



DEVELOPING A “SMART VILLAGE” THROUGH THE IMPLEMENTATION OF MOBILE APPLICATIONS

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Abstract:

The future of rural tourism development has been shaped by the new wave of technological possibilities. The concept of smart village emerged as an innovative model that includes technology-based tourism experience in a rural area. This model has been established considering the advantages of mobile tourism applications, among the other technologies, designed to help tourists in decision making process when choosing a rural destination, and to augment their enjoyment during the stay. Hence, the subject of this paper is to determine the role of mobile applications in the development of rural tourism and to define the future direction of academic research related to smart villages and mobile-based tourism. The research is based on the secondary data analysis of various academic publications related to the rural tourism and information communication technology (ICT). Research results indicate that implementation of mobile applications in rural tourism has positive influence on the rural tourism development, thus creating valuable opportunities for service providers in this tourism niche. The significance of this study has been presented as a theoretical contribution to literature regarding the rural tourism, as well as the practical contribution to the process of creating the updated version of rural tourism destinations.

Keywords:

rural tourism, smart village, mobile tourism applications.

INTRODUCTION

In today's business conditions, under the influence of globalization, which is increasingly dictating changes in the tourism market, companies have been faced with a necessity to find new ways to respond to these dynamic shifts. In fact, the changes have been identified in relation to the rapid growth of modern ICT, without which it is practically unthinkable to remain competitive on erratic tourism market. Bosnić *et al.* (2018) pointed out that by taking the advantage of modern technological solutions and the Internet, approaching visitors on an individual basis and developing marketing offers that match their preferences, many tourism destinations have gained competitive advantages.

The world has entered the information age, and the rise of the digital economy is the primary trend (Voronkova, 2018). ICTs have given rise to opportunities for destinations, including rural tourism destinations, to improve their performances and processes (Buhalis, 2003), to meet

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the increasing need for impressive tourist experiences (Yovcheva *et al.*, 2013). The travel industry has been interested in using mobile technology to meet consumer expectations in order to fulfil the information needs of tourists on products and services before purchasing (Lee and Mills, 2010).

A picture of rural tourist in the countryside with a folded map, binoculars and a watch has been replaced with its opposite. Modern rural tourist now carries a mobile phone on which he/she could see basic information regarding current time and location, but also additional information related to a certain rural tourism destination. In this manner, tourists can gather information about accommodation, restaurants, transport, local culture and manifestations organized in rural tourism area where they intend to spend their holiday. They have even a possibility to pay for the provided services through smartphones, making their experience during travel in rural area exceptional. Although Murphy *et al.* (2016) found that tourists tend to book holiday on their personal computers, smartphones were shown to be a key tool in the search process. In this manner, mobile phones have become tourist guides, which allow the rural tourist to customize itineraries and have access to a large amount of information regarding rural tourism offer in the certain area. From researching historical and cultural information to participating in events and activities they never knew existed, while being able to receive those information in motion, mobile devices changed the rural tourism experience (Gallouj and Leroux, 2011).

In recent years, an important growth has been noted in the use of mobile devices, such as hand-phones, personal digital assistants and handheld computers (Jupiter, 2008). Having this in mind, the paper is based on two hypotheses:

1. Implementation of mobile applications in rural tourism has positive influence on the rural tourism development.
2. Implementation of mobile applications and virtual tours in rural tourism has created valuable opportunities for service providers in this tourism niche.

According to Lazarević-Moravčević and Lazić (2021), changes in habits and consumers, imposed the need for alternative ways of market communication, primarily through mobile technologies. Thus, the subject of this paper is to determine opportunities for mobile technology (mobile applications and virtual tours) implementation in rural tourism. Tourism has been heavily reliant on mobile applications and tourists can associate directly with service providers and vice versa, which represents an opportunity to modernize the way of service promotion and distribution (Mišković, 2013), while Eriksson (2002) pointed out that mobile technology has not only increased the reach of wired networks but also provided travellers with new opportunities as an alternative information channel. On the other hand, mobile technologies have altered the manner in which certain activities involving information are carried out.

LITERATURE REVIEW

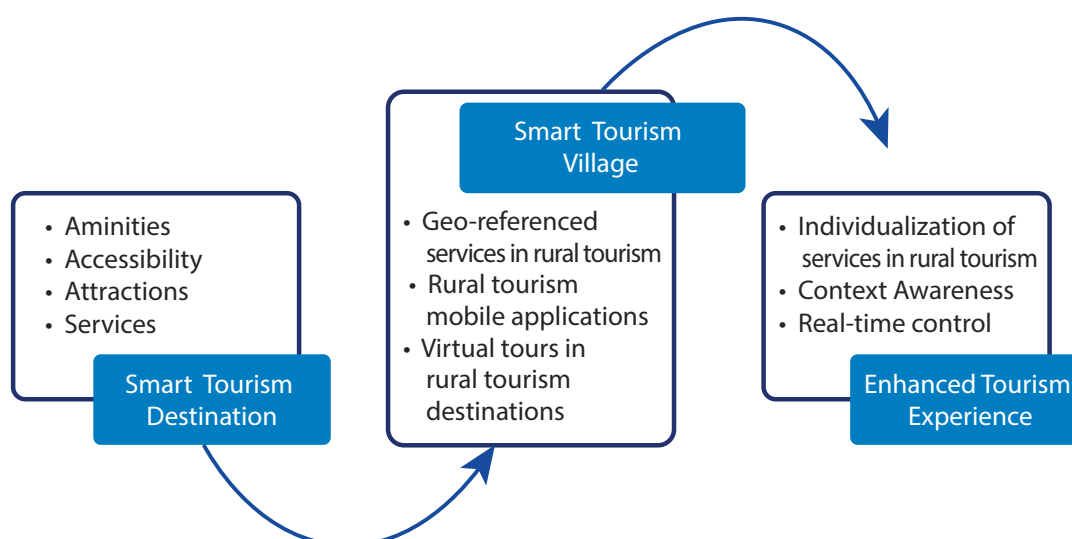
Rural tourism development based on information technology (IT) has been discussed thoroughly in various research papers, regarding the changes in rural tourism offer under the influence of IT (Pena and Jamilena, 2010; Ruiz-Molina *et al.*, 2010; Polo Pena *et al.*, 2011; Polo Pena *et al.*, 2013; Simkova, 2013; Evans and Parravicini, 2005; Kumar, 2020; Zhu and Shang, 2021), the IT-based sustainable development of rural tourism (Mitchell and Hall, 2005; Andreopoulou *et al.*, 2014), the promotion of rural tourism services through IT channels (Clarke, 2005; Bethapudi, 2015), as well as the IT acceptance by rural residents (Gan *et al.*, 2016; Zhu *et al.*, 2021). However, the specific analysis of mobile technology usage in rural tourism has been done rarely (Kim *et al.*, 2012; Kazmina *et al.*, 2021; Wang, 2021).

Along with the growth and development of tourism, new markets and special forms of tourism have been emerging, including rural tourism. Rural tourism has played a key role in raising the living standard of rural communities and their economic development. European trends in the last few decades indicated that Europe is the world leader in the offer of rural tourism, and that it will remain so for a long time (Živković and Mihajlović, 2010). The future of rural tourism development has been conditioned with the implementation of IT, in spite of the resistance by service providers and local residents. Given that most often the first contact of tourists with the destination is electronic, the e-experience represents a significant link in the chain of value creation and expected quality for tourists. The concept of smart village has been proposed in this paper, considering the importance of e-experience for modern rural tourists.



Smart tourism villages could be defined as “intelligent, sustainable, and competitive rural tourism destinations using data-linked resources, such as geo-referenced data, large data, and the Internet of Things” (UNWTO, 2017), where “the investments in human social capital and modern ICT structure meet the social, cultural, economic, leisure and personal needs of visitors” (Lamsfus and Alzua-Sorzabal, 2013, pp. 19). While developing and implementing the concept of smart village, it is crucial to create a smart experience for tourists. Buhalis and Amaranggana (2013) explained smart experience as technology-mediated experience, amplified by individualization, contextual awareness and real-time observation, while providing new and improved services to rural tourists (Schaffers *et al.*, 2011). Hence, the main objective of smart tourism village should be to create smart experience for rural tourists and improve service quality (Huang *et al.*, 2012), as presented in the model of Buhalis and Amaranggana (2015) shown in Fig. 1.

Figure 1. Enhancing tourism experience through creation of smart tourism village



Source: Buhalis, D., Amaranggana, A. (2015), modified by Authors

In today’s business world, mobile technologies have become an essential component (Car *et al.*, 2014). A mobile application is defined as “a program, which is installed on a particular platform with a specific function which allows to comply different actions” (Ekaterina *et al.*, 2016, pp. 616). The market for mobile applications, one of the fastest-growing media sources in the history of consumer technology, is being driven by the increasing use of smartphones (Newark-French, 2011). This is confirmed by the data related to the smartphone penetration in Europe, which has hit 77.64% and is projected to reach 84% until 2025 (Degenhard, 2021). Taking the smartphone and making a call to tourism organizations or agencies has become a new normal for tourists. Hence, smartphones have become essential for tourists, tourism marketers, and network partners (Wang *et al.*, 2012).

METHODOLOGY

Desk method was conducted for the purposes of the research paper, including the collection and interpretation of secondary data sources. The research is based on data analysis of various academic publications related to the rural tourism and information communication technology (ICT).

Considering the previously mentioned, the paper comprises the presentation of obtained data into two parts:

1. Analysis of the smart village concept implementation in rural areas;
2. The usage of mobile applications and virtual tours in rural tourism areas, their role in creating the smart village and achieving a high level of rural tourist satisfaction;



RESULTS AND DISCUSSION

Rural tourism has been presented as the balance between fast urban life and calm nature, with opportunities for relaxation and entertainment in rural area and various services imbued with hospitality of rural residents. However, the demand in rural tourism for mobile applications and virtual tours displayed on smartphones has been growing, and complex nature of modern tourists' needs conditioned rural tourism destinations to change their market approach. Thus, in order to preserve the distinctive characteristics of rural tourism and remain competitive on tourism market on the other hand, rural tourism destinations have been offering services mediated through mobile technologies.

The “new normal” rural tourism offer could be based on the usage of mobile virtual tours and mobile applications, enabling the realization of “smart village” concept. Research results confirmed the primary hypothesis which indicated that implementation of mobile applications in rural tourism has positive influence on the rural tourism development, having in mind that application of customized mobile applications and virtual tours has resulted in higher satisfaction of rural tourists with services in rural tourism. On the other hand, valuable opportunities for service providers in rural destinations were noticed, including reduction of negative aspects caused by intangibility of services, positive e-WOM communication and possibilities for employee training and better work performance.

Digital transformation of rural tourism destinations could be realized through the implementation of virtual tours (Roblek *et al.*, 2021) and mobile applications (Lim *et al.*, 2015; Kazmina *et al.*, 2021; Martin *et al.*, 2022). Entering the new century, mobile applications and virtual tours have played a key role in the growth of rural tourism and the promotion of rural areas. In this manner, rural tourists could obtain a wide range of information while planning the vacation to rural destination and have customized offers in the form of images or video footage. Having this in mind, it is essential to accentuate the necessity for development of mobile technology in rural tourism areas, and ensure that the basic conditions for mobile technology implementation (signal and Wi-Fi availability, virtual tour guides etc.) have been fulfilled.

Tourists invest a large amount of time searching the Internet during the process of vacation planning in order to visit a rural destination (Ceh-Varela, and Hernandez-Chan, 2015). The process of information searching and activity planning has been facilitated through the use of Internet, particularly through the use of mobile applications (Smirnov *et al.*, 2013). The ubiquity and ease of use of mobile devices, among other unique features, make their use as electronic tourist guides particularly appealing (Varshney, 2003). On the other hand, large amount of online information could be overwhelming and negatively influence their tourism experience during the stay. Offering people information, goods and other services based on their requirements, individualized information and personal interests is one way to combat the issue of information overload (Bi *et al.*, 2022). Thus, customization of mobile application services and promotions is necessary in order to satisfy the heterogeneous needs of modern rural tourists.

The suggestions related to accommodation, restaurants, events etc. in a rural destination could be given to the user by displaying the content's title or image through the mobile application. If the suggestion is accepted, the user will make a request for the wanted suggestion. If the tourist rejects the recommendation, another suggestion will be automatically presented (Liu and Yang, 2019). According to Huang and Benyoucef (2022) tailored recommendations may be given to fulfil the various demands of tourists in which diversified, personalized and differentiated tourism goods should be offered to meet their needs. On the other hand, these information could be used for more precise segmentation of tourism market, having in mind specific requests tourists made through the mobile application. In addition, Aliperti and Cruz (2020) suggest the “try-before-you-download” technique in order to present the app possibilities to the rural tourists before they buy it or download it free of charge. This strategy could assist in gathering facts and ideas to enhance mobile applications of rural tourism destinations and create appropriate image and reputation, supported by positive e-WOM.

Intangibility of rural tourism offer has made it open to digitalization, thus creating a strong base for smartphone implementation in its promotion and distribution. Turkmendag (2022) pointed out that one of the biggest benefits of mobile-based rural tourism is that tourist can exchange information with other potential tourists or those who have already visited the rural destination. This type of online communication defined as e-WOM (*Electronic Word-of-Mouth*) communication has been quite an essential part in the process of analysing



the level of tourists' satisfaction by tourism companies. Henning-Thurau *et al.* (2004) explained e-WOM communication as "any positive or negative statement made by potential, actual, or former customers about a product or company, which is made available to a multitude of people and institutions via the Internet" (pp. 39). Thus, the implementation of mobile technologies has created a large number of opportunities and challenges in rural tourism, where e-WOM has a strong impact (Buhalis and Law, 2008). Hence, many tourism and hospitality companies offer free Wi-Fi connectivity to encourage the use of mobile devices (Delaplace, 2016).

One of the opportunities for improvement using mobile technology was researched by Kim and Kizildag (2011), who looked into possibilities to train hotel staff by adopting mobile devices. They concluded that m-learning (*Mobile Learning*) could increase the effectiveness of employee training and overcome the boundaries of conventional education methods. Jeong *et al.* (2016) have also investigated the implications of mobile technology implementation at work on hotel employees' perceptions. While previous research mentioned above was focused on employee training, they focused on the analysis of effects mobile technologies have on employees' self-efficacy and job performance. The research confirmed that employees were perceiving higher job satisfaction and commitment to the company in which they worked after implementing mobile devices in different job operations. Hence, mobile technology could be beneficial for tourism and hospitality companies both from organizational and promotional viewpoint.

Implementation of mobile technologies in rural tourism could be additionally accomplished by organizing virtual tours, which could be particularly interesting for rural tourists. Pakurar and Olah (2008) defined virtual tourism as "a tourism product, which approach accentuates the importance of supply management and marketing activities" (pp. 777). According to Osman *et al.*, (2009) a virtual tour is described as "a simulation of an existing location that is composed of a sequence of video images" (pp. 173).

Virtual tours have played a particularly important role in the development of tourism and the promotion of rural destinations. In rural areas, it has been very important to create mobile tourism applications, through which self-guided rural tourists could visit and discover rural areas with tourist potential but no organized tourist routes (Kazmina *et al.*, 2021). In addition, virtual tourism could fulfil cultural, educational and recreational functions of rural tourism destinations (Cherevichko, 2004). De Luca *et al.*, (2022) pointed out that virtual tours have become progressively attractive for rural tourists, who are exposed to innovative and personalized experiences. During these tours, rural tourists could be provided with a choice of theme routes, recommended according to their particular needs and previous travel experience. Additionally, virtual tours displayed on the smartphone are available for every rural tourist who is interested, anytime and anywhere (Li *et al.*, 2020).

CONCLUSION

Jiang *et al.* (2021) predicted explosive growth of mobile traffic until 2030, while pointing out its exponential contribution as the "extension from the real world to the virtual world" (pp. 141). Having in mind that the sixth generation mobile communication system (6G) has been developed in the recent years (Zhang *et al.*, 2019), it is necessary for service providers in rural tourism to follow these trends. The necessity to develop a smart village has been based on the need to satisfy growing requests tourists have towards rural tourism and hospitality companies.

The future of rural tourism based on the development of mobile technologies should be focused on effective planning, while considering available tourist information and their growing needs (Duncombe, 2016). Improving the rural tourism offer should be a priority, including the development of services available through mobile tourism applications and monitoring of tourists' satisfaction with those services, in order to ensure sustainable expansion of rural tourism resources (Hew *et al.*, 2016). Thus, sustainable tourism development should be taken into consideration to amplify positive effects of mobile technology implementation.



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