Handbook of Research on Smart Technology Applications in the Tourism Industry

Evrim Çeltek
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Dedicated to my mother Ayşe.

Editorial Advisory Board

List of Contributors

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Section 1
Smart Technology Applications

Progress and development of tourism technologies and applications available through smart devices provide an increasing diversity in tourism marketing. Augmented reality, virtual reality applications with the smart technologies, which are considered as new marketing communication instruments, increase awareness and help in terms of getting information about tourists and giving information to the tourist. Thus, this chapter provides an assessment regarding the progress of AR and VR researches published in hospitality and tourism journals. In particular, the chapter determines the current fields, topics, and research methods of AR and VR articles published in 32 hospitality and tourism research journals between 2000-2018, comparing the subjects and research methods of 32 journals and discussing the changes in topic areas throughout the years, to offer suggestions for further research on AR and VR for hospitality and tourism journals.

The public and private sectors will undergo a significant transformation with the use of blockchain technology, and this potential of blockchain technology will be influential in all areas of life. In addition, blockchain technology can help ease the integration of the Internet of Things, augmented reality, and artificial intelligence applications. The question of how such a technology that is in the process of development will be applied in areas such as taxation, notary operations, and banking, arises simultaneously. Studies related to blockchain technology have mainly been carried out in the fields of finance, logistics, banking, and education. However, there is a paucity of studies on blockchain technology in the tourism industry which has an important role in the global economy. Therefore, the potential of using blockchain technology in the tourism industry is evaluated in this chapter. For this purpose, the features, advantages,

and disadvantages of blockchain technology are explained. The potential uses of blockchain technology in the tourism industry are then discussed.

In the tourism sector, online tourist reviews analysis is one of the methods to evaluate the products and services offered by businesses and understand the needs of tourists. These reviews take place in social networks and e-commerce sites in parallel with the developments in information and communication technologies. Tourists generate these reviews during or after their use of the products or services. In the literature, these reviews are referred to as UGC (User Generated Content) or eWOM (electronic word-of-mouth). The scientific evaluation of the textual contents in tourist reviews is done by text mining, which is a sub-area of data mining. This chapter discusses the methods and techniques of opinion mining or sentiment analysis. In addition, aspect-based sentiment analysis and techniques to be used in the application are discussed. A case study was carried out using aspect-based sentiment analysis method. In the application "Cappadocia home cooking" restaurant used tourist reviews.

The use of near field communication (NFC), a type of wireless technology that allows data transfer by bringing two devices closer together, has been increasing very rapidly. NFC offers great ease to its users through its contactless operation and provides the optimum environment for wireless communication with other technologies. Users with NFC-enabled mobile phones can share websites, contact information, phone numbers, music files, videos, and photos and can also unlock doors and can use their phones as mobile wallets to make purchases safely and easily. In recent years, with the increasing use of technology, it is clear that NFC technology is promising for the tourism industry. This chapter provides background on NFC technology. The features of NFC technology and its advantages and disadvantages for the tourism industry are evaluated. NFC technology applications (data sharing, payments, tickets, keys, etc.) for the tourism industry are explained. Finally, examples of NFC applications in the tourism industry are discussed for both tourists and sector stakeholders.

With the development of technology, new innovative approaches emerge day by day. With the internet and mobile devices being used more actively, many applications provide great convenience to our lives. This situation has brought about many changes and developments when it is evaluated in terms of both businesses and consumers. Enterprises are using applications that will increase customer satisfaction and loyalty to be different from competitors, adopt in the market, interiorize a sustainable policy, and make more profit. Some technological applications will save customers time and increase satisfaction and loyalty in tourism enterprises and all other businesses. One of these applications is the use of QR codes.

Tourism businesses use AI and big data to connect guests creatively and meet their expectations with personalized service. Big data enables tourism professionals to learn more about their customers, and the more they know, the better experience they can offer to customers. As it provides real value, AI has already become an integral part of operations, and this trend will continue. Tourism businesses use AI tools to reduce operating costs and maintenance bills as in many other sectors. AI-oriented marketing has already been widely used in the hospitality industry. Moreover, as long as technology evolves and becomes more complex, tourism professionals will find more ways and methods to implement big data and AI to satisfy customers, and AI will continue to transform the tourism industry. Properties, advantages, and problems of artificial intelligence and big data are discussed in this chapter, and some examples are given from the perspective of the tourism industry.

With the revolution of Industry 4.0, the technologies that enter our daily lives are based on smart devices, applications, and platforms with internet connection. A wide range of these technologies collected under one umbrella is known as IoT (internet of things). This chapter evaluates the stages of a touristic travel in smart tourism destinations by considering IoT architecture. The technologies used in these phases and their contributions to the tourism sector and tourists are examined. In the implementation section, an IoT-based information system is proposed for Cappadocia hot air balloon tours. The main purpose of the system is to determine whether the appropriate weather conditions are formed before the hot air balloon flights. The proposed system allows for the automation and evaluation of data already collected using traditional methods. With the implementation of the system; work and time savings can be achieved, and more accurate measurements will make safe flights.

Through modern ages, tourism becomes a vital part of human life. With the advance of technology, tourism movements gain new tools. Those tools gave tourism an edge on management, marketing, education, and economic areas. Also, on demand side, new types of tourists with their brand-new demands and motivations became an important factor for those responsible for tourism supply. One of the most noticeable tools that new technology era has brought is virtual reality applications. Despite dating back to the 1950s, VR (virtual reality) has gained an interesting reputation in the last few years with the advances of related technologies. VR applications are used in many sectors like construction, military, communication, marketing, education, etc. Tourism industry is one of them of course. Especially,

VR is used as both a tool and product in hotel & accommodation sector, recreation & entertainment, transportation, destination marketing, and a touristic product itself.

Chapter 9

Emrah Özkul, Kocaeli University, Turkey
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In today's world where digital technology has become an indispensable part of human life, the use of digital platforms allows people to play various types of games to not only meet their personal needs, but also to keep people's minds away from the strenuous work tempo of daily life. The game is an action that allows people to socialize and gain different experiences and to have a pleasant time. It is limited by certain fixed rules for a purpose, including the outcome of winning and losing as a result of these rules. This action led to the emergence of a concept called gamification along with digitalizing technology. Gamification is the use of game elements, game design, and mechanics in the game environment that enable users to socialize and have fun in non-game environments. This chapter defines the concepts of game, gamification, and gamification in tourism, and examines the digital gamification applications in the tourism industry with certain parameters. Authors emphasize the relationship between tourism and gamification.

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Section 2
Industry 4.0 and Customer Experience

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Chapter 10

Hande Mutlu Ozturk, Pamukkale University, Turkey

Technological developments in recent years have been affecting the lives of people and societies more rapidly than in the past. Developments in the field of communication, robotics, transportation, etc. are called the 4th Industrial Revolution or Industry 4.0 in the industrial sector. Technological developments have created great changes in the services and industrial sectors. Industry 4.0 has also led to changes in the transformation of the tourism sector and is likely to occur in future processes. This chapter examines the impact of Industry 4.0 on the tourism sector.

Chapter 11

Jurij Urbančič, Arctur d.o.o., Slovenia
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With more and more people traveling worldwide (the number doubling in the last 20 years), tourist destinations are now more than ever trying to maintain and enhance their competitiveness in the global market. In this regard, novel business models combined with state-of-the-art technology can play a crucial role in not only satisfying the increasing tourism demand but also ensuring a sustainable growth to avoid the deteriorating effects on both the social and natural habitat. For these reasons, the Slovenian government included tourism as one of the priority areas for investment. Hence, the Tourism 4.0 initiative was launched to unite tourism stakeholders with high-tech companies and unify their scattered ideas, experiences, knowledge, and expertise. The ambition is to position Slovenia as a top destination for sustainable tourism with high economic value. This chapter introduces the basic concepts behind Tourism 4.0 and how it relates to technologies for an enhanced tourism experience.

Chapter 12

    Ilhami Tuncer, Karamanoglu Mehmetbey University, Turkey

One of the most important points of consideration that will ensure the sustainability and profitability of businesses in the digitized world market is the experience offered to customers. Experience in business preferences, especially of the digitized customers, is quite specific. This chapter discussed the contribution of smart technologies to customer experience for restaurants, and emphasized its significance. Moreover, the subjects of artificial intelligence, smart technology, and QR code were addressed based on customer experience. The contribution offered to customers was emphasized by giving examples of smart technology applications used in restaurant businesses to improve customer experience. The chapter will contribute theoretically to the subject which has not been adequately studied in the literature.

Chapter 13

    Cenk Murat Koçoğlu, Karabük University, Turkey
    Merve Yıldırım Kalem, Karabük University, Turkey

Tourism companies, like other companies producing goods and/or services, practice different strategies to achieve competitive advantage and satisfy the needs and wants of customers/guests. The most important recent strategy is electronic customer relationship management (e-CRM). In today's competitive environment, a successfully implemented e-CRM enhances a customer centric culture that is key to tourism growth and competitive advantage. For tourism companies, e-CRM succeeds only if it is totally integrated strategically and operationally in the business and in the information system of the company. This chapter focuses on e-CRM concept, its importance in tourism, dimensions of e-CRM, major challenges of e-CRM and its opportunities for companies, its implementation in tourism, e-CRM Technologies used in tourism, e-CRM success factors, and the reasons of e-CRM failures.

Chapter 14

    Seden Doğan, Ondokuz Mayis University, Turkey

The development of service robotics comes along with the development of industrial robotics. Service robots are designed to perform professional job tasks as well as for service users in areas of everyday

life. One of the fields for service robots' application is medicine. This chapter determines the opinions of the university students who have tourism education towards tasks that may be performed by the robots. The research question was "in which hotel department the robots might be employed". In total, 396 valid surveys were collected from the students, Mann Whitney U and Kruskal Wallis-H Tests were conducted to test the hypotheses. It was found that gender, department, and grade are significantly effective on the students' opinions towards tasks that might be performed by service robots.

Chapter 15

    Ali Dalgic, Isparta University of Applied Sciences, Turkey
    Kemal Birdir, Mersin University, Turkey

Technological developments and demographic changes have started to encourage the hotel businesses to use automation systems and adapt the concept of smart hotel. Smart hotels use state-of-the-art technology to provide customers with different and more technology-oriented experiences. A robot works as receptionist, concierge, bellboy, and housekeeper in such hotels. These applications are observed to minimize service failures and save on costs. For instance, chatbots created in smart hotels by means of artificial intelligence respond to customers' problems and demands quickly and accurately. Virtual reality applications used in the marketing of smart hotels make it possible for guests to take a virtual tour of the cultural heritage sites of the destinations. Internet of things (IoT) is another technology that is often used in smart hotels to offer customers a more comfortable holiday and get instant data. Likewise, in smart hotels, self-service software technology is often used and enables customers to perform many tasks such as check-in / out, getting hotel room keys, etc.

<div align="center">

Section 3
Smart Tourism

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Chapter 16

    Cemal Ince, Gaziosmanpaşa University, Turkey
    Gülmira Samatova, Kyrgyz-Turkish Manas University, Kyrgyzstan

Technology process that started with the reservation provided many services in accommodation establishments such as online room selection, room colour selection, air conditioning adjustment, temperature and light control, virtual scenery creation, and online service. Another area that is affected by technology is food and beverage services. Food and beverage businesses also benefit from technology while serving their guests. Many services are provided through technological revolutions such as online reservation, online service, smart tables, robots, and so on. Today, technology also affects museums and museum services positively. Virtual reality museums offer visitors the opportunity to visit their works online. Online ticket sales also save visitors time. Credit cards and ticket sales provide economic convenience to the guests. With the help of technology, heat and light adjustments can be made in museums and technology helps to protect the works exhibited in these museums.

Chapter 17

    Halime Göktaş Kulualp, Karabuk University, Turkey
    Ömer Sarı, Karabuk University, Turkey

The rapid increase in the population has caused problems in the correct use and management of resources in cities. Solutions to these problems have been sought based on knowledge management. In today's digital age, the concept of smartness of cities has been put forward together with the web-based applications. It has changed the expectations and needs of tourists and residents, especially in the tourism sector in the service sector. Smart tourism destinations, which are seen as a solution to the expectations and needs of the changing tourists and local people, bring holistic innovations covering all the stakeholders in the tourism ecosystem. In this direction, it is thought that knowledge management makes the right use of resources obligatory and contributes to sustainable tourism understanding. For this purpose, in the chapter, suggestions were made to provide maximum benefit from web-based projects that are carried out in qualitative direction of knowledge management and smart tourism destinations.

Chapter 18
      Nurettin Ayaz, Karabük University, Turkey
      Bayram Akay, Burdur Mehmet Akif Ersoy University, Turkey

Tourism is a fragmented and information-oriented sector covering tour operators, travel agencies, hotel sales representatives, associations, meeting offices, transportation, car rental, airlines, cruise, souvenirs, restaurants, hotels/motels, and entertainment. In the tourism sector, technology is an important requirement for the interconnection of all these fragmented organizations, activities, and elements, and for the satisfaction of tourists. However, the effective use of technology in a destination requires the leadership of a leader. This chapter approaches the smart municipality applications oriented to tourism sector with the example of Turkey, a well-known destination around the world, from the perspective of municipalities, which is regarded as a democratic leader at local level and provides a general framework regarding the studies on an innovative, environment-friendly, solution-oriented, and more livable urban life. Suggestions are provided for smart technologies to improve the quality of life of local citizens and to the satisfaction of tourists.

Chapter 19
      Gamze Coban, Faculty of Tourism, Nevsehir Haci Bektas Veli University, Turkey
      Şule Aydın, Faculty of Tourism, Nevsehir Haci Bektas Veli University, Turkey

This chapter provides an insight into the topic of smart destinations. By adopting smart technologies, tourism destinations, as well as cities, gain more opportunities to offer better quality of life for residents and visitors. Smart cities aim to improve resource management, sustainability, and living conditions in urban environments by utilizing ICTs. The concept of smart tourism destination, deriving from smart city, refers to the use of technology in tourism destinations to increase the service quality and tourist satisfaction by focusing on tourists' expectations. In other words, smart tourism destinations aim to integrate technology into the destination for these purposes. This chapter presents the concepts of smart city, smart tourism, and smart destination. The emergence of smart city and smart destination concepts and the issues and challenges they might face are discussed. In addition to some future research directions, a brief discussion on potential controversies is presented.

Chapter 20

Lakhvinder Singh, Government College, Kaithal, India
Kamal Kumar, Pt. Chiranji Lal Sharma Government P. G. College, Karnal, India

Smart city concept is emerging as a new venture in the tourism sector especially in a country like India. This chapter analyzes the tourist experience in Jaipur city of Rajasthan which is emerging as a popular tourist destination taken over for development under smart city mission. The chapter adopted empirical approach, but to some extent it also used secondary data sources. The authors analyzed tourist experience by using smart attraction, smart mobility, smart amenities, smart ancillary, smart safety, and smart available packages as important dimensions of smart tourism destination. Regarding tourist experience, the chapter noticed smart available packages, smart safety, and smart attractions are providing a pleasant experience to tourists in contrast with remaining aspects of smart tourism destination. The result of the study provides implication for tourism marketer and policy maker to take appropriate steps to enhance the tourist experience by improving smart facilities & services.

Chapter 21

Luis Galindo Pérez-de-Azpillaga, Universidad de Sevilla, Spain
Alfonso Fernández-Tabales, Universidad de Sevilla, Spain
Concepción Foronda-Robles, Universidad de Sevilla, Spain

The chapter is divided into two differentiated parts. The first includes a brief technical review of the concepts of Territorial Intelligence and Intelligent Tourist Destination, situating them in the context of the new tourist destination planning paradigms. This part ends with a first approach to the Spanish case and the progress of its public tourism policies towards these concepts. The second part goes deeper into the Intelligent Tourist Destination model applied in Spain, driven by the public administration, paying special attention to its official standardisation process, and the indicators adopted to that end. Finally, the chapter ends with some brief conclusions.

Chapter 22

Katarzyna Leśniewska-Napierała, University of Lodz, Poland
Tomasz Napierała, University of Lodz, Poland
Sevda Sahilli Birdir, Mersin University, Turkey
Kemal Birdir, Mersin University, Turkey

This chapter discusses geographical context of smart tourism planning through the analysis of relations between spatial planning, tourism development, and technology. The main question addressed in this enquiry is whether development of technology and tourism respects sustainable spatial planning. Thus, geographical influence of tourism and ICT on spatial planning was investigated. Research is carried out in Poland as tourist destinations in the country are substantially different regarding their tourist attractions, infrastructure, and development. Geographically weighted regression (GWR) was applied to identify regions where spatial planning is significantly influenced by tourism, and technology development as well. Both mentioned phenomena were recognized as competing in terms of spatial planning. Tourism and technology development did not support spatial planning parallely. Hence, establishing and developing smart tourism planning was confirmed as challenging from the geographical perspective.

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Foreword

Technology has brought exciting changes to the life of all of us. Whatever role we have as managers, teachers, consumers, students, citizens; technology changed our way of decision making, communicating, learning, entertaining... Tourism is also one of the industries that has been effected a lot from the technology. All around the world tourists may find the best hotels for themselves, reserve a room, search the easiest routes to reach a touristic destination, may learn about the other visitors' comments, may have a lingual support or interactive experience in a museum, may get a personalized excursion etc. This list is endless and what makes it possible is the smart technologies. Technology today is not only so inclusive; it is very smart also. Smart technologies like mobile devices, digital platforms, big data, open data, internet of things (IoT), three-dimensional printing, social interactive robots, artificial intelligence, virtual reality, augmented reality, blockchain, NFC, QR codes are transforming tourism industry and creating new opportunities, new challenges.

This book which is about the smart technology use in tourism provides very valuable contribution to anyone who has been interested in tourism as a researcher, student, and a decision maker. It includes three sections as; smart technology applications; Industry 4.0 and customer experience; smart tourism (smart destination, smart city, smart municipality and smart tourism planning). The importance of smart technologies in tourism industry in enhancing the customer experience is emphasized heavily in the book. I believe "Handbook of Research on Smart Technology Applications in the Tourism Industry" will be an essential reference source for the tourism researchers.

I appreciate the work of Associate Professor Evrim Çeltek in leading and editing this book and also appreciate the authors who have put their knowledge and effort to this book. I hope the book will increase the awareness, interest and research on the use of technology in the tourism industry.

Sevgi Ayşe Öztürk
Anadolu University, Turkey

Preface

Smart technologies enhance customer experience, increases the amount of data gained through connected devices, and widens the scope of analytics. This provides a range of exciting marketing possibilities such as selling existing products and services more effectively, delivering truly personalized customer experiences, and potentially creating new products and services. Handbook of Research on Smart Technology Applications in the Tourism Industry are an essential reference source that discusses the use of smart technologies in tourism, as well as its importance in enhancing the customer experience. Featuring research on topics such as augmented reality, virtual reality, QR code, big data, artificial intelligence, gamification, blokchain, industry 4.0, smart tourism, smart destinations, smart cities, smart municipalities, electronic customer relationship management, robots, near field communication (NFC), opinion mining and internet of things (IoT), this book is ideally designed for tourism business professionals, marketing managers, academicians, researchers, and graduate-level students seeking coverage on the use of smart technologies in tourism.

This book aims to show how smart technologies can influence the consumer relationship in the field of tourism industry. And present featuring tools and techniques applicable to the sectors under analysis.

Objective of the book is to bring together related academicians who dedicate themselves to find solutions to the problems scientifically and objectively and provide space for them to claim their opinions, put forward ideas or models and contribute to the field with their enlightening viewpoints.

The book is designed as three sections: smart technology applications; Industry 4.0 and customer experience; smart tourism (smart destination, smart city, smart municipality and smart tourism planning).

Now let's have an outlook over the contents of chapters in sequence.

Progress and Development of Virtual Reality and Augmented Reality Technologies in Tourism: A Review of Publications from 2000 To 2018

Progress and development of tourism technologies, applications available through smart devices provide an increasing diversity in tourism marketing. Augmented reality, virtual reality applications with the smart technologies, which are considered as new marketing communication instruments, increase awareness and help in terms of getting information about tourist and giving information to the tourist. Thus, this study aims at providing an assessment regarding the progress of AR and VR researches published in hospitality and tourism journals. In particular, the chapter aims to determining the current fields, topics and research methods of AR and VR articles published in 32 hospitality and tourism research journals between 2000-2018, comparing the subjects and research methods of 32 journals and discussing the

changes in topic areas throughout the years, to offer suggestions for further research on AR and VR for hospitality and tourism journals.

Blockchain Technology and Its Uses in the Tourism Industry

The public and private sectors will undergo a significant transformation with the use of blockchain technology, and this potential of blockchain technology will be influential in all areas of life. In addition, blockchain technology can help ease the integration of the Internet of Things, augmented reality, and artificial intelligence applications. The question of how such a technology that is in the process of development will be applied in areas such as taxation, notary operations, and banking arises simultaneously. Studies related to blockchain technology have mainly been carried out in the fields of finance, logistics, banking, and education. However, there is a paucity of studies on blockchain technology in the tourism industry, which has an important role in the global economy. Therefore, the potential of using blockchain technology in the tourism industry is evaluated in this chapter. For this purpose, the features, advantages, and disadvantages of blockchain technology are explained. The potential uses of blockchain technology in the tourism industry are then discussed.

Opinion Mining In Tourism: A Study On "Cappadocia Home Cooking" Restaurant

In the tourism sector, online tourist reviews analysis is one of the methods to evaluate the products and services offered by businesses and understand the needs of tourists. These reviews take place in social networks and e-commerce sites in parallel with the developments in information and communication technologies. Tourists generate these reviews during or after their use of the products or services. In the literature, these reviews are referred to as UGC (User Generated Content) or eWOM (electronic word-of-mouth). The scientific evaluation of the textual contents in tourist reviews is done by text mining, which is a sub-area of data mining. This study consists of two main parts. The first section discusses the methods and techniques of opinion mining or sentiment analysis. In addition, aspect-based sentiment analysis and techniques to be used in the application are discussed. In the second part, a case study was carried out using aspect-based sentiment analysis method. In the application "Cappadocia home cooking" restaurant used tourist reviews.

Near Field Communication (NFC) Applications in the Tourism Industry

The use of near field communication (NFC), a type of wireless technology that allows data transfer by bringing two devices closer together, has been increasing very rapidly. NFC offers great ease to its users through its contactless operation and provides the optimum environment for wireless communication with other technologies. Users with NFC-enabled mobile phones can share websites, contact information, phone numbers, music files, videos, and photos and can also unlock doors and can use their phones as mobile wallets to make purchases safely and easily. In recent years, with the increasing use of technology, it is clear that NFC technology is promising for the tourism industry. In this chapter, background on NFC technology is provided. The features of NFC technology and its advantages and disadvantages for the tourism industry are evaluated. NFC technology applications (data sharing, payments, tickets,

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QR Code Applications in Tourism

With the development of technology new innovative approaches emerge day by day. With the internet and mobile devices being used more actively, many applications provide great convenience to our lives. This situation has brought about many changes and developments when it is evaluated in terms of both businesses and consumers. When it is considered in terms of enterprises, it can be said that applications that will increase customer satisfaction and loyalty have been started to be used for the purpose of being different from the others in competition conditions, being adopted in the market, interiorise a sustainable policy and making more profit. When it is considered in terms of customers it can be said that there are some technological applications that will save time, increase customer satisfaction and loyalty in tourism enterprises as well as in all other businesses. One of these applications is the use of QR (Quick Response code).

Big Data, Artificial Intelligence and Their Implications in Tourism Industry

Tourism businesses use AI and big data to connect guests creatively and meet their expectations with personalized service. Big data enables tourism professionals to learn more about their customers. And the more they know the better experience they can offer to customers. As it provides real value, AI has already become an integral part of operations, and this trend will continue in the future. Tourism businesses use AI tools to reduce operating costs and maintenance bills as in many other sectors. AI-oriented marketing has already been widely used in the hospitality industry. Moreover, as long as technology evolves and becomes more complex, tourism professionals will find more ways and methods to implement big data and AI to satisfy customers, and AI will continue to transform the tourism industry. The use of artificial intelligence and big data applications are discussed in this chapter. Properties, advantages and problems of artificial intelligence and big data are discussed, and some examples are given from the perspective of tourism industry.

Internet of Things in Tourism: A Proposal of the Information System for Cappadocia Hot-air Ballooning

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Through modern ages, tourism becomes a vital part of human life. With the advance of technology, tourism movements gain new tools. Those tools gave tourism an edge on management, marketing, education and economic areas. Also, on demand side, new types of tourists with their brand new demands and motivations became an important factor for who is responsible for tourism supply. One of the most noticeable tools that new technology era has brought is virtual reality applications. Despite dating back to 1950s, VR (virtual reality) has gained an interesting reputation in last few years with the advances of related technologies. VR applications are used in many sectors like construction, military, communication, marketing, education etc. Tourism industry is one of them of course. Especially, VR is used as a both tool and product in hotel & accommodation sector, recreation & entertainment, transportation, destination marketing and a touristic product itself.

Digital Gamification in Tourism Industry

The use of digital platforms allows people to play various types of games to not only meet their personal needs, but also to keep people's minds away from the strenuous work tempo of daily life. The game is an action that allows people to socialize and gain different experiences and to have a pleasant time and is limited by certain fixed rules for a purpose, including the outcome of winning and losing as a result of these rules. This action led to the emergence of a concept called gamification along with digitalizing technology. Gamification is the use of game elements, game design and mechanics in the game environment that enable users to socialize and have fun in non-game environments. In this study; literature on game, gamification, gamification theories, elements and models, player's types, tourism and game, gamification in tourism marketing have been reviewed. As a result of the literature review, the relationship between tourism and gamification has been explained and sample gamification models in tourism industry have been included. In the last part of the study, based on literature review and sample gamification applications, a new model has been designed and suggestions for digital gamification studies in tourism have been presented.

Technological Developments, Industry 4.0 and its Effects on Tourism Sector

Technological developments in recent years have been affecting the lives of both people and societies more rapidly than in the past. Developments in the field of communication, robotics, transportation etc. are called the 4th Industrial Revolution or Industry 4.0 in the industrial sector. Technological developments have created great changes in the services sector as well as in the industrial sector. Industry 4.0, it has also led to changes in the transformation of the tourism sector and is likely to occur in future processes. The purpose of this study is to examine the impact of Industry 4.0 on the tourism sector.

Expansion of Technology Utilization through Tourism 4.0 in Slovenia

With more and more people traveling worldwide (the number doubling in the last 20 years), tourist destinations are now more than ever trying to maintain and enhance their competitiveness in the global market. In this regard, novel business models combined with state-of-the-art technology can play a crucial role in not only satisfying the increasing tourists demand but also ensuring a sustainable growth

in order to avoid the deteriorating effects on both the social and natural habitat. For these reasons, the Slovenian government included tourism into one of the priority areas for investment. Hence, the Tourism 4.0 initiative was lunched with the aim of uniting the tourism stakeholders with high-tech companies and unify their scattered ideas, experiences, knowledge and expertise. The ambition is to position Slovenia as a top destination for sustainable tourism with high economic value. In the following chapter, the authors will introduce the basic concepts behind Tourism 4.0 and how it relates to technologies for an enhanced tourists experience.

Customer Experience in the Restaurant Industry: Use of Smart Technologies

One of the most important points of consideration that will ensure the sustainability and profitability of businesses in the digitized world market is the experience offered to customers. Experience in business preferences, especially of the digitized customers, is quite specific. In this study, the contribution of smart technologies to customer experience was discussed for restaurants, and its significance was emphasized. Moreover, the subjects of artificial intelligence, smart technology and QR code were addressed based on customer experience. Finally, the contribution offered to customers was emphasized by giving examples of smart technology applications used in restaurant businesses in order to improve customer experience. It is thought that this study will contribute theoretically to the subject which has not been adequately studied in the literature.

Electronic Customer Relationship Management in Tourism

Tourism companies like other companies producing goods and/or services, practicing a number of different strategies to achieve competitive advantage and satisfy the needs and wants of customers/guests. The most important of these strategies in the recent period is electronic customer relationship management (e-CRM). In todays competitive environment, a successfully implemented e-CRM that enhances a customer centric culture is a key to the tourism growth and create competitive advantage. For tourism companies, e-CRM is successful only if it is totally integrated strategically and operationally in the business and in the information system of the company. This chapter will focus on e-CRM concept, its importance in tourism, dimensions of e-CRM, major challenges of e-CRM and its opportunities for companies, its implementation in tourism, e-CRM Technologies used in tourism, e-CRM success factors and the reasons of e-CRM failures.

In Which Department(s) the Robots might be Employed-Evidences from Turkish University Students

The development of service robotics comes along with the development of industrial robotics. Service robots are designed to perform professional job tasks as well as for service users in areas of everyday life. One of the fields for service robots application is tourism. Aim of this study to determine the opinions of the university students who have tourism education, towards tasks may be performed by the robots. The research question was "in which hotel department the robots might be employed". In total, 396 valid surveys were collected from the students, Mann Whitney U and Kruskal Wallis-H Tests were conducted to test the hypotheses. It was found that gender, department, and grade are significantly effective on the students' opinions towards tasks might be performed by service robots.

Smart Hotels and Technological Applications

Technological developments and demographic changes have started to encourage the hotel businesses to use automation systems and adapt the concept of smart hotel. Smart hotels use state-of-the-art technology to provide customers with different and more technology oriented experiences. Robot works as receptionist, concierge, bellboy and housekeeper in such hotels. These applications are observed to minimize service failures and save on costs. For instance, chatbots created in smart hotels by means of artificial intelligence respond to customers' problems and demands quickly and accurately. Virtual reality applications used in the marketing of smart hotels make it possible for guests to take a virtual tour of the cultural heritage sites of the destinations. In addition, Internet of Things (IoT) is another technology that is often used in smart hotels to offer customers a more comfortable holiday and get instant data. Likewise, in smart hotels, self-service software technology is often used and enables customers to perform many tasks such as check-in/out, getting hotel room keys, etc.

Smart Applications in Tourism

Technology process that started with the reservation provided many services in accommodation establishments such as online room selection, room colour selection, air conditioning adjustment, temperature and light control, virtual scenery creation, online service. Another area that is affected by technology is food and beverage services. Food and beverage businesses also benefit from technology while serving their guests. Many services are provided through technological revolutions such as online reservation, online service, smart tables, robots and so on. Today technology also affects museums and museum services positively. With virtual reality museums offer visitors the opportunity to visit their works online. Online ticket sales also save visitors time. Also, credit cards and ticket sales provide economic convenience to the guests. With the help of technology, heat and light adjustments of museums can be made and it helps to protect the works exhibited in these museums.

Smart Tourism, Smart City and Smart Destinations as Knowledge Management Tools

The rapid increase in the population has caused problems in the correct use and management of resources in cities. Solutions to these problems have been sought based on knowledge management. In the digital age we are in, the concept of smartness of cities has been put forward together with the web based applications. It has changed the expectations and needs of tourists and residents especially in the tourism sector in the service sector. Smart tourism destinations, which are seen as a solution to the expectations and needs of the changing tourists and local people, bring holistic innovations covering all the stakeholders in the tourism ecosystem. In this direction, it is thought that knowledge management makes the right use of resources obligatory and contributes to sustainable tourism understanding. For this purpose, in the study, suggestions were made to provide maximum benefit from web-based projects that are carried out in qualitative direction of knowledge management and smart tourism destinations.

Preface

Smart Municipalities in Tourism

Tourism is a fragmented and information-oriented sector covering tour operators, travel agencies, hotel sales representatives, associations, meeting offices, transportation, car rental, airlines, cruise, souvenirs, restaurants, hotels/motels and entertainment. In the tourism sector, technology is an important requirement for the interconnection of all these fragmented organizations, activities and elements and for the satisfaction of tourists. However, the effective use of technology in a destination requires the leadership of a leader. This study approaches the smart municipality applications oriented to tourism sector with the example of Turkey, a well-known destination around the world, from the perspective of municipalities, which is regarded as a democratic leader at local level and provides a general framework regarding the studies on an innovative, environment-friendly, solution-oriented and more livable urban life. Suggestions are provided for smart technologies to improve the quality of life of local citizens and to the satisfaction of tourists.

A New Concept in Tourism: Smart Tourism Destinations

The purpose of this chapter is to provide an insight into the topic of smart destinations. By adopting smart technologies, tourism destinations, as well as cities, gain more opportunities to offer better quality of life for residents and visitors. Smart cities aim to improve resource management, sustainability, and living conditions in urban environments by utilizing ICTs. The concept of smart tourism destination, deriving from smart city, refers to the use of technology in tourism destinations in order to increase the service quality and tourist satisfaction by focusing on tourists' expectations. In other words, smart tourism destinations aim to integrate technology into the destination for these purposes. In this chapter, the concepts of smart city, smart tourism, and smart destination are presented. The emergence of smart city and smart destination concepts and the issues and challenges they might face are discussed. In addition to some future research directions, a brief discussion on potential controversies is presented.

Tourist Experience in Smart City Destination of Jaipur (Rajasthan)

Smart city concept is emerging as new venture in tourism sector especially in a country like India. The present chapter focus to analyze the tourist experience in Jaipur city of Rajasthan which is emerging as popular tourist destination and taken over for development under smart city mission. Although, chapter adopted empirical approach, but to some extent it also used secondary data sources. The authors used to analyze tourist experience by using smart attraction, smart mobility, smart amenities, smart ancillary, smart safety and smart available packages as important dimensions of smart tourism destination. Regarding tourist experience, the chapter noticed smart available packages, smart safety and smart attractions are providing pleasant experience to tourists in contrast with remaining aspects of smart tourism destination. The result of the study provides implication for tourism marketer and policy maker to take appropriate steps to enhance the tourist experience by improving smart facilities and services.

Intelligent Tourist Destinations and Their Application to Public Policies: The Spanish Case

The chapter is divided into two differentiated parts. The first includes a brief technical review of the concepts of Territorial Intelligence and Intelligent Tourist Destination, situating them in the context of the new tourist destination planning paradigms. This part ends with a first approach to the Spanish case and the progress of its public tourism policies towards these concepts. The second part goes deeper into the Intelligent Tourist Destination model applied in Spain, driven by the public administration, paying special attention to its official standardization process, and the indicators adapted to that end. Finally, the chapter ends with some brief conclusions.

Smart Tourism Planning: Geographical Evidence from Poland

The main focus of the chapter is to discuss geographical context of smart tourism planning through the analysis of relations between spatial planning, tourism development, and technology. The main question addressed in this enquiry is whether development of technology and tourism respects sustainable spatial planning. Thus, geographical influence of tourism and ICT on spatial planning was investigated. Research is carried out in Poland as tourist destinations in the country are substantially different regarding their tourist attractions, infrastructure, and development. Geographically weighted regression (GWR) was applied to identify regions where spatial planning is significantly influenced by tourism and technology development as well. Both mentioned phenomena were recognized as competing in terms of spatial planning. Tourism and technology development did not support spatial planning parallely. Hence, establishing and developing smart tourism planning was confirmed as challenging from the geographical perspective.

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Chapter 3
Opinion Mining in Tourism:
A Study on "Cappadocia Home Cooking" Restaurant

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ABSTRACT

In the tourism sector, online tourist reviews analysis is one of the methods to evaluate the products and services offered by businesses and understand the needs of tourists. These reviews take place in social networks and e-commerce sites in parallel with the developments in information and communication technologies. Tourists generate these reviews during or after their use of the products or services. In the literature, these reviews are referred to as UGC (User Generated Content) or eWOM (electronic word-of-mouth). The scientific evaluation of the textual contents in tourist reviews is done by text mining, which is a sub-area of data mining. This chapter discusses the methods and techniques of opinion mining or sentiment analysis. In addition, aspect-based sentiment analysis and techniques to be used in the application are discussed. A case study was carried out using aspect-based sentiment analysis method. In the application "Cappadocia home cooking" restaurant used tourist reviews.

INTRODUCTION

In tourism sector, online tourist reviews analysis is one of the methods of evaluating the products and services offered by businesses and of understanding the needs of tourists. These reviews take place in social networks and e-commerce sites in parallel with the developments in information and communication technologies. Tourists generate these reviews during or after their use of the products or services. In the literature, these reviews are referred to as UGC (User Generated Content) or eWOM (electronic