

PERSONALIZATION, SECURITY AND BUSINESS OPTIMIZATION IN TOURISM THROUGH THE APPLICATION OF ARTIFICIAL INTELLIGENCE

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Abstract: Artificial Intelligence (AI) is significantly influencing the development of tourism, bringing numerous advantages to both travelers and the industry. AI enables a personalized approach by analyzing user behavior and needs so as to offer recommendations tailored to individual preferences. It simplifies trip planning for travelers by providing information about the best routes, accommodation, and attractions. Chatbots, one of the most well-known applications of AI, facilitate real-time support, streamline communication, and reduce operational costs. Additionally, advanced data processing aids in better price management and tracking tourism trends. Language barriers are minimized through translation technologies and natural language processing, contributing to an enhanced traveler experience worldwide. Furthermore, AI is utilized for organizing activities, optimizing routes, and improving services. However, challenges such as data privacy protection and the lack of personal touch remain relevant. Many tourism companies, including airlines and booking platforms, successfully implement AI to enhance customer experience and improve operational efficiency. The development of AI continues to transform tourism, introducing innovations that increase service accessibility, customer satisfaction, and competitiveness in this rapidly growing industry.

Keywords: AI in tourism, tourism industry, innovations in tourism, data personalization, tourism sector in the Russian Federation

INTRODUCTION

Artificial Intelligence (AI) technologies are rapidly advancing and finding increasing applications across various sectors, including travel. AI has become one of the most significant innovations of the modern era, revolutionizing numerous industries, including tourism. In the age of digitalization, when travelers seek fast, personalized, and efficient services, the application of AI is key to enhancing customer experience, optimizing operations, and boosting the competitiveness of tourism organizations.

One of the most notable advantages of AI in tourism is the potential for personalization. Using advanced algorithms, tourism industry can analyze data on traveler behavior and preferences to create recommendations tailored to their desires. This technology provides suggestions for the best routes, attractions, restaurants, and accommodation, simplifying the planning process and significantly improving customer satisfaction.

In addition to personalization, AI significantly contributes to the optimization of internal processes. Automation, through chatbots and reservation systems, enables tourism companies to offer services 24/7, reducing operational costs and increasing efficiency. Moreover, AI's ability to analyze large volumes of data facilitates the prediction of seasonal trends and price optimization, which is a crucial advantage in making business decisions.

Furthermore, AI expands communication possibilities with travelers through natural language processing, enabling tourists worldwide to access services in their native language. This enhances accessibility and improves the travel experience, turning everyday trips into unique adventures.

With continuous technological advancement, AI is positioning itself as an indispensable partner in transforming tourism, delivering innovations that enhance traveler experiences and support the growth of the entire sector.

KEY APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN TOURISM

Artificial Intelligence (AI) plays an increasingly significant role in transforming the tourism sector, offering numerous opportunities to enhance traveler experiences and optimize the operations of tourism companies. Its key applications include:

1. *Personalized Recommendations*

AI processes large volumes of data to analyze customer preferences and behaviors. Based on this data, AI can provide personalized recommendations for optimal routes, accommodations, restaurants, attractions, and activities. This technology allows travelers to receive suggestions tailored to their individual needs and interests, greatly simplifying the trip planning process (Tussyadiah & Miller, 2019).

2. *Chatbots*

Chatbots are tools that enable tourists to get answers to their questions, make reservations, and access information 24/7. These systems operate independently of human working hours, increasing service availability and improving the user experience. Chatbots are not only useful for communication but also for quickly resolving issues or providing additional information (Ivanov & Webster, 2019).

3. *Price Optimization*

AI enables the analysis of various factors influencing pricing in tourism, such as demand, seasonal trends, competition, and global market price changes. These insights allow tourism companies to optimize their pricing strategies, offering competitive deals that attract customers and enhance profitability (Tussyadiah & Miller, 2019).

4. *Demand Forecasting*

AI can analyze large datasets on past travel patterns, traveler behavior trends, and seasonal variations. This information enables accurate forecasting of demand for various tourism services, helping optimize resource allocation and capacity planning. Forecasts can influence decisions about promotions or enhancing offers for specific periods (World Tourism Organization, 2019).

5. *Personalized Content*

Travelers increasingly seek information relevant to their specific interests. AI can tailor the content offered to users, such as articles, videos, or recommendations, based on their past choices and preferences. This personalization enhances the user experience and increases the likelihood that travelers will choose suggestions in line with their interests (Tussyadiah & Miller, 2019).

6. *Business Optimization*

AI also plays a crucial role in optimizing internal processes for tourism companies. Automating tasks such as reservation processing, payments, and client communication significantly reduces operational costs and increases efficiency. This technology helps companies save time and resources while improving service quality (Ivanov & Webster, 2019).

7. *Natural Language Processing*

One of the greatest advantages of AI in tourism is its natural language processing capabilities, enabling travelers to communicate with virtual assistants in their native languages. This technology facilitates easier and faster communication with travel agents and makes services more accessible to people worldwide, regardless of language barriers (Li & Wang, 2020).

Overall, artificial intelligence offers significant opportunities to enhance the travel experience, from personalized recommendations and business optimization to improved communication. Its applications help tourism companies become more efficient and competitive while increasing traveler satisfaction.

PERCEPTIONS AND EXPECTATIONS OF TRAVELERS REGARDING GENERATIVE ARTIFICIAL INTELLIGENCE IN TOURISM

A study on artificial intelligence and tourism conducted by Amadeus IT Group in 2020 focused on how AI can transform the tourism industry and enhance both traveler experiences and the operations of tourism companies. The results of the study were published in various sources, initially available on Amadeus' official website and their trend reports.

The findings showed that travelers respond positively to the use of generative AI in tourism. Most respondents believe such tools can significantly improve their experience, simplify trip planning, and provide personalized recommendations based on their individual interests and needs.

Travelers are also interested in the application of generative AI in various aspects of travel, such as booking flights, hotels, and activities, as well as receiving recommendations for restaurants, tourist attractions, or even creating entire travel itineraries.

The use of generative AI in tourism is not only accepted but considered an important factor in creating new opportunities to enhance traveler experiences and increase the competitiveness of tourism companies. Travelers are willing to embrace this technology as a means to provide innovative and tailored solutions that simplify and improve their journeys.

The first question asked respondents about the activities they used AI tools for (such as ChatGPT or virtual assistants). 29% of respondents used tools to get answers to general questions. 23% used them for explanations of topics they wanted to understand better. 20% sought to increase productivity, such as summarizing texts or emails. 18% used them for finding recommendations in line with their interests. 13% utilized tools to find the best deals. 9% used them to explore potential travel routes. 3% selected "other needs," while 6% had no response. Notably, 42% of respondents stated they had never used AI tools.

The second question focused on areas where AI tools could be beneficial during travel. 58% believed AI tools could assist with translation, such as real-time conversation or sign translation. 38% saw advantages in finding flights, hotels, or car rentals based on preferences and budget. 37% desired personalized recommendations for restaurants, events, or landmarks matching their interests. 34% thought AI could help manage travel itineraries, organize plans, and send reminders for activities or reservations. 27% found value in using AI for booking flights, hotels, or cars based on their preferences. 24% appreciated receiving alerts about changes, such as flight delays or cancellations. 22% wanted help tracking lost luggage in real-time or filing lost luggage claims. Women (25%) were slightly more inclined than men (20%) to see benefits in this area. 21% saw value in using AI for quick check-ins at airports or hotels, with women (24%) again being more likely than men (19%) to use AI for this purpose. 20% believed AI could enhance airport security checks, speeding up passport control. 18% saw benefits in AI for hotel services, such as room service requests, cleaning, or virtual concierge services. 19% were unsure about AI's potential applications.

The third question addressed challenges faced when using AI for travel planning. 20% expressed concerns about security and privacy issues, such as how personal data is collected, stored, and used. 17% preferred interacting with humans over AI due to the lack of a human touch. 15% were worried about potential biases in AI-generated recommendations. 15% cited a lack of awareness about AI tools and their benefits, affecting their use in travel planning. 14% had concerns about the accuracy or reliability of AI-generated recommendations. 13% encountered outdated information or errors in data used by AI. 10% found AI tools too complex to use or understand, often due to a lack of experience. 1% mentioned other issues, while 6% were unsure or unaware of potential problems.

The fourth question asked about the features of an AI-based travel assistant that respondents would most likely use. 29% would use an AI assistant to create travel itineraries, including suggestions for activities, restaurants, and accommodations. 28% wanted real-time updates, such as flight statuses, gate changes, and local weather conditions. 27% valued answers to questions about visa requirements or local customs. 27% would use the assistant for personalized recommendations when creating itineraries, based on their preferences and past travel experiences. 25% desired the ability to create itineraries with direct bookings for flights, hotels, and activities. 13% were unsure which features they would use.

IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE IN THE TOURISM SECTOR OF THE RUSSIAN FEDERATION

In Russia, artificial intelligence is actively used in the tourism industry to enhance customer experiences, optimize processes, and improve service efficiency. Examples of AI applications in the tourism sector of the Russian Federation include:

1. Personalized Recommendations for Travelers

Many Russian travel agencies and online platforms, such as OneTwoTrip and Tutu.ru, use AI algorithms to analyze user data, including previous trips, interests, and budgets. Based on this analysis, the platforms provide personalized suggestions for destinations, hotels, routes, and activities.

2. Chatbots for Reservations and Customer Support

Companies like Aeroflot and RZD (Russian Railways) have implemented AI-powered chatbots. These tools assist travelers in booking tickets, provide information about flight and train schedules, and respond to customer inquiries 24/7.

3. Translation Applications and Language Processing

Applications like Яндекс.Переводчик (Yandex Translate) help tourists communicate with locals more easily, translate signs, and understand cultural information at their destinations. This is particularly beneficial for international tourists visiting Russia.

4. Virtual Assistants for Trip Planning

Companies such as Яндекс.Путешествия (Yandex.Travel) integrate AI tools that assist in creating customized travel plans. These assistants suggest activities, optimal routes, and ways to save money during trips.

5. Virtual and Augmented Reality (VR and AR)

Museums and tourist attractions in Russia, like the Hermitage in St. Petersburg, use VR and AR technology to offer virtual tours. This allows tourists to explore landmarks before traveling or have an interactive experience during their visits.

6. Demand Forecasting and Tourism Flow Analysis

AI is used to analyze tourism flows in major cities such as Moscow and St. Petersburg. This helps authorities and businesses optimize infrastructure, organize events, and better manage crowds during peak seasons.

7. Facial Recognition at Airports and Train Stations

At Russian airports, such as Sheremetyevo in Moscow, AI is used for facial recognition during security checks and boarding. This technology speeds up processes and enhances passenger security (Кумова, 2021).

THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE DEVELOPMENT OF TOURISM IN SERBIA

Artificial intelligence-based tools have significant potential to transform the tourism sector in Serbia, enhancing services and tourist experiences. For example, personalized applications or platforms can offer tourists recommendations for destinations, activities, and accommodation, taking into account their preferences. These applications could combine information about natural attractions, historical sites, and cultural events, providing a unique and comprehensive experience.

Tourism organizations in Serbia could integrate chatbots to assist tourists in real-time. Chatbots would make it easier to obtain information about festivals, events, transportation, and available services. On a local level, travel agencies could use artificial intelligence to automatically create itineraries, including tours of cultural and historical landmarks.

Museums, such as the National Museum in Belgrade or the Nikola Tesla Museum, could enhance their offerings by using virtual reality (VR), allowing virtual tours for visitors who cannot physically attend. This would further stimulate interest in Serbian culture and history.

Local tourism organizations and agencies could use artificial intelligence-based analytics to predict tourist flows and plan resources. This would help in better managing the tourism season and reducing crowds at popular locations.

At Belgrade's Nikola Tesla Airport, technologies such as facial recognition could speed up security procedures and improve passenger comfort. Hotels and restaurants throughout Serbia could use artificial intelligence to analyze guest feedback and continuously improve services, further increasing visitor satisfaction.

CONCLUSION

Artificial intelligence presents enormous opportunities for growth in the tourism sector. It is a future where every traveler will have a personalized digital companion that will accompany them throughout their journey and provide recommendations tailored according to their unique preferences. The technology should not only simplify the planning process but also enrich the travel experience, transforming ordinary trips into incredible adventures. By embracing these innovations, there is an opportunity to rethink travel and make it better for everyone.

The application of artificial intelligence in tourism and hospitality is not only a global trend but also a key opportunity for Serbia to position itself as a competitive and innovative tourist destination. AI technologies can significantly enhance the personalization of services, enabling a better understanding of tourist needs and creating unique experiences. This is especially important for Serbia, which has great potential in cultural and natural tourism, but which has yet to fully capitalize on it. The integration of tools such as virtual assistants, dynamic pricing, and data analytics can help attract foreign visitors and extend the stay of domestic tourists.

The implementation of AI also brings improvements in business efficiency, cost optimization, and enhanced promotion of Serbia's tourism offerings on an international level. Serbia, as a developing destination, can leverage AI to explore new markets and promote its unique features through virtual tours, interactive applications, and platforms that provide personalized recommendations.

The importance of AI implementation in Serbia lies in its ability to strengthen the competitiveness of domestic tourism, contribute to sustainable development, and attract investments. To achieve this, it is necessary to invest in education and workforce training, the development of technological infrastructure, and the creation of a favorable regulatory framework.

With the right approach, Serbia has the opportunity to leverage the potential of AI to strengthen its position in regional and global tourism while simultaneously improving service quality and visitor satisfaction.

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