DESTINATION BUSINESS INFORMATION SYSTEMS FOR SMART DESTINATIONS: THE CASE STUDY OF KOSICE COUNTY

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The proposed paper deals with the issue of synchronization of collecting and sharing tourists' behavioral data and destinations offers' key performance indicators between destination management and tourism stakeholders in Kosice County's destinations. The constantly increasing impact of ICT on tourism creates the necessity to implement innovative methods of destination management, based on the analysis of relevant data the level of destinations. Destinations usually do not only arise from districts but mainly based on historical and current regional and sub-regional ties, from smaller communities in the form of clusters, for whom the availability of real data is largely limited. Accessible public data on tourism KPI at the level of NUTS 4-5 are not meaningful for an exact destination in terms of destination management according to local market conditions. The project DBIS implemented at the Technical University of Kosice approaches the issue of shortage of relevant data about destinations' and their target groups through the development of a Destination Business Information System (hereinafter DBIS) for the support of complex decision making and planning in tourism market conditions. In Slovak conditions, the DBIS's perception of destinations as linked socio-economic organisms covering all producers of supply and demand brings a whole new concept from the perspective of destinations' marketing research. By building the destinations own knowledge structure via the components of hybrid decision support systems, the DBIS is able to gather and disseminate real data to tourism stakeholders to readable formats relevant to a destination.

Keywords: KPI, DSS, DBIS, DMIS, TSA, Open data, Mining tourism, Destination management.

Introduction

Current resonating themes include continuous and global computerization of all sectors of the economy, including tourism. As strategic documents of the European Union refer, information and communication technologies (ICTs) are now a huge and growing sector that is constantly innovating and has a built industrial and technological employment base. According to the Organization for Economic Cooperation and Development (OECD), the digital technology sector has the highest growth rate of added value in the EU. Currently, in the age of knowledge economy, ICT is generally regarded as the main "gold" of innovation, which is essential for productivity growth and provision of goods and services (Kršák et al. 2011).

In the context of global economy, the contribution of tourism is an essential component of the gross domestic product of each economically advanced country. The impact and benefits of the implementation of information and communication technologies, geoinformatics tools and visualization of processed data

are highly current for the development of tourist destinations (Blišťan 2013). Within the issue of the development of the European tourism market, the European Commission itself considers in the Europe 2020 strategy increasing the use of information and communication technology as one of the key challenges for economic growth and prosperity of European society (Tourism Policy Framework 2010). Also, one of the key objectives of the EU Tourism Policy Framework) aims on enhancing the use of new technologies, especially information and communication technologies by public and private entities in tourism.

Internationally, the issue of implementation of information and communication technologies that support complex decision-making and planning in the practice of the business environment is more than the current (Čarnický, Mesároš 2013). The constantly increasing impact of ICT on the tourism is creating the necessity of implementation of innovative management methods of destinations based on the analysis of real data outputs. The interdisciplinary nature of the tourism sector is identically reflecting in the actual management of destinations (Griffin 2013). While companies are working only with its internal data management Destination management organizations need to work with regard to all factors and changes in the area, which are affecting its competitiveness.

Leading international tourist destinations have been using own customized internal platforms for the collection, processing and evaluation of data, such as ISO Travel Solutions or BIST Croatia, for years. These platforms provide a comprehensive overview of the performance of the destination in real time frames. On the other hand, destination management organizations (DMOs) in Slovakia are dependent on working with incomplete publicly available statistics or on subjective outputs of manually collected data from various questionnaires. This fact has resulted, in many cases, into spontaneous entries on the tourism market in the form of economically unsuccessful business investments or product packages of existing service providers, or to very limited development planning in the area. The biggest disadvantage in the issue is the fact that DMOs are not able to provide relevant based recommendations to small and medium sized enterprises in the tourism sector, which could these SMEs embrace as useful methods of support of the competitiveness of their businesses and ultimately of the destination itself.

DBIS Project Idea

The primary objective of the project is to develop a functional and fully automated pilot Business Intelligence System (BIS) - intelligent platform based on the principals of Living Lab (Almirall, Wareham 2011) covering the territory of the destination Košice Region. The system will support comprehensive decision-making and planning of future development activities in tourism including:

  – monitoring outputs of processed data in the bounded area of the destination,
  – analysis of the actual development of partial trends in the area of the destination,
  – making decisions on the basis of mutual relations between performance indicators of tourism destinations,
  – planning by modeling and testing the potential success of new market entries in the form of various development and innovative tourism activities (investment projects, services, events, new attractions etc.),
  – development of cooperation with the private sector companies acting in destinations tourism market through increased cooperation at the level of data sharing, unified system of gathering feedback from target groups (tourists and consumers of tourism services).

The BIS platform itself consists of two key components – BIS Back Office (the platform's administration interface) and BIS Front Office (platform's user interface); and three essential parts – synchronized data bank, GIS linked to the BIS data bank, user interface. The data bank (Back Office component) automatically collects publicly available data relevant to the destination; communicates with external data providers at the level of tourism (secondary tourism offer providers, primary tourism offer administrators); monitors and analyzes development trends in the destination's market; generates

predictions of conditions in the destinations on the basis of development trends; alerts and warns the user in the case of market extremes and hazards; generates recommendations based on mutual logarithms between trends in the destination; tests model scenarios based on new user inputs into the data bank of the BIS; and generates questionnaires on destination's target groups based on the analysis of trends. Geographic Information System (GIS) linked to the BIS data bank will be able to project data and trends of the BIS data bank in interactive cartographic layers in real time horizons; project data and trends of the BIS data bank on the base of GPS coordinates in interactive cartographic layers in real differentiated space; project the interactions between various trends in the destination based on the BIS data bank's logarithms; project predictions of future conditions in the of the BIS data bank in interactive cartographic layers; and project model scenarios based on new user inputs into BIS data bank. The user interface will perform following functions: communication with the user of the Destination BIS; projecting the outputs of the BIS data bank and GIS to the user, tracking trends and logical predictions; and user modeling of own inputs.

Main Project Benefits

The Destination BIS project proposes the process of solving on the principle of a global trend in tourism based on mutual cooperation between academia, public authorities, and the private sector. Cooperation within the proposed platform Destination BIS is an entirely new form of cooperation, at least in the Slovakia region.

The originality of the project is the fact that it relieves the DMO's from the necessity of manually collected data from external sources. On the contrary, the user gains opened doors to a wide range of options of modeling and testing potential innovations in various forms of tourism activities (investment projects, services, events, new attractions, technology, etc.). The proposed Destination BIS provides the basis for a new range of possibilities of ICT use in tourism (GIS applications and software solutions for smart tourism etc.). Last but not least, the platform allows the user to make decisions and plan on the basis of real performance trends in the destination. The proposed Destination BIS, in terms of Slovak destination management, has no similar technology. It represents a completely new concept of perception destinations as a socio-economic body.

The process of obtaining feedback by through the Destination BIS will take place at several levels within the cooperation process:

Level 1 - Continuous data collection of tourism subject diverted to BIS data bank;

Level 2 – Košice Self-Governing Region (future user of project results) provides via the user interface to tourism subjects the destination's performance reports with recommendations and with continually updated and consistently categorized questionnaire templates (depending on the nature of business enterprises) with key questions;

Level 3 – Tourism enterprises obtain feedback from the consumers of tourism services through questionnaires of the Destination BIS;

Level 4 - Tourism enterprises continuously supply the Destination BIS's data bank with continuously updated replies;

Level 5 - Košice Self-Governing Region distributes the results of the questionnaires on the basis of continuously generated outputs of the Destination BIS to tourism enterprises.

The proposed level of receiving feedback creates an entirely new form of cooperation between all entities with an impact on the performance of destinations. Continuously updated cycle frees organizations as DMO, as well as tourism enterprises in obtaining relevant information for short-term (seasonal), medium-term and long-term conceptual planning development activities of existing and in the planning of creation of new tourism products.

Since into the collection of information of the Košice Region data bank will be able to involve local producers of domestic materials, it is assumed that the visualization of spatial differentiation of their offer for the producers will have the effect of increased awareness of the existence about local products. Increasing the awareness about local producers expects an increase of demand for local products from potential customers in Košice region, since, in many cases customers are not informed about the comparison of local producers' competitive offer.

Conclusion

The development of the Destination BIS and its subsequent implementation in practice corresponds with the European Union's objective of strengthening the use of new technologies, especially information and communication technologies by public and private tourism entities. From this perspective is expected the development of skills and relation to ICT among the human resources of entities operating in the tourism sector in the first three years after the development of the platform in the Košice region. Subsequently is expected the potential use in other tourism destinations respectively by operating entities affecting the tourism market.

Destination BIS's Data Bank, as well as Destination BIS's geographic information system also counts with partial data of administrators of primary tourism offer (management of national parks, protected landscape areas, etc.) operating in environmentally sensitive areas, institutions gathering data of external environmental factors (meteorological institute etc.), as well as institutions gathering data of anthropogenic activities (transportation, waste management, municipalities, etc.). Based on this fact, the outputs of the proposed Destination BIS will be able of relation's data correlation not only informing about the impacts on tourism but also on the about environmental aspects in the destination. In the case of a logical prediction of the increase of negative environmental impacts (on the basis of developments of reciprocal relations), the platform will be able to inform the user about the potential threat. For this, the Destination BIS is a preventive tool for environmental protection in the destination.

Acknowledgments

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