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Editorial

Special issue on informatics/data analytics in smart tourism

1. Introduction

Due to the growing digitalization of tourism at large, and the ubiquitous use of digital tools by travelers, the role of informatics/data analysis in tourism has become increasingly critical in order to understand travel practices and to design and run effective and efficient services in the field (Koo, Park, & Lee, 2017).

In the smart technologies' era, the concept of informatics link with the massive interaction of technologies, the use of information, and a large volume of texts, sounds and images data that are promoting deep transformations in tourism consumer behaviors and in structural communications by organizations. As a mobile interface is getting important, informatics should provide a suitable accounting for data presentation, processing, and communication of information (Fourman, 2002) through location-based and context-aware services to collect, process, analyze and visualize information (Chen, Chiang, & Storey, 2012). As a discipline, informatics with its engineering methods, technological development, and practical applications can help develop travel businesses, travel marketing strategies and practices in order to design and offer contextualized and customized travel products or tailored services.

Today, tourism researchers believe that informatics/data analytics present a unique opportunity for intelligent consumers and companies. Therefore, both travelers and organizations, indeed, have immensely paid attention to the role of informatics and analytical capabilities from the stage of travel planning and decision, booking and paying, to the stages of experiencing and engaging on travel sites, up to word-of-mouth sharing after a trip on websites, social media, blogs, etc. For example, user-generated contents allow for (some) automatic information extraction, topic identification, opinion and sentiment mining, question-answering, and image mining to understand travelers' needs and identify new opportunities and threats. Despite the significant transformational potential for informatics/data analysis in smart tourism research (Hunter, Chung, Gretzel, & Koo, 2015), it has received scarce attention.

Given the phenomena of information-intensity in tourism and the high dependency on technological developments in the tourism field, to see the convergence of the concepts of "informatics/data" and "smart" within the tourism industry is not surprising at all (Gretzel, Sigala, Xiang, & Koo, 2015).

> Smart tourism is defined as *tourism supported by integrated efforts at a destination to collect and aggregate/harness data derived from physical infrastructure, social connections, government/organizational sources and human bodies/minds in the combination with the use of advanced technologies to transform that data into on-site experiences and business value-propositions with a clear focus on efficiency, sustainability and experience enrichment (p.181)*.

Informatics and data analytics techniques have been used in smart tourism. By analyzing users' clickstream data, text data, image data, or visual data, web analytics can provide a trace of user's (i.e. traveler) online activities (Chen et al., 2012). Digital analytics are able to extract meaningful information from travelers' online browsing and engaging as well as from their experiences while traveling. This helps to better understand them and to provide relevant recommendations and higher quality personalized products and services.

2. A brief overview of travel informatics/data analytics

Today, tourism consumers want to get the most optimized information about available tourism products via the most powerful and real-time based data analytics, which they are searching for the products and services from metasearch engines and online travel agencies (OTAs). OTAs (e.g.: Expedia, Priceline, Orbitz, Travelocity) aggregate tourism products such as hotels, car rentals, air tickets, event tickets or combined products among them in a one-stop accessible site where travelers can book and pay. OTAs can offer dynamic packaging for travelers to book their products. OTAs data can be used for cost-benefit analysis of guest data such as credit card data, email data, and other relevant personal information.

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On the other hand, Metasearch engines (e.g.: Trivago, Kayak, Skyscanner, Google, TripAdvisor) are providing a search engine that shows up many kinds of hotels and rate together in a given destination. This metasearch provides tourism consumers with ad-hoc selected products in an efficient and easy way, because of the comparison of price rates and online reviews. A metasearch engine doesn't provide product inventory, it only displays information. This metasearch is called data of data, their software agents find, retrieve, and process data quickly and massively. So information is represented by metadata, which are now displaying tourism products that allow travelers to book instantly from the metasearch results. Travelers today want to buy optimized products in the shortest amount of time and through the easiest way of exploring available possibilities. Metasearch engines use CPC (cost-per-click) method, which is the rate website owners charge advertisers every time one click is done on an advertisement. Or CPA (cost-per-acquisition), which social media companies charge an advertiser, who pays if a user clicks and does a specific action.

Moreover, tourism applications provide recommender systems and decision support systems, based on informatics/data analytics of search and user logs, traveler transaction records, traveler-generated content such as comments, reviews, and sensor network contents (Chen et al., 2012). In terms of analytic methods in smart tourism, one can mention association rule mining, database segmentation, and clustering, graph mining, text and web mining, sentiment analysis. Due to the success of data mining and statistical analysis, informatics/data analytics will be among the hottest research areas in the coming years.

Based on the above considerations, informatics/data analytics in smart tourism can be defined as the cluster of services for collecting, aggregating, processing and visualizing data derived from physical infrastructures and sensor networks and devices, as well as from digital activities and interactions. By doing so, they promote a better understanding of travelers and the tourism industry at large, and support better decisions.

This special issue highlights two main research challenges. First, which tourism informatics practices can support appropriate analytical patterns and identify tourists' contextual inquiries (using e.g. spatial, temporal, and purposive criteria) in order to support effective marketing practices? Second, how can travelers' functional services (e.g.: search, booking, payment, tracking of transportations) over time be interpreted as meaningful information, which can allow for more personalized traveler experiences, can promote higher traveler loyalty, and increase revenue?

3. Researches in this special issue

After several rounds of a rigorous review process, we decided to publish five papers in this special issue.

The first article, "Do online information sources really make tourists visit more diverse places? Based on the social networking analysis," is by Hyunae Lee, Namho Chung, and Yoonjae Nam. This study investigates whether or not online tourism information prompted the international tourists who visited South Korea in 2015 to visit a wide range of tourism destinations, in particular, those in non-capital regions. The offline information seekers' group showed movements in various directions and frequent visits to non-capital regions as opposed to the online information seeker group, which was highly dependent on the capital region.

The second article, "Exploring the effect of heuristic factors on the popularity of user-curated best places to visit recommendations in an online travel community," is by Lin Li, Kyung Young Lee, Sung-Byung Yang. This study identifies 'best places to visit' recommendations. Based on the heuristic-systematic model of persuasion, empirical results, which were based on 565 'best places to visit in the U.S.' recommendation postings from Qyer.com, a major online travel community in China, suggest that recommender's identity disclosure, reputation, number of places recommended, helpfulness rating, and length of recommendation are positively associated with recommendation popularity.

The third article, "Exploring the group holiday decision-making process with the support of technology," is by Zhang Lanyun, Sun Xu, Christian Wagner. This research conducted two studies and proposed a model for a group holiday decision-making process with four components: information acquisition, intra-group information sharing, knowledge transfer, and decision making. It also identified new influential factors on the use of technology by tourist groups for decision making.

The fourth article, "Examining the relationship between specific negative emotions and the perceived helpfulness of online reviews" is by Ren Gang and Hong Taeho. This study analyzed online reviews based on an emotion classification approach, which examined the differential effects of three discrete emotions (anger, fear, sadness) on perceived review helpfulness. By analyzing panel dataset, this study contributes a better understanding of the important role of emotions embedded in review helpfulness.

The final article, "Subjective perception patterns of online reviews: A comparison of utilitarian and hedonic values," is by Juyeon Ham, Kyungmin Lee, Taekyung Kim, Chulmo Koo. This study identifies the differences in the patterns of the perceptions toward the utilitarian and hedonic values of online reviews. 2'616 Yelp data were analyzed by using the fuzzy-set qualitative comparative analysis approach. Four patterns of perceptions toward the utilitarian value of online reviews were derived, as well as three patterns of perceptions toward the hedonic value of these reviews. The results revealed some differences among those factors that influence the recognition of the utilitarian and hedonic values of online reviews.

In this special issue, we highlight various theoretical, methodological, and practical contributions for expanding informatics/data analytics in smart tourism research from the traveler, organization, and business perspectives. Therefore, the papers in this special issue represent current researchers' and practitioners' interests, through IS and tourism communities' disciplines, to the smart tourism phenomena. We highly appreciate the diverse aspects of contributions to this special issue. These researchers contribute to the current and future research directions and foundations for smart tourism and IS communities. In particular, we extend our gratitude to Prof. Jim Jansen, Editor in Chief of Information Processing & Management, for his valuable advice and kind support during the preparation of this special issue. The great efforts and clear decisions of an expert group of international reviewers has made this special issue exceptional. We hope that readers will find this special issue useful and meaningful. Most importantly, we hope that this issue offers significant insights and theoretical foundations for developing smart tourism practices.

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Guest Editors

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