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**TOURISM
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Tourism in the Era of Digital Transformation



**THEMATIC
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I



**UNIVERSITY OF KRAGUJEVAC
FACULTY OF HOTEL MANAGEMENT
AND TOURISM IN VRNJAČKA BANJA**



THE INFORMATION AND COMMUNICATION TECHNOLOGY IN THE FUNCTION OF TOURISM DEVELOPMENT

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Abstract

Rapid development of information and communication technology, above all computer reservation systems, global distribution systems and Internet, has introduced a series of changes in recent tourism development. These changes are primarily related to the establishment of new relations between supply and demand in the tourism market. In terms of supply, some of the advantages of using information and communication technologies are business operations performance efficiency, direct contact with clients, flexibility in work, lower operating costs. In terms of demand, the advantages are reflected in a quick and easy access to information and easier booking and payment of tourist services. Influences of modern information and communication technologies on tourism development are numerous. This paper focuses on the impact of information and communication technology on the formation of new relations on the tourism market and changes in the tourism industry.

Key Words: information and communication technology, computer reservation systems, global distribution systems, Internet, tourism, development

JEL classification: Z32, L86, 039

Introduction

Tourism is one of the factors of growth of the world economy, the biggest export “industry”, a significant factor in foreign exchange earnings and a source of added value of undeveloped areas (Hrabovski-Tomić &

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Milićević, 2012). As the most dynamic and heterogeneous phenomenon of modern society, tourism should be a long-term priority of economic development of each country as it represents one of the most remarkable economic and social phenomena of the XXI century (Milićević & Petrović, 2017).

According to the World Travel and Tourism Council (WTTC) the total contribution of the tourism industry in the global GDP in 2016 was 10.2%. That same year, the recorded 297,896,000 employees in economic activities were directly and indirectly related to tourism, or 9.7% of total employment (WTTC, Travel&Tourism Economic Impact 2017 World). According to the data of the World Tourism Organisation, one out of ten job positions in the world are in the tourism sector. The total number of international tourists in the world in 2016 amounted to 1,235 million (3.9% more than in 2015). Expenditure by international visitors on accommodation, food and drink, entertainment, shopping and other goods and services in tourism destinations reached US\$ 1,220 billion (euro 1,102 billion) in 2016 (UNWTO Tourism Highlights, 2017 Edition). Such development of international tourism evolved in constant growth of tourism role in overall economic development of most countries over the world (Petrović & Milićević, 2015).

Continuous innovation of tourism offer is required because the tourism development happens in a very turbulent environment (Krstić et al., 2015), and because today tourists increasingly strive for new tourism products, new destinations, new experiences. New experiences become a main motive for a decision on tourism travel (Milićević & Petrović, 2016). New, sophisticated and demanding tourists require information about new destinations and authentic experiences, as well as an interaction with providers in order to satisfy their specific needs and wishes (Buhalis, 1998). Starting from the changes in requirements of tourism demand, hoteliers, travel agencies, tour operators, rent-a-car companies and other participants in tourism distribution chain base their business on technological achievements. Information and communication technologies have made big changes in the operating manner in tourism industry. Success in tourism market depends on the ability to anticipate changes in requirements and motives of tourists. Application of information technologies is related to numerous and complex tourism demand, as well as expansion of tourism products meant for smaller market segments (Milićević et al, 2013).

The tourism industry can be seen as one of the first business sectors where business functions are almost exclusively using information and communication technologies (Garzotto et al. 2004). The information and communication technology is crucial to the tourism industry and its success. The information and communication technology has brought with it a number of changes and challenges that affect business and tourism (Pease & Rowe, 2005).

Many tourism companies have begun to complement their service by using innovative technology to meet the demands of modern tourists. Robots, virtual reality and different gadgets are already being used in the tourism industry. Passengers can now do an online check-in when travelling by plane via a home computer, a tablet, or a smartphone. They can, before entering the plane, reserve the desired seat or choose a favorite meal (Milićević, 2016). New ways for doing business are developed through the innovative usage of information and communication and internet technologies. It helps companies to achieve the competitive advantage on the global market (Janković & Galetić, 2014).

Information and communication technology through efficient and fast data processing basically change the quality of business in tourism by creating new methods of business management and decision making. The development of information and communication technology has introduced significant changes in the way hotels and transport companies, tour operators and travel agencies work, and has improved the process of distribution of tourist products (Milićević & Štetić, 2017). Important factor of the tourism destination competitiveness is a high-efficient information technology (Petrović et al., 2017). The information and communication technology allow tourists to quickly and easily access information about tourism destinations and purchase the desired services without intermediaries (Petrović & Milićević, 2015). In contemporary terms of business, survival and advancement of tourism market position cannot be imagined without the implementation of contemporary information and communication technologies in business systems. Electronic commerce has opened up new opportunities in the global tourism industry.

So far three significant innovations within the information and communication technology have influenced the redefinition of the

organizational structure in the global tourism industry. These are (Pease et al., 2007; Shanker, 2008; Štetić et al., 2017):

- The development of computer reservation systems as the first globally present information application,
- The development of global distribution systems, and
- The development of the Internet as a new platform for tourism companies business and tourism destinations management.

In addition to implications on the change of tourism industry structure, development of information and communication technologies influenced the changes in perception of consumers through strengthening the interaction between consumer-tourism destination, consumer-tourism companies and the consumers themselves (Milićević et al, 2013).

The computer reservation systems and tourism

The initial impulse of application of information and communication technology in tourism has resulted in deregulation of air traffic. New competitive relationships between airline companies meant that much more information was used in the business with constant changes that were conditioned by the emergence of new airlines, new airline lines, constant tariff changes, etc. The development of a computer reservation system is the main change in the distribution of tourism products. This was a transition from a manual reservation system to a fully automated computer reservation system.

The main initiators for the development of computer reservation systems were airlines, first in the United States and then in Europe. They then represented the internal systems of large airlines that provided travel agencies with direct access to information about available seats on the plane and ticket prices, with the possibility of direct reservations. In 1964, *American Airlines* introduced the first *computer reservation system SABRE*, which later developed and expanded into the global distribution system and today is one of the leading in the world. Computer reservation systems of airline companies are in fact the outbreak of global distribution systems and online agencies.

Recognizing the importance of this technology, other tourism industry subjects, primarily hotel chains and tour operators, begin developing their information and reservation systems. The main advantages of these systems for tour operators are reflected in the speed at which they can

register free accommodation and traffic capacity, efficiency in the reservation system and the sale of the package of arrangements, as well as the ability to react quickly to changes (e.g. *last minute* tourism offers) (Milićević & Štetić, 2017).

The first tour operator who introduced the computer reservation system into its business is the British *Thomson Holidays*, in 1976 under the name *TRACS (Thomson Reservation and Administration Control System)*. At that time, ten regional offices were connected to a central computer, and travel agencies could call any of these outlets to reserve a package of arrangements (Kärsher, 1997). Employees of *Thomson Holidays*, who worked on the booking, communicated through the terminals with a central computer and thus provided the agents with the necessary informations and reservations. In addition to reservations, *TRACS* also supported procedures related to finance and administration. The disadvantage of *TRACS* was that reservations between travel agencies and *Thomson* offices continued to be made by telephone, which caused excessive overhead of telephone lines and high costs during the season. The solution to this problem was to connect travel agencies with *Thomson's* computer reservation system directly *online*. This was done in 1981 when *Thomson Holidays* set up the *TOP (Thomson Open Line Programme)* system, the most famous and successful system of a tour operator, which was a key factor in achieving the competitive advantage of this tour operator on the British market (Milićević & Štetić, 2017).

Global distribution systems and tourism

In the mid-'80s, the computer reservation system is developed into a comprehensive global distribution system that offers a wide range of tourism products and services and provides mechanisms for communication between airlines and travel agencies. The development of the computer reservation system in the global distribution system integrates various tourist services, uses the computer reservation system infrastructure and provides additional value of services (Njeguš, 2010).

For travel agencies, this was an opportunity for significant improvement of business, and above all a more efficient process of reservation of airline tickets, hotel accommodation, *rent-a-car* services and other services. The Global Distribution System has provided a number of advantages to all tourist companies, which in this way have placed their services to end consumers - tourists, through sales sites of travel agencies,

who have had access to a set of offered services by entering the global distribution system terminal. The main advantage of using the global distribution system for travel agencies was based on the global availability of tourism products, as well as accurate and up-to-date information on these products, significant reduction in communication and booking costs, facilitated commission fees and efficient printing procedures and all information needed by clients (Spasić, 2013).

Global distribution systems have influenced the expansion of tourism companies and tourist destinations, through linking suppliers in tourism with tourist intermediaries. Today, leading global distribution systems sell their services through the Internet on the open market, own their own websites, and thus successfully market and efficiently distribute their services on the online market and continue to intensively expand the network of users among travel agencies. The aim of global distributive systems is to make their services available to online consumers through high technology and simultaneously to provide them with different products at attractive prices. Such an approach requires the global system to offer a series of information on different elements of tourist offer and to include economic and noneconomic entities into the system work (Radosavljević, 2009).

The four most important global distribution systems are *Amadeus*, *Galileo International*, *Sabre* and *Worldspan*, through which it is possible to reserve all the services necessary for the realization of the tourist arrangement. On the territory of the USA, leading global distribution systems are *Sabre* and *Worldspan*, while in Europe the most widely used are *Amadeus* and *Galileo International*. *Amadeus* is the largest global distribution system in the world (Milićević & Štetić, 2017).

Amadeus was founded in 1987 by four air companies: *Air France*, *Iberia*, *Lufthansa* and *SAS*, but it started operating in 1992. Until then, most European air carriers developed their own computer reservation system, however, due to the unification of the European market, there was a need for creating such a distribution system that will distribute airline seats in Europe and around the world and will establish a direct link with travel agencies. Today, *Amadeus* is the leading global distribution system according to the number of users - travel agencies. Over 230 tour operators can make reservations of air tickets, hotels, etc. in this way. *Amadeus* includes 709 airlines, over 379.000 hotel properties, 43 car rental companies, 50 cruise and ferry lines, 90 rail operators, 16 insurance

provider groups, 200 airport operators, etc. More than 190 countries served by *Amadeus* and its 70 local *Amadeus Commercial Organisations*. More than 14,250 employees work in the *Amadeus group worldwide*, representing 118 nationalities worldwide. The benefits of *Amadeus* include: insight into driving schedule, sale of air, rail and boat tickets, hotel sales, car rentals, cruises sales, sales of travel arrangements, etc. Over 3.9 million reservations are made daily through this system. The company's headquarters are in Madrid (Amadeus Global Report, 2015). The *Amadeus Serbia & Montenegro* was founded in 1989 by national carrier *Air Serbia* (former name *Yugoslav Airlines*) and *Amadeus Group*. *Amadeus* is dedicated to deliver *Amadeus* products and solutions and to serve travel agency network in Serbia and Montenegro (Amadeus Serbia, 2017).

The Internet and tourism

During the 90s of the twentieth century, the era of Internet and web sites emergence that were involved in tourism travel followed. Development and application of information and communication technology has linked both the supply and demand operators on the tourism market, and thus facilitated the distribution and promotion of tourism and hotel services (Petrović et al, 2016). The Internet, being one of the most influential information and communication technologies, has served as a competitive marketing and communication tool for tourism and hotel companies in facilitating information sharing and online transactions (O'Connor & Frew, 2002; Doolin et al, 2002).

Collaboration around the Internet is a way for tourist operators, such as hotels, to deal with excess capacity and increase occupancy rates quickly. This already occurs within many chains and is evident in the participation in intermediaries or websites such as *Travelocity.com* (Pease & Rowe, 2005). Traditional travel agencies are developing their online sales, creating web sites and encouraging tourists to online shopping of arrangements and travel services because it brings them savings in time and money. An example of successfully used new channels of sales is *Thomas Cook's website* (Spasić, 2013).

Dynamic expansion in the use of the Internet has led to substantial changes in the channels of distribution of tourist services. Travelers using the Internet can explore, plan and book tourist services. The websites of travel agencies and on-line platforms are the main source of travel

information. In one place, travelers can get a lot of information related to transport, accommodation and other tourist services. They have enabled all tourism companies to place their products on the tourist market without intermediaries (Milićević & Štetić, 2017).

The availability of the Internet has introduced new modes such as infomediation, i.e. exchanges of information between consumers on forums, personal websites, and pages dedicated to comments and advices, on professional tourist sites or portals (Gensollen, 2001). With a rapid development of the Internet and the emergence of Web 2.0, which has enabled the development of social networks and virtual worlds, tourists are able to estimate the destination before they physically travel to it. Social networks that enable people to experience a destination through the impressions of other consumers, of both, those they know and completely unknown are extremely prominent (Neuhofer et al., 2014). Social networking sites and photo/video sharing sites have become more popular serving as websites used for trip planning (Xiang, Magnini & Fesenmaier, 2015). Mariani, Di Felice, and Mura (2016) carried out a survey exploring Facebook strategic use by Italian destination management organizations (DMOs). Their study-outcomes indicate that each organization employs social media in a different manner and with variable frequency (Semerádová & Vávrová, 2016). Similarly, Yoo and Kim (2013) investigated the availability of online newsrooms (such as Facebook, Twitter, Youtube, or Flickr) on U.S. state tourism websites. Despite the high availability ratio, the authors found shortcomings in the ways organizations distribute this newsroom content (Semerádová & Vávrová, 2016).

The Internet has undoubtedly brought real revolution in the mode of distribution and promotion of hotel accommodation facilities (Buhalis & Law, 2008). The hotel industry experiences dynamic expansion of the Internet application. Strong changes occur primarily in the field of promotion and sales, due to the willingness of an increasing number of tourists to take advantage of new technology to book, purchase, and pay for tourist services.

The phenomenon of Internet has always changed the way travel agencies operate. This has also influenced the formation of new electronic mediators in tourism, which have been recording rapid growth. These are *Internet* or *online* agencies (also called *electronic* or *virtual* agencies) whose basic characteristic is the lack of direct communication with

consumers and business partners, i.e. business based on electronic (*online*) communication (Milićević & Štetić, 2017). These *online* agencies use the same computerized booking systems as traditional agencies, but provide additional information such as information about tourist destinations, weather forecasts, foreign currency, city maps, etc. They are available to customers non-stop (*24/7 customer service*). The main advantage of *online* agencies is the possibility of direct booking of tourist services through *websites*, which reduces the cost of sales staff in making direct contact with consumers (Radosavljević, 2009).

These new distribution channels allow tourists to browse through the Internet and create a "real" package arrangement that meets their own requirements. Also, in this way, the costs related to the payment of agency fees are reduced, as well as the number of other costs that tour operators have in stimulating the retail network. Certainly with these savings, the possibility of lowering the prices of tourist arrangements and partial tourist services is created. Electronic agencies have increased their global participation, but at the same time they have become strong competitors to traditional travel agencies with classically organized sales at outlets (Milićević & Štetić, 2017).

The expansion of the Internet has influenced the emergence of new opportunities in the distribution of tourist services, and large global distribution systems have adapted very quickly to these trends by forming their own electronic agencies. The first electronic agency, *Travelocity.com* was established in 1996 by SABRE, the leading global distribution system, precisely as a reaction to market challenges. That year, another electronic agency, *Expedia.com*, was set up in the United States, founded by *Microsoft*, which is gaining momentum in market growth.

Today the *Expedia.com* is one of the largest online travel companies in the world, with an extensive brand portfolio that includes some of the world's leading online travel brands: *Expedia*, *Hotels.com*, *Expedia Affiliate Network (EAN)*, *Trivago*, *HomeAway*, *Egencia*, *Orbitz*, *Travelocity*, *Hotwire*, *Wotif Group*, *Expedia MediaSolutions*, *CarRentals.com*, *Classic Vacations*, *Expedia Local Expert*, *Expedia CruiseShipCenters*, *TravelDoo*, *SilverRail*. Korisnici platforme mogu da pretražuju over 500.000 hotels, over 500 airlines, paket aranžmane, krstarenja, *rent-a-car* agencije, itd (Expedia Group, 2017).

Some online travel agencies have seen an opportunity to improve the market position in the business specialization. For example, there are online travel agencies that base their business on the sale of accommodation facilities. Some of them offer a large number of hotels around the world, like *Hotels.com* or *Booking.com*. There are travel agencies that specialize in luxury hotels, such as *Mrandmrsmith.com*. On the other hand, there are agencies specializing in last minute booking, such as *LateRooms.com* or *Lastminute.com* (in addition to accommodation and transportation, offering package arrangements, rent-a-car, tickets for musicals and attractions, etc.) (Milićević & Štetić, 2017).

Established in 1996 in Amsterdam, *Booking.com* has grown from a small Dutch start-up to one of the largest travel e-commerce companies in the world. Part of The Priceline Group, *Booking.com* now employs more than 15,000 employees in 198 offices in 70 countries worldwide. The *Booking.com* connect travellers with the world's largest selection of incredible places to stay, including everything from apartments, vacation homes, and family-run B&Bs to 5-star luxury resorts, tree houses and even igloos. The *Booking.com* website and mobile apps are available in over 40 languages, offer 1,534,024 properties, and cover 123,217 destinations in 229 countries and territories worldwide. Each day, more than 1,550,000 room nights are reserved on the platform. On the platform, availability and price can be checked and online reservations made, and payments are made through credit cards. *Booking.com* does not charge any fees for services to users of the platform. In addition to photos, maps and hotel descriptions, you can also find hotel reviews, as well as guest comments. The platform is also available through mobile applications (Booking.com, 2017).

The intensification of competition in the sales channels was influenced by the emergence of new types of *online* companies, *Aggregators* or *Metasearch engines*, which are an alternative to global distribution systems and online agencies. They represent the kind of search engines that have the huge ability to search the databases on a large number of sites in order to give the best possible offer according to the requirements of the consumer (Spasić, 2013). *Metasearch engines* are the search engines that do not have their own database, they send queries to someone else or to several other browsers, and on the basis of his/their database form the search results. In this way, passengers can search and compare offers of multiple bidders at the same time. The most famous aggregators are: *Kayak*, *Mobissimo*, *Cheapflights*, etc. For example, if a tourist

searches for a particular hotel in London, *Kayak* will offer him the prices of the largest *online* search engines with whom it cooperates, such as *Hotels.com*, *Priceline.com*, *Booking.com*, *Expedia.com*, *Travelocity.com*, *Tripadvisor.com*, *Hotwire.com*, *Orbitz.com*, etc. In this way, the client has the opportunity to compare prices and choose the most favorable bid (Milićević & Štetić, 2017).

New distribution channels are becoming more and more popular in the market, and tourists are increasingly relying on this kind of search of travel services. Certainly the great advantage of using electronic platforms is the availability of pictures and video content, as well as comments by other tourists, which can make it easier to make decisions about travel and hotel choices. On each platform, tourists can create a user profile where reservations are kept. Depending on the type of content search, there are various "filters", starting from the choice of tourist destination and date of travel, airline company, hotel type, child benefit, type of car rented, price, etc.

Almost every tourist or hotel company maintains online presence on the market using some of the social networks (Parker, 2012). Social networks help companies manage the brand of a company and influence its presence in everyday life of consumers; to approach consumers and get to know their needs, participate in discussions and offer them a solution; offer cheaper propaganda than traditional media; and offer numerous ways to measure and monitor performance (Milićević & Štetić, 2017).

Conclusion

Development of information and communication technologies in the last decades has conditioned a revolutionary shift in all segments of development and functioning of society (Milićević et al, 2013). The influence of modern information and communication technologies is major in all forms of business, and consequently in the areas related to hospitality and tourism (Milašinović & Kraguljac, 2015). Tourism is one of the first sectors to embrace information and communication technology (Pease & Rowe, 2005).

Development of mass tourism is followed by dynamic changes in tourism supply and demand. Development of computer reservation systems in the 1970s, global distribution systems in the 1980s and Internet in the 1990s have transformed operative and strategic business practice of tourism

companies (Milićević et al, 2013). Since 2000, the era of modern information and communication technology has started, which in a completely new way through the development of the Internet, Extranet, mobile applications and interactive digital television connects tourist demand with tourist offer, which contributes to a more significant democratization of tourism as a phenomenon (Bakić, 2010). Modern technology has made a step forward with the development of destination virtual experience system and online agencies. Therefore, main precondition for successful operation of the carriers of tourist offer is abandoning of conditional and transfer to electronic manner of tourist services distribution.

Perhaps the most significant change in the tourism industry business operations and the consumer behavior in tourism is enabled by a rapid development of the Internet. Today the Internet is not only a portal toward tourism enterprises and destinations but also a platform for both, their entire business operations on one side and a source of information about a trip, helping tourists with decision-making, planning and paying for it on the other side (Štetić et al, 2017). The application of the information and communication technology and the increasing use of the Internet in tourism industry business operation not only facilitate communication with customers and business partners, but it also ensure the future success at the tourism market (Čavlek, 2006).

New digital technologies leave a deep trace by ensuring global connectivity and interactivity (Štetić et al., 2009). The survival of tourism companies in the future will depend exclusively on identifying appropriate trends and their timely incorporation.

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