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THE IMPACT OF NEW TECHNOLOGIES IN NATIONAL AND INTERNATIONAL TOURISM

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SUMMARY



Tourism is a key sector in the world economy. According to the World Tourism Organization, international tourist arrivals increased by 102% in 2022 compared to 2021, but remained 37% below the level of 2019. The market size of the global tourism sector increased by approximately 41% in 2022 compared to the previous year, after which decreased dramatically with the onset of the COVID-19 pandemic. Despite strong growth, the market size remained below pre-pandemic levels, totaling approximately \$2 trillion in 2022. According to forecasts, the market size is expected to grow to approximately \$2.29 trillion in 2023, surpassing the peak recorded in 2019.

Over the years, the tourism sector has consistently proven its resilience and ability to not only recover but also contribute to economic and social recovery. The COVID-19 pandemic, with the uncertainty it has created in terms of travel bans and health obligations, has been the toughest test for the future of tourism.

Recent crises have had and continue to have a major impact on the tourism ecosystem: on the one hand, the COVID-19 pandemic, which led to significant losses of income, jobs and personnel; on the other hand, the war in Ukraine, with its economic, political and humanitarian effects, with a negative impact on tourism as well.

Tourism and technological advancement have an interconnected relationship, as technological advancements have revolutionized the travel industry and transformed the way people plan, book and experience travel.

In recent decades, the tourism industry has seen a significant transformation due to the emergence of various technological innovations such as online booking platforms, social networks, mobile applications and augmented and virtual reality. These innovations have facilitated access to destination information, simplified the travel booking process, and provided unique and personalized experiences for travelers.

Online booking platforms such as Expedia, Booking.com and Airbnb have eliminated the need for intermediaries and allowed tourists to compare and choose from a wide range of accommodation, transport and activities. Social networks Facebook and Instagram have created a global community of travelers where they can share experiences, tips and recommendations with other travel enthusiasts, and mobile apps have turned smartphones into portable travel guides.

In recent years, the technological progress has irreversibly transformed the tourism industry, leading to the emergence of eTourism, a subfield of Tourism that involves the use of electronic and digital technologies. Among various technological innovations that have revolutionized eTourism, Artificial Intelligence stands out as one of the most promising technologies with the potential to further transform this sector. Its integration in eTourism has opened new opportunities for companies to improve the quality of their services, experiences and, at the same time, to increase profitability. AI-based chatbots, recommendation engines, personalized travel itineraries and real-time translation services are just a few examples of AI applications in eTourism, which are already transforming the industry. However, their use in eTourism is still in its early and exploratory stages when it comes to their applications, implications, and potential challenges.

The motivation to research this topic has several aspects in mind. First of all, the object of the research is a phenomenon that appeared recently and is in continuous development, studies in this direction being insufficient. Secondly, this topic is of particular importance in the current context of society, given the impact that technological developments can have on everyone. Thirdly, the characteristics that must be taken into account by those active in

the tourism sector can be highlighted, which is essential to avoid unwanted consequences in the future. Research can also provide a better understanding of tourist behavior and preferences, which can help develop more effective and personalized marketing strategies. In addition, the research can contribute to the identification of new opportunities for the development of sustainable tourism, bringing long-term economic and social benefits. Therefore, the motivation for this scientific approach is obvious and necessary to ensure responsible and sustainable tourism in the future.

In regards to the current results in the field, both from a practical and theoretical perspective in the context of globalization, technological progress and the current changes, the scientific research in the field shall keep up with the current trends, thus the negative impact of these changes would be easier to mitigate and the adaptation would happen much faster.

The doctoral thesis, entitled "Impact of new technologies in national and international tourism" has as its main objective the analysis of the impact of technological developments on tourism and tourists.

Several specific objectives derive from the main objective:

- OS1** Analyzing the impact of tourism on the global and national economy.
- OS2** Identifying the technological progress in the tourism in Romania and worldwide, while listing the latest technologies in the field
- OS3** Reviewing Romania's strong and weak points in a regional context by analyzing the relationship between tourism and digitalization.
- OS4** Discovering the profile of the "new tourist" by identifying changes in his personality due to the development and the use of artificial intelligence.
- OS5** Structuring and synthesizing current research on technology and tourism through bibliometric analysis of the specialized literature in the field of technologies used in tourism and content analysis of relevant articles.

In order to achieve the herein objectives, the following research methods and tools were used:

- Analysis, observation, synthesis, comparison, induction, deduction;
- Quantitative research (survey) by applying a questionnaire to identify the profile of the new tourist;
- Bibliometric study regarding the current state of research in the field;
- Qualitative (content) research of relevant articles.

The research method used is the mixed method complex because the research is carried out over a period of time and uses quantitative research obtained through survey as well as qualitative research obtained through systematic analysis of specialized literature.

The secondary data were obtained by accessing sources such as: Eurostat, European Commission, World Economic Forum, IMD World Competitiveness Center, International Telecommunication Union, and the primary data were collected by applying the questionnaire.

The thesis is structured in 5 chapters and ends with Conclusions and Future Research Directions.

The thesis is structured in 5 chapters, as follows.

Chapter 1 - "Tourism - history, developments, effects on the economy" begins with a foray into the history of tourism and the adaptation to social and technological changes. From ancient trade journeys to modern vacations, tourism has become a thriving global industry. It's not just about visiting new places or relaxing in exotic destinations, it's also a way to discover and understand different cultures and ways of life. On the other hand, the significant impact that tourism has on the global economy is analyzed through the substantial revenue and jobs that it creates, but also through its contribution to local infrastructure development and preservation of cultural and natural heritage.

Chapter 2 - "Technological Developments and the Tourism Industry" presents the evolution and the way technologies have revolutionized the tourism industry. In recent decades, tourism has progressively transformed into an information business that relies heavily on information and communication technology (ICT). The progressive and synergistic interaction between technology and tourism has brought fundamental changes in the industry and in the perception of its nature. There have been many new players on the tourism scene, changes in market share and balance of power, changes in political perceptions of tourism and a growing recognition of the importance of tourism to a growing number of national and regional economies.

Developments in the field of ICT have transformed both strategies and practices, as well as the architecture of the industry. The adoption of the Internet and communications networks have favored those organizations focused on business globalization by offering greater and faster data exchange and more streamlined reservation systems. Modern technology has affected the traditional way of doing business in tourism, challenging the existing business models. The tourism and hospitality product has become globalized; thus, the options for consumers have diversified and competition has increased. With the emergence of technologies specific to Industry 4.0, such as the Internet of Things, big data, artificial intelligence, blockchain, virtual and augmented reality systems (VR and AR), 5G and their implementation in tourism, a large part of the production and delivery of tourism goods and services is now in the process of becoming fully automated.

Chapter 3 - "The changing personality of the tourist as a result of the artificial intelligence with human intelligence coexistence" analyzes the role of the tourist in the tourism industry and how the new technologies affect them. Every tourist is different, having a unique mix of experiences, motivations, and desires. Tourists from the most developed countries have become frequent travelers and are linguistically and technologically qualified to "function" in multicultural environments.

The development of ICT and especially, the Internet has generated the "new tourist", who becomes a connoisseur in the field and who is more interested in new experiences and less interested in purchasing traditional products and services. Artificial intelligence is playing an increasingly important role in society, both in the life of each individual and in the economy, having different effects globally. In tourism, this can lead to higher economic efficiency and improved decision-making by analyzing larger amounts of data and by creating new products and services.

In this context, by collecting surveys from young people, a "new tourist" profile was outlined, for which it is desired to identify the changes in his personality. The purpose of this research is to investigate how the development and use of artificial intelligence have influenced individuals' tourism preferences, behaviors, and experiences. Also, through this research, valuable information for the tourism industry is provided, as well as information on the decision-making factors in the development and implementation of smart technologies,

aimed at improving the experience of tourists and effectively responding to their needs and desires.

Chapter 4 - "The integration and use of new IT technologies in tourism" includes an inventory of the latest technologies in the tourism industry (in hotels, restaurants, cafes, catering services, etc.) and an analysis of the relationship between tourism and digitalization at a global level (through indices such as Travel & Tourism Development Index - TTDI, IMD World Digital Competitiveness and DiGiX) and European (through DESI and Digital Intensity Index).

Chapter 5 - "Bibliometric study on the adoption of new technologies in the tourism industry" analyzes the English literature sources and the "Web of Science Core Collection" database in the field of technologies used in tourism and a content analysis of relevant articles. The aim is to structure and synthesize current research on technology and tourism, in order to develop a future research agenda in the field.

The doctoral thesis analyzes the progress and impact of information and communication technology on the tourism and hospitality industry, the tourist and his personality in the context of given developments, as well as the current state of knowledge in the field. Through the quantitative and qualitative research undertaken, the main objective - the analysis of the impact of technological developments on tourism and the tourist - and the specific objectives were achieved.

We can consider that technological progress has enabled the tourism industry to become more efficient, customer-centric and sustainable, while also opening up new opportunities for tourism businesses to innovate and grow. However, it is also important to recognize the potential challenges and risks associated with the use of technology in tourism, such as privacy, security and digital divide issues. As technology continues to advance, it will be important for the travel industry to meet these challenges and ensure that the benefits of technological progress are shared fairly among all stakeholders.

The new digital economy has a profound impact on the tourism sector, transforming the process of communication with tourists and tourism marketing through new and creative ways of providing tourism services. These are provided locally, but tourism businesses operate in global markets, and the information-intensive nature of these services makes them ready for digitization. At the same time, consumers are changing. Generation Z, Millennials and the next generations will form the mass of tourists by 2040. These generations are digital natives and their relationship with technology will continue to influence the delivery of tourism services.

Tourism 4.0 represents a new paradigm in which technology, connectivity and innovation determine the development of the tourism industry. It involves the extensive use of the Internet, artificial intelligence and data to create high-quality tourism experiences tailored to individual travelers' needs and preferences.

The profile of the new tourist is characterized by an increased desire for authentic and personalized experiences. It uses various technologies to search and plan trips, share experiences on social networks and contribute to the development of local communities by supporting the local economy and sustainability initiatives.

The relationship between tourism and technology can be summarized as follows:

- E-tourism refers to the analysis, design, implementation and application of ICT solutions in the tourism and hospitality industry; it also refers to the analysis of the impact of the respective technical and economic processes on market structures;

- The classic model of tourist behavior and tourism where suppliers, in order to ensure proper distribution, had no other option but to turn to their intermediaries - travel agencies and operators) began to change in the Internet era, after 1990;
- The field of e-tourism is mature, the industry has changed radically, and the users have adopted an increasing range of new information and communication technologies. Users have become the very engine of this development;
- New technologies - Internet of Things, Internet of Everything, 5G mobile network, mobile devices, smartphones, 3D printing, cryptocurrencies and blockchain, sensor and beacon networks, gamification as well as the improved analytical capabilities supported by AI - add intelligence to the tourism ecosystems and make these environments more responsive, flexible and adaptable;
- Technical and business opportunities and challenges are continuously opening up in the fields of IT and tourism, which leads to a complex process of adapting to change;
- Both industries have a high potential for innovation, thus they have been recognized by decision-makers.

Considering the general and specific objectives of the research as well as the results obtained, own contributions can be summarized as follows:

- determining the impact of tourism on the global and national economy;
- the presentation of the forms of manifestation of tourism in their historical evolution;
- inventory of technologies used in the tourism industry;
- the presentation of Romania's strong and weak points in a regional context by analyzing the relationship between tourism and digitalisation;
- determining the profile of the "new tourist" by identifying the changes in his personality with the development and use of artificial intelligence;
- presentation and systematization of specialized literature on technology and tourism;
- identifying the current state of knowledge in the field and future research directions;
- content analysis of relevant articles on artificial intelligence in tourism to present an integrated framework highlighting the conclusions synthesized in the most cited articles published in the period 2003-2023.

The impact of technology on the tourism of the future is profound and will continue to shape the industry in significant ways. With ever-increasing technological advances and access to the Internet worldwide, tourists and the travel industry will face a number of important changes. These include:

- Personalized experiences: Technology will enable operators in the tourism industry to offer personalized experiences based on the preferences and needs of each tourist. Through the artificial intelligence algorithm, it will be possible to recommend personalized destinations, activities and travel offers, thus improving customer satisfaction.
- Virtual and Augmented Reality: Tourists will be able to use virtual and augmented reality to explore destinations before embarking on their journey. This will give them the opportunity to better plan their trip and feel better prepared when they arrive at their destination.
- Smart booking systems: Technology will facilitate the booking process, allowing tourists to quickly and easily find and book transport, accommodation and activities. This will reduce entry barriers for travelers and make tourism more accessible.

- Sustainability: Technology will play a crucial role in promoting sustainable tourism. Tourists will have more information about environmentally friendly travel options before making decisions, and industry operators will be better able to manage their environmental impact.
- Communication and connectivity: Technology will facilitate communication between tourists and local residents, enabling the exchange of cultures and experiences. It will also make travel safer through emergency services and location apps.
- Robots and automation: In the hotel industry and other tourism services, robots and automation will play an increasingly important role in improving efficiency and reducing costs.

Digital technologies are transforming the travel industry, and this trend will continue in the future. It makes travel easier, more personalized, more sustainable and more connected. However, it is important to carefully manage new challenges related to data privacy, security and the impact on local culture to ensure balanced and responsible tourism development.

Future research could analyze, on the one hand, how new technologies can be used to improve the tourist experience. New technologies such as the Internet of Things, artificial intelligence, virtual and augmented reality continue to develop, which will also allow the tourism industry to adopt and adapt to these trends. On the other hand, given the dynamics of tourism and closely related to the social environment and the natural environment, the delimitation of new features of the tourist's personality can be a challenge for researchers.

The results of the research carried out were disseminated both by publishing articles in domestic and foreign magazines, and by participating in national and international conferences: 1 SCOPUS indexed article, 3 articles indexed in international databases and 6 participations in national and international conferences.

In conclusion, the tourism product and the tourism industry have special characteristics, which can accentuate the relationship between technology and tourism and make tourism an attractive field for various IT applications and research. Thus, this field remains one that constantly adapts to new technologies, with the help of which it creates new products and services for increasingly technological tourists. Clearly, this development will continue, with waves of innovation, with new services and players, with complex structural changes. Previous developments lead to the conclusion that innovation mainly comes from outside the core industry.

Keywords: *tourism industry, artificial intelligence, information and communication technology (ICT), tourism 4.0., tourist, bibliometric analysis, questionnaire.*