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SOME ASPECTS OF APPLYING MOBILE INFORMATION TECHNOLOGY IN TOURISM

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Abstract: The study focuses on the contribution of mobile information technology to the development of tourism in Bulgaria. It helps to improve the methods and mechanisms of collecting, processing, analysing, storing and using information. The emerging popular computer systems, video systems, teleconferencing systems and electronic systems have led to the complete automation and widespread use of electronic equipment in business. The application of mobile information technology facilitates accommodation and transport bookings, entertainment services, the purchase of tourist products, the availability of and accessibility to different types of tourism and destinations, as well as the tourism potential of countries and regions.

Keywords: mobile information technology, information systems, tourism in Bulgaria, types of modern tourism.

JEL: L81, L86, O31, O32.

Introduction

In the modern information society, information and communication technologies have entered our everyday life and are used not only in the professional sphere but also by consumers in their spare time. The latest

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trend in IT development is to make devices more portable, easily accessible, efficient and user-friendly. Compared to desktop systems, mobile devices provide a flexible way to access the Internet with equivalent functionality.

Tourism, as one of the fields where conveying information to consumers at the right time and place is of particular importance, is a good example of the introduction and use of mobile devices and technologies. Computer systems, teleconferencing systems, booking systems, video systems, information systems, telephone networks, mobile communication and electronic money transfer systems, well-known in the information society, have led to the complete automation and widespread use of computing equipment. Every year, modern mobile technologies evolve and allow tourism to become more and more attractive and accessible.

The aim of the article is to analyse the prerequisites as well as the possibilities of applying mobile information technologies in tourism. The most popular mobile information services and technologies contributing to the constant contact between places of interest and consumers have been studied. Trends and prospects in the development of mobile information technology in the tourism industry are identified as well.

The modern hospitality industry in Bulgaria requires more efficient management of the functioning information systems. Therefore, they have to be improved on the basis of the most up-to-date information and communication technologies. The increased use of mobile information technologies in tourism as a whole necessitates changes in the hospitality industry in particular. Mobile information technology is essential for the sustainable development of the tourism industry in the 21st century.

1. Nature of mobile information technology

Mobile information technology results from the convergence of information and telecommunication technology. While with e-business the access to a computer network is gained via desktop computers at any time of the day, with mobile business or, to be more precise, with mobile information technology users can access computers networks anytime and anywhere (the so called anytime and anywhere access). Mobile information technology makes it possible to perform transactions through mobile wireless communication networks, regardless of the geographical location of manufacturers, consumers and traders. According to **The Global Information Technology Report 2016**[2], information technology has advanced significantly in recent

[2] The Global Information Technology Report 2016 - https://goo.gl/3RiyqD

years, while mobile information technology has evolved to the highest level. Mobile devices include the following: mobile phones, hybrid phones, smartphones, personal digital assistants (PDAs, Palms) or pocket PCs, laptops, notebooks, tablet PCs, etc. According to statistics provided by Google Consumer Barometer[3], as of January 2015 there were 3,456,000 smartphones in Bulgaria (48% of the total population), i.e. a growth rate of 70%, as compared to 2014. The number of tablets generally used by whole families was 1,584,000 (22% of the total population). Compared to 2014, there was an increase in their use by 173%. A total number of over 5,040,000 mobile devices are currently in use in Bulgaria (Piero97, 2015).

Online booking and online customer targeting are becoming increasingly popular in Bulgaria. Bulgarian consumers contribute to online tourism by looking at booking suggestions and virtual maps of mountains, by using online payments, etc.

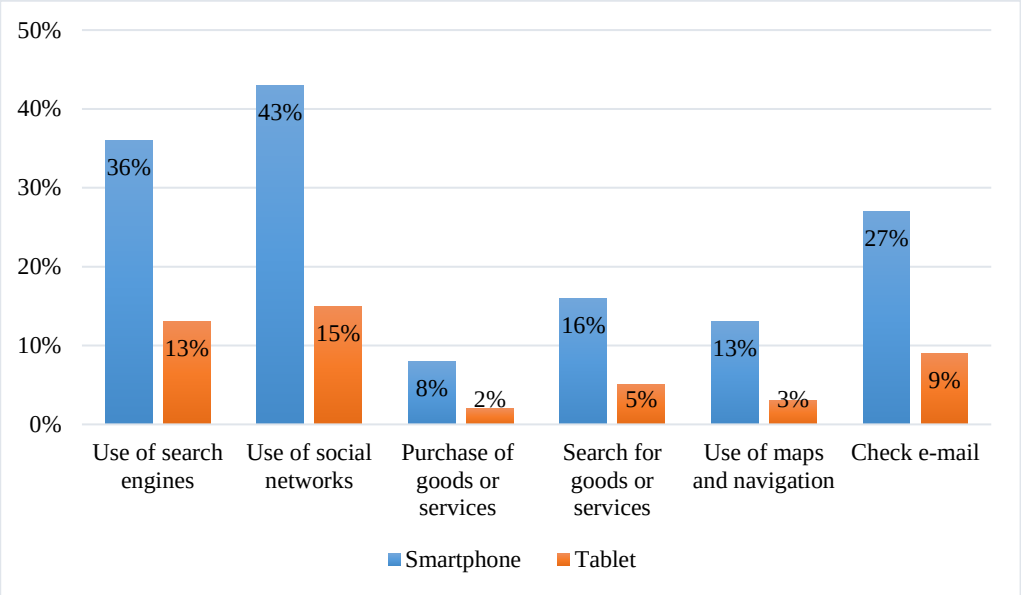

Figure 1. Use of mobile devices by consumers. 2015 statistics.

The global use of mobile devices reached 2.32 billion users worldwide in 2017, indicating an increase of 0.22 billion as compared to 2016. According to the online statistics portal www.statista.com[4], by the end of the second

[3] Statistics on mobile devices used in Bulgaria for the period up to January 2015 - http://url.itbg.eu/777255

[4] https://www.statista.com – a global statistics portal.

decade of the 21st century, the number of smartphone users worldwide is expected to exceed 2.87 billion (www.statista.com, 2014).

After country-by-country consideration, and according to the *use by the population* indicator, it is determined that the highest percentage of smartphone internet usage is in Indonesia – 90%. Mexico ranks second, followed by Brazil. It seems that the large-scale global use of mobile devices has led to a change in communication between consumers and traders. There is a decline in the provision of traditional services on a global scale, while the interest in mobile devices is rising steadily together with their use for connecting to the Internet, shopping and communication. As a result, mobile devices are becoming subject to constant observation and research and the number of transactions made through them is constantly increasing.

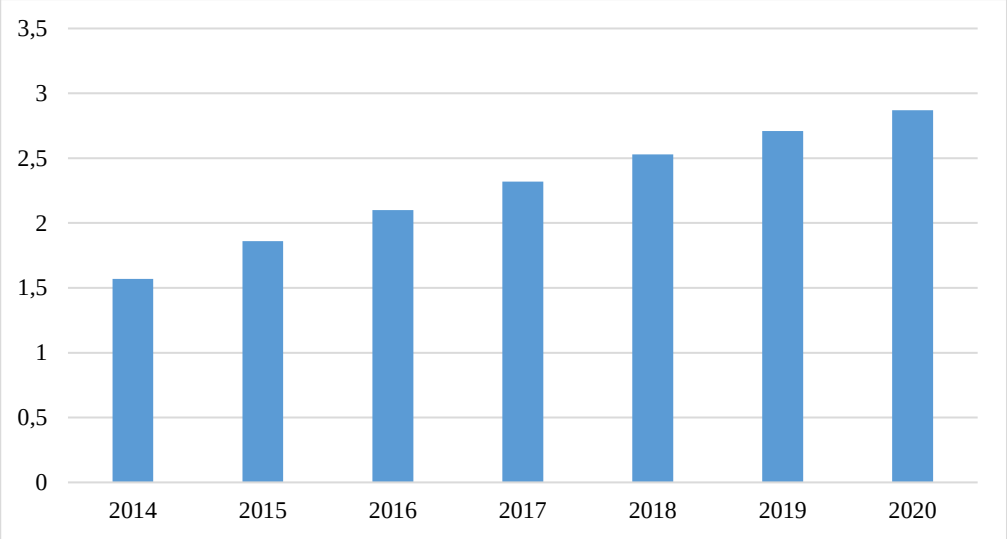

Figure 2. Number and forecast of smartphone users worldwide from 2014 to 2020

2. Popular mobile services in tourism

Companies offering tourist services use a wide range of information and communication technologies providing direct satellite coverage of international events and conducting business meetings by using mobile communication for teleconferencing. A wide range of videos are needed to find more information about venues and the attractive opportunities they offer. As a

result of mobile information technology, the reliability and quality of tourist services are increasing.

According to http://www.gartner.com[5], some of the most frequently used mobile services in tourism are:

- **Mobile payment** – payment via mobile phone applications. Tourist places of interest use applications of banks they work with, or universal ones such as PayPal, ePay and Skrill. All of them allow for incorporating connection into foreign applications.
- **QR code** – this is a specific two-dimensional barcode, recognizable by special QR barcode readers or mobile phone cameras. The barcode consists of black modules arranged in a square pattern on a white background. The information in it can be text, URL, or other. Currently, this technology is most commonly used in air transport. When booking and purchasing a ticket online, airlines send a QR code that is read at the airport when departing. Thus the system recognizes and prints passengers' boarding passes.
- **HTML5** – this web visualization language provides flexibility and convenience for its users. It helps travel agencies or places of interest to spread information on their services and characteristics into the virtual world.
- **Smart devices –** smartphones have become a personal network hub consisting of wearable devices such as body health sensors, smart jewellery, smart watches, display devices, and various sensors embedded in clothing and shoes. These gadgets communicate with mobile applications for providing information in new ways and generate a wide range of products and services in different sectors of the tourism industry.

Despite the tendency to develop slowly, modern technology in Bulgaria, introduction and use of mobile technology did not take a long time to become a fact. A great number of consumers find it convenient to use mobile technologies and their new modifications. Nowadays, this advantage affects to a large extent mobile businesses, and more specifically the area of mobile commerce.

Compared to e-commerce, mobile commerce has the following major advantages:

- **Global access –** users can perform transactions, regardless of their geographic location or time zone, because currencies are automatically converted;
- **Real-time service** – each service is performed at the time it is set or at a time interval specified by a contractor;

[5] http://www.gartner.com - Gartner, Inc. (NYSE: IT) is a research and consulting company, a global leader in information technology.

- **Security** – implemented by a special system called Secure Socket Layer (SSL). A technology which uses a SIM (Subscriber Identification Module) card for unambiguous owner authentication and provides a high level of security equivalent to a fixed Internet environment;
- **Convenience** – due to their compact size, mobile devices are always available with their rich functionality and easy-to-use interface;
- **Location** – the GPS (Global Positioning System) makes it possible to provide goods and services appropriate to the area and location of selected users;
- **Individuality** – consists of providing goods or services to users selected according to characteristics specified by them in a mobile portal or service.

3. Problems with using mobile technology in tourism

In recent years, the use of mobile devices has become common in places of interest worldwide. By enabling companies to keep their employees connected at any time, these devices allow people to work anywhere – at home, in the office or when travelling between different destinations.

The introduction of mobile devices can pose a significant risk to the overall security system of the tourism industry. Mobile devices can also be extremely vulnerable as they are susceptible to malicious attacks as well as to non-malicious internal threats.

The most common attacks on mobile technologies according to IDG News Service[6] (Slavov, 2017) are as follows:

- **Phishing attacks** – these are a common way of misusing customer data. A project implemented by the University of California, Berkeley, reviewed 100 mobile applications, including those for travel agencies written for Android, iPhone and Windows. After this initiative, testing has begun by applying over 15 methods that cybercriminals could use to write malicious programmes, stealing users' names and passwords from popular sites and their applications such as **Trivago.**[7]
- **Mask attack** – it uses the idea that hackers pretend to be particular clients and (via clients' IP addresses) start or continue a session with a server on their behalf by sending synchronization packets. Then a series of actions are performed to keep the status where the server is unaware of the masking.

[6] http://www.idg.bg – an organizer of the most prestigious forums and conferences focusing on applying information technology in all business segments of the economy.

[7] Trivago – an international tour booking company.

Although in most cases the hacker's computer cannot receive data from the server, it can send data to it, which is a serious potential threat. This accounts for over 27% of the attacks.

Undoubtedly, the use of mobile devices involves a great number of risks. In addition to the potential hazards listed above, there is also the possibility of technical attacks on mobile devices by using vulnerabilities in the communication layer. These attacks are carried out using remote access tools that can be installed/ incorporated in mobile devices thus gaining access to physical devices in order to recover information and data. In the majority of cases, these threats can be countered by a sound policy and judgment with the application and use of appropriate devices. Nevertheless, some threats require additional layers of protection that technical control and counter measures offer, such as encryption and third-party security software designed to counteract these threats.

4. Recommendations for the secure use of mobile technology in tourism

Having established the trend that mobile devices are becoming an extremely important tool for business operations, with regard to security it is essential for managers to consider how they can prevent and counteract the risks associated with these devices. With the introduction of new mobile devices and platforms, information security professionals need to update the existing mobile strategies or to develop new ones. Developing a mobile strategy will ensure that risks are properly accounted for and managed. Managers should consider information security issues as well as technology and management in creating a mobile strategy.

Some of the most important recommendations for a secure use of mobile technology **presented by http://www.safenet.bg**[8] (https://www.safenet.bg/, 2017) are as follows:

- **Mobile device protection** – to install and use antivirus and anti-spyware applications. They protect against viruses and unwanted applications. It is also important to ensure that the latest version of the applications is available and updated with the latest virus definitions. Due to the fact that new versions are constantly released, applications that are not updated may not detect and block them.
- **Enhance security when carrying out online transactions by using the scheme for additional identification and certificates** – any

[8] http://safenet.bg - Bulgarian Safer Internet Center.

system that is used on the Internet has additional protection methods such as an electronic certification system and additional legitimation methods, a second password or a secret answer to a question.

- **Use of secure payment methods** such as PayPal and purchase from traders registered in this system. In case of a problem with the merchant-dise, money is refunded to a certain amount, according to the region where customers are located. The Bulgarian version of PayPal is ePay. This system is reliable because the registration and a credit/debit card is subject to control and when shopping traders cannot gain access to its number and validator.

Conclusion

In conclusion, we can summarize that the mobile technology used in tourism integrates a number of services to offer its users easier access and save time and resources. They are constantly evolving and improving, and this trend will continue in the future. Technical innovations have helped mobile devices to be commonly used at workplaces. Most managers in tourism choose to use mobile information technology, often without taking into account the risk or business management implications associated with these devices. Losing, stealing, or infecting confidential data, malware that can affect not only a mobile device but also the corporate network as well as the way workers use devices are just some of the risks associated with this type of technology.

Managers in tourism who consider the use of mobile computing devices in their business should assess all the benefits that technologies can offer them, taking into account the additional risks. After being aware of the benefits and risks, it is desirable to use an effective management system to ensure that processes and behaviour are implemented and understood and appropriate levels of security are also applied to avoid loss of data. The boom in information technology and mobile technologies in particular, undoubtedly has positive and negative effects. It can be summarized that the widespread use of mobile information technologies solves the problem with the secure use of mobile technology in tourism, encouraging the tourism industry to expand and become even more accessible.

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