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THE EFFECTS OF THE USE OF ICT BY TOURISM ENTERPRISES

Małgorzata Januszewska,[1] Daria Elżbieta Jaremen,[2] Elżbieta Nawrocka[3]

Wrocław University of Economics
[1] e-mail: malgorzata.januszewska@ue.wroc.pl
[2] e-mail: daria.jaremen@ue.wroc.pl
[3] e-mail: elzbieta.nawrocka@ue.wroc.pl

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ABSTRACT

Nowadays tourism economy is driven by information technology (IT) and telecommunications. All tourism oriented companies, such as tour operators, travel agencies, rental agencies, cruisers and hotels experience the growing impact of what is commonly known as information and communication technology (ICT). Tourism sector represents the information-intensive industry characterized by a significantly long value chain influenced, to a great extent, by information. Its creation, collection, storage, retrieval and transfer remain within the core activities of all tourism enterprises. Every single innovation in IT sector can potentially change the strategy followed by tourism companies in running a business. Such transformations are also imposed by tourists' behaviors which keep altering under the influence of information technology. The process of tourist services purchase is based on information collected through many different channels, e.g. travel agencies, brochures, the word-of-mouth, or web sides offered by tourist service suppliers, which are currently gaining much importance. Consumer decision making process in tourism sector is transformed into an online one, since direct service booking has become possible.

Proper understanding of behaviors presented by those searching for travel information online, as well as using innovative information and communication technologies by tourists, remain essential for designing an effective ICT-based business model. Currently it seems to be the crucial challenge for the entire tourism sector. ICT is focused on designing the new scientific paradigm (by innovation, co-opetition, collaboration with customers) of tourism development based on modern e-technologies.

The paper discusses the level of information and communication technologies application in the tourism sector. The study covers small and medium-size hotels (SMEs) and travel agencies which dominate the tourism industry worldwide. The article draws experience from the tourism industry in one of the most popular tourist destinations in Poland − Lower Silesia.

Introduction

For the last two decades we have been witnessing the truly transformational effect of the information and communications technologies on tourism industry. They changed both sides of the tourism market: demand and supply. 'The integration of ICTs has particularly benefited the facilitation of experiences. With new technologies being developed, new types of tourist activities are emerging that can both transform conventional experiences and result in the emergence of new types of tourism experiences' (Neuhofer et al., 2014: 340–350). The Web is changing the needs of consumers, who are increasingly less loyal, take more frequent vacations of shorter duration, and take less time between choosing and consuming a tourist product (Werthner, Ricci, 2004: 101–105). ICT application in tourism economy supports efficient functioning of enterprises, since it speeds up management procedures and upgrades both efficiency and quality of economic operations performed in an enterprise. The introduction of modern information technologies allows for taking better advantage of the resources at the disposal of a tourist enterprise, whereas their fast development imposes the need for reorganizing enterprises and making investments.

This paper suggests that ICT use affects rather positively the tourism enterprises and the tourism sector as a whole, however there are such fields as for example traditional intermediaries which can feel a danger of decay.

This paper first provides a theoretical review of the notion of information and communication technology and second discusses the benefits of ICT application in the tourism enterprises.

The presented paper employs a mixed-mode methodology, i.e.: literature review, collecting substantial quantitative data, standardized interview. Primary data were collected by conducting CAWI (computer assisted Web interview) with owners or managers of the selected hotels and travel agencies.

The notion of ICT(s)

The subject literature offers huge spectrum of definitions of the notion information and communication technology(ies) – ICT(s). The term came into widely usage in the 90s of the twentieth century as the consequence of the public access to Internet, web sides and e-mail. For this reason the term of ICT is associated usually with the application of computers and the Internet (Unwin, 2009). ICT is often considered the extended synonym for information technology (IT). Particularly in USA, the term IT is more often used than ICT (more popular in Europe). If compared to IT category, which emphasizes the application of information technology tools, supporting information management processes in enterprises (e.g.: servers and security mechanisms for storing, processing, retrieving and protecting information of the company), the concept of ICT is much broader and puts emphasis on these tools usefulness also in terms of information transfer over long distances and their general application not only by economic organizations, but also by the society. As the name suggests ICT merges information technology with communication technology. Drew and Forester (define IT as 'the group of technologies revolutionizing the handling of information which embodies the convergence of interest between electronics, computing and communication'. Simply speaking, ICT means the use of all possible means and methods offered by information technologies in the communication process (transfer of information). Some of ICT definitions presents very technical point of view. Mansell and Silverstone (1996 cited in Opara, Onyije, 2013: 11–15) emphasize that ICTs include 'electronic networks – embodying complex hardware and software – linked by a vast array of technical protocols'. According

to many definitions ICT are restricted to electronic means, which are used for capturing, processing, storing, sharing and disseminating information. It is no longer surprising, because nowadays digitalization remains the common feature of ICTs (Hamelink, 1996). The subject literature offers also wider definition of ICT. For example, Weigel (2004: 15–42) suggests that 'ICT means the entire spectrum of technologies designed to access, process and transmit information in relation to text, sound, data and pictures. ICT covers the whole range from traditional, widely used devices such as radios, telephones or television to more sophisticated tools like computers or the Internet'. Chandler and Munday (2011) share a similar concept that information and communication technology is an umbrella term for all of the various media employed in communicating information, e.g. computers, the Internet, television broadcast and even printed and handwritten notes. In this way of understanding ICT encompasses any medium to record information (magnetic disk/tape, optical disks – DVD/CD, flash memory and arguably also paper records), technology for broadcasting information (radio, television) and technology for communicating through voice, sound and pictures (microphone, camera, loudspeaker, telephone and cellular phones).

In conclusion ICT represents the technology required for information processing and transfer: innovative tools which form an integrated system of software and networked equipment that facilitates data processing, information sharing, communication, searching and selecting from the existing range of products and services used for an organization's benefit. It is an umbrella term which refers to any product that stores, retrieves, manipulates, transmits and receives digital data and how these various applications work with each other (Buhalis, 2003).

ICT are used in production and services provision, education, medicine, culture, state management or running a household, etc. They revolutionize almost every sphere of life, in particular tourism as an information-intensive industry. The development of ICT remains the basic reason for economic processes virtualization in tourism. The virtualization means transfer of economic activities to digital communication platforms. It can be defined as (Mowshowitz, 1999: 6–18):

- the use of network technologies, such as the Internet, extranet, and intranet (application of technology),
- the indication of a strategic role and importance of intangible resources in a company, especially information, knowledge and relationships,
- blurring of boundaries between a company and the environment (the collaborative aspect of virtualization).

In tourism market relations, financial settlings, customer service processes or even tourist products are subject to virtualization. ICTs and virtualization open new opportunities and challenges for the tourism enterprises. Nowadays success in tourism depends on ability to taking advantage of all opportunities offered by information and communication. In next part of paper the advantages and benefits resulting from the use of ICTs for tourism enterprises are presented.

Benefits of ICT for tourism enterprises

Unabated advances and innovation of ICT affect every tourism organization and stakeholder. This impact has been observed since the early 1960s, when first computer aided service booking system SABRE was installed by American Airlines. Since then many new ICT solutions have been emerged. As Buhalis suggests 'three main waves of technological developments established ITs in tourism enterprises, namely Computer Reservations Systems (CRSs) in the 1970s, Global Distribution Systems (GDSs0 in the 1980s and the Internet in the 1990s' (Buhalis, 1998:

409–423). Nowadays we should add the World Wide Web and its (r)evolution from Web1 to Web4[1] and wireless communication development.

The benefits resulting from ICT application in the travel and tourism sector have been proven by an extensive number of studies. Only during the period 2005 to 2007, Law, Leung, and Buhalis (2008: 599–623) accounted total number of 215 IT-related articles were published in 57 major tourism and hospitality journals. In last two decades many of the articles in this field were written by Buhalis in the cooperation with other authors. The most of researches predominantly focused on the impact of information and communication technology in travel distribution (e.g. Marcussen, 1999; Werthner, Klein, 1999; Buhalis, Molinaroli, 2003) and the using the Internet in searching for information and purchasing tourist services process (e.g. Buhalis, Main, 1998).

The key factor influencing tourism industry referring to ICTs is easy and direct access to information. Buhalis and Zoge (2007: 481–492) in their study conclude that rivalry has increased dramatically; bargaining power of both buyers (consumers) and suppliers (principals) has been strengthened due to their ability to communicate directly at the expense of the position of intermediaries. The advent of the Internet has diminished many of these asymmetries between larger and smaller actors through the simultaneous explosion of global customer reach as well as access to and sharing of rich information (Paraskevas, 2005).

The literature review let to identify many benefits of the use of ICT for tourism enterprises. The most important are:

- in the tourism sector, it is widely acknowledged that ICT have opened new pathways for relationships between the members of the distribution channels, and new management solutions that enhance these relationships (Berné, et al., 2015: 188–198), the intensity of information exchange among companies operating in the same distribution channel has led to greater efficiency, as increased information exchange highlights shared interests and common goals, which in turn facilitate collaboration (Spralls et al., 2011: 59–74),
- offering easy access, in real time, to data and information let 'to quick identification of consumer needs and in reaching potential clients with comprehensive, personalised and up-to-date information' (WTO, 1998) and forge new ways to satisfy consumer needs, as it allows for an "informatization" of the entire tourism value chain − resulting in numerous value-generating strategies, such: value extraction, value capture, value addition and value creation (Werthner, Ricci, 2004), possible owing to the Dynamic Packaging Tool, which extends customization ICT creates opportunities to design new tourist services and products meeting individual needs,
- enabling value co-creation (defined by Prahalad and Ramaswamy (2004: 5–14) as the 'joint creation of value by the company and customer'), ICT makes tourists more knowledgeable, demanding, empowered and active role in planning, designing and specifying of services and products, tourism companies can use consumer knowledge to create their offers on the one hand and shouldn't forget about tourists as a crucial part of tourist value chain on the other hand,

[1] Web is the largest transformable-information construct that its idea was introduced by Tim Burners-Lee in 1989 at first. Much progress has been made about the web and related technologies in the past two decades. Web 1.0 as a web of cognition, web 2.0 as a web of communication, web 3.0 as a web of co-operation and web 4.0 as a web of integration are introduced such as four generation of the web since the advent of the web (Aghaei et al., 2012: 1–10).

- providing the large range of information in short time ICTs contribute the higher tourist satisfaction and improve the tourist service performance and quality (e.g. Ashari et al., 2014),
- ICTs help tourist companies to gain competitive advantage owing to: an access to reliable and accurate information or to large size and global market, the larger market share, the building closer relationships with suppliers and customers, the maintaining price leadership in the market or/and the differentiating and improving their products (e.g Buhalis, 2003),
- enabling promotion and distribution tourist products direct to the consumers, reducing dependency on intermediaries (disintermediation) and sales commission paid for intermediaries and direct and nearly free of charge access to information, ICTs diminish transaction costs (seeking information, distribution, promotion cost) and make higher revenues are possible (e.g Buhalis, 1998),
- improving social inclusion for the tourists mobility (e.g. knowledge sharing about interesting places worth visiting, easy access, evaluation of accommodation facilities etc.),
- allowing for sales analysis aimed at monitoring the increasingly frequent changes in demand,
- speeding up management procedures and supporting efficient functioning of tourism enterprises,
- allowing for taking better advantage of the resources at the disposal of a tourist enterprise.

The above presented advantages of ICT application in tourism can be divided into the following groups:

- from the perspective of an entity – advantages for a tourism enterprise and a client,
- having considered the nature of advantages – economic and non-economic,
- based on the time horizon criterion.

In general the expansion of the use of information and communication technologies (ICT) in the tourism industry has created a more competitive environment, and they have become an indispensable element of business development (Berné et al., 2015: 188–198). Each tourism market player is affected by new information and communication technologies. ICT enables efficient co-operation within the industry and offers tools for globalization (Buhalis, 1998: 409–423).

Information and communication technologies offer a wide spectrum of solutions influencing the increased efficiency level of economic processes in the tourism sector.

It has been recognized increasingly often that business competitiveness means, among other things, its presence on the virtual market. Insufficient adoption of information and communication technologies is considered as a barrier in providing equal opportunities for commercial activities: people and businesses without access to the Internet and the related technologies are incapable of benefiting from e-services provided and could be gradually driven out of competition from global markets (Pimenidis et al., 2006 cited in Stiakakis, Georgiadis, 2011: 149–169).

The literature identifies several key barriers of ICT use in tourism industry. S. Duffy classified them into two groups: pull and push factors (inhibitors). The main pull barriers are: security concerns, seasonality, cost, lack of ICT applications for tourism enterprises, lack of capital, maintenance of hardware and software, personal background of owner/manager, lack of training and fear of technology. The main push factors identified are: perceived usefulness and ease of use of ICT, availability of internal expertise, support of owner/manager, organisational readiness, user participation, external pressure, positive use of external expertise.

The effects of ICT use by tourism enterprises – empirical research findings (the case of Lower Silesia entities)

Development of ICT has an undeniable impact on development possibilities of tourism enterprises, on a local scale, as well as globally. It is estimated that the world's 40% turnover in tourism sector results from the application of ICT techniques, which are most often associated with travel agencies' web sides or aggregators of these agencies offers which provide electronic transactions and online booking systems for hotels and airlines.

IAB Europe research indicated that in 2012 in the world approx. 75% of airline tickets sales occurred online. As many as over 13% of plane tickets purchased in Poland in 2013 were booked on-line. 42% of the Internet users choose to pay by means of electronic banking facilities, over 50% of Poles travelling by planes decide to invest in budget airlines, which can be booked only on-line. 40% of the Internet reservations are made outside the hours 10 a.m. – 6 p.m., 15% of on-line bookings are done on Saturdays and Sundays, every second ticket booked on the Internet can be issued completely automatically. The above information confirm the significant role played by ICTs with regard to activities performed by tourism enterprises and their extensive influence on such entities' functioning.

In the Raport PhoCusWright (2012) it is estimated that the value of tourism market in Poland has grown up to about 4 billion USD in 2013. Major part of this amount originates from selling the available offer by traditional distribution canals. However, the dynamics of on-line tourism services sales is extremely high. According to performed estimations Poles spent about 850 million PLN on purchasing tourism services via the Internet, including about 300–350 million PLN on airfares. It is estimated that in 2013 the value of tourism offer on-line sales amounted to over 1 billion PLN.

Analysis of using ICT by hotels and travel agencies has been based on authors own observations and on the results of quantitative research. The research was completed using medium standardized questionnaire technique. The studies have been conducted in 2014 on a group of 36 travel agencies and 61 hotels placed in Lower Silesia region. Respondents were asked to point out, in a scale from 1 to 10, the advantages of information and communication technologies use. The results have been shown in Table 1.

Table 1. Advantages from ICTs usage in the analyzed hotels and travel agencies

Specification	Assessment in the scale from 1 to 10, where 10 refers to very high and 1 very low			
	hotels	ranking	travel agencies	ranking
service quality improvement	8.2	1	6.2	8
Faster service	8.2	1	9.2	1
Increase in customer number	7.7	2	8.3	4
Higher customer satisfaction	7.6	3	7.5	5
Company image improvement	7.0	4	8.7	3
Business operating costs reduction	6.9	5	6.3	7
Higher income	6.7	6	9.1	2
New markets	5.9	7	7.0	6

Source: authors' compilation.

The majority of respondents agreed that ICTs have great impact on running a business in travel and tourism sector. They decided that, in the travel agencies, the process of using ICT is faster than in the other entities of tourism

industry. ICT in travel agencies mainly influence the speed of customer service, higher income, and company image improvement. According to respondents ICT in travel agencies has not got much to do with forming the quality of the product, its price, and business operating costs reduction.

By observing travel agencies activities it was found that, there are agencies which operate through the direct contact and trust with customers and they are resistant in deployment of new informational technologies (in some cases they don't even have a web sides). The other group of agencies builds its future based on ICT.

The respondents from hotels the primary advantages for ICT implementation in a company is associated with faster service and service quality improvement. The other highly rated advantages for ICT application are as follows: increase in customer number, higher customer satisfaction and company image improvement.

ICT access and their implementation possibilities encounter numerous barriers, among which the most important ones are the following: capital intensity of ICT solutions, the absence of sufficient financial means and adequate knowledge about them in the discussed enterprises, as well as the unavailability of trainings in this matter on the market.

The results indicate that the majority of interviewed hotels and travel agencies apply ICT, however, to a limited extent. The reasons for this are few basic barriers, among which the most important ones for both type of analyzed enterprises is the absence of sufficient financial means. Beyond this barrier hotel managers and owners mention also limited access to EU funds and lack of institution of innovation support for business. Whereas travel agencies noticed others obstacles, i.e.: the high borrowing rate, inadequate and insufficient knowledge for ICT implementation.

Conclusions

Tourism sector is particularly susceptible to the application of ICT tools. It also shows the fastest development and higher growth dynamics than in the entire economy. Online sales in tourism sector amounts to 40%, whereas the relevant level in the overall economy is 17%. In accordance with the data provided by the European Commission (2005), based on "e-Maturity Index", tourism represents the sixth sector (ranked after: IT services, transport, banking, chemical industry and business services), where ICT tools are most often used.

The conducted research indicates the differences in the observed advantages and barriers for ICT implementation by tourism enterprises, which may represent the effect of both the specific nature of performed activities and the offered product. For example, ICT for the improvement of services quality is considered the basic advantage in case of hospitality business, whereas for travel agencies it remains the least important advantage. Tourism intermediaries approach ICT as the means for increasing revenues which, however, is not pointed out by hoteliers. In spite of ICT importance, emphasized in the subject literature as the method for transaction costs reduction in running a business in tourism sector, the surveyed entrepreneurs (both hoteliers and representatives of travel agencies) do not perceive this advantage as crucial. An individual perception of ICT advantages dominates over the general outlook among the respondents.

In the opinion of the authors the identified barriers can be counteracted in various ways. One of them is initiating regional cooperation of tourism enterprises following the formula of a tourism cluster. Participation in such cluster allows diminishing the risk and cutting the costs of ICT implementation by many partners taking part in it, the diffusion of knowledge reducing information gap about ICT and easier fundraising, primarily from the European Union grants.

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