



# Modelling tourism expenditure using complexity theory



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## ABSTRACT

This study contributes to the literature by offering a novel analytical approach to solving complex interactions of tourism expenditure antecedents, advancing the theoretical reasoning behind the way in which socioeconomic indicators of prosperity combine to explain tourism expenditure on an international scale. The study explored a variety of configurations sufficient for simulation of both high and low scores of outbound tourism expenditures that have policy implications in both destination countries and countries of origin. We used complexity theory and fuzzy set qualitative comparative analysis (fsQCA) to analyze a composite score of 5-year data for 105 countries. The predictive validity results indicated the capacity of the proposed model to predict future outcome using other samples. The results expand our knowledge of the asymmetrical relationships of tourism expenditure and its antecedents.

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## 1. Introduction

In 2015, >1186 million tourists travelled abroad, and the export earnings generated by international tourism reached US\$ 1.5 trillion, which led to tourism being ranked as the fifth largest industry in the worldwide export category of the United Nations World Tourism Organization (UNWTO, 2016). As a flourishing industry, tourism is a key driver of the economy in many countries. According to a 2016 UNWTO report, the Chinese spent US\$ 292 billion and the US spent US\$ 113 billion on tourism-related activities, which, in the opinion of many researchers, conveys the importance of outbound marketing based on tourism expenditure (e.g., Eugenio-Martin & Campos-Soria, 2014; Lin, Mao, & Song, 2015; Marrocu, Paci, & Zara, 2015). Similarly, from a policy-maker's perspective, outbound tourism expenditure functions as an import factor for the origin country of visitors and as an export factor for the destination country, which is significant for macroeconomic management in numerous countries, especially developing countries (Eugenio-Martin & Campos-Soria, 2014; Seetanah, 2011; Tugcu, 2014).

Lin et al. (2015, p. 101) highlighted the paucity and worthiness of empirical research on tourism expenditure as follows:

A good understanding of tourism expenditure will bring great benefits in identifying viable market segments and formulating market

segmentation strategies for the tourism industry. The importance of tourism expenditure is well recognized, not only by tourism-related businesses, but also by local governments and destination marketing organizations.

Heterogeneous patterns of tourism expenditure, at both the micro and macro levels, are escalated by the complex interactions of their antecedents (Eugenio-Martin & Campos-Soria, 2014; Jang & Ham, 2009; Lin et al., 2015; Marrocu et al., 2015). Thus, there is a keen interest in developing a new methodological approach in modelling tourism expenditure that not only addresses nonlinear and complex interactions of expenditure antecedents, but also provides deeper insights into the management of outbound tourism expenditure (Brida & Scuderi, 2013; Jang & Ham, 2009; Sainaghi, 2012; Wang & Davidson, 2010).

### 1.1. Purpose of the study

This study aims to develop and test a configurational model for predicting tourism expenditure using complexity theory with fuzzy set qualitative comparative analysis (fsQCA). This approach is useful to obtain a deep understanding of the configurations of factors in stimulating tourism expenditure. Using asymmetrical modelling, this study proposes to identify combinations of five indicators of prosperity that lead to both high and low scores for tourism expenditure at the macro level. The evaluation of key tenets of complexity theory with the fsQCA results enable us to explain the existence of heterogeneous features,

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occurrences of contrarian cases and complex interactions of tourism expenditure antecedents.

### 1.2. Significance of the study

This study seeks to contribute to the current knowledge of tourism expenditure in several ways. First, it provides new perspectives on the relationships between predictors of outbound tourism expenditure. Application of complexity theory is an advance in the theoretical reasoning as to how complex interactions of causal factors combine to explain the occurrence of high/low tourism expenditure scores. To analyze configurational models, fsQCA, a novel and powerful analytical approach that has received only limited attention in extant tourism research, was used to test the proposed model (Hsiao, Jaw, Huan, & Woodside, 2015; Olya & Altinay, 2016; Olya & Gavilyan, 2016; Wu, Yeh, Huan, & Woodside, 2014). Several researchers acknowledged that tourism expenditure is a complex tourism phenomenon (e.g., Dolnicar et al., 2008; Lin et al., 2015; Wang & Davidson, 2010). There is a paucity of research on simulation of complex phenomena (e.g., tourism expenditure) in the tourism industry, and this study endeavors to fill this research gap.

The second contribution of this study to the current knowledge on tourism expenditure is through the five indicators of prosperity—entrepreneurship and opportunity, governance, health, safety and security, and personal freedom—for 105 countries over five years, which are used as causal antecedents of outbound tourism expenditure. Legatum Institute (2013) provides definitions and technical information regarding prosperity indicators in their original report on methodology and its technical appendix. Crouch and Ritchie (1999) and Law and Au (2000) acknowledged that, on the whole, prosperity has integrated with tourism development. It is worthy to explore how the recipes/configurations of the five indicators of prosperity predict tourism expenditure at the country level. Since data on outbound expenditure and prosperity of all countries are calculated and issued on a national scale, simulating expenditure behavior of tourists based on the conditions of the origin country increases the functionality of data for making policies at the national and international levels. In this regard, Pizam and Sussmann (1995) found that the behavioral patterns of tourists vary by nationality, which indicates—beside data type—the necessity of modelling tourism expenditure based on the social, cultural, and economic situations of origin countries (Gholipour, Tajaddini, & Al-mulali, 2014).

The third contribution of this study to the current knowledge on tourism expenditure is its consideration of the contributions of methodology and theory (application of fsQCA with complexity theory), as well as data type (antecedents of prosperity and tourism expenditure of 105 countries over 5 years). To the best of the authors' knowledge, this is the first attempt that provides models for both increasing outbound tourism expenditure and decreasing outbound tourism expenditure based on the integrations of indicators of prosperity of the visitor origin country. In fact, fsQCA with complexity theory helps to justify/explain why and how being top spenders or low spenders depends on the conditions of antecedents of tourism expenditure. There is no need to elaborate on the benefits of a high level of outbound tourism expenditure for destination countries (Jang, Cai, Morrison, & O'Leary, 2005). However, many countries are reluctant to be ranked as top spenders in the area of international travel because a high level of expenditure can be considered as an import of goods/services. Based on this logic, Athanasopoulos, Deng, Li, and Song (2014) advised policy-makers to focus on domestic tourism as a convenient substitute for outbound tourism. The present study calculates causal recipes for a low level of outbound tourism through exploration of sufficient algorithms of the five indicators of prosperity of the origin country.

The next section presents a review of the tourism expenditure antecedents, a conceptualization of the relationship between tourism expenditure and prosperity indicators, a critique of past analytical approaches in modelling tourism expenditure, the complexity theory

and the proposed conceptual model. The methodology section includes data, procedures and analytical approaches followed by the fsQCA results, a discussion of the findings and an evaluation of the key tenets of complexity theory. The last section provides the conclusion, limitations and theoretical and managerial implications.

## 2. Theoretical background and conceptual model

### 2.1. Tourism expenditure antecedents

Previous studies considered several ranges of variables, such as economic, social, cultural, environmental (e.g., climate), sociodemographic, psychological, and trip-related as antecedents of tourism expenditure (e.g., Abbruzzo, Brida, & Scuderi, 2014; Eugenio-Martin & Campos-Soria, 2011; 2014; Gholipour & Tajaddini, 2014; Gholipour et al., 2014; Hong, Morrison, & Cai, 1996; Hung, Shang, & Wang, 2012; Lin et al., 2015; Marrocu et al., 2015; Veisten, Lindberg, Grue, & Haukeland, 2014; Wang & Davidson, 2010). Table I, a supplementary file, provides a summary of the relevant literature. The review revealed applied methods for estimating tourism expenditure using various types of variables. While a number of researchers have assessed the impacts of the economy (e.g., Akkemik, 2012; Eugenio-Martin & Campos-Soria, 2014; Han, Durberry, & Sinclair, 2006; Wang, 2014), entrepreneurship (Chang, 2011), personal freedom (Gholipour et al., 2014), education, safety and security (Eugenio-Martin & Campos-Soria, 2014), and other origin-based related factors, such as climate (Eugenio-Martin & Campos-Soria, 2011), on tourism expenditure, the association of the five indicators of prosperity for simulating tourism expenditure remains unexplored.

Furthermore, numerous scholars have identified complex interactions among the antecedents of tourism expenditure (e.g., Brida & Scuderi, 2013; Sainaghi, 2012; Wang & Davidson, 2010). When predicting variables that are subject to complex issues, such as tourist behavior, a set of combined factors must be considered to provide deeper insights into the mechanism of the occurrence of the outcome(s). This also applies to tourism expenditure where heterogeneity and sophisticated interactions of factors have been reported (Dolnicar et al., 2008; Jang & Ham, 2009; Lin et al., 2015; Wang & Davidson, 2010). In this regard, Wang and Davidson (2010) identified heterogeneous results in an investigation of the impact of age on tourism expenditure, and Jang and Ham (2009) correctly stated that such heterogeneity could be explained by considering the simultaneous conditions of other contributors (e.g., health, social, and economic environments). In fact, the effect of one indicator of tourism expenditure depends on the conditions of other causal factors that this study will address by analyzing the complex configurations of antecedents.

### 2.2. Conceptualization

This study attempts to address this question: Under what conditions of prosperity are countries recognized as top spenders and/or relegated to an inferior position? In other words, how do we attune the antecedents of country's prosperity to achieve high tourism expenditure and also predict conditions leading to a low level of expenditure? The answers provide implications for target marketing at a country level. Many previous studies focused on predicting tourism expenditure at the individual level, but few studies have assessed it from a cross-national perspective (Cho, 2010; Eugenio-Martin & Campos-Soria, 2014). It is important to model tourism expenditure at a national level because many tourism-related statistics (e.g., expenditure) are issued on a national scale (i.e., country), and the formulation of predictions of tourism expenditure of countries helps businesses that are interested in targeting/expanding new international markets. Specifically, Georgantopoulos (2012) forecasted a growing trend of tourism expenditure from 2012 to 2020.

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