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## RESEARCH ARTICLE

## Tourism in Rural Areas and Information and Communications Technology

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### Abstract

Agriculture has a significant impact on a global scale, shaping economies, societies, affecting the environment, and is the primary source of food, income, and livelihood for a large portion of the world's population. Agriculture also contributes to global trade providing food and raw materials for industries worldwide. Moreover, it affects the population in rural areas not only by providing employment but also promoting cultural heritage and enhancing social interactions. Agritourism or tourism in rural areas has been promoted, and is until today, as a means of boosting rural economies, encouraging the diversification of economic activity, promoting local products and SMEs, ultimately improving the quality of life in rural areas, and avoiding depopulation. Today, digital transformation in agriculture and rural areas is a global policy priority. In this paper, applications of Information and Communications Technologies (ICT) in tourism in rural areas and current trends are explored.

**Keywords:** Agritourism, Agricultural Tourism, Tourism in Rural Areas, ICT, Technology

### Introduction

According to the United Nations, as of 2022 the world's population has reached 8.0 billion, more than three times larger than it was in the mid-twentieth century (United Nations a,b). According to FAO, IFAD, UNICEF, WFP, and WHO (2021), it is estimated that between 720 and 811 million people in the world faced hunger in 2020; 161 million more than in 2019. In addition, nearly 2.37 billion people did not have access to adequate food in 2020; 320 million more than in 2019.

According to the World Bank (2019) agricultural development is one of the most powerful tools for ending extreme poverty, increasing shared prosperity, and feeding the 9.7 billion people expected by 2050. Agriculture is also critical to economic growth, accounting for 4% of the global GDP and for more than 25% of the GDP in some least-developed countries. Moreover, the agricultural sector affects rural areas and rural populations, and is a major source of employment for rural residents, not only for those directly involved in agricultural production but also for those involved in related fields. It should

be noted that the effect of agriculture in rural areas is diverse. Agriculture produces non-commodity outputs or services. These include environmental, social and cultural benefits such as traditional heritage and cultural traditions. For example, a well-established agricultural sector enhances social interaction among the rural population during various agricultural processes (Hong Linh et al., 2019).

Today, digital transformation in agriculture and rural areas is a global policy priority (Biró & Csete, 2022; Qin et al., 2022a; Xu et al., 2022). It is expected that digital technologies will be one of the new strategic solutions for the development of agriculture, having the ability to increase the scale, efficiency and effectiveness of agricultural production. The Food and Agriculture Organization (FAO) of the United Nations calls this role the "Digital Agricultural Revolution", while other sources characterize it as "Agriculture 4.0" (Araújo et al., 2021; Liu et al., 2021).

In the European Union the Common Agricultural Policy (CAP) promotes the vibrancy and economic viability of rural areas through funding and rural development actions. Rural development is the "second pillar" of the CAP, reinforcing the "first pillar" of income support and market measures by strengthening rural areas' social, environmental, and economic sustainability. It should be noted that €387 billion in funding will be allocated to the CAP for the 2021-27 period and one of the main aims, going forward should, be to enhance market orientation and increase farm competitiveness both in the short and long term, including a greater focus on research, technology, and digitalization (European Commission, n.d.).

New digital technologies offer new opportunities to accelerate agricultural economic transformation, help make agricultural production more efficient and profitable (UN Department of Economic and Social Affairs, 2021). Within this context, digital technologies are often seen as an opportunity to achieve a sustainable future in agriculture and rural areas (Rijswijk et al., 2021). According to the United Nations' Department of Economic and Social Affairs (2021), the improvement in agricultural productivity alone is not sufficient for successful rural transformation. Strong links between sectors are required to transfer agricultural gains into demand for labor, inputs, and services in non-farm activities. As rural economies thrive, this process should encourage investment, entrepreneurship, and job growth in the non-farm economy. In addition to empowering individual farmers, digital technology offers enormous potential to improve the sustainability and efficiency of the entire economic ecosystem. This is crucial for the non-agricultural sector, which includes self-employment, tourism, manufacturing, construction and other non-agricultural value chain activities such as agro-processing, transport, distribution, marketing and retail (Independent Evaluation Group, World Bank, 2016).

## Agritourism

One of the largest industries in the world is tourism, and there are various forms of alternative tourism, such as medical tourism, ecotourism, and agricultural tourism. Agricultural tourism, often referred to as agri-tourism or tourism in rural areas is considered one of the most significant pillars of the EU economy (Kamariotou and Kitsios, 2022) and has long been considered a means of, amongst others boosting rural economies, encouraging the diversification of economic activity, promoting local products and SMEs, ultimately improving the quality of life in rural areas and avoiding depopulation (Diareme and Tsiligrides, 2018b).

Definitions of agritourism vary in the literature. The discrepancies between the different definitions relate to the type of setting (eg. farm), the authenticity of the agricultural facility or the experience and the types of activities (eg. accommodation or education) (Dionysopoulou, 2021), as well as local policies and legislation. These variations lead to substantial differences that concern whether to include in an agritourism plan non-working farms or only working farms, other agricultural production settings, or other points, such as businesses that sell agricultural products. Moreover, it has also been proposed to add the dimension of travel to the definition of agritourism (Arroyo, Barbieri, & Rich, 2013). Many, if not all, definitions of agritourism do not refer to the need for travel in rural areas. However, according to Dionysopoulou (2021) “some of them may imply some sort of travel when mainly referring to farm-stays or entailing any type of accommodations”. At the same time, there is also a difference in the categorization of the concepts of rural tourism, tourism in rural areas, pure agrotourism, ecotourism, etc. For example, the terms agritourism or tourism in rural areas may be used as synonymous terms, or agritourism may be a subset of tourism in rural areas (Colton & Bissix, 2005).

Although no standard definition exists (Grillini et.al., 2022) agritourism is closely connected with pluriactivity and multi-functionality, especially in the EU. It has been actively promoted through the CAP, since the 1990s, as a means to diversify economic activities in rural areas (Koutsouris et al., 2014) and promoted as beneficial for rural and less favored areas Daugstad & Kirchengast, 2013.

The term multi-functionality refers to the multi-functional aspect of agricultural areas when taking into consideration also social and other economic aspects. Agriculture, in addition to physical commodities, produces non-commodity outcomes or services such as landscape beauty and environmental externalities, social and cultural benefits which include traditional heritage and cultural customs (Ciolac et.al, 2019). It should be mentioned that Song, Robinson and Bardsley (2020) recognize four distinct types of valuation of modern multifunctional agriculture, those are economic, biophysical, socio-cultural, and holistic.

Although agritourism has been criticized, during the past years, whether or not it has had any true positive effects on rural areas, lately we see a growing interest not only in the EU but in other areas as well (Diareme and Tsiligrirides, 2018b). Scientific works of the past years (Eusébio et al., 2017; Hüller et al., 2017; Zasada et al., 2017) emphasised the interest in agricultural tourism and the value of providing various rural tourism goods to various demographic groups. Kamariotou and Kitsios (2022) state that in Greece, the contribution of agritourism to economic growth has increased during the last decade.

According to Roman, Roman and Prus (2020) and Garau (2015) innovation in agritourism lies in the assumption that visitors who choose to vacation in rural regions look for accommodations that will both meet their standards and pleasantly surprise them with originality. Under this notion, agritourism can be innovative by creating an original tourist product from inception (such as a theme town using an intriguing, original concept) as well as by creating a professional marketing setting that highlights the natural and cultural features of a specific region, for example, organising the services and tourism infrastructure around the structures of material culture and their promotion. In addition, innovative solutions may include the improvement and differentiation of products already offered and increase the average length of tourist stay.

### **ICT in Tourism in Rural Areas**

According to UNESCO, the term ICT refers to various technological elements and solutions, which are used for the creation, transmission, storage, sharing, and exchange of information (Demestichas and Daskalakis, 2020). Investment in technological research is imperative to stimulate the development of sustainable solutions for the agricultural sector Araújo et al., 2021 and agritourism is part of this sector. Applications of technology in agritourism have not been studied systematically and until 2020 no papers could be located that describe digital technologies in agritourism (Tanina, Konyshchev and Tsahaeva, 2020). When exploring such applications one can draw from the examples presented in various domains of tourism in rural areas.

One of the areas of application is online tourism platforms, booking systems, and platforms that enable the online review of products in scenic spots and are already an important basis for tourism, not only in rural areas, consumption decisions (Chen, 2021), can facilitate tourists and even increase the average length of tourist stay. In addition, under the umbrella of ICT are included all network infrastructure that make telecommunication in rural areas possible, permit virtual communication, and improve access to services, farm management, and decision-making.

An area that has gained popularity is agricultural touring which refers to providing personalised thematic tours in rural areas with a dual objective. Firstly, adding value to agricultural tourism, and secondly dealing with the real needs of the tourists (Diareme & Tsiligiridis, 2018a). Recent scientific literature strengthens the importance of offering different rural tourism products to different population groups. The need for fast satisfaction of tourists-consumer's needs and offer of accurate, timely and personalised information has been also pointed out for many years, by the United Nations World Tourism Organization, as a key to success along with the use of technology and interactive services (Diareme & Tsiligiridis, 2018b). It should be noted that the literature indicates a lack of destination management and destination marketing organizations specifically established for rural tourism destinations; personalized tour planning systems, and applications could help bridge this gap. Big Data and Artificial Intelligence can help formulate sound marketing strategies for tourism in rural areas (Xie & He, 2022). In order to assist the trip planning process and generate tourist routes based on a personal profile and preferences personalized electronic tourist guides have been developed (Vansteenwegen and Gunawan, 2019) for tourism in urban areas and rural areas as well. Today, we are starting to see cases that take under consideration also data from social networks in order to provide personalised tour recommendations, and not only.

Currently, a substantial body of research focuses on analysing big volume of opinionative text data from various Internet sources (User Generated Content, UGC) using sentiment analysis to gain valuable insights (Diareme et al., 2022). Sentiment Analysis is a computational method aiming to extract opinions/evaluations of individuals for an entity such as a product or a service (Liapakis et al., 2020). Those opinions can generate insights that can reveal tourism trends as well as customer satisfaction and complaints, locate points of interest that could be recommended to tourists during their vacations in rural areas (Karampela et al., 2019), identify the determinants of agritourists' experience (Chittiprolu et al., 2020), determine key elements for the success of thematic tours, for example, wine tours (Barbierato et al., 2022), evaluate the points of strength and weakness of agritourism packages, and, as already mentioned, define effective marketing strategies (Xie & He, 2022).

It should be noted that the spread of the COVID-19 global pandemic generated an extraordinary volume of data, thus the term 'infodemic' has been used, e.g. individuals frequently expressed their views, opinions, and emotions about the events of the pandemic on social media (Diareme et al., 2022). There is a need to manage and monitor these data to obtain relevant information (Piccarozzi & Aquilani, 2022) as well as to manage the changing needs of many economic sectors. The COVID-19 pandemic has caused significant challenges for the tourism industry, including rural tourism. While it was initially believed that the pandemic would encourage growth in rural tourism due to its links to

open-air healthy activities, this optimism has faded. Many farm-related tourism businesses have returned to farming or retired due to the pandemic's impact. The challenge could be to rebuild rural tourism and increase business confidence to return to pre-pandemic levels. However, what does seem likely is that tourists could return to the same types of tourism as they took before unless there are fashionable, fulfilling, and affordable alternatives readily available to them (Lane et al., 2022). Under this concept, the impact of the COVID-19 pandemic on agritourism was studied (Silva, 2022) in the international literature as well as tourist route optimization in times of Covid-19 and post-Covid-19, for example how to create specific or alternative routes inside a destination, to reduce the risk of spreading the virus, while positively contributing to the local economy (Păcurar et al., 2021).

## Conclusion

Tourism in rural areas is a significant pillar of the economy, is a means of boosting rural economies, promoting local products and SMEs, and ultimately improving the quality of life in rural areas. Agritourism is closely connected with pluriactivity and multi-functionality, especially in the EU, and has been actively promoted through the CAP since the 1990s. It is denoted that investment in technological research is imperative to stimulate the development of sustainable solutions for the agricultural sector and as such agritourism is also affected. Moreover, digital technologies can also improve the position of farmers in the value chain by offering new opportunities for market access, supply chain management, and precision agriculture.

Digital technologies are rapidly transforming the tourism industry, offering new opportunities for rural areas to attract visitors and boost local economies. As highlighted by Chen (2021), increasing efforts to improve tourism-supporting facilities in scenic spots can help enhance the overall tourism experience and attract more visitors to rural areas. Many attractions in the countryside can be made accessible and be better presented and interpreted to make them more interesting, fashionable, rewarding, and exciting (Lane et al., 2022). To fully leverage the benefits of digital technologies in rural tourism, it is important to consider the needs of local communities and envision the digital future of a rural area or village. This involves identifying the unique features of the local landscape, cultural heritage, and agricultural practices that can be leveraged to create new tourism products and experiences. Taking into account the multifunctionality of the agricultural sector tourism in rural areas or agritourism can be considered to have a dual objective. First, create added value for rural areas and second, address the real needs of tourists (Diareme & Tsiligiridis, 2018a, 2018b). Therefore, the concept of travel should be included in a holistic approach of tourism in rural areas. Current technological trends and user needs should also be taken into account. Under this prism agritourism



should refer to the provision of personalized routs in rural areas in a way that includes SMEs related to the production of agricultural products, the promotion of the natural beauty of a place and cultural heritage, and which will address the real needs of tourists.

Currently, a substantial body of research focuses on analysing UGS using sentiment analysis to gain insights related to agritourism, and to provide personalised agritouring routes. A crucial issue related to the adoption of digital technologies and the use of Big Data is the potential bias in data sets and algorithms, which could perpetuate social prejudices and reinforce inequalities. As noted by Efthymiou et al. (2020), it is essential to address the bias in data sets used in machine learning systems to ensure that they are representative of diverse perspectives and backgrounds. This requires addressing issues such as the ownership of data, data anonymization, and the westernization of data.

From AI and robotics to IoT and 5G, the latest technologies can offer invaluable support for farmers and agribusinesses, helping them to optimize resource utilization and manage field operations more efficiently (Utamima & Djunaidy, 2021). It is important to recognize that the adoption of digital technologies can create a digital divide between those with access to cutting-edge technologies and those without. This divide could manifest itself in several ways, such as between connected and disconnected farms and between small and large agricultural operations. To ensure that digitalization is inclusive and accessible for all, policymakers, industry leaders, and technology providers should work together to promote the benefits of digitalization and support farmers with training, resources, and incentives to adopt new technologies.

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