Chapter 66
Analysis of Tourist Behavior Based on Tracking Data Collected by GPS

Oriol Bernadó
Science and Technology Park for Tourism and Leisure, Spain

Albert Bigorra
Science and Technology Park for Tourism and Leisure, Spain

Yolanda Pérez
University Rovira i Virgili, Spain

Antonio P. Russo
University Rovira i Virgili, Spain

Salvador Anton Clave
University Rovira i Virgili, Spain

ABSTRACT

The research field of tourism management has been witnessing in the last ten years an important development in methods based on the analysis of the spatial behavior of visitors, mainly driven by the progressive enhancement and economic accessibility of satellite-based tracking techniques. However, the practical operations of destination management systems based on tracking technologies still suffer from the relative complexity of obtaining and mastering this information. This chapter illustrates the development of Track-Tour, a user-friendly system that integrates the tracking of visitor spatial activity, the elaboration of such data according to structured formats, and their visualization through a web-based viewer. It is believed that this system has the potential to allow an easier uptake by destination management and planning organizations in their quest for more sustainable tourism impacts.

The chapter presents the design and validation of this comprehensive methodology, and the early results from a test application in the historical centre of the World Heritage city of Tarragona, a semi-enclosed area with unpredictable patterns of tourism mobility that typically suffer from congestion and flow management problems.

INTRODUCTION

It is clear that mobility is a core aspect of contemporary life (Drummond, et al., 2006), and tourism is by no means indifferent to this. The increased possibilities and means of transport (reducing functional distances), as well as the supposed "normality" of the individual's occupational, social and leisure mobility (Urry, 2008) have engendered a cultural and economic revolution and has led to the progressive standardization of tourism as a social commodity. This evolution modifies the traditional approach to tourism and the topics being researched or investigated in this field addressing research into aspects such as the choice of destinations and forms of tourism (where to travel), and aspects of performativity and spatial behavior at the destination (what to do there, what to consume, and where). This article focuses particularly on the second aspect, defining a systematic method for the study of tourist mobility at destinations or tourist areas that will help destinations to plan and manage actions geared towards improving the competitiveness and the sustainability of tourist activity. Hitherto, this area of research has aroused scant interest, resulting in a limited practical usefulness of the methods employed and the results obtained for policies and the management of visitable spaces (Dietvorst, 1995; Thornton, et al., 1997; Shaw, et al., 2000). Even in places where visitor surveys are carried out regularly, visitor mobility has continued to merit little attention; the spatial or geographic aspect of visits in general is neglected, since it is assumed and estimated to be impossible to amass such complex information through direct empirical research (Meng, et al., 2005).

Thornton et al. (1997), among others, point out that understanding the spatio-temporal behavior of tourists at destinations could generate different improvements such as transport management, avoid the saturation of places of interest, optimize routes or, and beyond the actual destination, extend the geographic distribution of visitors and their spending in the ensemble of the regions and/or sights at the destination. These potential actions should be complemented by better marketing strategies (Thornton, et al., 1997) and several other aspects, based on a better segmentation of the target and the visitable space. Knowing exactly what routes have been taken, by how many people or vehicles, for how long and with what effort, what facilities or shows they went to, who visited and photographed the monuments or when, as well as what types of shops and places interested visitors more or less, could lead to a very significant improvement in the performance of destinations. This reality will allow us to establish new solutions designed with precision on the elements, such as signs, opening times, the setting of license costs, public transport engineering, etc. In summary, it leads us to a new tourist site management scenario on any spatio-temporal scale.

STATE OF THE ART

This potential improved management of tourist destinations was unthinkable until only recently; however, in the last decade, technological development (particularly in the new Information and Communication Technologies (ICT) and satellite communication technology) has permitted a change of paradigm in the consideration of the aforementioned mobility. Until barely a few years ago, research in tourism had generated only general information on the activity of visitors through traditional or "low-tech" methods. While it is true that general information on tourist activity can be obtained through methods such as direct surveys or travelogues, these methods present different shortcomings in terms of availability of detailed and real or exact data. This is due to the complexity of the environment: a visitor in an unknown setting will find it difficult, if not impossible, to remember the route, and then there is the need to secure the tourist's close collaboration and dedication, which means biasing the sample to those

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