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Tourist Destination Marketing Supported by Electronic Capitalization of Knowledge

George Stalidis*, Dimitrios Karapistolis

[a]*Alexander Technological Educational Institute of Thessaloniki, 17 Km Sindos-Thessaloniki, 57400 Thessaloniki, Greece*

Abstract

Marketing for tourist destinations, either as strategic planning or as short-term marketing-mix specification, has a lot to gain from computerized information tools. In this paper, we present knowledge engineering methods for the extraction and modeling of findings from market surveys and data analytics in the form of reusable and sharable knowledge. In contrast to information-based systems which are able to store and provide high quality information but their user relies on his own interpretation and decision abilities, we focus on a knowledge-based approach where data analysis and reasoning are consolidated and the system is thus able to provide solutions to common marketing problems. Data analysis methods suitable for discovering factors, associations, clusters and in general hidden patterns that explain a market phenomenon or customer behavior, are applied on multiple surveys related to tourist destination marketing. In addition, a computerized knowledge management process, utilizing ontologies and a rule-based inference engine, is developed to capitalize the extracted knowledge and offer it to support marketing planning problems. Preliminary results are presented on capturing the image of Thessaloniki as tourist destination and suggesting important factors for improving its promotion to individual visitor groups.

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1. Introduction

The access to high quality market information and the ability to make use of this information to take successful marketing decisions may be of decisive importance for the competitiveness of a destination. To this end, the analysis of survey data is also a challenging field, where specialized expertise and information technology offer advanced capabilities, such as to discern qualitative patterns and hidden dependencies, as well as to study phenomena evolving over time. Since more than two decades ago, it has been supported that

* Corresponding author. Tel.: +30-2310791246; fax: +30-2310791563.
E-mail address: stalidgi@mkt.teithe.gr

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successful marketing in tourism depends on the extent to which more specialized consumer demands or lifestyles can be identified, as opposed to massive generic approaches (Weinstein, A., 1994). The positioning strategy of a tourism product can thus be devised following the measurement of the customer's image of the tourism product (Etchner, C. and Ritchie, B., 1993) and his satisfaction from product attributes, in correlation with his specialized needs and desires (Cho, B., 1998), (Kavoura, A., 2013). Such measurements of a destination's or product's image as well as the identification of the customer's needs are typically performed through primary surveys and statistical analyses. An interesting challenge would be to progress from a data or information-based approach to a knowledge-based approach, where the marketer would not be concerned with datasets, statistical tables or reports but with the knowledge derived from those. Moreover, it would be desirable to consolidate knowledge from different sources in order to solve a broader problem and to accumulate this knowledge in a reusable and sharable form, building a knowledge capital available to the marketer.

Strategic planning tools for improving the competitiveness of tourism in selected areas have been reported in the literature (Bousset, J.P., et al, 2007), based mainly on information management and less on sophisticated analysis and knowledge extraction. Knowledge-based decision support systems applied to tourism marketing have also been reported (Moutinho, L., Rita, P. and Curry, B., 1996). In the current paper we present knowledge engineering technologies (Schreiber, G., 2008) that are used to extract knowledge from survey data and to store it in an electronic Knowledge Base, so that it can be used within intelligent computerized systems as an advanced marketing decision support tool. The main focus is on the design of a knowledge model suitable for tourist destination marketing and the illustration of a proposed methodology for managing knowledge derived from questionnaire-based primary surveys. Multidimensional factor and clustering analysis methods (Benzecri, J.-P,, 1992) are used as a powerful knowledge extraction method and original results are presented from a recent marketing survey on the image of Thessaloniki as a tourist destination.

2. Methods

2.1. Multidimensional data analysis

In order to uncover the relations among different aspects of the visitors' image for a destination, we applied multi-dimensional factor analysis and clustering methods. In specific, a combination of Multiple Correspondence Analysis (MCA) (Benzecri, J.-P, 1992), (Greenacre, M., 2007) and Hierarchical Cluster Analysis (CHA) based on Benzecri's chi-square distance and Ward's linkage criterion (Benzecri, J.-P, 1992) were used in a multistep analysis procedure, in order to identify distinct perceptions in terms of the respondents' views to specific aspects of their visit, to cluster visitors in terms of their preferences and viewpoints and to discover the relations among different variables in order to promote our understanding as regards key satisfaction factors. The specific analysis methods are produce results in qualitative form, allowing graphical exploration and the formation of patterns that involve classes, properties and associations (Van de Geer, John, P., 1993). The data analysis process was performed using the MAD analysis software (Méthodes d' Analyses des Données – MAD, 2012) and comprised the following steps:

1. For each block of items in the questionnaire (corresponding to an individual aspect of the survey), a combination of MCA and CHA were applied on the variables included in the specific block. The clustering method was used to divide the respondents into homogeneous groups in terms of their responses and the factor analysis was performed to project the profiles of the respondent clusters on the factorial axes, together with the properties (i.e. categories or modalities) of the main variables, allowing to match the groups of respondents with groups of properties.