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**NEW TECHNOLOGIES IN RESTAURANT SERVICE ORGANIZATION:  
SAFETY, SERVICE, COMMUNICATION**

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## **НОВІ ТЕХНОЛОГІЇ В ОРГАНІЗАЦІЇ РЕСТОРАННОГО ОБСЛУГОВУВАННЯ: БЕЗПЕКА, СЕРВІС, КОМУНІКАЦІЯ**

*In today's world, technology has become an integral part of the development of various industries, and the restaurant business is no exception. In particular, there is currently an active implementation of new (innovative) technological solutions in restaurant service organizations, opening up new opportunities to improve service quality, enhance safety, and foster effective communication between staff and customers. Thus, this article is dedicated to studying the impact of new technologies on the organization of restaurant service, specifically focusing on aspects of safety, service quality, and communication processes. To achieve the objective, the following research methods were utilized: analysis of literary sources, comparative analysis, survey, and observation methods. It is possible due to their optimizing impact. Indeed, using these technologies contributes to the transformation of traditional methods in the restaurant industry, enhances the efficiency of processes, and creates a more comfortable experience for guests. It has been proven that security technologies in restaurant service significantly expand the possibilities for protecting*

*guests' health, enhancing safety for staff, and ensuring data confidentiality, which is crucial in today's conditions. It has also been proven that service technologies radically change the hospitality experience and optimize the operational processes of establishments. They improve service quality, reduce wait times, and provide a personalized approach to each customer. It has been proven that communication technologies in restaurant service automate customer interactions, which facilitates faster and more accurate communication, improves feedback, and contributes to more effective guest relationship management. The prospects for further research lie in the in-depth study of the impact of new technologies on service quality, safety, and process efficiency in the restaurant industry, as well as in assessing their potential to enhance personalization and customer satisfaction.*

*У сучасному світі технології стали невід'ємною частиною розвитку різних галузей, і ресторанный бізнес не є винятком. Наразі активно впроваджуються інноваційні технологічні рішення в організацію ресторанного обслуговування, що відкриває нові можливості для підвищення якості сервісу, поліпшення безпеки та ефективної комунікації між персоналом і клієнтами. Відтак, ця стаття присвячена вивченню впливу нових технологій на організацію ресторанного обслуговування, зокрема на аспекти безпеки, якості сервісу та комунікаційних процесів. Для досягнення мети використано такі методи дослідження, як аналіз літературних джерел, порівняльний аналіз, а також методи опитування та спостереження. У межах дослідження доведено, що нові технології в організації ресторанного обслуговування забезпечують інноваційні підходи у сферах безпеки, сервісу та комунікації. Це стає можливим завдяки їх оптимізаційному впливу. Зокрема, використання цих технологій сприяє трансформації традиційних методів роботи в ресторанній індустрії, підвищує ефективність процесів і створює більш комфортний досвід для гостей. Доведено, що технології безпеки у ресторанному обслуговуванні значно розширюють можливості захисту здоров'я гостей, підвищують рівень безпеки для персоналу та забезпечують конфіденційність даних, що є особливо*

важливим у сучасних умовах. Доведено, що сервісні технології докорінно змінюють клієнтський досвід і оптимізують операційні процеси закладів. Вони підвищують якість обслуговування, скорочують час очікування та забезпечують індивідуальний підхід до кожного гостя. Доведено, що комунікаційні технології у ресторанному обслуговуванні автоматизують взаємодію з клієнтами, що сприяє швидшій та точнішій комунікації, покращує зворотний зв'язок і забезпечує ефективніше управління відносинами з гостями. Перспективи подальших досліджень полягають у поглибленому вивченні впливу нових технологій на якість обслуговування, безпеку та ефективність процесів у ресторанній індустрії, а також в оцінці їхнього потенціалу для покращення персоналізації та задоволення клієнтів.

**Keywords:** *restaurant staff; contactless technologies; access control; robotic service systems; self-service kiosks; mobile apps with integrated functions; security.*

**Ключові слова:** *персонал ресторану; безконтактні технології; контроль доступу; роботизовані системи обслуговування; сервіси самообслуговування; мобільні додатки з інтегрованими функціями; безпека.*

**Problem statement.** In today's world, technology has become an integral part of the development of various industries, and the restaurant business is no exception. In particular, there is currently an active implementation of new (innovative) technological solutions in the organization of restaurant service, opening up new opportunities for improving service quality, enhancing safety, and facilitating effective communication between staff and customers. It should be noted that the latest technologies adaptation to the specifics of the restaurant business not only significantly simplifies the service process but also optimizes management functions, reducing costs and improving interaction with guests. Particular attention is given to safety issues in the context of modern realities, as the protection of customer data, health, and food safety are critical to the reputation of a restaurant establishment. Innovative systems such as contactless payments, process automation, modern

methods implementation for monitoring product quality, and other technologies make service more comfortable and secure. Service is also one of the core factors determining the success of the restaurant business. Technologies simplify operational processes and significantly improve interaction with guests, allowing staff to respond quickly to customer needs and create a personalized approach for each individual. In addition, the integration of communication platforms integration for feedback allows restaurants to receive reviews and adjust their service strategy accordingly.

***The analysis of recent researches and publications.*** Yehupova I. M., Malynovska O. Yu., and Povorozyuk I. in their works emphasize that modern innovative solutions adopted in the restaurant business not only meet the current demands of customers but also helps to establish new standards in the service industry. Sokirnyk I. V. also notes that innovations in the operations of restaurant enterprises are aimed at gaining new advantages in the field of restaurant service, particularly in the areas of safety, service, and communication. Therefore, the research on this topic is relevant and timely.

***Purpose of the article.*** This article is dedicated to studying the impact of new technologies on the organization of restaurant service, specifically focusing on aspects of safety, service quality, and communication processes.

***The paper main body with full reasoning of academic results.*** New technologies in the organization of restaurant service enable innovative approaches in various areas, such as safety, service, and communication transform traditional methods in the restaurant industry, enhancing efficiency and comfort for guests. Indeed, new security technologies in the organization of restaurant service help ensure both physical and information security for guests and staff [2; 4].

The main areas of implementing such technologies (Table 1) include contactless systems, intelligent video surveillance systems, access control, hygiene technologies, process automation, data management, and automation of food preparation [4-5].

**Table 1. Characteristics of security technologies in the organization of restaurant service**

Technologies	Characteristics of the technology's focus of action
Contactless technologies	A set of specialized software and technologies designed to optimize internal restaurant processes, such as inventory management, order handling, and processing and analyzing customer data.
Intelligent video surveillance systems	A set of innovative tools and methods aimed at maintaining high standards of cleanliness and sanitation within the establishment.
Access control technologies	Systems that restrict access to certain areas of the restaurant (e.g., the kitchen or storage rooms) to prevent unauthorized entry.
Hygiene technologies	Video surveillance systems equipped with artificial intelligence capable of analyzing and recognizing various situations in real time.
Process automation and data management	Solutions that enable operations without physical contact with staff or surfaces.
Food preparation automation	A set of specialized robotic devices and automated systems in the kitchen for partial or full meal preparation.

*Source: formulated by the author based on [3; 5-6]*

Let's take a closer look at the outlined technologies and their impact on safety.

1. Contactless technologies, specifically contactless payments. These payments enable payment systems based on NFC (Near Field Communication), such as through smartphones or bank cards with contactless capabilities. This minimizes physical contact between guests and service staff, reducing the risk of infection spread.

2. Intelligent video surveillance systems, specifically video surveillance with elements of artificial intelligence and behavior analysis. These systems use artificial intelligence to detect suspicious activities or unauthorized access to premises, which allows for automatic notifications to security personnel about potential threats. Additionally, intelligent cameras can analyze movements within the restaurant, identify possible threats or unlawful actions, and enable quick responses to situations such as theft or unauthorized attempts to enter restricted areas.

3. Access control technologies, specifically electronic access systems, and automated door locking and entry monitoring. This involves the use of cards, and biometric scanners (such as fingerprint recognition or facial recognition [3]) to restrict access to secure areas like the kitchen, storage rooms, or offices, which enhances physical security on the premises. Additionally, technologies are used for

automatic door locking or unlocking with remote control, allowing for the prevention of unauthorized access.

4. Hygiene technologies, specifically automatic sanitizers and disinfectants, as well as intelligent ventilation and air filtration systems. This includes the use of contactless dispensers for hand sanitization in guest and staff access areas, helping maintain hygiene standards and prevent the spread of viral infections. Additionally, systems that automatically clean the air of bacteria and viruses, ensure proper air circulation, and reduce pollution levels contribute to a safer and healthier environment within the restaurant.

5. Process automation and data management, specifically robots for food delivery and the analysis and protection of customer data. In particular, the use of robots for delivering food to tables in restaurants helps reduce contact between guests and staff, thereby improving hygiene safety. Additionally, systems used for processing customers' data (such as during payment transactions [3]) with high levels of protection ensure confidentiality and the security of personal information.

6. Robotic systems for automating food preparation. The implementation of automated kitchen devices and robots for food preparation helps reduce human involvement in cooking processes, which can enhance safety in food preparation by minimizing the risk of errors, contamination, or accidents.

In fact, new security technologies enable improvements across a wide range of measures aimed at protecting the health of guests, ensuring the safety of staff, and safeguarding the confidentiality of information. For example, the Fenix restaurant complex (Kyiv) actively uses contactless payments through mobile apps and payment systems, which reduces the risk of infection spread and enhances customer comfort by allowing them to pay for their orders without the need to contact a cash register or handle cash.

New service technologies in organization of restaurant service specifically transform the guest experience and optimize operations of establishments. These innovations enhance service quality, making it faster and more personalized. The main areas of implementing such technologies (Table 2) include interactive menus and mobile

apps, robotic service systems, booking and guest flow management systems, self-service systems, and smart service personalization systems [3-4].

**Table 2. Characteristics of service technologies in the organization of restaurant service**

Technologies	Characteristics of the technology's focus of action
Interactive menus and mobile apps	Toolsets that allow guests to view menus, place orders, and pay bills through tablets, smartphones, or dedicated terminals.
Robotic service systems	Software solutions that allow customers to book tables in advance online or through mobile apps.
Booking and guest flow management systems	Software solutions that allow customers to book tables in advance online or through mobile apps.
Self-service systems	Technologies that enable customers to place orders, pay bills, and choose personalized service settings independently, without the involvement of a waiter.
Smart service personalization systems	Software solutions that collect and analyze data on customer preferences and order history to provide personalized recommendations, special offers, and an individualized approach during service.

*Source: formulated by the author based on [1; 3-4]*

Let's take a closer look at the outlined technologies and their impact on service.

1. Interactive menus and mobile apps, specifically interactive menus on tablets, mobile apps for placing orders, and QR codes for accessing the menu. So, thanks to these technologies, guests can view the menu, photos of dishes, ingredients, calorie content, and other details right at the table using interactive screens. This allows guests to save time and helps them make an informed decision. Restaurant apps enable customers to book tables, place orders, view the menu, and pay bills without the need for a waiter's assistance. In addition, instead of traditional menus, guests can scan a QR code on the table to view the menu on their smartphones. This reduces the need for physical menus and provides a more hygienic solution.

2. Robotic service systems, specifically robot waiters and automated kitchen systems. This refers to the use of robots for delivering orders to tables (which helps reduce the workload on staff, especially during peak hours). Currently, robots can take orders or deliver food, allowing the staff to focus on more personalized aspects of service. It also refers to robotic kitchen devices for preparing beverages, coffee,

frying, and cooking specific dishes (which helps increase the speed and accuracy of food and beverage preparation).

3. Booking systems and guest flow management systems, such as online booking and intelligent guest flow management systems. So, many restaurants use online booking systems that allow guests to choose an available table (which reduces wait times and avoids queues) and systems that predict the restaurant's load at specific times and automatically assign guests to tables (to minimize customer wait times).

4. Self-service systems, specifically self-service kiosks and table-side self-service technologies. For example, self-service kiosks located at the entrance of a restaurant or food court allow customers to place orders, choose ingredients, and make payments on their own, minimizing the need for waitstaff and increasing service speed. Table-side self-service technologies allow guests to independently order dishes, request additional services, and pay their bills using a tablet or smartphone.

5. Smart service personalization systems, such as Customer Relationship Management (CRM) systems and software for service personalization. In this case, it involves collecting and analyzing customer data, allowing restaurants to offer personalized recommendations, discounts, and promotions based on previous orders and guest preferences. Furthermore, using CRM systems, staff can access customers' order history and preferences, enabling them to provide a personalized approach when interacting with each guest.

In fact, new service technologies in restaurant service organizations enhance customer interaction and provide a more personalized experience. For example, Residence Restaurant (designed by Yova Yager Hospitality Design studio, Cherkasy) actively uses digital kiosks for self-ordering, allowing customers to select dishes directly on the screen, as well as personalize their orders by adding or modifying ingredients. In addition, Residence developed a mobile app that allows customers to pre-order food by selecting from the menu and paying via their smartphone. Another example is Yourz Space Bistro (a venue by chef Oleksandr Yourz, Odesa).

Previously, the bistro operated as a delivery service and a pop-up, but now it has a fully functional establishment that actively uses mobile apps and online platforms to automate the ordering and food delivery process. Through integration with online payment systems and GPS mapping, customers can track their orders in real-time, which enhances their satisfaction with the service.

New communication technologies in restaurant service organizations help implement modern solutions for improving customer interaction, automating communication, collecting feedback, and enhancing the overall service. The main areas of implementing such technologies (Table 3) include chatbots and virtual assistants, mobile applications with integrated communication features, social media and marketing platforms, email newsletters and SMS marketing, feedback systems, and service quality assessment systems [1-2].

**Table 3. Characteristics of communication technologies in restaurant service organization**

Technologies	Characteristics of the technology's focus of action
Chatbots and virtual assistants	Automated programs that can answer customer questions in real-time through websites, messengers, or mobile apps.
Mobile apps with integrated communication features	Tools that allow customers to interact with the restaurant: browse the menu, place orders, receive personalized offers, leave feedback, and request assistance.
Social media and marketing platforms	Platforms that allow the restaurant to engage in dialogue with customers, notify them about new dishes, special promotions or events, and receive real-time feedback.
Email newsletters and SMS marketing	Automated newsletters that notify customers about promotions, seasonal menus, or discounts.
Feedback systems	Integrated mobile apps or online resources, where customers can leave reviews, ratings, or suggestions about service or the menu.
Service quality evaluation systems	Special questionnaires or devices installed at the exit, enabling customers to quickly rate the level of service.

*Source: formulated by the author based on [1-2; 5]*

Let's take a closer look at the outlined technologies and their impact on communication [2; 5]:

1. Chatbots and Virtual Assistants, which are capable of automating responses to frequently asked questions and helping customers with table reservations, food orders, and other inquiries. Yes, chatbots automatically interact with customers through text or voice messages. Voice assistants can offer recommendations and take orders, significantly enhancing service speed.

2. Mobile apps with chat functions offer options for reservations and payments that allow users to leave feedback or ask questions. These features enhance user convenience and enable restaurants to maintain a history of customer interactions.

3. Social media and marketing platforms enable restaurants to maintain an active presence on social networks, helping them stay connected with customers, run marketing campaigns, and conduct surveys. It allows establishments to increase audience loyalty and attract new visitors.

4. Email newsletters and SMS marketing allow restaurants to send personalized offers and inform customers about new dishes, discounts, or special events, which helps boost sales and attract customers.

5. Feedback collection systems (such as QR codes, apps, or online surveys) allow restaurants to receive customer feedback. It helps restaurants respond promptly to comments and improve the level of service.

6. Service quality evaluation systems, such as specialized platforms for assessing service quality, help restaurants monitor staff performance, analyze customer satisfaction levels, and identify areas for service improvement.

New service technologies in restaurant service organizations allow for the automation of many processes, improving customer communication. For example, Eastman (the largest establishment by restaurateur Dmytro Zaporozhets, who develops restaurants under the First Line Group brand in Kyiv) actively uses communication technologies for order-taking via social media, mobile apps, and even voice assistants, making it easy for customers to order pizza. As for Gorcafe 1654 (First Line Group in Kharkiv), communication technologies help customers place coffee orders through a mobile app and offer personalized recommendations based on previous purchases.

**Conclusions from this study and prospects for further exploration in this direction.** The research demonstrates that new technologies in restaurant service organizations ensure innovative approaches in security, service, and communication. The use of these technologies contributes to the transformation of traditional working methods in the restaurant industry, enhances process efficiency, and creates a more comfortable experience for guests. Main conclusions:

1. Security technologies in restaurant service significantly expand the possibilities for protecting guests' health, enhancing safety for staff, and ensuring data confidentiality, which is crucial in modern conditions.
2. Service technologies radically transform the hospitality experience and optimize operational processes within establishments. They improve service quality, reduce wait times, and provide a personalized approach to each customer.
3. Communication technologies in restaurant service automate interactions with customers, facilitating faster and more accurate communication, improving feedback, and enabling more effective management of guest relationships.

The prospects for further research lie in the in-depth study of the impact of new technologies on service quality, safety, and process efficiency in the restaurant industry, as well as in evaluating their potential for enhancing personalization and customer satisfaction.

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