

# Dissecting Coastal and Inland Tourism in Sardinia: A Study Based on Online Reviews and Geographic Dichotomy Through Natural Language Processing

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Since the late 1970s, a considerable body of literature on tourism has focused on customer satisfaction from different perspectives and for different purposes (Disegna-Osti, 2016). Most satisfaction studies are based on expectation and perception models, cognitive evaluation, congruity and equity models, and perceived overall performance (Neal and Gursoy, 2008).

The expectation and perception models proposed by Oliver's (1980), which expresses consumer satisfaction as a function of expectation and expectancy disconfirmation, is one of the most used in the definition of tourism satisfaction (TS). Following this model, Truong and Foster (2006) have defined the TS as "the difference between expectations and perceived performance, and the "fit" between tourist expectations and host destination attributes" (Truong & Foster, 2006, p. 843). Similar definitions are proposed by other researchers (see for instance, Tribe and Snaith, 1998; Chen et al., 2011).

Moreover, some researchers have underlined the necessity to investigate the TS taking into account different aspects. For instance, Yüksel and Yüksel (2008) have stated the TS can be evaluated taking into account three different levels: the *Product-service level satisfaction*, which refers to individual product-service experiences delivered by a single organization in the production chain; the *Dimensional level satisfaction*, which is obtained summing the satisfactions derived from individual products and services within the given component of tourism; finally the *Total satisfaction*, which is obtained summing together the individual products-service level satisfactions and dimensional level satisfactions.

Positive results in terms of tourism satisfaction influence the development of a destination and the profitability of private businesses, stimulating tourist expenditure, repeat visits, positive recommendations, and reputation enhancement. Consequently, measuring tourism satisfaction and its determinants becomes crucial for policymakers and managers (Sukiman et al., 2013). Several empirical studies focus on these issues following both qualitative and quantitative approaches. Among these, recently, increasing interest has emerged in measuring customer satisfaction directly or indirectly from online reviews with various scopes and methods (Zhou and Yao, 2023).

This study aims to contribute to this recent line of study by investigating information contained in online customer reviews (e-WOM) in the form of text and scores. The main goal is to understand which is the within-regional variation (Coastal and Inland Tourism) in TS in Sardinia through Online Review Analysis using natural language processing. More in detail, the purpose is to understand if there are differences in topics used by customer reviewers in their online review, and how these differences impact customer satisfaction between coastal and inland geographical areas. At this scope, after investigating each topic's impact on the Sardinian region's customer satisfaction level, we split the dataset into two sub-samples: one related to the destination located in the coastal area, the other in the inland (meant as the central area of Sardinia). Online customer reviews are retrieved from TripAdvisor platforms and related to activities, attractions, and services.

To retrieve and process data from the web, we apply a new method recently proposed by Ortu et al. (2022). This method, called **TO**pic modeling **B**ased **I**ndex **A**ssessment through **S**entiment (**TOBIAS**), allows modeling the effects of the topics, moods, and sentiments of the customers' comments describing a phenomenon, such as the perception of the quality of a service, over the level of satisfaction expressed by customers. This method's novelty relies on the combination of natural language processing and causal inference to explain customers' assessment of a phenomenon.

TOBIAS is built by combining different techniques and methodologies. Firstly, Sentiment Analysis identifies sentiments, emotions, and moods, and Topic Modeling finds the main relevant topics inside comments. Then, Partial Least Square Path Modeling estimates how they affect an overall rating that summarizes the performance of the analyzed phenomenon.

Since coastal and inland tourism present specific characteristics, we expect to identify differences in topics and impact on satisfaction levels among these two geographical areas by customers. Results are then interpreted.

Our contribution is threefold: first, we contribute to tourism literature on customer satisfaction; second, we contribute at the statistical level proposing a new model for analyzing consumer satisfaction; finally, we contribute at the level of policymakers through the interpretation of results by offering strategies to be adopted for the tourism destination.

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