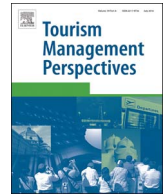




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The use of Geographical Information Systems for Tourism Marketing purposes in Aveiro region (Portugal)

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ABSTRACT

Geographical Information Systems are tools that allow a better decision making process, accessing politicians and managers in tourism development and providing integrated touristic information. Furthermore, these are powerful tools for the development of destination marketing strategies. Aveiro web-based Geographical Information System was developed, with the purpose of integrating tourism resources in a common platform. Aveiro region is an important coastal wetland of Portugal that presents unique features which allow the development of a sustainable tourism activity, based on natural and cultural characteristics. Despite the diversified resources, it is observed that the Aveiro region needs a strong improvement regarding tourism development and marketing strategies. In this paper, it will be presented the methodology used for the implementation of the first step of this GIS (inventory of resources and creation of the database) and the potential of this tool for the development of a sustainable tourism marketing strategy.

1. Introduction

Geographical Information Systems (GIS) are tools that present very useful functionalities that can be used in tourism management, providing an integrated approach analysis of spatial and non-spatial data. The development of tools capable of supporting tourism decision making process and enabling potential visitors to get an overview of the touristic resources diversity, products and services, are the main purposes for the implementation of GIS applied to tourism marketing (Lee, Choi, Yoo, & Oh, 2013; Supak, Brothers, Bohnenstiehl, & Devine, 2015; Supak, Devine, Brothers, Rozier Rich, & Shen, 2014; Turk, Kitapci, & Dortyol, 2014).

Aveiro region in Portugal has growing in terms of tourism demand in the last years, which implies the necessary development of tourism marketing strategies in order to improve the experience of tourists when visiting this area. This region comprises 11 municipalities that are connected by the Ria de Aveiro lagoon ecosystem, which is being recognized as the main tourist point of interest of this region. Considering its location and resources biophysical characteristics, it represents an excellent case study for the development of sustainable tourism marketing strategies, based on the profit of natural potential of this area

(Albuquerque, 2013). Several documents sated already the necessity of giving priority to the attraction, development and diversification of economic activities such as tourism, water sports and recreation, which genuinely depend on the maintenance or improvement of coastal and lagoon area environmental quality. The challenge is to show that it is possible to develop a sustainable tourism marketing strategy based on local natural and cultural resources, considering Ria de Aveiro as the linkage of touristic activities. Territorial, cultural and environmental singularities of this region could contribute to the development of quality and attractive tourism products.

In this paper, it will be analysed the web-based GIS of Aveiro region, concerning tourism marketing purposes. The main purpose of this study is to examine the potentiality of the web-based GIS of Aveiro region for the development of tourism marketing strategies, with two different approaches: to support tourism decision making processes and to improve the experience of the tourists in this region. To accomplish this purpose, this paper is organized in five sections – introduction, literature review, case study, main finding and conclusion and further research. In this first section, it is presented the aim of the study and the main purposes that is pretended to achieve. The literature review is focused on the conceptual analysis of GIS and tourism marketing

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through the presentation of different case studies found in the literature. The third section describes the Aveiro region study area and presents the aims, methodology and results of GIS database development and its implementation, showing the potential of this tool for this region. The fourth section describes the main findings of the analysis of the case study, having in account tourism marketing purposes. Finally, the last section presents some conclusions and recommendations for future researches.

2. Literature review

2.1. GIS and tourism

Geographical Information Systems (GIS) are important tools since they have the ability to represent, store, manage, analyse, update and visualize spatial and non-spatial data (Church, 2002; Stojanovic, Djordjevic-Kajan, & Stojanovic, 2000) in an integrated platform. These spatial and non-spatial data can be described as “geographically-referenced information [that] includes spatial data (graphical) components which describe the location and attribute components which describe properties for location” (Ahmad et al., 2010, p. 187).

These are powerful tools, since they can combine a geographical analysis with an attribute analysis, providing a better interpretation of the data that can be used in different research fields. Thus, as Goodchild (1989, p. 1) refers GIS “is clearly something more than a mapping system, because of the emphasis on analysis rather than display”.

Tourism sector is a spatial phenomenon that requires spatial data collection and processing (Boers & Cottrell, 2007), namely to identify features relationships and to analyse those relationships in a spatial context. Therefore, Geographical Information Systems can be considered as important business tools for tourism. As Mcadam (1999, p. 79) mentions “since most tourism planning problems can be shown to have spatial or geographical characteristics and tend to be increasingly multi-dimensional and complex, it is likely that projects could be more accurately managed using the techniques and tools found in a GIS environment”.

Considering this statement, Bahaire & Elliott-White (1999, p. 161) presented the functional capabilities of GIS related to tourism sector, namely tourism resources inventories, identifying most suitable locations for development, measuring tourism impacts, visitor management and visitor flows, analysing relationships associated with resources use, and assessing potential impacts of tourism development.

Thus, GIS is a tool that can be used for a multitude of functions extremely important in tourism management and planning. Regarding Bahaire and Elliott-White (1999) research, it is possible to refer that GIS tools are seen as an added value both to the decision making processes, accessing politicians and managers in tourism development, and also by providing integrated and spatial touristic information, capable of assisting tourists in planning their visits.

Some authors tried to accomplish a state-of-the-art about GIS applications in tourism. Mcadam (1999) identified a set of papers emphasizing the use of GIS in issues related to tourism management in sensitive and cultural context and the use, in early stage, of tourism development destinations. Bahaire and Elliott-White (1999) referred the use of GIS tools in tourism related issues, such as environmental management, travel costs and tourism development modelling, based on scenarios analysis. Nevertheless, these authors referred also new applications namely in the design and monitor of sustainable tourism (Bahaire & Elliott-White, 1999). In the same way, Chancellor and Cole (2008) also identified a set of applications related to sustainable tourism and the need to provide capacities for stakeholders to tourism decision making processes. Farsari and Prastacos (2004) presented a literature review referring the benefits of using GIS in tourism management and planning. They have carried out a review of different GIS application, categorizing them in tourism resource inventories; location suitability; measuring and monitoring tourism impacts; visitor flows

and management; relationship associated with resource use; and assessing potential impacts of tourism development.

However, these same authors referred that the use of this technology applied to tourism sector is still scarce (Albuquerque et al., 2016; Boers & Cottrell, 2007; Chancellor & Cole, 2008; Farsari & Prastacos, 2004; Mcadam, 1999), which turns the analysis more difficult.

2.2. GIS and tourism marketing

According to the use of GIS in tourism marketing, it was observed different approaches and findings through the literature review. Some studies are related to the conceptual analysis of GIS in tourism marketing (Bertazzon, Crouch, Draper, & Waters, 1997; Elliott-White & Finn, 1997; Feng & Morrison, 2002) and others are more related to case studies where GIS was used as a tool for tourism marketing analysis (Ayed, Bazazo, Hasoneh, & Ayed, 2010; Beeco et al., 2013; Bertazzon et al., 1997; Chancellor & Cole, 2008; Chang & Caneday, 2011; Feng & Morrison, 2002; Jovanović & Njeguš, 2008; Miller, 2008; Supak et al., 2014). First, it will be presented the analysis of papers concerning tourism marketing and GIS conceptual analyses, followed by the analyses of some case studies.

Bertazzon et al. (1997) presented a study where they identified current use and future prospects of GIS applications in tourism marketing. They analysed possible applications of GIS in tourism marketing, considering the market and the organizations. According to the market, they found that GIS applications are focused on “the spatial task of finding, analysing and mapping market characteristics”. On the other hand, considering organizations, those applications are “concerned with the spatial tasks of locating, designing, and planning tourism development” (Bertazzon et al., 1997, p. 40), which means the use of GIS for product and destinations development. In this paper, authors realized an analysis of a case study – ‘Alberta Ski resorts hypertext document’. This is a GIS application to tourism marketing organizations, presenting “real time information on weather and road conditions within the resort region” and providing “information on shortest routes and tours of the region” (Bertazzon et al., 1997, p. 56).

Elliott-White and Finn (1997) discussed the role of GIS tools in the context of new developments of tourism marketing theory, having in account the concepts of lifestyle and relationship marketing. This is a conceptual paper, related to the evolution of the marketing concept and its application to tourism sector. They have emphasized that GIS tools could benefit “tourism providers but also the destination itself” (Elliott-White & Finn, 1997, p. 78).

Feng and Morrison (2002) presented also a literature review about GIS, GIS and marketing and GIS and tourism marketing. Having in account the 8Ps (product, price, place, promotion, package, programming, partnership and people) of marketing mix and the five-step tourism and hospitality marketing system model, known as PRICE (Feng & Morrison, 2002), they have presented a discussion about the use of GIS in tourism marketing, in each task of the PRICE model (Table 1).

They also presented a case-study in Brown County, Indiana, USA, focused on the market analysis for destination marketing. They concluded that GIS tools have strong potentialities for destination

Table 1
Tourism and hospitality marketing system tasks and steps: the PRICE model.
Source: Feng & Morrison, 2002, p. 133.

Task/function		Steps/questions
Planning and research	P	Where are we now?
	R	Where would we like to be?
Implementation	I	How do we get there?
Control evaluation	C	How do we make sure we get there?
	E	How do we know if we get there?

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