TOURISM AND TOURISM INFRASTRUCTURE FROM THE PERSPECTIVE OF TECHNOLOGICAL CHANGES

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Abstract

Tourism contribution, to both the Gross World Product formation and global employment level, transforms it into one of the global economy's most important and dynamic components. Over time, technological changes have strongly influenced the development of this sector, permanently revolutionizing the way touristic experience is perceived. Starting with the development of air transport and continuing with the way hotels and restaurants are built and with the innovative electronic devices used to streamline their economic activity and to improve their guests' experience, the evolution of technology has continuously offered new perspectives to tourism. Nowadays, the world's fastest growing industry is marked by a transition from the offline to the online environment, which makes it even more competitive and capable of offering outstanding and unique experiences to tourists.

Keywords: innovation in tourism, online tourism, Social Media, technological changes, tourism infrastructure

JEL Classification: L83, M31, O33

Tourism currently represents one of the fastest growing economic sectors worldwide. In 2012, its contribution to the Gross Domestic Product formation was of 9,3% (6.630,4 billion USD). Almost 8,7% of the world's employees (261,39 million jobs) come from tourism, meaning that one out of 11 jobs worldwide belongs to this sector. According to the World Travel & Tourism Council, in 2013, tourism's global contribution to the Gross Domestic Product formation will increase by nearly 3,2%, reaching 6.842,57 billion USD, while the sector's number of jobs will increase by 1,7% (265,83 million jobs worldwide). (WTTC Travel & Tourism Economic Impact 2013 – World, p. 1)

Although 2013 will continue to be influenced by the effects of the global economic crisis triggered in late 2008, according to forecasts, there will be a slight increase in the global economy and, therefore, in the tourism sector. Globally, the

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number of tourist arrivals will most probably increase by 3% to 4%. (UNWTO Tourism Barometer, 2013, p. 6) According to an European Travel Commission report, in 2013, the number of tourists worldwide will increase by approximately 2,3% for inbound tourism and by approximately 2,7% for outbound tourism. (European Tourism 2012 – Trends and Prospects, 2012, p. 25)

The number of worldwide tourists will be mainly influenced by the new emitters in the Asia-Pacific, Latin America and Eastern Europe; Thailand, the United Arab Emirates, South Korea, Chile, Nigeria and Singapore are some of the successful destinations. However, American tourists will pay particular attention to travelling to hard-to-reach countries until recently (for example, Libya, Cuba and Myanmar), following the easing of travel restrictions.

According to IPK International, a consulting company, the positive trend followed by the tourism industry nowadays is mainly due to the economic boom of the BRIC countries (Brazil, Russia, India and China). The World Tourism Organization (UNWTO) claims that this tendency is also supported by the developing countries in Asia and America; moreover, increases for Europe and North America will continue, albeit at a more moderate pace.

Over time, the continuous expansion of tourism has been due to many economic, social, political, cultural and technological changes. However, after the Second World War and once the air transport has started developing, easing worldwide movements, the technological evolution was the one to influence the tourism industry more and more; changes were not only felt in the tourism industry, but also in the adjacent sectors.

Transport, one of the key factors for tourism, benefited from important improvements thanks to technological changes, resulting in a sharp rise in global tourism. The development of air transport made possible travelling to different, previously hard-to-reach, parts of the world; such journeys would have required time and important financial resources, some of them only being possible by sea. The technological evolution caused permanent transformation of aircrafts, so that they can now carry more passengers, faster, with lower costs. Basically, benefiting from lower ticket prices, anyone could afford to travel anywhere in the world. Thus, technological changes have not only led to the emergence of a new means of transport, able to cover extremely long distances in a much shorter time and with lower costs, but also to its permanent evolution, by permanently reducing travel time and improving cost efficiency.

Hence, together with the development of air transport, tourism has taken on new dimensions; long and very long distance travels have been facilitated (journeys' internationalization and their costs reduction led to the development of mass tourism). However, facilitating the access to areas with low population or to isolated regions that were not normally easy to reach, except for those in the surrounding areas, has strongly influenced the indigenous people, both positively (tourism development led to economic growth in these regions and also to higher living standards) and negatively (pollution, cultural differences etc.)

Regarding the transport infrastructure, technology has played an important role in developing access routes. Thus, technological evolution has made possible the construction of once unthinkable road and rail access routes, offering new possibilities of travelling from one place to another. One example would be the Channel Tunnel, the undersea rail tunnel, built under the English Channel, which allows quick and easy access between Great Britain and France. Travelling between these two countries has been encouraged, resulting in an increase in tourism for both.

Technological changes have played a major role in the development of tourism-specific infrastructure. These have had a strong influence especially on accommodation and food units, starting with the construction phase (used building materials, construction technologies, design) and continuing with shaping services and experiences offered to tourists.

Developing increasingly novel constructions has become possible thanks to the technological evolution. Such an example would be the Willis Tower building, in Chicago. The skyscraper has become one of the city's main tourist attractions, due to the SkyDeck observation deck, opened to the public in 1974. It is located on the 103rd floor of the building and it consists of four covered balconies, entirely built of glass, which offer an unforgettable view over Chicago. SkyDeck attracts about 1,3 million visitors annually.[1]

With the passing of time and with technology development, constructions have become more and more innovative, a simple glass balcony being surpassed today by unusual construction materials and shapes of buildings (for example, ice hotels or underwater hotels) or by their positioning in places where, decades ago, that would have been unimaginable (for example, artificial islands built in the ocean, such as the one of the famous Burj Al Arab hotel).

Ecology is the trend that currently marks the tourism industry. Tourists' requirements are constantly evolving and the demand for tourism product and services that do not affect the environment is increasing. The emphasis is on social responsibility and on economic activity efficiency, the tourism investors' target being that of obtaining an optimal profitability, which not only means obtaining benefits, but also respecting the sustainability principles; so far, they wanted to obtain maximum profitability, sometimes at all costs, regardless of the negative effects that some forms of tourism have on the environment. Governments, investors and local communities are increasingly aware of the need to protect natural habitats and local specificity, but also of the fact that this cannot be possible unless sustainable development strategies are implemented. Frequently adopted measures refer to the reduction of greenhouse gas emissions, water and energy consumption, mainly by implementing sustainable policies at the level of accommodation units and also of regions, and by using the benefits of the technological evolution. From the tourism investors' perspective, the ecology trend actually represents a way of streamlining the

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[1] http://www.theskydeck.com/the-tower/facts-about-the-ledge

business and reducing costs without, however, affecting the quality and the variety of services offered to the clients. As a result, investors in the tourism sector are increasingly turning to this issue, whether it is about materials used for the construction of hotels or about the latest technology meant to reduce the accommodation units' operating costs and to offer, at the same time, quality services and unique experiences to the clients.

Nowadays, the trend in the hotel industry is to build green hotels and zero-carbon hotels, especially in Europe and Asia. Technological changes have enabled the use of new materials, these hotels being built mainly from recycled materials. Once the construction is completed, the focus is on reducing greenhouse gas emissions, water and electricity consumption. Any green hotel has to take into account any possibility of using alternative energy sources. The technological evolution has brought with it solar photovoltaic or passive water heating systems, waste to energy transformation systems, but also the possibility of using geothermal energy, wind energy or marine energy. The building's energy efficiency is also determined by the heating, ventilation and air conditioning system. For example, as technology advanced, heat pump systems or CHP (*Combined Heat and Power*) systems, which are more efficient than conventional boilers, have been developed. A hotel's lighting system is responsible for almost 20-25% of the building's energy consumption.[2] Therefore, the development of motion detectors and timers constituted another milestone in terms of hotels' energy efficiency. For an efficient use of water, an important role is played by wastewater recycling systems (particularly in regions where water is an expensive resource), rainwater collecting systems or sensors used to reduce water consumption.

In the current economic context, and focusing on the ecology trend, the tourism infrastructure is continuously marked by the use of the terms „reconversion" or „recycling" of buildings. Old buildings, with a different original destination, are converted into hotels. This is the case of historical or even industrial buildings that, once turned into hotels (usually boutique hotels), offer unique and unprecedented customer services. Building „recycling" not only allows reusing buildings that no longer fulfill their original functions and cannot be demolished (such as historical buildings), but also eliminates the negative environmental impact caused by a new construction (waste, greenhouse gas release, use of building materials which can be harmful for the environment etc.)

Technology represents an extremely important element for the existing facilities in hotels, both for clients, who are becoming more and more sensitive to the degree of technology of the tourism experience, and for the management, who, thanks to technology, streamlines the economic activity, reducing operational costs. On an increasingly competitive market, service diversification and technology innovation represent the key factors for revenue growth and customer loyalty. Some

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[2] http://www.fivestar-hospitality.ro/ro/articol-consultanta-24482

consequences of the latest technological advances in the hotel sector are the following:

• The replacement of hotel room keys with access systems based on magnetic cards allows synchronization with the lighting and heating/ventilation systems, which are turned off automatically when exiting the room. The technological evolution currently leads to the implementation of biometric access systems (fingerprint recognition or retina scan), which relieve the clients from taking care of their key or magnetic card.

• Classical closing/opening safe systems in hotel rooms can now be replaced with systems using the Bluetooth technology of mobile phones.

• Implementing infrared scanners in hotel rooms allows the detection of the tourists' presence in the room (using the human body heat), so that lighting and ventilation/heating systems are turned off in their absence.

• The use of microchips for room-service carts makes the Housekeeping Department's activity more efficient; once tourists have finished eating, all they have to do is take the cart out of the room and the microchip automatically alerts the Housekeeping employees.

• The replacement of conventional TV sets with Internet-connected LCDs becomes a real trend in the hotel industry, allowing the clients to access entertainment content online. Moreover, new trends regarding the design of bathrooms impose the use of „mirror TVs".

• Implementing computerized inventory systems, which use electronic sensors and radio-frequency identification technology, for mini-bars in hotel rooms makes it possible to avoid situations where certain products are missing from the mini-bar (these were not declared and paid on the departure of clients) or situations where products have exceeded shelf life. Once the products are removed from the mini-bar, the sensor is activated and they are automatically recorded into the system; this way, the system keeps track of consumed and remaining products, but also of their expiry date.

• More and more often, following the increasing number of electronic devices available in the hotel room and the fact that tourists are inseparable of their own laptops, tablets or mobile phones even when on vacation, the need for an employee specialized in technology rises. Thus, any urgent hardware or software issue can be solved by simply calling the „tech butler", with no need for the tourists to go to a specialized store in the area (most often, in some destinations, these do not even exist or their location is unknown to tourists).

In the near future, the technological evolution will continue to mark the hospitality industry through the use of Smart TVs, which are becoming more and more sophisticated. They integrate television with the technology of Internet and Social Media. The use of Smart TVs allows tourism companies to share videos and create their own Internet TV channels (which can, of course, be watched on Smart TVs). It is assumed that soon, simply watching a travel and tourism dedicated TV

channel could result into a real experience by being able to make a reservation directly through the Smart TVs (using Web links or dedicated applications). The focus will be on the emotional connection created by TV programmes; users will be able to make real-time reservations for the hotel or destination they have just viewed and appreciated.

Concerning the food units and the technology's impact on them, an important innovation in this regard was the implementation of Point of Sale (POS) systems. They are designed to automatize some of the employees' tasks, streamlining the units' activity. POS systems allow the electronic transmission of clients' orders to the kitchen and automatic issue of bills. Nowadays, thanks to technological progress, systems have evolved, being able to perform accounting functions, to display the cooking time for each type of dish (and, based on this and other statistics, to estimate the time required to free a table) or to follow the stages of the technological process at which various dishes are at different times. Current innovations in the field allow the use of a system similar to the POS systems for each table in a food unit, allowing the clients to take on some of the tasks traditionally performed by employees. Every client can make an order through the existing device on the table (the menu is integrated, so that the client is able to see not only the ingredients, the description and the price of each dish, but also the way it looks like), this being automatically forwarded to the kitchen; in the end, the client can issue the bill and also pay it via credit card. This way, the food unit's activity is more efficient, the waiting time of the clients being significantly reduced (the time required for one of the employees to bring the menu and to take the order, then the required time for bringing the bill).

Although the technological evolution has marked many changes over time in terms of means of transport, hotel construction or facilities in accommodation and food units, the greatest innovations in the tourism industry are due to the development of the information and communication technology (ICT). This is one of the key factors in the competitiveness of the tourism product and services market, but also in terms of strategic tourism management, reducing transactional and operational costs.

Since the emergence of the Internet, the evolution of the ICT has radically changed the perception of tourism services, contributing to increasing the quality of offered services. The use of the Internet has brought important benefits for tourism companies and continues to do so, especially considering the large amount of information that can be obtained regarding the requirements and consumption habits of the clients (the information automatically stored on web servers can be easily analysed, helping the tourism companies to offer products and services that correspond at an increasingly high rate to different categories of clients' requirements).

Travel agencies have benefited from technological progress with the advent of computer reservation systems (CRSs), which offer real-time access to airlines and hotel chains offers, easing the reservation process. Later on, CRSs have evolved,

turning into global distribution systems (GDSs) that link the travel agencies not only to airlines and hotel chains, but also, for example, to car rental companies.

The global spread of the Internet has led to the development of online tourism (referring to the entire process of searching for a holiday destination and of obtaining information, until booking the holiday). If, in the past, holidays could be booked only through travel agencies, the technological evolution has allowed online booking, in front of the personal computer. With the increasing degree of Internet penetration worldwide, the number of online information sources has increased, search engines and specialized sites facilitating the choices that tourists had to make when they wanted to plan a trip. At the same time, the number of online travel agencies (OTAs) has continuously increased and the advent of credit cards as a payment method determined the significant growth of the number of holidays booked online, drawing directions of a new trend in tourism.

Estimates currently show that over 50% of the leisure trips and over 40% of the business trips are booked online. (WTTC Travel & Tourism 2011, p. 22) Moreover, the evolution of online sales has started to become stronger than that of offline sales, one of the current trends being that of travel agencies operating fully online. For this reason, in the future, the technological progress can become a real problem for conventional travel agencies, whose activity will gradually cease to be profitable and will be forced to exit the market. The only option for them to survive is to reinvent their services and to offer consulting and custom-made services to their clients, according to their ever-changing requirements. In the near future, sales recorded by airlines will be the most successful in the online travel segment, travel agencies registering significant sales for hotel bookings.

Recently, the technological evolution has determined the advent of a new form of tourism. Virtual tourism is based on virtual reality and offers unforgettable experiences to the tourist; the so-called „cyber-tourist" is able to travel anywhere in the world, paradoxically, without leaving home. The technology of virtual reality systems continues to progress, so that the users' experience becomes more and more real. Virtual tourism removes any barriers, such as a too long distance to travel to a certain destination, high costs of travel or any existing hazards in a particular region (for example, wars or epidemics that may jeopardise tourists' health). Moreover, virtual tourism allows an efficient use of a tourist's most important resource: the spare time. Therefore, the vacation time can be strictly used for visiting the chosen destination(s), the time needed for transport from one place to another being eliminated.

The number of mobile phone owners with Internet access is constantly growing, so their access to the desired information regarding tourism companies becomes easier and quicker, whether it is about accessing offers or making a reservation or simply gathering information on a destination or a certain company throughout other tourists' feedback.

With the evolution of technology, the online promotion of the offers of tourism companies has become more and more important. Nowadays, online promotion

represents a key factor for the competitiveness of the companies and is an effective marketing tool that provides great benefits, like low advertising costs and the possibility to achieve customer segmentation and selection of target clients. Among the numerous tools used in online promotion it is worth to mention the Web sites, which become increasingly interactive (through virtual tours) and easy to use, the official promotion channels on YouTube (official videos of tourism companies, as well as videos posted by tourists, shaping a real image of the experience), the review sites (hotels' reputation depends more and more on tourists' reviews and specialized sites such as TripAdvisor or Yelp will be taken into consideration more often when it comes to the hotels' promotion policy) and, last but not least, the blogs. Blogs are becoming more and more widespread, be it blogs of tourism specialists (for example, travel consultants who promote various destinations or tourism services through their own blogs) or tourists' blogs (people who travel a lot and present their experiences). The upward trend followed by travel blogs is due to the fact that tourists prefer to find out, before actually purchasing services, information on the chosen destination or accommodation unit, either from tourism specialists or, more often, from people who have already experienced the product/service. This way, any inconveniences that tourists may encounter are almost entirely excluded; tourists consider that the information found on the official sites of accommodation units/destinations/travel agencies is not always true and fair, the presentation always being made in favour of the company.

Tourism companies currently largely adopt the tools of Social Media in order to demonstrate the quality of the products and services they offer. The recent expansion of Social Media fundamentally changes the way tourists seek for travel information, but also the way different destinations and accommodation units are presented. Moreover, this facilitates the interaction and even the collaboration between tourists and tourism products and services suppliers through social networks or blogs. Social networks (the best-known of these is currently Facebook) bring real-time access to information offered directly by tourism products and services suppliers, but also the possibility to interact with a large number of people who have already experienced that product or service. For tourism companies, social networks represent a means of networking with potential clients and, more important, a custom tool of quick and mass promotion of the offer. This way, companies also make a selection of clients – the use of social networks corresponds to a particular tourist profile (the educated, informed tourist, with a certain level of income).

A new concept aiming to become more and more popular in the tourism industry is that of „gamification" or the integration of game-specific dynamics into static environments in order to draw the attention on the brand and to gain the loyalty of clients. Such an example would be Cape Town, which already took the first steps in the „gamification" process for South Africa, by integrating an interactive game on its Facebook page; this intends to attract tourists and to present the

destination in a more dynamic way. It is estimated that more and more destinations and tourism companies will use interactive games in their Web pages, blogs or social networks.

The technological progress has also strongly influenced the tourism industry through the advent and development of mobile phones. The quick upward trend of mobile phones, both in terms of coverage and development of smartphones, together with changing living standards determine a constant growth in the number of worldwide smartphones; therefore, an important role is played by dedicated mobile applications. More and more applications are being developed, facilitating the direct booking process on mobile phones, whether it is a hotel reservation, flight booking (in this case, by switching to e-tickets, there have been developed special mobile applications that ease the check-in process by simply scanning the reservation code at the special devices in the airport), various shows or restaurant reservations or even booking of travel packages. The applications are being developed either as generic applications, which include products and services of several tourism companies, or official applications launched by travel agencies, hotels or airlines, strictly for products and services offered by each of them.

An innovation regarding mobile phones and the tourism industry is the use of QR codes (Quick Response Codes). These are, in fact, encodings of information that can be obtained by simply scanning the symbol through a mobile phone application and using the phone's camera. QR codes are used in hotels (tourists can find out more about the activities they can have in or near the hotel, but also information about the destination's main attractions), in restaurants' menus (this way, clients have access, for example, to videos showing how a certain dish is cooked or they can simply see how a dish looks like before ordering it) and in travel agencies, either in catalogues or on posters (QR codes offer further information regarding a certain offer, but also pictures and videos meant to encourage the purchase of a certain travel package). The development and use of such codes is intended to provide new experiences for tourists who own smartphones.

Conclusions

The tourism industry is the sector that is constantly developing and marking the fastest growth worldwide. Despite the current global economic crisis' effects, tourism is the only economic sector to have currently returned to the values recorded before its onset, evidence of the industry's high degree of adaptability to changes in the economic environment.

Over time, the tourism industry has been influenced by various economic, political, social or technological factors. However, the technological factor is the one that particularly contributed to the evolution of this sector, fundamentally changing the perception of tourism products and services.

The technological evolution has primarily facilitated the access to numerous tourist destinations, the key point being the use of aircrafts to transport passengers to previously hard-to-reach or even unreachable regions. Regarding tourism-specific

infrastructure and mostly the accommodation units' construction phase, technological changes have allowed the use of new construction materials (focus is currently on the use of recycled materials) and systems that help reducing water and electricity consumption, these being meant to streamline the activity and to follow the lines of a new trend, that of a sustainable development. Moreover, the constant development of technology has made possible the construction of accommodation units in previously hard to imagine places (for example, those on artificial islands built on sea or in the ocean) and, last but not least, original shapes of buildings.

With the development of the ICT and, therefore, the innovations in this regard, the tourist experience gained new dimensions and will move more and more from the offline to the online environment. The global spread of the Internet and the increasing degree of its use, the development of specific applications, the increasing popularity of online travel agencies and the emergence of virtual tourism are just some of the current trends that fit perfectly into the concept of „online tourism". Technological progress currently tends not only to facilitate and streamline tourism employees' activity and to increase the level of comfort felt by tourists during their holidays, but also to automatize an important part of the tourism industry. This seems to lead to robotics, the numerous technological devices that are constantly evolving already being able to replace a large number of employees, especially in the hotel sector.

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