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ARTIFICIAL INTELLIGENCE AS AN ELEMENT OF DIGITIZATION IN TOURISM AND HOSPITALITY

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Abstract. *The direction of the research is based on the problem of using an artificial element in the field of tourism and hospitality. In the section, the author emphasizes the relevance of the implementation of artificial intelligence tools in the activities of hospitality enterprises, which is connected with the active growth of the market after the previous years of recession. Accordingly, the research hypothesis consists in the assumption that the effective use of artificial intelligence tools in the operational activities of hospitality enterprises contributes to the formation of customer-oriented business. The main goal of the study is the analysis of artificial intelligence tools in the activities of enterprises in the field of tourism and hospitality. The chapter emphasizes the idea that in the new digital era, technology collaborates with human senses and intelligence to offer a convenient customer experience across both online and offline channels. This approach leads to increased efficiency, productivity, and a deeper understanding of customer services. Digital technologies also contribute to the progress of such a component as marketing in order to optimize the entire travel process, focusing on the wishes of customers, and not on the actions of competitors. In conclusion, the author offers a technology stack of the optimal chatbot of the HoReCa segment, which will allow to fully automate the processes from the creation of an order by the customer to feedback from the client in the form of feedback upon completion of the order. The application of the latest modern information technologies can give impetus to the development of the restaurant and hotel business, therefore, choosing the optimal combination of progressive digital solutions and a scientific approach to the HoReCa segment is an urgent task.*

Keywords: *artificial intelligence, hospitality, tourism, chatbot, digitalization.*

The widespread use of artificial intelligence (AI) in the field of tourism and hospitality is associated with the need to generate profit through the development and improvement of the visitor service system through the use of the latest information technologies.

The analysis of many scientific sources showed a significant variety of existing information solutions and methodical approaches in this field. One that deserves attention, in particular, is the concept of a digital interactive table created by students of Lund University and Eindhoven University of Technology for "Ikea's Concept Kitchen 2025" (Vermes, 2015). Also of note is the research on a futuristic concept for the restaurant sector. The tablet computer "Fujitsu Iris" was created with the concept of a transparent tablet and using an OLED display (Vermes, 2015). In his how-to video, he is placed in futuristic situations where augmented reality takes place. The concept of a transparent screen works as an additional barrier between the interaction of the real and the augmented world.

AI is transforming the travel planning process, making it more intuitive and convenient. AI in travel planning acts as a personal assistant, using sophisticated algorithms to suggest itineraries and destinations that match each traveler's unique preferences (Tapscott & Tapscott, 2016). These systems can analyze past trips, reviews, and even current weather conditions to suggest the most suitable options. Thanks to machine learning, AI is able to recognize and adapt to users' changing interests and habits, making recommendations increasingly accurate and personalized over time. AI also helps make booking easier by providing real-time information on ticket availability, hotel room availability, and available excursions. This allows travelers more flexibility in planning their trips, minimizing stress and increasing planning pleasure. Thus, AI acts as an innovative tool that makes travel planning more intuitive, efficient and personal (Table 1 - Examples of using).

Table 1. Examples of using AI

App	*Description*
Google Trips	This app uses AI to analyze your email inbox to automatically gather information about your upcoming trips and offer personalized recommendations for places to visit.
Hopper	This app predicts prices for airline tickets and hotel rooms using AI to analyze massive amounts of data. It helps you find the best time to book to save money.
Kayak	Uses AI to improve search and filter travel options, suggesting options that best match a user's individual preferences.

AI in the travel industry takes into account not only travel preferences, but also the personal characteristics of each client. From restaurant recommendations to the choice of excursions - everything is selected individually. By analyzing user behavior

and feedback, AI can suggest options that you didn't even think about, but that will hit the mark.

The use of big data and AI makes it possible to collect and analyze information about previous travels, interests, even behavior on social networks of tourists. This allows us to offer travel products and services that are ideal for each customer, from choosing a destination to recommending hotels and excursions. This approach increases customer satisfaction and makes their journey more comfortable and memorable (Table 2 - Examples of using).

Table 2. Examples of using

App	*Description*
Booking.com	Uses AI to analyze users' preferences based on their past bookings and searches to suggest the most suitable hotels and holiday destinations.
TripAdvisor	Uses machine learning algorithms to create personalized tour and restaurant recommendations based on reviews and ratings from other users with similar interests.
Expedia	Uses data about customers' preferences and travel habits to offer customized travel packages, including airfare, hotels and excursions.

These examples demonstrate how AI technologies and big data analytics can be used to provide a more personalized and targeted approach to travel planning, increasing customer satisfaction and loyalty.

AI in hotel services helps improve guest comfort through automation and personalization of services. AI-powered systems can manage bookings and provide guests with personalized offers, including room preferences, services, and even in-room settings. AI also helps in optimizing staff work and hotel management, providing more efficient and faster service. With the help of AI, hotels can provide more intuitive and comfortable experiences for their guests, increasing customer satisfaction and loyalty (Table 3 - Examples of using).

Table 3. Examples of using

App	*Description*
Hilton's Connie	Hilton has introduced "Connie", an IBM Watson-powered robot that assists guests with information about the hotel and local attractions.
Marriott's Chatbots	Marriott uses chatbots to provide quick answers to guest questions and help book services.
The Cosmopolitan of Las Vegas's Chatbot Rose	This chatbot assists guests with restaurant reservations, event information and personalized recommendations.

These examples demonstrate how hotels are using AI to improve customer service and create unique hotel experiences.

Artificial intelligence is penetrating more and more into various areas of life. The hospitality industry, which traditionally follows new products, is no exception. There are many applications for AI-powered algorithms in the hotel industry. The pandemic has increased the demand for contactless services and, although COVID-19 is a thing of the past (Priyadarshini, 2020), they have caught on and are still in high demand. For example, online programs have replaced plastic key cards, which tourists so often lose. Through the application, a guest can independently choose a unit from anywhere in the world, pay for accommodation, check-in and check-out, book a parking space, which means saving his time. In addition, the guest, bypassing the reception, goes straight to the room and literally feels at home. This solution is ideal for apart-hotels designed for long-term stays.

Discerning travelers expect technology to become part of their everyday lives at work and at home. That's why hotel apps now also allow guests to set settings for comfort elements, such as turning on heating and air conditioning, adjusting lighting and TV speaker volume. In the future, they promise to teach AI to save this data. Every time a guest decides to book a stay at a specific hotel or brand, they will be greeted with a room perfectly customized to their preferences.

Chatbots have learned to answer guests' most basic questions. They can tell you about the services of the spa center, the opening hours of the pool or the breakfast menu. Some large hotels already use an advanced version of the bot - an online concierge. An example of a concierge already well-known in the professional environment is the voice assistant Rose at the Cosmopolitan Hotel in Las Vegas. It's similar to Apple's Siri, but specifically designed for hotel guests. You can ask your assistant to deliver towels, tell you about attractions, help you choose a cocktail, or order a taxi (more detailed information about chatbots in the hospitality industry is given below).

AI can improve the work of staff who are responsible for making reservations, handling complaints and other requests from guests. To do this, the hotel can use a speech analytics system powered by AI. These systems have long been used in banks, insurance companies, retail, air transport companies, as well as in the operation of hotlines. That is, wherever it is necessary to analyze 100% of the records of communication between employees and clients, and prepare a report on what problems the guests had, how they were helped, what affected sales, how best to convince a potential client and respond to his requests, and who of the employees did it better than others. This identifies best sales and service practices and then trains staff. It is important to understand that without using a speech analytics system, no more than 3% of the array of accumulated voice information can be analyzed. The advantage is

obvious. The system performs such analysis thousands of times faster than people, working 24/7. Moreover, the operator communicating with the client can receive the information necessary for the conversation directly in real time.

In general, the process of managing a hospitality enterprise is a set of relationships and actions aimed at ensuring the optimal ratio of labor, material and financial resources (Tapscott et al., 2000). Restaurant business processes can be divided into 3 main processes:

- the main business processes related to the direct production of restaurant services;

- auxiliary business processes that ensure the implementation of the production process;

- business management processes (Kostynets, 2020 *(1)*).

Automation of groups of the main business processes of a hospitality enterprise is one of the key tasks. Modern informational computer technologies, created directly for enterprises in the field of hospitality, allow to significantly optimize, simplify and accelerate many monotonous, repetitive operations specific to this business. Let's consider this issue in more detail using the example of restaurants.

Currently, there is a fairly large number of services that help optimize restaurant operations, from full accounting and analytics to table reservations. Such services can be classified according to three types of system functionality.

The first type is an information system designed for one institution or a network of institutions, which involves managing all business processes in one program. These systems are quite difficult to use and expensive. This calls into question the expediency of their use, especially for a recently opened restaurant. Their disadvantage is also the lack of interaction with the client (Van Krevelen & Poelman, 2010). Examples of such systems can be:

- "Quick Resto" is a combination of a CRM system for attracting guests, accounting and analytics tools to increase profits, and a universal POS system for visitor service;

- "Poster" is a program for accounting in cafes, shops and restaurants. Poster accelerates the reception of sales, keeps warehouse and financial records, builds detailed statistics on the institution's activities (Poster);

- "R-Keeper" - automates sales, customer service, kitchen and bar operations and analyzes sales and service data in different time periods at restaurant enterprises and entertainment centers. The collected data are used in warehouse and accounting systems (Kostynets, 2020 *(2)*).

Information systems belonging to the second type implement only table reservations. These are, for example, such systems as:

- "RestoPlace" - creates a scheme of the establishment in a convenient online designer, which can be easily inserted into the site and accept applications. A potential client chooses the table in the establishment that he liked. Reservations and deposits are made with the help of "Restoplace". The fact of booking a table is recorded in "R-Keeper";

- "emptyStudio" - a system that allows users to set up and according to their needs manage working time and free places online, also process requests and customer data, add employees to manage orders.

The third group includes systems that work with several institutions at once. Most often, they only provide the opportunity to choose a table in one of the offered restaurants, book a table for a certain time for a certain number of people, view the menu and leave your wishes. An example of such systems can be the "LeClick" system - it is a convenient and understandable service for searching, selecting and online booking of restaurants; the service ensures the selection and reservation of the appropriate restaurant according to an extended set of criteria.

Existing systems optimize restaurant operations in various ways. Some affect all business processes of the restaurant, but do not work with customers in any way, others, on the contrary, work exclusively with customers, that is, they transmit information only about the reservation of tables in the restaurant for a certain date and time. Thus, restaurants need such an information system that would be convenient and easy to use on the part of customers, meet their requirements and requests, namely: book a table for the right date and time, order the desired dishes and drinks, have a guarantee of timely fulfillment of the order. The requirement put forward by the staff is to ensure receipt of orders from customers and transfer them to other departments - kitchen, bar, hall, automatic collection of data on orders. A requirement for the program, which is usually put forward by the administration and management, is the automation of personnel management. To some extent, such an information system that will satisfy all these requirements can be a chatbot (software that simulates a real interview with a client).

Chatbots are the story about the interaction experience. When a restaurant launches its bot, the guest has a new way of communicating with the brand in a familiar environment: he can order meals or book a table with minimal movements. At the same time, an audience is formed that chooses only this way of interaction (Kostynets, 2020 *(2)*).

Potential restaurant guests have many requests that can be solved with the help of standardized algorithms - for example, to find out the exact address of a restaurant or order food delivery without going to a separate site or platform. A chatbot can perfectly cope with these tasks. If the guest has a non-standard question at the time of interaction with the chatbot, and there is no pre-programmed answer, the operator connects to the

guest. Today, this is the optimal scheme for using bots in the restaurant industry, both from the point of view of economy and convenience for the guest. On the other hand, a chatbot does not replace communication with a person.

A classic example of using chatbots in the restaurant business is delivery. However, the potential set of functions of chatbots is not limited to delivery - it is much wider: from table reservations and food orders to recruiting line staff. And yet, in most cases, the chatbot is responsible for the initial contact with the guest. The bot is able to answer simple, standard questions, as well as perform some functions: for example, provide a menu at the user's request, orient the guest to the location of network establishments, etc. This allows to offload the SMM specialist (chat operator), who joins the conversation only when non-standard questions arise. With the help of the bot, you can also conduct voting, surveys on the site and much more. The benefit of chat bots also lies in the digitization of the customer base, because when a guest starts communicating with a bot in a social network or messenger chat, the owner of the establishment receives contact information: as a rule, a phone number and name. This data can then be used for marketing activity, such as sending messages with promotions or offers.

If the chatbot is integrated with the establishment's accounting system, the restaurateur receives additional valuable analytics: which customers come to him, how much they spend, how much they buy using the chatbot. Another promising direction for the use of a chatbot is promotions, during which the chatbot is used to manage the engagement funnel. Chatbots are also used to work with personnel - training employees about menus and standards, identifying weak points in knowledge, scheduling interviews. In addition to messengers, restaurants can also use voice chatbots. Following banks, financial and insurance companies, restaurants are implementing language technologies to communicate with customers. In this case, the main advantage of using a chatbot is to relieve the call center. The bot answers questions and answers in the application or over the phone: where is the order, until what time is the establishment open, etc.

The conducted empirical studies indicate that the optimal chatbot, from the author's point of view, should be implemented using a technology stack (a set of software tools) (Fig. 1).

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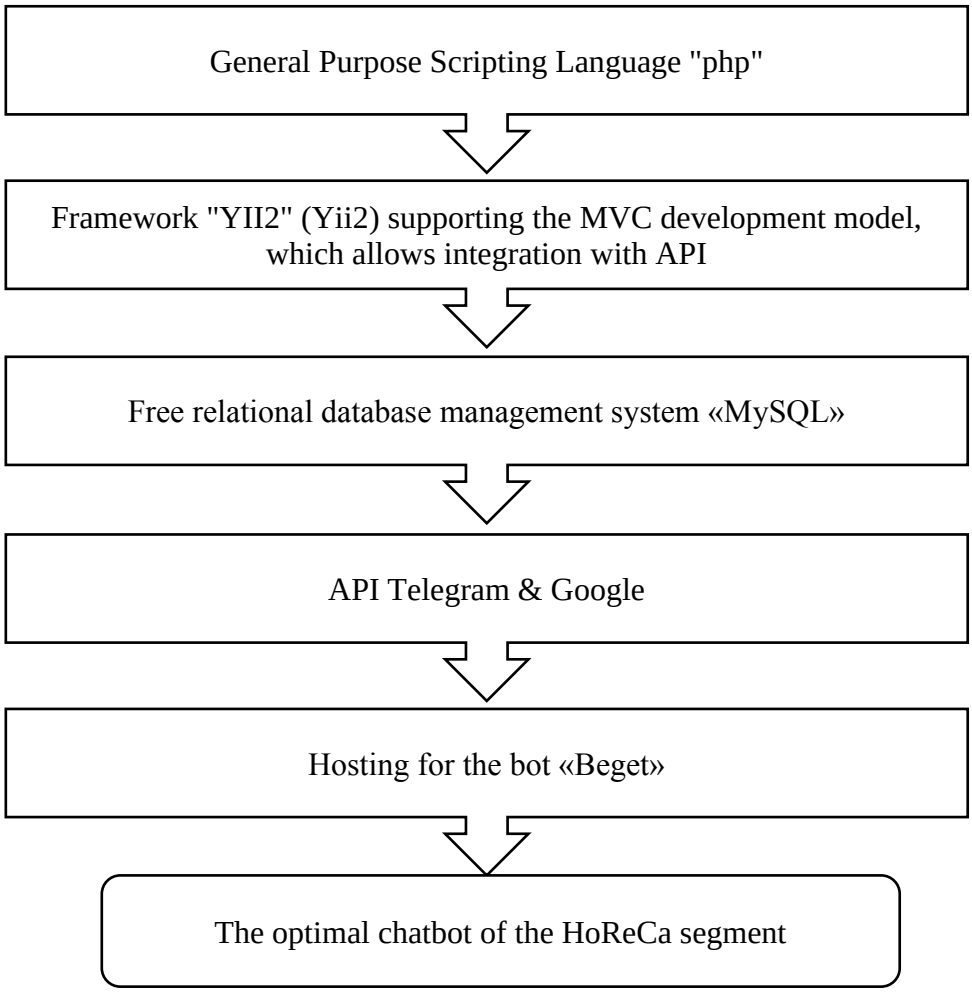

Figure 1. The optimal chatbot technology stack for the HoReCa segment

This bot will allow users to fully automate the processes from the creation of an order by the client to feedback from the client in the form of feedback upon completion of the order. The chatbot will integrate with the restaurant's database, receive up-to-date information about the composition of the menu, availability of ingredients, free seats in the hall and offer possible options to the client. When the customer creates an order, the system will receive all the necessary data and transfer them to the hall and kitchen administrator (Wagler & Hanus, 2018). After their confirmation, the order will be automatically sent to the waiters and cooks, who will begin to process it. The client, for his part, will be able to track the status of the order and have a guarantee that the table will be ready at the time of his visit and the ordered dishes will be served in a timely manner, the waiting time for service will be reduced to a minimum. After closing the order, i.e. paying and receiving the check from the waiter, the client will be able to leave his feedback with the help of the chatbot. Collecting feedback from customers will allow us to adjust and improve the activity of the restaurant in general and this information system in particular.

The application of the latest modern information technologies can give impetus to the development of the restaurant and hotel business, therefore, choosing the optimal combination of progressive digital solutions and a scientific approach to the HoReCa segment is an urgent task. The results of our research show the prospects of this direction and substantiate the expediency of their implementation in the activities of restaurant enterprises, because those establishments that implement all information conveniences for their customers will be in a more attractive position for a potential customer compared to those establishments where this service not practiced. Thus, the presence of a chatbot as an element of digitization will allow coordination of all departments and services both inside the restaurant and will be an indisputable advantage for interaction between the restaurant's services and the potential customer of services - the visitor. All this is possible due to the presence of a well-thought-out chain of interaction from the client to the waiter using modern technologies. The proposed idea of an optimal chatbot has a wide functionality for organizing the interaction process of the restaurant visitor with all departments responsible for customer service. Yes, in such a system, it is possible to reserve tables, order specific dishes and drinks from the restaurant menu. Accordingly, this program relieves one of the bottlenecks of the restaurant business, namely the process of high-quality order processing and customer service. In turn, the integration of a chatbot will allow you to place orders online, which will provide a new customer base for the restaurant and increase the competitiveness of the enterprise.

Conclusions. To summarize, we note that artificial intelligence is an effective business tool. Already today, a neural network is capable of processing huge amounts of information in real time, offering the optimal price for a hotel. This means that the company will not lose out on potential guests due to inflated prices and at the same time avoid the problem of selling rooms too cheap.

In the near future, algorithms may learn to collect and analyze other specific data - guest reviews, employee performance, resource allocation. This will allow you to make informed decisions on hotel management and ultimately lead to improved business results and a new level of guest comfort. Hoteliers who implement AI today stand a good chance of outperforming their peers and competitors in the coming years.

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