INNOVATION AS A TOOL FOR MAKING MANAGEMENT DECISIONS IN THE TOURISM AND HOSPITALITY INDUSTRY REGARDING OPTIMIZATION AND MODERNIZATION AT THE INTERNATIONAL LEVEL

ІННОВАЦІЇ ЯК ЗАСІБ ПРИЙНЯТТЯ УПРАВЛІНСЬКИХ РІШЕНЬ В ІНДУСТРІЇ ТУРИЗМУ ТА ГОСТИННОСТІ ЩОДО ОПТИМІЗАЦІЇ ТА МОДЕРНІЗАЦІЇ НА МІЖНАРОДНОМУ РІВНІ

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Добрянська Н.А., Черноусова С.С., Саленко Л.Р. Інновації як засіб прийняття управлінських рішень в індустрії туризму та гостинності щодо оптимізації та модернізації на міжнародному рівні. Оглядова стаття.
Розглянуто важливість технологічних інновацій у сфері туризму і їх вплив на оптимізацію та модернізацію галузі. Досліджено, як сучасні технології допомагають туристичній індустрії стати більш ефективною та відповідати зростаючим потребам мандрівників. Висвітлено різні аспекти використання штучного інтелекту, аналітики даних, мобільних додатків, віртуальної реальності та інших інноваційних рішень у туризмі. Розглянуто важливі теми, такі як сталість та екологічна відповідальність, інформаційна безпека та персоналізація послуг для підвищення якості подорожей. Дослідження слугує важливим джерелом для розуміння сучасних тенденцій у туризмі та їхнього впливу на галузь.
Ключові слова: інновації, туризм, туристична діяльність, туристична галузь, туристичні індустрія

Dobrianska N.A., Chernousova S.S., Salenko L.R. Innovation as a Tool for Making Management Decisions in the Tourism and Hospitality Industry Regarding Optimization and Modernization at the International Level. Review article.
The importance of technological innovations in the field of tourism and their impact on the optimization and modernization of the industry are considered. It examines how modern technologies help the tourism industry to become more efficient and meet the growing needs of travelers. Various aspects of the use of artificial intelligence, data analytics, mobile applications, virtual reality and other innovative solutions in tourism are highlighted. Considered important topics such as sustainability and environmental responsibility, information security and personalization of services to improve the quality of travel. The study serves as an important source for understanding current trends in tourism and their impact on the industry.
Keywords: innovation, tourism, tourist activity, tourism industry, tourism industry

Today, tourism is one of the most dynamic industries in the world. With the growing number of trips and travellers. The demand for travel services is constantly growing, creating a need for effective innovation. Modern tourists have new expectations in terms of convenience, personalisation and environmental responsibility. Technological innovations can meet these changes and meet the needs of modern travellers. Also, competition in the tourism industry is fierce, and companies that do not invest in technological solutions may lose customers.

Technology can increase competitiveness and expand the audience. The unstable political situation, environmental issues, the COVID-19 pandemic, and martial law in the country have affected tourism, changing the conditions and requirements for the industry. Technological solutions help to adapt to new changes. Tourists now expect convenience and personalised service. Technological innovations allow the tourism industry to create unique offers and approaches for each client. Technology helps tourism businesses to optimise their operations, which leads to lower costs and higher profitability.

There is also a growing awareness of environmental issues and technology can help the tourism industry become more environmentally responsible by reducing emissions and optimising resource use. All this means

that technological innovations in the tourism sector are extremely relevant and important for the further development of this industry. They help to increase competitiveness, attract more customers and provide a high-quality and convenient travel experience.

Analysis of recent researches and publications

Scientists who have dealt with the issue of innovation: J. Schumpeter, P. Drucker, O. Gudzinsky, G. Yermakov, S. Erokhin, I. Ansoff, O. Oliynyk, P. Stetsiuk, O. Lapko, M. Malik, V. Momot, A. Podderiogin, P. Sabluk, A. Chupis and others. The issues of innovation in tourism were considered by the following scholars: M. Boyko, N. Vlasova, O. Garbera, O. Golovinov, L. Hopkalo, O. Davydova, O. Kalchenko, T. Kindryk, L. Maklashyna, S. Melnychenko, V. Novikov, Y. Pshenychnykh, A. Saak, N. Semenchenko. The issue of innovation in tourism is studied and researched by different categories of professionals and scientists, as this topic requires an interdisciplinary approach and combines various aspects of innovation, tourism and economy. Universities and research institutes conduct research on tourism innovation. They study the technological, environmental, social and economic aspects of innovation and its impact on the tourism industry [1-4]. People who work directly in tourism, including hotels, tour operators, airlines, restaurants and other industry players, research and implement innovations in their fields of activity.

The tourism industry is constantly evolving, and researchers from around the world continue to explore new technologies, approaches and trends to facilitate its further development and growth. Despite the acknowledged importance of innovation in the tourism industry, many aspects remain under-researched and require further consideration and clarification.

Unsolved aspects of the problem

Innovation in the tourism industry, while having great potential to improve service quality and competitiveness, also faces a number of challenges. Innovation requires investment in research, development and implementation of new technologies and approaches. For many tourism businesses and start-ups, this can be financially challenging. In some cases, infrastructure and technology in tourism regions may be limited or outdated, making it difficult to innovate. Tourism is highly dependent on seasonal and economic factors. Innovations may become less effective if the market is unstable. With the introduction of new technologies and increased data collection and processing, the risks associated with the preservation and protection of tourists' personal data are growing. Tourism innovations should also take into account the socio-cultural aspects of the local population and visitors, which can be challenging in different cultural contexts. Innovations should contribute to sustainable development and reduce the negative impact of tourism on the environment. This may require additional efforts and resources. Innovations in tourism can be successful, but their implementation requires careful analysis, readiness for change and the development of strategies that take these issues into account.

The aim of the article is to highlight the importance of technological innovations for sustainable tourism development and promoting environmental responsibility in the industry and to highlight key aspects of tourism innovations, demonstrate how they can optimise and modernise the industry, and provide valuable information for different audiences, from professionals to travellers.

The main part

According to the Law of Ukraine "On Innovative Activities", innovations are defined as "newly created (applied) and (or) improved competitive technologies, products or services, as well as organisational and technical solutions of a production, administrative, commercial or other nature that significantly improve the structure and quality of production and (or) the social sphere" [5].

Tourism has always been an important sector of the global economy, providing opportunities for recreation, cultural exchange and the development of a rich range of industries. However, with the increasing demands of modern travellers and the changing economic environment, it is becoming increasingly important to introduce technological innovations into the tourism industry.

Changes are happening all the time, regardless of our will. However, if companies want to achieve sustainable success, they must become proactive in adapting to these changes. In today's world, innovations that result from a structured process require interdisciplinary collaboration, clearly defined stages in the search for new ideas and flexible methods. Implementing innovative solutions in tourism services is one of the ways to increase competitive advantage over similar enterprises.

One of the biggest revolutions in the tourism industry has been the introduction of mobile apps and online platforms for booking hotels, apartments, flights and excursions. Hotel apps greatly facilitate the interaction between a hotel and its guests. They help a hotel to present itself effectively, showcase its rooms, and provide a convenient way to book rooms and answer all possible questions. A well-designed app can attract new customers and provide satisfaction for regular guests [6].

There are four global booking systems in the travel industry: Amadeus, Galileo, Sabre and Worldspan (Fig. 1). More than 800,000 travel agencies worldwide use the services of these systems. Hundreds of thousands of travel agencies connected to the terminals of global booking systems have the opportunity to provide their customers with real-time booking services [15].

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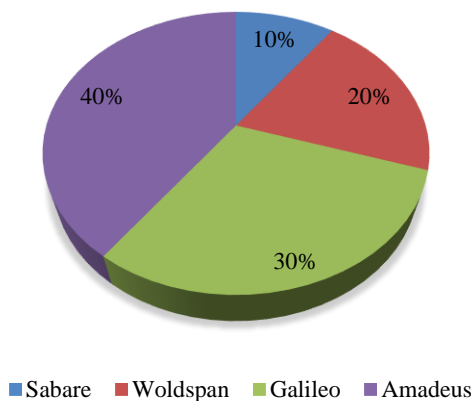Regarding Optimization and Modernization at the International Level*

Figure 1. Prevalence of booking systems in the world
Source: compiled by authors on materials [15]

Each hotel app is developed individually, taking into account the specifics of a particular business. The necessary tools are selected to help maximise the benefits. The main task is to create a convenient tool for customers and a profitable tool for the hotel [6]. Booking is an example of the most popular app in the world. This app allows you to research hotels and inns and book a room. It has a loyalty programme, the ability to use a filter for searching, and track room prices [6]. Travellers can easily find and book accommodation or a ticket from their smartphone, which greatly simplifies and speeds up the travel planning process. Mobile apps and booking platforms in the travel industry have become extremely popular and important innovations. They have revolutionised the way travellers search for and book accommodation, vehicles, tours and other travel services. These apps allow users to easily search and book travel from anywhere and at any time, thanks to smartphones and tablets. Users can easily compare prices in real time and read reviews of different hotels, airline tickets, restaurants and other services, helping them to make informed choices. Some apps use data mining to make recommendations and personalised offers to users based on their previous choices and habits – which really entices the customer to come back. Thanks to instant confirmation in such apps, the booking can be made immediately and the user receives confirmation and more detailed information about their journey. Mobile apps allow you to store tickets, certificates and other documents on your smartphone, which makes travelling easier and reduces the need to print paper documents. People can also monitor the status of their bookings and cancel services via apps, which gives them more flexibility in their travel planning. Mobile applications provide users with information about tourist attractions, local restaurants, cultural events and other useful data that make life easier for tourists. Hotels, airlines and other travel businesses are able to attract more customers through mobile platforms, which helps to increase sales.

Society is now living in a time when the real world and the computer world coexist and interact, creating fascinating syntheses and combinations. Virtual Reality (VR) and Augmented Reality (AR) allow travellers to get an innovative experience of exploring places before they travel. The ability to virtually visit popular tourist destinations or explore historical sites helps to promote new destinations and reduces the cultural barrier for tourists. Virtual Reality (VR) and Augmented Reality (AR) are two different technologies that intersect in the field of innovation and have great potential for tourism and other industries. The term augmented reality (XR) refers to a set of immersive technologies that combine the physical and virtual worlds. XR is a broad term that combines virtual reality (VR), augmented reality (AR) and mixed reality (MR) [7].

VR is a technology that creates an immersive environment that completely separates the user from the real world and absorbs them into the virtual world using special headsets or other devices. The advantages of this technology are that it increases interest and attracts more tourists, allows tourists to visit hard-to-reach places, and provides an opportunity to explore historical events and cultural aspects. An example of a VR application is the Batman game: Arkham VR, a virtual part of the DC universe full of criminal secrets [7].

The following methods are used in tourism:
— virtual tours - a tourist can visit famous tourist attractions or even historical events without leaving his or her place;
— previewing hotels and resorts – tourists can "stay" in hotel rooms or on beaches thanks to VR before making a booking decision;
— tourist tours – VR can provide interactive tourist tours and information guides to enhance the tour experience.

AR is a technology that combines virtual objects with the real world, extending or enhancing the real world through smartphones, tablets or other devices. The benefits of this technology include: increased interactivity and engagement, improved navigation and information context, and it helps to enrich the experience and learning value. Augmented reality tools include Snapchat filters: they add various effects to photos (wardrobe items, make-up) or can change a person beyond recognition. The gaming hit Pokemon Go is also an example of augmented reality [7].

Methods used in tourism:

— Improved navigation systems – tourists can get information about places, restaurants and other objects in real time using AR applications.

— Interactive museums and exhibitions – AR can add virtual objects to museum exhibitions, making the exposition more attractive to visitors.

— Enhancing education – AR can provide additional education about the history and culture of localities. Both VR and AR have the potential to revolutionise the travel industry by providing new opportunities for travellers and enhancing their experience. They can promote the popularity of tourist attractions, facilitate planning and navigation, and enrich knowledge and entertainment during travel.

The leisure industry is a sector of the global economy with a share of about 5.5% of GDP (data for 2020). The recreation sector includes the following components: carriers, hotels, restaurants, and others [8]. Blockchain for security and efficiency This technology helps to ensure the security of transactions and deals in the tourism industry. It can be used to verify the authenticity of tickets, guarantee the security of personal data, and improve customer loyalty systems. The blockchain is based on a distributed network of computers, which makes it less vulnerable to attacks and various failures. This allows data to be stored and transmitted without centralised points of vulnerability. The application of blockchain technology in the tourism sector has significant potential to improve the safety, convenience and efficiency of services. Blockchain can be used to securely store and share personal data of tourists, such as passport details, visas, medical records, etc. This helps to combat abuse and fraud in the tourism sector. This technology can also simplify and speed up the process of booking hotels, airline tickets, travel, etc. Smart contract systems can automate and secure payments for services. Blockchain can create interactive virtual tours and travel guides that allow tourists to join virtual journeys to global attractions and places without leaving their homes. The technology can contribute to greater transparency and efficiency of loyalty programmes for tourists, as well as allow for the secure distribution of promotional codes and discounts. Blockchain can be used to track and verify the sustainability of tourism resources and regulate the environmental impact of tourism. It can also be used to verify the authenticity and origin of goods and services, such as souvenirs or tours. A large number of tourism service providers can interact and share data on the blockchain, which can improve collaboration and reduce the risks of errors and abuse. Blockchain can facilitate the tracking and management of tourism resources, such as luggage and transport, in tourism supply chains. The technology can improve the quality and security of tourism services by enabling more efficient data processing and reducing the risk of fraud.

Perspective projects in the field of tourism. Blockchain is an innovative technology. Its use in tourism is promoted by various projects. Among the well-known startups, several companies are worth highlighting.

Table 1. Famous start-ups

Company	Description
LockTrip	The startup has built a blockchain network, whose members are hotels and inns. They rent out real estate, and the platform helps manage various processes (payment, booking). There are no intermediaries or commissions.
Winding tree	A decentralised system of travel services. It is based on the Ethereum blockchain. The company's activities allow you to manage luggage during air travel and book flight tickets. The processes are simple, transparent, and reliable.
The company Ariva	The global B2C network provides a selection of travel services based on reviews. The project also provides contacts and helps to book accommodation using cryptocurrency. It promotes the use of digital assets in the tourism sector.
Travala.com	A blockchain-based accommodation booking platform. It uses its own AVA token.
Aeron	Implementation of new solutions in the field of aviation security.

Source: compiled by authors on materials [8]

Over time, innovation can penetrate any environment, even the most conservative. Blockchain technology is attracting developers and users due to its key advantages: reliability, trust, security and speed of transactions. However, this has also led to the emergence of many projects, not all of which have practical applications. Some start-ups have turned out to be frauds, while others have not brought significant benefits. Specifically in the tourism sector, not all blockchain projects can affect large service providers such as airlines, hotels and travel agencies. However, it is important to note that some of these projects have great potential to improve the industry. The development and implementation of blockchain solutions in tourism can lead to greater efficiency, reliability, and security for all market participants, including travellers. Thus, although not all innovations always succeed, it is important to support the development of technology and the implementation of those ideas that can bring real benefits and improve the tourism industry [8]. Let us consider the characteristics of the main types of innovations in the tourism industry (Table 2).

Today, artificial intelligence systems have become widely used. Nowadays, just three mouse clicks separate a potential tourist from the most relevant transport offer for even the most complex route. Artificial intelligence and neural networks will simplify the choice of carrier services, save time and planning efforts.

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Table 2. Characteristics of the main types of innovations in the tourism industry

Type of innovation	Characteristics
Technological innovations	Using new technologies to improve the travel experience, booking, navigation and communication
Sustainable growth	Green innovations to reduce the negative impact of tourism on the environment, including sustainable housing and eco-friendly vehicles
Gastronomic innovations	Food tourism and gastronomic tourism offering unique dishes and culinary experiences
Cultural innovations	Development of cultural programmes, exhibitions, festivals and art events to attract tourists interested in art and culture
Recreational innovations	Expanding entertainment options, including outdoor activities, sports tourism, spa programmes and recreation in the natural environment
Social innovations	Projects aimed at supporting local communities and improving living standards in tourist regions
Marketing innovations	Use of new marketing and advertising methods to attract and retain tourists, including online marketing and social media

Source: compiled by authors on materials [14]

At the same time, users have high demands on the level of personalisation: 88% of customers change ticket booking services or travel companies in the absence of an individual approach. Recently, tools that provide a high level of personalisation in ticket selection and customer support have become increasingly popular on the international market [9]. AI (artificial intelligence) and data analytics help travel companies analyse huge amounts of data on travel demand, pricing, route selection, and customer feedback. This allows them to more accurately predict and improve services.

The use of artificial intelligence and data analytics in the tourism industry can significantly improve the quality of services and increase the efficiency of business processes. AI allows analysing data on customer requirements and preferences to create customised travel packages and recommendations. This makes travel more personalised and ensures customer satisfaction. Data analytics helps to predict the demand for travel services at different times of the year or in different regions. This allows businesses to optimise pricing and advertising campaigns. Data analytics can track social media discussions and feedback, which helps businesses monitor visitor reactions and respond to changes in time, and can help manage inventory and logistics, providing greater efficiency in serving tourists. AI-powered chatbots and virtual assistants can answer customer questions and provide real-time booking and travel information. AI can analyse weather and traffic data to provide recommendations and warn travellers about possible changes to their travel plans, and can detect fraudsters and spam sites, which helps ensure the security of online bookings. Data and AI can help analyse the prices of hotels, airline tickets and other services to ensure that businesses remain competitive. The use of artificial intelligence and data analytics can improve the quality of service for tourists, ensure the efficiency of tourism resource management, and help businesses adapt to changing market conditions.

The popularity of environmental care and wildlife conservation in the world makes ecotourism a very promising type of recreation and tourism. Ecotourism is designed to prevent negative human impact on nature and motivate tourists and tour operators to participate in the socio-cultural development of regions and nature conservation. Ecotourists travel to those natural places where wildlife has been preserved [10-12]. The growing awareness of environmental issues is forcing the tourism industry to look for sustainable and environmentally friendly approaches. The introduction of solar panels, the use of biodegradable materials and the reduction of CO_2 emissions are just a few examples of technological innovations in the field of eco-tourism. Environmental innovation in tourism is important to reduce the industry's negative impact on the natural environment and create a more sustainable and environmentally responsible way of travelling. The use of electric, hybrid or other vehicles that have less negative impact on the environment for the movement of tourists can significantly reduce emissions of harmful gases and negative impacts on the air and environment. Create tourism programmes and services that adhere to the principles of sustainable development, including minimising waste and resource consumption. Hotels and restaurants can improve their infrastructure and processes to reduce energy consumption and environmental impact, for example, by using renewable energy sources and treating waste. Also, develop standards and certification programmes to assess the environmental responsibility of hotels, transport companies and other tourism players. Engaging tourists in environmental and sustainable development issues through information campaigns and educational events.

Developing programmes for the conservation and restoration of natural ecosystems to preserve the biodiversity and natural beauty of our land. Developing eco-tourism routes that promote nature and the environment and support the conservation of these places. Ecological innovations are aimed at preserving the environment, reducing the negative impact of tourism on nature, and contributing to the creation of a more sustainable and environmentally responsible tourism sector through rural green tourism [13].

Conclusions

In conclusion, we can say that innovations in tourism have become not only the basis for optimising and modernising the industry, but also an important tool for creating new opportunities and an unrivalled experience

for travellers. Every year brings new achievements and changes in the technological landscape of the travel industry, making travel more comfortable, safe and efficient.

Tourism has long been an important industry for many countries and regions, and it continues to grow and develop. However, in order to meet the modern requirements and needs of tourists, the tourism industry must constantly improve and modernise. The importance of innovation in tourism cannot be overstated, as it affects all aspects of the industry, from travel search and booking to the travel experience itself and sustainable development.

Above all, innovation is affecting the way tourists search for and book travel. Thanks to the internet and mobile apps, travellers are able to make real-time bookings, compare prices and choose the best deals. This makes travel planning easier and more accessible to a wider range of people.

In addition, innovations help to improve and enrich the tourist experience. Virtual reality, augmented reality and other technologies allow tourists to explore the places they plan to visit before they travel. This allows them to immerse themselves in the cultural and natural features of the places, makes travel more exciting and provides an opportunity to live unique experiences.

Sustained growth and demand for tourism also brings sustainability and responsibility into focus. Tourism companies and regions should develop green and sustainable innovations to reduce the negative impact of tourism on the environment and preserve cultural resources. Such innovations include environmentally friendly transport, sustainable housing and efficient waste management.

From an economic perspective, tourism is an important industry that contributes to job creation and income growth. Innovations help develop new segments and destinations in tourism, creating opportunities for small and medium-sized businesses. They also contribute to the development of the cultural and creative industry, which adds value and uniqueness to tourist attractions and travel.

The development of the innovations presented is a key factor for the future of the tourism industry, as they meet the modern requirements and needs of travellers. Technology is helping to expand travel opportunities by providing access to a wealth of information, facilitating personalisation and creating unique experiences.

In summary, innovation in tourism continues to change the way tourists travel and is a precious resource for tourists and the industry as a whole, making travel more exciting and convenient, and helping the industry to remain competitive and meet modern demands. Tourism remains an important driver of economic and socio-cultural development, and innovation plays a key role in its future.

Abstract

Innovations in tourism are of great importance as they contribute to the growth of competitiveness and development of the industry, as well as help to attract more tourists by making tourist attractions and services more attractive and interesting. In today's world, technological innovation has become an essential element in the development of the tourism industry.

This article thoroughly analyses the importance of technological innovation in tourism and its impact on the optimisation and modernisation of this industry. It looks at how modern technology helps the tourism industry become more efficient and meet the growing needs of travellers.

The aim is to emphasise the importance of innovation in tourism to achieve sustainable development in the sector and to promote environmental responsibility in the industry. We aim to address the key aspects of tourism innovation that can optimise and modernise the industry and provide information that is useful for different audiences, from tourism professionals to travellers.

The article draws attention to various aspects of the use of artificial intelligence, data analytics, mobile applications, virtual reality and other innovative solutions in tourism. It reveals how these technologies help create new opportunities for tourists and provide them with unforgettable experiences.

Special attention is paid to such relevant topics as tourism sustainability and environmental responsibility. The article discusses how technological innovations help to reduce the negative impact of tourism on the environment and increase the sustainability of the industry.

In addition, the article highlights the issues of information security and personalisation of services that contribute to improving the quality of travel and ensuring the comfort and safety of tourists.

All of these aspects make this article an important source for understanding current trends in tourism and their decisive impact on the industry. It provides readers with an in-depth insight into the world of technological innovation in tourism and its significance for the future of the industry.

Tourism innovations are continuously changing the way tourists travel, and they are of great value to both tourists and the tourism industry as a whole. These innovations make travelling exciting and convenient, helping the industry to remain competitive and respond to modern demands. The tourism industry is constantly evolving, and researchers from around the world continue to explore new technologies, approaches and trends to facilitate its further development and growth. Despite the acknowledged importance of innovation in the tourism industry, many aspects remain under-researched and require further detailed analysis and clarification.

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