



DENIS GAVCHUK

**NEW
TECHNOLOGIES
IN THE
HOSPITALITY
INDUSTRY:
OPPORTUNITIES
AND CHALLENGES**

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**New technologies in the
hospitality industry:
opportunities and challenges**

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Аннотация

In this fascinating study, the author shares his vision of the future of hospitality, where digital innovations open doors to unexplored opportunities. From artificial intelligence that manages personalized customer service to robotic systems that ensure that hotels operate flawlessly, the book examines how new technologies can enhance guest experiences and optimize operational efficiency.

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New technologies in the hospitality industry: opportunities and challenges

Denis Gavchuk

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Introduction

The current state of the hospitality industry is characterized by dynamic development and adaptation to changes in consumer preferences. The hospitality industry, covering segments such as hotel business, restaurant services, travel services and entertainment events, is showing steady growth. According to the World Tourism and Travel Council, the sector's contribution to the global economy was \$ 8.9 trillion in 2022, demonstrating its importance and potential for further growth.

In today's world, technology plays a key role in transforming the hospitality industry. Their importance cannot be overemphasized: new technical solutions not only improve the quality of customer service, but also optimize operational processes, reduce costs and increase the competitiveness of companies. The use of technologies such as artificial intelligence, the Internet of Things, and blockchain opens up new horizons for businesses and increases customer satisfaction. For example, the use of artificial intelligence-based chatbots for booking rooms and processing guest requests can significantly reduce response time and increase the efficiency of customer interaction.

The main purpose of this book is to analyze the application of innovative technologies in the hospitality industry, as well as to consider the challenges and opportunities that

arise in this process. The objectives of the study include reviewing current technologies, assessing their impact on the quality of services provided and operational processes, as well as identifying key problems and potential risks associated with their implementation. In addition, this study aims to offer recommendations for the successful integration of new technologies into the business model of companies operating in this industry.

The research methodology is based on a comprehensive analysis of the existing literature, data from which will be supplemented by the results of interviews with experts and industry representatives. Both quantitative and qualitative approaches will be used in the work: quantitative data will allow an objective assessment of the impact of technologies on production indicators, while qualitative data obtained during interviews will provide a deeper understanding of current trends and practical aspects of their implementation. Such a multi-faceted approach will provide a comprehensive coverage of the topic and allow us to offer sound conclusions and recommendations.

Chapter 1: Introducing Robots to Hospitality

History and examples of using robots in hotels and restaurants

The use of robots in the hospitality industry is one of the brightest areas of technological evolution that can significantly change the face of the industry. Interest in robotization in the hotel and restaurant business was already evident in the middle of the 20th century, however, ensuring real implementation became possible only with the development of modern automation and artificial intelligence. At the turn of the new millennium, some initiatives to introduce automated solutions became experiments. One of the first examples is the Henn-na Hotel, which opened in Japan in 2015. This hotel became known as the first in the world to be operated by robots, which attracted many visitors and media attention. The hotel employed more than 30 robots performing various tasks, from checking in to delivering luggage to rooms, which significantly reduced staff costs and increased the level of automation. Another important stage in the history of the use of robots in hospitality was the activity Savioke of the Savioke Corporation,

which specializes in the development of delivery robots for hotels. In 2016, one of their projects, the Relay robot, started working in the Aloft hotel chain, owned by Marriott International, and quickly gained popularity among guests, who were impressed by the possibility of receiving services at a high technological level. Relay robots delivered items such as drinks, toiletries and even documents to guests' rooms, which made it possible to relieve staff and optimize operational processes.

Restaurants have also been affected by the introduction of robotics. In 2018, the automated pizzeria «Zume Pizza» in California began using robots for pizza preparation, which allowed to increase productivity and reduce the cost of production. In 2020, the Spyce restaurant chain in Boston demonstrated robot chefs capable of preparing various dishes independently, observing high standards of quality and hygiene. These examples show the industry's high willingness to adapt to new technologies. Analyzing the current trends, it is worth noting that the introduction of robots in the hotel and restaurant industry is associated not only with technical, but also with social challenges. A 2021 McKinsey survey found that 30% of customers in the United States and Europe are positive about automating the service process, but 20% expressed concern about job losses and lack of human interaction. However, technology will continue to evolve, and the integration of robots into the hospitality sector will become an increasingly integral part of business processes.

Thus, robotics represents an important area of technological change in the hospitality industry. The history of its application shows that, despite the initial difficulties and challenges, technological innovations can significantly improve the quality of customer service and increase the operational efficiency of a business. With the further development of artificial intelligence and automation, we can expect new, even more advanced solutions that will open up broad prospects for growth and development for the hospitality industry.

Robots for automating routine tasks

One of the most striking examples of the application of new technologies in the hospitality industry is robots designed to automate routine tasks. Modern hotels are increasingly implementing robotic solutions to perform functions such as luggage delivery and room cleaning, which can significantly increase the level of comfort and satisfaction of guests, as well as reduce transaction costs. So, in March 2019, the company «M Social Singapore» put into operation two robots that are designed to deliver luggage to guests directly to their rooms. These robots can move through all floors of the hotel using elevators, and work around the clock, without requiring breaks for rest or food. Such innovations help accelerate the process of check-in and eviction of guests, which is one of the key factors in the hospitality industry. Actual data shows that such robots can handle up to 100 deliveries of average baggage per day, which significantly reduces the load on staff.

In addition, robots have an important role to play in improving hotel sanitation. For example, robotic cleaning systems such as Rosie Savioke's Rosie Savioke can automatically clean and disinfect hotel rooms and public areas. This is especially true in the post-pandemic world, when maintaining a high level of hygiene has become a priority for many hotels. According to Savioke statistics, cleaning robots are able to clean

one standard room in 30 minutes, which is faster and more efficient than traditional methods. However, the introduction of such technologies is not without challenges. Investing in robotic systems requires significant financial investment at the installation and configuration stage. According to a study conducted by the International Hotel Robotics Association, the average cost of a single baggage delivery robot is about \$ 150,000, while the cost of a room cleaning robot is about \$ 200,000. This can be a significant barrier for small hotel businesses. It is also important to consider technical aspects and maintenance costs, which can be up to \$ 10,000 per year. Equally important is the aspect of interaction between robots and staff. The most effective implementation of technologies is possible only if robotic systems are integrated into existing workflows and employees are trained to interact with new tools. This will require a reallocation of roles and functions, which may cause initial difficulties and employee resistance.

At the same time, automating routine tasks using robots opens up huge opportunities for improving the operational efficiency of the hotel business. A successful example of such implementations can be observed in hotels of the Henn-nachain in Japan, where since 2015 robots have been performing a significant part of routine tasks related to guest service. This hotel chain notes a 20% reduction in operating costs and a 15% increase in customer satisfaction. The use of robots to automate routine tasks such as luggage delivery and room cleaning provides

an opportunity for the hotel business to significantly reduce costs, improve the level of service and adapt to modern standards of hygiene and safety. Despite the existing challenges, competent implementation of robotics can become a key competitive advantage in a rapidly changing market environment.

The impact of robots on the customer experience

One of the most significant innovations in the hospitality industry was the integration of robotic technologies. Robots in hotels perform various functions, ranging from luggage delivery to room cleaning, and significantly increase the comfort of guests. An example of successful implementation of such technologies is the M Social Singapore Hotel, which has been using robots to deliver luggage directly to rooms since March 2019. These robots are able to move through all floors of the building, performing about 100 deliveries per day. Guests of the hotel note the convenience and speed of service, which, of course, positively affects the overall impression of the stay. Another important aspect is related to improving sanitary conditions. Modern robotic cleaning systems, such as Savioke's Rosie robot, can automatically clean and disinfect hotel rooms and public areas. In the post-pandemic world, when hygiene and safety issues have become particularly important, such robots have proved to be irreplaceable assistants. According to Savioke, cleaning robots can perform a thorough cleaning of one standard room in just 30 minutes, which is significantly more efficient and faster than traditional methods. However, it should be borne in mind that the introduction of robotic technologies in the hotel business is accompanied

by certain challenges. First, there are significant financial costs at the initial investment stage. So, according to a study by the International Association for Hotel Robotics, the average cost of a single robot for luggage delivery is about \$ 150,000, and a robot for room cleaning is about \$ 200,000. These figures can be a real barrier for small hotels. You also need to take into account the annual operating costs for robot maintenance, which can reach \$ 10,000.

In addition, staff needs to adapt to new technologies. Effective implementation of robots is possible only if they are integrated into existing workflows and employees are trained accordingly. For example, the Henn-na hotel chain in Japan has successfully completed this task, automating a significant part of routine tasks since 2015. As a result of this implementation, the network was able to reduce operating costs by 20% and increase customer satisfaction by 15%. Thus, the impact of robots on the customer experience in hotels is multifaceted. On the one hand, they significantly increase the level of comfort and security for guests, improving the overall experience of the stay. On the other hand, the introduction of such technologies requires significant financial investments and organizational changes. In the long run, smart use of robotics can become a key competitive advantage that increases operational efficiency and customer satisfaction.

Economic and operational benefits of using robots

The introduction of robotic technologies in the hospitality industry brings significant economic and operational benefits. One of the key benefits is reduced operating costs. Robots that perform tasks such as cleaning rooms and delivering luggage can significantly reduce the need for manual labor. For example, the Henn-na hotel chain in Japan has successfully used robots in various operations since 2015, which has reduced staff costs by 20%. Reducing the cost of wages and social benefits directly affects the profit growth and competitiveness of enterprises. Cost-effectiveness is also reflected in increased productivity and speed of service. Robots can work 24 hours a day without interruptions and weekends, which leads to faster task completion. According to Savioke, baggage delivery robots can perform up to 100 deliveries a day, providing prompt service to guests. This gives employees more time to perform other important functions, such as individual customer service, which increases the overall level of service.

An important aspect of the economic benefits of using robots is to reduce the human factor and, consequently, reduce errors. It is estimated that human-related errors can lead to losses of up to 10% of revenues in the hotel business. Robots, on the other hand, work with high accuracy and consistency,

which reduces the number of erroneous actions and increases overall efficiency. For example, robotic booking systems can automatically process requests and check room availability, minimizing check-in errors and ensuring data accuracy. The operational benefits of using robots also include improved hygiene and increased safety. Robots can perform tasks that may be dangerous or inconvenient for humans. For example, robotic cleaning systems such as Tennant's T5 can effectively disinfect the hotel's public areas, ensuring a high level of cleanliness. This aspect has proved particularly important in the context of the COVID-19 pandemic, when sanitation and hygiene requirements have increased significantly. Improving hygiene conditions not only increases customer satisfaction, but also helps to reduce health care costs and reduce the risk of spreading infections. In addition, the use of robots improves monitoring and resource management. Modern robotic systems are equipped with sensors and software that allow you to collect and analyze data on the consumption of electricity, water and other resources. For example, IBM's Robotic Monitoring system allows real-time monitoring and optimization of electricity usage in hotel rooms, which reduces energy consumption by 15% and reduces utility costs.

Thus, the economic and operational benefits of using robots in the hotel industry are significant and multifaceted. Robots can significantly reduce operating costs, increase productivity and service quality, as well as improve hygiene and safety.

In the long term, the introduction of robotic technologies can become a significant factor in improving the competitiveness and sustainable development of hospitality enterprises.

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