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**Modern information and communication technologies in the organization of the
hotel service process**

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Abstract. *The article examines the role of information and communication technologies (ICT) in hotel management and the organization of guest service processes. It is established that modern digital technologies serve as a key factor in enhancing the efficiency of accommodation establishments, optimizing operational processes, improving customer interaction, and creating competitive advantages.*

The research methodology is based on a systematic approach, an analysis of modern ICT systems used in the hospitality sector, and an empirical review of ICT implementation at the "Lion" Hotel. The primary research methods include comparative analysis, a structural-functional approach, and expert evaluation methods.

The study identifies that hotel enterprises employ technological solutions such as property management systems (PMS), online booking, CRM systems, automated lighting and climate control, business intelligence (BI), electronic marketing, online payment processing, and guest feedback collection. The operational features of the "Lion" Hotel are analyzed, highlighting its use of comprehensive digital solutions for room inventory management, business data analysis, customer interaction, financial transactions, and rating assessment.

Key areas of ICT implementation in guest service processes are explored, including hotel integration into global booking platforms (Booking.com, Agoda, Trip.com), automation of reservation and payment processes, and the use of media resources and chatbots for customer interaction. The research finds that these technologies contribute to attracting more tourists, increasing consumer trust, strengthening competitive positions, and improving financial stability.

It is concluded that the active implementation of ICT in the hospitality industry is a critical factor in improving service quality, ensuring effective customer feedback mechanisms, and enhancing the operational efficiency of hotels. The use of innovative digital solutions allows businesses not only to maintain but also to expand their competitive advantages in the rapidly evolving hospitality market.



Keywords: *digital technologies, hotel management, process automation, booking, CRM systems, electronic marketing, business intelligence, financial transactions, customer feedback.*

**Сучасні інформаційно-комунікаційні технології в організації процесу
готельного обслуговування**

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Анотація. *У статті досліджено роль інформаційно-комунікаційних технологій (ІКТ) у сфері управління готельними підприємствами та організації*



процесу готельного обслуговування. Визначено, що сучасні цифрові технології є ключовим чинником підвищення ефективності діяльності закладів розміщення, сприяючи оптимізації операційних процесів, вдосконаленню взаємодії з клієнтами та формуванню конкурентних переваг.

Методологія дослідження базується на використанні системного підходу, аналізу сучасних інформаційно-комунікаційних систем, що застосовуються у сфері гостинності, а також на емпіричному аналізі досвіду впровадження ІКТ в готелі «Lion». Основними методами дослідження є порівняльний аналіз, структурно-функціональний підхід та методи експертного оцінювання.

У результаті дослідження виявлено, що готельні підприємства використовують такі технологічні рішення: системи управління готелем (PMS), онлайн-бронювання, CRM-системи, автоматизоване керування освітленням і мікрокліматом, бізнес-аналітику (BI), електронний маркетинг, обробку онлайн-платежів і прийом відгуків від гостей. Досліджено особливості діяльності готелю «Lion», який застосовує комплексні цифрові рішення для управління номерним фондом, аналізу бізнес-даних, взаємодії з клієнтами, фінансових операцій та формування рейтингових оцінок.

Проаналізовано ключові напрями впровадження ІКТ у процес готельного обслуговування, зокрема інтеграцію готелів у міжнародні бронювальні платформи (Booking.com, Agoda, Trip.com), автоматизацію процесу бронювання та розрахунків, застосування медіаресурсів і чат-ботів для комунікації з гостями. Встановлено, що використання таких технологій сприяє залученню більшої кількості туристів, підвищенню довіри до готельного підприємства, зміцненню його конкурентних позицій та покращенню фінансової стійкості.

Зроблено висновок, що активне впровадження ІКТ у сфері гостинності є критичним фактором для підвищення якості обслуговування, забезпечення зворотного зв'язку з клієнтами та підвищення операційної ефективності готелів. Використання інноваційних цифрових рішень дозволяє підприємствам



не лише зберігати, але й нарощувати конкурентні переваги в умовах стрімкого розвитку ринку готельних послуг.

Ключові слова: *цифрові технології, готельне управління, автоматизація процесів, бронювання, CRM-системи, електронний маркетинг, бізнес-аналітика, фінансові операції, зворотний зв'язок.*

Problem Statement and Its Connection with Important Scientific and Practical Tasks. Information and communication technologies (ICT) have become an integral element of modern hotel management, fundamentally transforming the organization of service processes and the promotion of hotel products. The implementation of ICT in the hospitality industry is essential for optimizing operational efficiency, enhancing customer satisfaction, and increasing the competitiveness of accommodation establishments. These technologies include property management systems (PMS), online booking platforms, customer relationship management (CRM) systems, business intelligence (BI), electronic marketing tools, and automated energy and resource management systems.

The increasing digitalization of the hospitality sector facilitates more flexible business operations, greater energy efficiency, and the automation of routine tasks. However, alongside the evident benefits, the adoption of ICT presents several challenges. These include the high initial costs of implementation, the need for specialized training for personnel, and barriers to accessibility for smaller hotels with limited financial and technical resources. Additionally, the rapid evolution of digital technologies requires constant adaptation by hospitality businesses to maintain service quality and market competitiveness.

The practical significance of this research lies in identifying effective strategies for integrating ICT into hotel management and service processes. Understanding how these technologies influence business performance, customer experience, and operational efficiency will provide valuable insights for hotel managers, policymakers, and technology developers. By addressing existing challenges and leveraging ICT



solutions effectively, accommodation establishments can improve their financial sustainability and long-term competitiveness in an increasingly digitalized market.

Analysis of Research and Publications. The role of ICT in the hospitality industry has been widely explored in scientific literature. Researchers have analyzed the benefits of digitalization in hotel management, the impact of automation on customer experience, and the effectiveness of ICT-driven marketing strategies. Notable contributions in this field include studies by Andrushkiv B., Kyrych N., Kilyar O., and Hahaluk O. [1], who examine management mechanisms for ICT integration in service industries, emphasizing their role in socio-humanitarian development.

Polinkevych O. [2] investigates the application of ICT for personalized hotel service delivery, identifying how consumer preferences and values shape digital transformation strategies. Chepurda L. and Petrenko S. [3] classify ICT applications in the tourism sector, outlining their significance for business optimization. Furthermore, Kuźmicki M. [4] highlights the transformative role of ICT in hotel services, examining how digital solutions enhance service delivery and operational efficiency.

Several studies have also explored the broader impact of ICT on the hospitality industry. Ip C., Leung R., and Law R. [5] analyze the development of digital technologies in hotel management, while Law R., Buhalis D., and Cobanoglu C. [6] discuss the evolution of ICT applications in hospitality and tourism. Additionally, Gonzalez R., Gasco J., and Llopis J. [9] examine how ICT influences human resource management in the industry.

Despite the wealth of research on ICT in hospitality, gaps remain in understanding the specific implementation of these technologies in individual hotels and their adaptation to market conditions. Existing studies often provide generalized overviews without addressing the unique challenges faced by different types of accommodation establishments, particularly in competitive environments. Moreover, while many publications focus on the benefits of ICT adoption, less attention has been given to the economic, organizational, and technical challenges associated with their implementation.



Identification of Previously Unresolved Aspects of the General Problem.

Several key aspects of ICT implementation in hotel management remain insufficiently explored:

1. **Hotel-Specific ICT Strategies** – While numerous studies discuss ICT adoption at an industry-wide level, there is a lack of research on how individual hotels tailor digital solutions to their specific operational needs and market conditions.

2. **Economic Feasibility of ICT Investments** – The financial implications of ICT implementation, including cost-benefit analyses for different hotel categories, require further examination. Many smaller establishments struggle with the high costs of digital transformation, necessitating research on cost-effective strategies and financial models.

3. **Customer-Centric Digitalization Approaches** – Although studies highlight the advantages of ICT in customer relationship management, the effectiveness of specific digital engagement tools, such as chatbots and AI-driven recommendations, is still underexplored.

4. **Integration with Emerging Technologies** – The potential of artificial intelligence, blockchain, and IoT in hospitality has been widely discussed, yet empirical research on their practical application and impact remains limited.

5. **Regulatory and Ethical Considerations** – The growing reliance on ICT raises concerns about data privacy, cybersecurity, and regulatory compliance. Research on the legal and ethical challenges associated with digitalization in hospitality is necessary for developing comprehensive industry standards.

Addressing these issues is essential for ensuring that ICT implementation in hospitality is both effective and sustainable. This study seeks to contribute to existing knowledge by exploring the specific application of digital technologies in the management and service organization of the "Lion" Hotel.



Formulation of the Article's Objectives (Research Tasks). The primary objective of this article is to analyze the key directions and practical applications of ICT in organizing the service process at the "Lion" Hotel. To achieve this goal, the study sets the following research tasks:

1. **Examine the role of ICT in modern hotel management**, identifying the primary digital solutions used in the hospitality industry.
2. **Analyze the specific ICT applications at the "Lion" Hotel**, evaluating their effectiveness in enhancing service organization and guest experience.
3. **Assess the economic and operational impact of digital technologies**, focusing on cost optimization, revenue generation, and competitiveness.
4. **Identify challenges and barriers to ICT implementation**, including financial, technical, and organizational constraints.
5. **Propose strategies for enhancing ICT utilization**, considering emerging technologies, regulatory requirements, and best industry practices.

By addressing these objectives, this study aims to provide practical recommendations for hotel managers and industry stakeholders on leveraging ICT to improve service efficiency, customer satisfaction, and business performance. Additionally, it seeks to fill research gaps by offering an in-depth case study on ICT integration in a specific accommodation establishment, contributing to the broader discourse on digital transformation in hospitality.

The results. The organization of the hotel service process is aimed at meeting consumer needs and improving service quality. This approach involves comprehensive measures for effective planning, cost reduction, service enhancement, and business reorientation through the adoption of ecological technologies using ICT. These technologies modernize hotels, enhance guest comfort, attract a wider audience, and enable flexible responses to changes in demand for hotel services.

Consumer service at the «Lion» Hotel, located in the Bulgarian ski resort of Borovets, is also facilitated through information and communication technologies. According to the online publication «Emerging» Europe, Borovets ranks second



among the best ski resorts in Eastern and Southeastern Europe, ahead of Bukovel in Ukraine, which holds the third position. The «Lion» Hotel is classified as a high-end accommodation establishment with a four-star rating under the hotel service certification system. A brief description and general characteristics of the establishment are presented in Table 1.

Table 1

Characteristics of the «Lion» Hotel's Operations and Services

Parameter	Description
Ownership	Limited Liability Company
Location	Bulgaria, Borovets ski resort
Classification	Four-star hotel
Number of rooms	162
Capacity	350 primary beds
Room types	24 studios, 62 standard rooms, 65 deluxe rooms, 5 apartments
Room amenities	Air conditioning, flat-screen TV, cable channels
	Private bathroom, complimentary slippers, free toiletries, hairdryer
Accessibility	6 rooms adapted for guests with disabilities
Conference halls	2 halls (90 and 150 seats) with technical equipment
Work studio	Capacity of 15 seats
Game room	Available
Ski equipment storage	Available
Safe for valuables	Available
Parking	Open parking lot
Services	Free shuttle service to/from the first lift, ironing, laundry, dry cleaning
Spa center	Indoor pool, sauna, fitness center, various massages
Restaurant	Main restaurant (240 seats) with a buffet for breakfast and dinner, Tavern restaurant (80 seats) with traditional Bulgarian cuisine and folklore program
Lobby bar	Features two fireplaces, fine wines and beverages, cozy atmosphere

Source: compiled by the authors

The operational characteristics of the «Lion» hotel shape its internal environment,



which is influenced by external factors. At the modern stage of development, the implementation of innovations has become a key direction in addressing pressing issues related to climate change, energy crises, and the fulfillment of social and economic needs, emphasizing the importance of stimulating their activity for both entrepreneurs and the state. Therefore, the integration of ICT into hospitality businesses not only optimizes business processes, enhances operational efficiency, and improves service quality but also ensures their long-term competitive advantage and promotes the sustainable development of the hospitality industry.

ICT involve performing operations of varying complexity according to strictly regulated rules. ICT operates based on information systems, which constitute their core environment and consist of computer networks, databases, software products, communication links, and technical communication tools, among others. The function of information systems is directed towards organizing the storage and transmission of information, while the role of information technology focuses on processing primary data for targeted purposes. Today, hotel enterprises employ modern information systems in service organization processes, including: hotel management systems (PMS) for reservations, guest registration, room management operations, and inventory control; online booking systems; sales management systems for automating cash transactions; CRM systems for tracking and analyzing interactions with guests; automated lighting and climate control systems that adjust according to room occupancy; business intelligence (BI) systems for trend forecasting and resource planning; and e-marketing solutions for promoting hotel products on social media, placing online advertisements, personalizing offers, and analyzing guest behavior to enhance service quality and improve the customer experience. Additionally, hotels utilize the «Payment Gateway» (PG) system, which processes online payments and can be integrated with platforms for collecting guest reviews and ratings. This system ensures secure payment for services and enables guests to provide feedback after receiving services. Furthermore, hotels employ analytical platforms to assess room occupancy, analyze demand, as well as chatbots and virtual assistants, and mobile



applications that facilitate room reservations, guest registration, and the dissemination of information about available services.

The experience of implementing ICT innovations in consumer service processes at the «Lion» Hotel highlights key directions, as illustrated in figure 1.

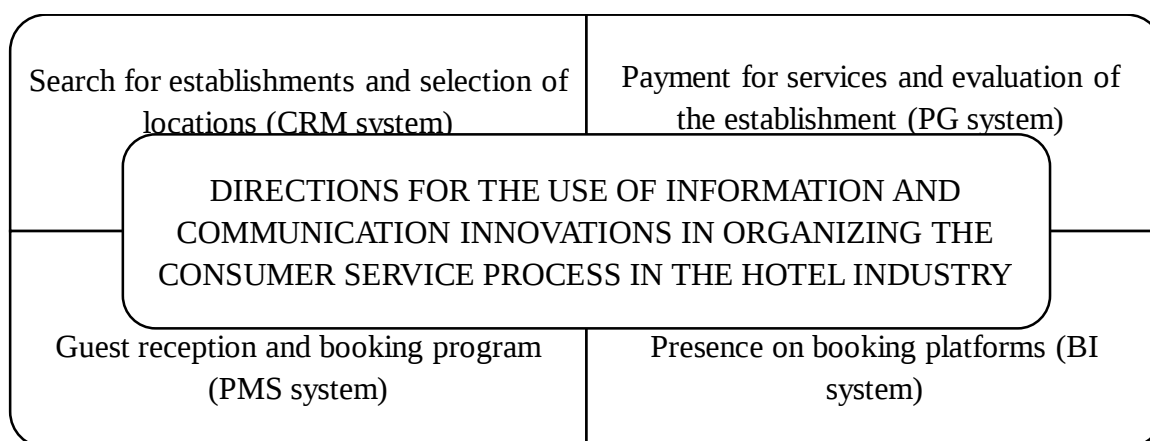


Fig. 1. Directions for the use of information and communication innovations in organizing the consumer service process in the «Lion» hotel

Source: developed by the authors

Thus, the «Lion» hotel utilizes the following information and communication systems:

1. PMS (Property Management System) – a hotel management system that ensures the management of room reservations, guest registration, room inventory, and other operations related to guest reception and accommodation.

2. BI (Business Intelligence System) – a system that enables the collection, analysis, and presentation of business data, including sales, marketing, and operational data. It also allows for an assessment of the hotel's presence on various booking platforms.

3. CRM System – a system for managing consumer relationships that helps track guest information, preferences, booking history, and other data. The CRM system enables consumers to search for accommodation facilities and select temporary lodging based on their preferences and needs.



4. PG (Payment Gateway System) – a system that processes online payments and can be integrated with platforms for receiving guest reviews and ratings. It ensures secure and fast payment for services and provides guests with the ability to leave reviews about the quality of services provided at the hotel.

Thus, the key directions for the implementation of information and communication innovations in organizing the consumer service process at the «Lion» hotel include:

1. Searching for accommodation facilities and selecting locations. One of the most critical tasks of a hotel is attracting tourists. To achieve this goal and maintain leadership positions in the highly competitive hospitality market, information and communication technologies, as well as media resources, are employed. Today, people are accustomed to visiting social media platforms daily, and although advertisements placed there may not always be engaging, they are consistently memorable. Analyzing the «Lion» hotel's activities in this area reveals that the information on the establishment's website is presented conveniently, with a well-structured list of questions that may interest guests. All links function quickly and without delays.

2. Presence on booking platforms. A well-integrated ICT system within the hotel's internal environment and website serves as a key factor in promoting its product. However, marketing activities also rely on platforms such as Booking.com, Agoda, and Trip.com. Presence on these platforms is essential for accommodation facilities seeking growth and economic success, as their use enhances the hotel's popularity and credibility. These booking systems are widely trusted and utilized by people worldwide.

3. Guest reception and booking system. The procedures for guest reception and room booking must be supported by a reliable and secure system. Errors, inefficient functionality, or a poorly designed booking system can deter guests, regardless of strong advertising and positive reviews. Consumers prioritize the speed of the booking process and the assurance that the system functions correctly. Booking errors or check-in issues result in an immediate loss of trust in the establishment. Therefore, the «Lion»



hotel employs the latest version of the booking software, which includes an enhanced table view that updates automatically after each guest interaction. The implementation of this new system necessitated an express training course for staff to acquire the necessary operational skills and understand the advantages of the improved technology in service organization.

4. Payment for services and hotel evaluation. Innovations in payment systems improve the hotel's operations and enhance service quality. The processing of payment transactions via electronic cards, mobile phones, digital payment systems such as PayPal and Mobile Pay, and cash transactions supports the hotel's financial stability and innovative initiatives. This approach ensures maximum guest satisfaction, which in turn fosters positive impressions and leads to favorable reviews. Consequently, it becomes necessary to establish a dedicated platform for guests to leave feedback.

The evaluation of a hotel's rating is a crucial aspect of its operations. Before making a reservation, potential consumers typically read comments and reviews about a hotel. A positive reputation enhances the hotel's rating and competitiveness, positioning it as a market leader. Research findings indicate that the «Lion» hotel is part of an influential network whose success is driven by the implementation of innovative communication technologies and IT solutions.

At present, information and communication technologies are continuously evolving due to scientific and technological advancements and the growing innovative activity of enterprises. The implementation of robotic innovations is reshaping the world daily. While artificial intelligence is often perceived as a futuristic concept, it is already a reality. Analysis of current information sources allows for predictions regarding the future integration of such innovations in the hospitality sector. However, for now, robots are primarily used in the restaurant industry, and their capabilities remain relatively limited, requiring significant maintenance. In Eastern countries, robotic services have become so common that they no longer surprise people, whereas in European countries, these innovative technologies are gradually being introduced, driven by increasing public interest.



Conclusions. The «Lion» hotel actively implements modern information and communication technologies in the consumer service process, particularly innovative systems for registration, booking, payment transactions, and cash operations. It utilizes media resources, online booking platforms, and chatbots for prompt customer support, ensuring feedback, disseminating information about the establishment, conducting promotional campaigns, increasing ratings, promoting services, attracting a larger number of consumers, and consequently strengthening competitive positions, increasing business revenue, and maintaining high service quality.

Based on the conducted research, the key directions for implementing information and communication innovations in organizing the consumer service process in the «Lion» hotel have been identified, including searching for accommodation facilities and selecting locations (CRM system), presence on booking platforms (BI system), utilization of guest reception and booking systems (PMS system), and innovative technologies in the payment system and establishment evaluation (PG system). Further analysis of the impact of these directions in the use of information and communication technologies on business processes and hotel performance will enable the enhancement of accommodation management systems and the improvement of consumer service quality in the hospitality industry.

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