BUSINESS INTELLIGENCE IN TOURISM

How can Big Data be turned into valuable insights for strategic innovation in places and destinations?

Professor Matthias Fuchs and the e-tourism team at ETOUR/Mid Sweden University are leaders in the area of ICT in tourism (i.e., e-tourism). They have worked for more than five years on the complex issue of generating and modelling fragmented data in destinations, applying business intelligence to generate knowledge and then facilitating access to insights and new knowledge to stakeholders in places such as tourism destinations.

The team includes director of ETOUR Dr. Maria Lexhagen and the head of the e-Business Competence Center, Professor Wolfram Höpken, at the Ravensburg-Weingarten University of Applied Sciences, Germany, as well as PhD students. The team researchers have worked for more than ten years in the academic field of e-tourism and have chaired many workshops and conferences (e.g., International Federation for IT in Travel & Tourism: www.ifitt.org), served on multiple review panels, and successfully managed a number of research projects in collaboration with industry partners.

What is the concern of this research area?
The challenges with Big Data, a collective term for any collection of large datasets, include: capture, curation, storage and transfer; analysis; searching, sharing and visualisation; and any privacy violation issues. The internet is flooded with data about people’s buying habits and desires, but most of the information is stored in databases of various stakeholders and remains as unused, valuable sources of knowledge. However, managerial expertise and organisational learning at the level of tourism destinations could be significantly enhanced by applying methods of business intelligence. Business intelligence is an umbrella term for data identification and preparation, database modelling and the population of a data warehouse, and the application of (explorative) online analytical processing and (explanative) data mining techniques.

Travel and tourism, or the movement of people, has become more and more linked to electronically handled processes since the advent of the World Wide Web. The specific benefit tourism gains from ICT is closely linked to the characteristics of the tourism product itself, being a service bundle that can ideally be portrayed and distributed by electronic media. As a consequence, travel and tourism is highly information intensive and, unsurprisingly, represents the largest sector within e-commerce.

Customers leave electronic traces during all travel-related activities, like searching and trip planning, reservations and bookings, service consumption, as well as feedback provision on community websites (e.g., social media) or through online surveys. Research in the area of business intelligence in tourism aims to resolve the deficiency of unused and fragmented data sources by conceptualising, prototypically developing, testing and evaluating system solutions that support value creation through enhanced supplier interaction and decision making. Another important aim is to improve and increase the capacity of destination management by applying business intelligence to better understand economic performance, customer behaviour and customer perceptions about their experiences of individual products as well as composite services at the level of destinations.

Why is this research area important?
As the main driver behind the innovation capacity of places such as tourism destinations, knowledge has been identified as the essential base for long term competitiveness and sustainable development. Through the generation and management of, and intelligent access to, relevant information, the knowledge level of stakeholders will increase and information asymmetries decrease. Consequently, knowledge relevant to suppliers (i.e., information about visitors and destination resources) will foster market cultivation processes, and destination competitiveness is strengthened through the capacity to innovate.

However, it is less the knowledge base existing at any time per se than a firm’s ability to effectively apply (and learn from) existing knowledge to create new knowledge, and to take action that forms the basis of achieving competitive advantages. Based on this, it is clear why ICT and methods of business intelligence are playing a crucial role in effectuating the knowledge-based view of the firm by enhancing large scale intra- and inter-firm knowledge exchange. The major challenge of knowledge management is to make individual knowledge about customers, products, processes, competitors or business partners available and meaningful to others.

How can the gained knowledge be used?
Designing and engineering a knowledge-based management information system requires a profound understanding of the nature of knowledge behind management processes. In the course of the team’s research they have identified knowledge requirements, prioritised customer-based indicators and developed system functionality, as well as evaluated the use of a prototypically developed and fully validated business intelligence system, in collaboration with industry partners in the leading
Swedish mountain destination of Åre. The partners represented the destination management organisation, the main lift operator and accommodation provider, individual hotels, as well as micro-businesses. In their evaluation the usefulness of a business intelligence system on the level of the destination was evident: “Finally I can get an overview of how many visitors are in the entire destination, and who they are,” commented one partner. “I will now be able to base my own decisions, as well as our joint decisions, about product development and marketing on detailed information and new knowledge,” said another.

Business intelligence offers highly reliable, up-to-date and strategically relevant information and previously hidden knowledge on the level of destinations, such as motives and service expectations, information needs, channel use and related conversion rates, occupancy trends/forecasts, quality of service experience and value added per guest segment, etc. If, similar to a gold digger, it is possible to mine this type of knowledge from hidden patterns (e.g. relationships between customer characteristics and product preferences) in Big Data, the competitive position of every business could be strengthened (e.g. through optimised marketing strategies).

**Future research priorities and Horizon 2020**

The research has so far focused mostly on the pre- and post-trip phase, which implies that the business intelligence application mainly covers an analysis of historical data with the potential of using forecasting tools. However, based on the theoretical knowledge destination framework, which consists of a knowledge generation and a knowledge application layer for supporting both suppliers and customers with new ICT-based services, the team is planning to move into the area of real-time business intelligence. This will enable a solution which also reflects visitors’ on-site behaviour. Tourists’ on-site behaviour is mirrored by real-time data stemming from ubiquitous (mobile) e-customer relationship management applications, which, at the same time, shows potential to enhance visitors’ experience quality and need fulfilment on-site. However, this research is challenged by the fact that these knowledge sources are rarely available at present, and therefore research needs to include the conceptual, as well as prototypical, development and implementation of such services in order to generate customer-based data of on-site behaviour relevant for supplier-based knowledge generation.

In the near future the team also aims to increase collaboration with other researchers and academic institutions, as well as industry partners across Europe. The team therefore looks forward to engaging with the opportunities offered by the Horizon 2020 programme in order to make new discoveries, conduct excellent research, and contribute to innovation in tourism.

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