Tourists’ travel decisions usually involve a number of choices that are made over time and across space. Since tourists face many aspects of choices and have to deal with spatial and temporal constraints, it is expected that there exists multi-faceted dependencies and interactions in tourist behavior. The term “dependence” refers to the state that tourist’s one choice aspect is conditioned on another, while the term “interaction” means tourist’s two or more choice aspects are interacted with each other. Such dependencies and interactions have three facets, including dependencies and interactions among different choice aspects; temporal dependencies and interactions; and social interactions. Aiming to gain a thorough understanding of tourist behavior, this study attempts to build a model system, into which all the major choice aspects related to tourist behavior are incorporated and multi-faceted dependencies and interactions are taken into account. Concretely speaking, this study will analyze tourism participation behavior by considering the influence of various factors, including individual and household characteristics, social interactions and constraint effects; investigate tourist multi-stage choice process, including two interrelated choice aspects of destination and travel party, and three interrelated choice aspects of tourism participation, destination choice, and travel mode choice; analyze tourist’s multi-destination choice with future dependence; represent tourism participation and tourism expenditure simultaneously; examine tourists’ time allocation decisions on various activities during travel.

Several modeling approaches are proposed in this study. Tourism participation choice is analyzed based on a Scobit model, which includes a skewness parameter to relax the assumption made in binary logit model that the sensitivity of individuals to changes in explanatory variables is highest for those who have indifferent preferences over participation and non-participation. Focusing on the interaction between travel party and destination, the latent class modeling approach is introduced into the nested logit modeling framework to simultaneously represent the heterogeneous nested choice structure. Three level nested logit model is adopted to jointly analyze tourist’s three interrelated choice (whether to travel, destination choice, travel mode choice). The model of destination choice that incorporates future dependence is developed to represent the multi-destination choice in a tour trip. A discrete-continuous choice model is developed to represent tourists’ two interrelated choice aspects (i.e., tourism participation and expenditure) simultaneously. The multiple discrete-continuous extreme value (MDCEV) model is employed to represent tourist’s time use behavior with multiple activities.

In total, this thesis consists of 8 chapters. Chapter 1 describes the research background, problems, objective, methodologies, and expected contributions.

Chapter 2 gives a review of existing studies about tourist behavior analysis. Firstly, studies regarding tourism participation behavior are reviewed. Then, research concerning tourist scheduling behavior is described, which includes several dimensions: spatial choice, temporal choice, monetary expenditure, and social contexts. Next, studies about post-travel evaluation are summarized. Finally, a review of integrated framework in tourist
Chapter 3 introduces the data used in this study. Three different types of data sets are used in this study. The first one comes from a web-based questionnaire survey conducted in Japan in April 2010. The survey included very detailed information of individual’s tourism behavior in the year 2009 (e.g., how many times they participated in tourism during the whole year, destination choice, timing, travel mode, travel party, duration of stay, expenditure for each trip) and individual characteristics (e.g., gender, age, occupation, education level, annual income, marital status, household composition, residential area, car ownership, etc.). This data is used to analyze tourism participation behavior, destination choice, travel mode choice, and monetary expenditure. The second data was collected at 29 major tourism destinations in Kyusyu, Chugoku and Shikoku regions in the summer of 2002 based on a face-to-face interview, which is used to analyze interrelated choices of destination and travel party. The third dataset was collected in the prefecture of Tottori in 2007 based on an on-site interview, which provide very detailed information about tourists’ on-site behavior. This data is used to analyze tourists’ on-site travel pattern and time use behavior.

Chapter 4 analyzes individual’s decision on whether or not to participate in tourism. In this chapter, individual’s choice of tourism participation is studied based on a Scobit model, which includes a skewness parameter to relax the assumption made in binary logit model that the sensitivity of individuals to changes in explanatory variables is highest for those who have indifferent preferences over participation and non-participation. In addition, two psychological factors, namely, social interactions and constraint effects are incorporated into the model based on the theoretical consideration in the existing literature. The empirical application is conducted using the data stemmed from a web survey conducted in Japan in 2010. Using this data the impacts of several attributes on participation decisions in tourism are investigated.

Chapter 5 deals with tourists’ multi-stage choices, which includes two parts. The first part aims to get a better understanding of heterogeneous interaction between destination and travel party choices in tourism. For this purpose, this chapter attempts to simultaneously represent these two choices by integrating the nested logit model with the latent class modeling approach, which is used to accommodate two types of nested model structures. The second part jointly analyzes tourist’s three interrelated choice (whether to travel, destination choice, travel mode choice) and examine the influences of state dependence as well as other factors on these three choices. In this chapter, the joint choice of three components is analyzed using a nested logit (NL) model, which includes three levels: the first level is tourism participation choice, the second one is destination choice and the third one is travel mode choice. The NL model incorporates the interaction between different choice dimensions with the help of an inclusive value, which is the maximal utility of the alternatives in the choice set of the lower level nest. To examine the influence of state dependence, lagged endogenous variables are included into the model.

Chapter 6 is concerned with interrelated choices underlying tourist’s multi-destination behavior. A new destination choice model is developed based on the concept of future dependence, which argues that choice of a destination during a tour is influenced by choices of other destinations that will be visited later. The model is built within the universal (or mother) logit model framework and it is especially suitable to represent the choice behavior with many destinations, which are difficult to be represented using traditional nested logit model. The results of analysis empirically confirmed the effectiveness of the proposed modeling approach, using a questionnaire survey data collected in Tottori Prefecture, Japan in 2007. It was also revealed the influential factors that affect the multi-destination choice behavior.

Chapter 7 focuses on tourist resource allocation decisions, which include both long-term and short-term aspects. The long-term decision concerns when to go for a travel, how long and how much to spend on a trip. The short-term decision mainly refers to the decisions during the travel (time and money allocation during travel). This chapter includes two parts. The first part investigates monthly tourism expenditure behavior (long-term aspect). The second part analyzes tourist time allocation on on-site activities (short-term aspect).

The existing research has a lot of problems in representing tourism expenditure as a decision which is independent from the decision of participation in tourism. The former part of this chapter attempts to represent these two decisions simultaneously. This is done by developing a new type of discrete-continuous choice model which incorporates the correlation between these two decisions and represents them simultaneously. To describe the tourism participation, Scobit model is adopted, which includes a skewness parameter to relax the assumption made in the popular Logit and Probit models that the sensitivity of individuals to changes in explanatory variables is highest for those who have indifferent preferences over participation and non-participation. An empirical analysis is carried out using the data collected from a web-based survey conducted in Japan in 2010. The results confirm the interaction between tourism participation and expenditure. Furthermore, Scobit-based model is proved to be superior to Logit-based model. Finally, influential factors affecting both tourism participation and expenditure are also examined.

In the latter part of chapter 7, tourist’s time use behavior involving multiple activities is analyzed by using a
multiple discrete-continuous extreme value (MDCEV) model. The MDCEV model is applied because it has several advantages over other existing time use models, including the joint representation of participation in multiple activities and the allocated time, diminishing marginal utilities (satiation effects), and different baseline utilities. Application analysis is carried out using a data collected from tourists in Japan. Influential factors related to time use in 7 activity categories are explored. Concretely speaking, individual attributes including age, employment status, residential area, travel experience, and trip-related attributes including travel mode, travel party, travel season are found to be important influential factors. It is also observed that the level of satiation is high for shopping activities and low for sport and hot spring activities.

Chapter 8 summarizes the findings of this thesis, and directions for future research are discussed.