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DIGITAL TECHNOLOGIES AS AN IMPORTANT FACTOR OF THE RESTAURANT BUSINESS DEVELOPMENT

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Topicality. The restaurant business success is determined by the high level of service and efficient work of the staff. The combination of quality and speed of service, first of all, became real due to the possibilities of information technologies implementation in the work of restaurants. The relevance of the study grounds on the fact that the use of information technologies in restaurant service can allow to quickly and efficiently solve many management tasks, improve service quality, and, consequently, increase business revenue. **The aim of the article.** The aim of this study is to analyze the current state and to identify key aspects of modern digital technologies implementation and usage in order to improve the efficiency of restaurant business enterprises. **Research methods.** When conducting research, the following general scientific methods were applied: analysis, abstraction, induction, deduction, synthesis, inference, generalization, comparison. **Results.** The article considered the main tendencies in the restaurant market development in the digital economy period. Special attention was paid to the analysis of digital technologies use in the activity of restaurant business enterprises. The main directions and tools of the restaurant business digitalization were studied. Promising information and technological innovations for business protection during the coronavirus pandemic were outlined. **Conclusions and discussion.** It was determined that the information support of the restaurant business and the use of digital technologies are a strategic resource that helps to attract as many customers as possible, to achieve maximum sales and attendance, to gain the trust of guests, as well as to form a positive image of the enterprise. The scientific novelty of the study is to substantiate peculiarities of the use of modern information technologies in the management of restaurant business enterprises in order to ensure their effective functioning. Promising areas for further digitization that require tracking and the proper strategy choosing are based on more sophisticated solutions, including the Internet of Things technology, big data analytics, robotics, and mobile technologies.

Keywords: restaurant business, digitalization, the COVID-19 pandemic, digital technologies, digital marketing.

The topicality of the problem

The problem formulation. Modern information technologies remain a basic driver of economic growth, and a condition for the modernization of various sectors of economy. Many countries are making significant efforts in order to develop information infrastructure, and increase the availability of digital services for the population, such as e-payment services and e-commerce, Internet commerce and Internet of Things (IoT), crowdfunding, Internet banking, etc.

Digital technologies are especially relevant for the service sector. If trade and transport companies, enterprises of the tourism and hospitality industry use more digital technologies, they will be able to improve the quality of service provided, as well as expand the range of consumers.

The restaurant business is one of the most promising areas of development in the hospitality industry. Even in the face of the COVID-19 pandemic crisis, every restaurateur is trying to stay in the market, to strengthen its position in it, which demand a lot of competition. The use of innovative technologies in the development of production or the management of the enterprise allows improving its activities due to best practices and management methods. Preference in relevance is given to digital technologies, as their use is a necessary condition for the functioning of any catering establishment, ensuring accuracy, efficiency, high-speed processing, and transmission of information.

With each day, digital technologies are increasingly being introduced into the daily turnover of the restaurant business. Innovative technologies and the latest solutions help restaurants to improve the performance of all services, make the stay of guests more comfortable, and the institution itself modern and maximally customer-oriented.

The state of the problem study. Problems of information technologies development and their use in the restaurant business are highlighted in the scientific works of domestic and foreign scientists. Thus, the issue of the introduction of innovative information technologies in the management processes of restaurant enterprises was studied by N. Balatska (2020), H. Piatnytska, O. Hryhorenko and V. Naidiuk (2017), I. Povorozniuk (2021), T. Tomalia (2016), O. Zavadynska (2018), et al. The works of these scholars consider both the feasibility of using information technologies in the restaurant business, and the automation of business processes of institutions through the usage of automated management systems, marketing tools, and trends in innovation.

Unresolved issues. The introduction of modern information technologies in the restaurant business and the hospitality industry, in general, is attracting more and more attention from specialists. Peculiarities of the industry determine its ambivalent attitude to innovation in the field of digital technologies. On the one hand, it is an industry characterized by a very high level of competition. Low barriers to entry and the growing demand for catering services are driving competition and high demand for new service formats and ways in order to increase efficiency. On the other hand, the small size of business limits investment opportunities of enterprises in developing their innovative technologies, requiring the search for solutions that are cost-effective. However, the issue of the development of the restaurant business based on the introduction and use of digital technologies in the practice of enterprises is insufficiently covered and therefore requires additional research.

Research aim and methods

The aim of the article is to analyze the current state, and determine key aspects of the introduction and use of modern digital technologies to improve the efficiency of the restaurant business.

The methodological basis of this research is to study the processes of digitalization of the restaurant industry, and determine key principles of their implementation.

Research methods – analysis, abstraction, induction, deduction, synthesis, inference, generalization, comparison.

The object of the study is defined as digital technologies in restaurant enterprises activity.

The subject of the study is the key aspects of using modern information technologies in the management of a restaurant business enterprise.

The scientific novelty of this research is to substantiate the peculiarities of the use of modern information technologies in the management of restaurant business enterprises in order to ensure their effective functioning.

The information basis of this study is scientific works of domestic and foreign scientists on the researched problem: monographs, scientific articles, materials of international scientific and practical conferences; statistical data; Internet resources.

Research results

Digitalization has been a major trend and business growth factor for several years. Innovative information technologies have transformed both business and approaches to customers, sales of products and services, etc.

Digitalization of production or management processes is not limited to the usual automation of internal processes of the enterprise, as it involves the transfer of part of the work of staff to software. Due to the digitalization of work processes, enterprises reduce the number of actions required to perform tasks, reduce paperwork, the number of errors, and increase staff productivity. Maintaining the usual algorithms in the same form can lead to lag behind competitors, which can be problematic to eliminate in the future.

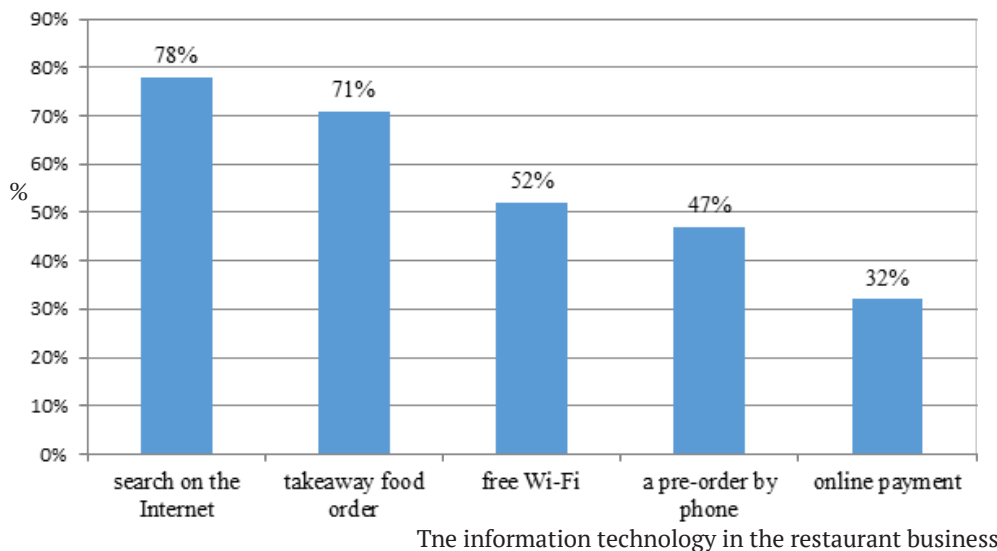
The digitalization of processes is relevant not only at the level of individual enterprises: entire industries choose this path of development as the only opportunity to meet today's rapidly changing conditions. Information technologies and automated control systems have become firmly established in the business environment in recent years, outlining the appropriate digital drivers for businesses. The use of automatic data collection and analysis, industrial IoT sensors, integrated control platforms, machine learning systems for optimal decision-making are implemented in most enterprises and corporations. Due to this, the digital transformation of industry, retail, public sector, and other areas is changing the life of everyone, and organizations as well.

The digital revolution has not escaped the restaurant business. To ensure leadership and gain a competitive advantage in the market of restaurant services, it is necessary to use computer networks, Internet technologies, end-to-end automation of all business processes.

Every year, innovations in the restaurant industry are developing quite rapidly. What used to be a novelty – table reservations, free Wi-Fi, or online home delivery – has now become a must-have. New techno-trends are changing the restaurant market,

with some already available and widespread, while others are being implemented in the activities of enterprises.

At one of the expert sessions of the NRA Show, the following data on the use of information technology in the restaurant business were announced: 78 % consumers are looking for a restaurant menu on the Internet; 71 % visitors have an opportunity to order takeaway food; 52 % guests are expecting in a restaurant free Wi-Fi; 47 % customers hope that in the institution can make a pre-order by phone; 32 % people pay through Apple Pay and Google Pay services (Pic. 1).



*Pic. 1. Frequency of information technologies use by clients of the restaurant industry
Source: based on (State Finance Institution for Innovations, 2020)*

All this suggests that it is no longer enough to simply meet the standard criteria of the restaurant: to guarantee only cleanliness, product quality and service. Consumers choose manufacturability and look for an institution that can meet this demand, which is relevant for our market.

Restaurateurs began to pay more attention to the automation of their enterprises, i. e. the processes of both the front and back-office:

- drafting and processing orders, including applications for waiters, as well as electronic menus for customers;
- management of menu;
- acceptance of payments and cash service;
- management of seating of guests;
- management of loyalty programs;
- planning, accounting and control of costs, control of staff, reporting;
- integration with warehousing, accounting, management accounting systems.

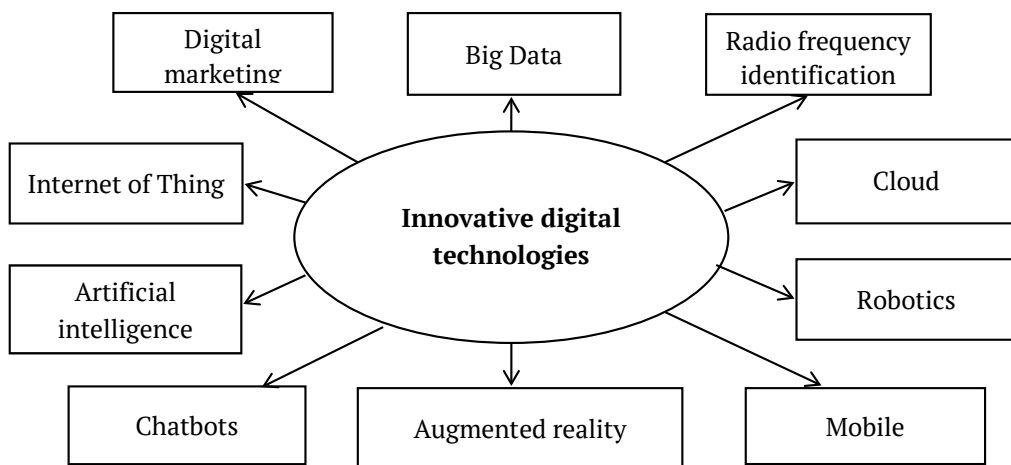
Therefore, the development of the restaurant business is impossible without the introduction of modern automated management systems that improve the quality of customer service, monitor the activities of the enterprise as a whole, daily analyze

financial statements, and more. The most widely used in restaurants are such complex solutions as Fidelio F&B, Micros, SERVIO, R-Keeper, B52®Restaurant, Sail-Restaurant, RestArt and others (Prysakar, 2015; Tomalia, 2016).

As an established standard for product labeling, QR-codes are relatively slow to penetrate the restaurant industry. At the same time, they are characterized by a very high speed of data processing and the ability to store a large amount of valuable information. QR-code can be placed on various surfaces, from the packaging of products and dishes to advertising banners, quickly and easily read by most modern mobile devices. They allow you to convey to customers key information about the restaurant with one touch, including opening hours, menus, history of the restaurant, etc. With the help of a QR-code, the company can inform customers about events, news, promotions, as well as activate loyalty programs and organize feedback (Tomalia, 2016).

Another area in the restaurant interaction with its customers is interactive technologies, as their features of the application are primarily the absence of the need to bargain for the waiter to place an order. For this purpose, the menu of the establishment with navigation is placed on the touch panels, which allows not only to get complete information about the dish but also to make clarifications about its preparation, which is transferred to production. The electronic menu also includes social networking and gaming services, a waiter call button, and the ability to pay in a contactless way.

Summarizing the experience of changes in the innovative activities of restaurants, we can note the following technological tendencies in the restaurant business: Big Data technology, the Internet of Things, augmented reality, chatbots and messengers, robotics, artificial intelligence, mobile applications, etc. (Pic. 2).



Pic. 2. Innovative digital technologies in the restaurant business
Source: supplemented according to the data (Tyshchenko, 2021)

One of the important innovation trends is the implementation of a single technological ecosystem that works with all sales channels, including delivery partners. This technology includes a mobile ordering and a payment system for those ones who eat at the table, as well as a click-and-pick-up system and self-service terminals for those ones who want to take orders with themselves.

Another innovative direction in the restaurant business is the use of the Big Data system. The essence of this area is to create a single automated data system that allows to obtain information on sales, average check, the dynamics of turnover of the enterprise from any region. With the help of the offered analytics, it is possible to understand not only the trends in the market of restaurant services but also to determine the attractiveness of the regions in terms of opening a restaurant. Analytics determines the priorities of target segments, their needs and demands.

The development of innovative technologies and especially artificial intelligence also affects the restaurant business. The processes of robotics and automation are beginning to be implemented in the restaurant activity. Artificial intelligence is a new direction, which is being intensively implemented in all spheres of activity, and can also allow replacing service personnel with jobs. But not only the robots have started to serve customers. There are also automatic machines that can cook meals during transportation and automatically solve delivery problems.

Digital technologies has a great influence on the development and use of marketing. In the process of digitalization, a special term has appeared – digital marketing, which is a tool of communication with the consumer, and is carried out through digital channels.

One of the most dynamic channels of digital marketing is social media marketing, which has radically changed the ability of restaurants to communicate with their target audience. At the same time, communication in this space should not be spontaneous, but part of a single strategy of representation in the social environment with its goals, objectives, and expected result. An important fact is that guests who are in the social information field of the restaurant are more willing to book tables or place an order online. At the same time, Facebook, Instagram, Telegram, and Twitter are the key networks where every restaurant should be presented, without taking into account other resources (Hrosul & Balatska, 2020).

Many restaurant businesses have their pages on different social networks. Still, their content is the same – photos of food and promotions. To compete in the market, institutions need to become a media company and create their show; be sure to place the booking module; make video content in the form of short sketches; share useful information, etc.

Now users can contact representatives directly through Messenger bots, buy a product (service) in one click, schedule an appointment, book a hotel room, or order food at home. The use of bots for business provides some advantages: quick information to users automatically (promotions, special offers, availability of services); free access and quick response to requests; possibility to organize simple technical support and consultations; direct communication with potential customers.

The trend in the field of restaurant digital marketing is to develop certain applications for smartphones. The mobile restaurant application is an effective tool that can provide easy access to customers to the most popular features, namely: information about the menu and composition of products; booking, ordering; monitoring and managing the loyalty program; choice of payment methods; contact information. Developing application is a relatively inexpensive way to focus access to the main services of the restaurant in one place using an adapted and user-friendly interface.

An attractive tool for restaurant marketing is augmented reality (AR). With the help of this technology, visitors can point their smartphone camera at a certain mark and see a 3D model of any dish on the menu, which allows them to examine it in detail and place an order. For example, Domino's New Pizza Chef used augmented reality to

provide customers with the ability to create and view pizzas using a mobile app, which was a great impetus for visiting the restaurant.

Additionally, a promising technology in the restaurant business, which meets the objectives of building a digital economy, is the technology of radio frequency identification. An example of such technology is the TableTracker table identification system, which consists of the fact that the customer who placed the order receives a special device in the form of a disk. The device identifies the specific table to which the order belongs, and allows staff to monitor the entire process of working on this order. The table tracking system is especially relevant for restaurants with a large number of seats and a high flow of visitors, for which reducing waiting times and minimizing costs are key factors in competitiveness.

It should be noted that the current realities of the functioning of enterprises in various sectors of the economy are characterized by a rather difficult situation. The spread of the COVID-19 threat around the world has changed the activities of all businesses. The coronavirus recession has not left any industry untouched, of which the restaurant business is the most prominent. Most restaurateurs are forced to use all key resources to maintain their viability (Balatska, 2020).

Restaurants, cafes, bars and other enterprises in this area in the fight against the pandemic are forced to change the concept of working with customers. To maintain their image, retain regular customers, and a general presence in the restaurant business, a large number of companies have reengineered the main business processes with an emphasis on the format of targeted delivery. The most popular food delivery applications in the world are Delivery.com, Glovo, Rocket.

To analyze the situation regarding the changes that have taken place in the restaurant industry after the pandemic, a survey of 20 restaurants in Uzhhorod was conducted. During the survey, restaurateurs were asked about their use of digital technologies to develop their business during the crisis. This allowed us to determine what forms the informatization of restaurant business enterprises takes in the field of customer relations.

The results of the study show that 68% of restaurants have begun to use information technology more actively in their work, namely: their own website, social networks, QR menus, electronic payments, and delivery services. Order processing and their integration with cashiering systems are the main things that interest businesses in terms of workflow automation. The vast majority of restaurants also provide basic communication and payment infrastructure. Free Wi-Fi Internet access and electronic payments are available in almost all establishments in the city. The most popular third-party food delivery service is Glovo, and 35 % of restaurants have their own delivery service.

Also, restaurant establishments demonstrate a high level of presence on the Internet, even if we do not take into account the posting of information on third-party services. Almost three quarters of restaurants have their own website, although their functional content can vary significantly. The presence on social media is even greater: 83 % of restaurants have a page on at least one social network (Facebook, Instagram).

It should be noted that the lack of an own app can be considered one of the main disadvantages and a promising area for further informatization for restaurants, as mobile devices are becoming the main means of accessing significant information. Developing your own application is a relatively inexpensive way to concentrate access to the main services of a restaurant in one place using an adapted and user-friendly interface.

Today it is important to create virtual restaurants by developing websites and mobile applications. With their help, customers can get information about meals,

prices, promotions, loyalty programs, view photos, 3D-tour, make table reservations, order food delivery, leave feedback about the institution on the rating resources. One of the new ideas on the market is “hubs” for virtual establishments: kitchens of different restaurants under one roof, between which autonomous cars ply, picking up orders and delivering them to customers. This reduces the cost of establishments and makes delivery more accessible to visitors.

The COVID-19 pandemic has prompted a restaurant business reboot. The work of restaurant business establishments will not be the same as before. After all, because of people’s fear of contracting a coronavirus infection, questions arise as to what exactly the requirements will be for customer service. Some of these problems of the world’s leading restaurants can be solved by robot waiters who can move ready meals from the kitchen. Before the epidemic, labor market problems were a major driver of restaurant robots, but the robotization of the restaurant business may accelerate in the near future.

Therefore, restaurant businesses in the rapidly changing epidemiological circumstances are forced to radically restructure their activities in the light of significant changes in consumer demands and the spread of digitalization of the world economy. By investing in the expansion of technological capabilities, they will be able to solve marketing problems to retain customers and strengthen their trust, create additional competitive advantages through constant and relevant communication.

Conclusions and discussion of results

Despite the unstable economic situation in our country due to the coronavirus pandemic, catering establishments are in great demand among places of leisure, means of organizing various events. The flexible policy of restaurant enterprises allows satisfying the desires of all people. But against the background of competition in the restaurant business, the question of moving away from traditional methods of service, cuisine, entertainment, and the expected contingent of consumers is increasingly emerging. Therefore, the restaurant business is forced to implement the latest information and computer technologies, methods and techniques at the level of management and service.

So, digital technologies are becoming an increasingly valuable resource in the restaurant industry, helping restaurateurs not only to maintain viability but also to open new promising areas of development. The introduction of digital technologies in the hospitality industry helps to attract as many customers as possible, the maximum number of sales and attendance, gaining the trust of guests, as well as the formation of a positive image of the enterprise.

The scientific novelty of the study is to substantiate the peculiarities of the use of modern information technologies in the management of restaurant business enterprises in order to ensure their effective functioning.

The practical significance of the obtained results is manifested in the possibility of applying a comprehensive system of business process management in the restaurant business with the use of modern information technology.

Informatization of the restaurant business, both in Ukraine and in the world, is based on a relatively small number of technical solutions that affect order processing, their integration with the management systems of the organization, as well as the dissemination of marketing information on the Internet and social media. Promising areas for further digitalization, which require tracking and adoption of an appropriate

strategy, are based on more complex solutions, including the Internet of Things technologies, big data analytics, robotics. In a short term, one of the innovative solutions for restaurant business enterprises is to develop their own mobile applications that integrate the most popular functions for customers, and create conditions for increasing customer loyalty and awareness of marketing policy.

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DIGITAL ТЕХНОЛОГІЇ – ВАЖЛИВИЙ ФАКТОР РОЗВИТКУ РЕСТОРАННОГО БІЗНЕСУ

Актуальність. Успіх підприємства ресторанного бізнесу визначають високий рівень обслуговування та оперативна робота персоналу. Поєднання якості і швидкості обслуговування насамперед стало реальним завдяки можливостям впровадження інформаційних технологій у роботі ресторанів. Актуальність дослідження полягає в тому, що використання інформаційних технологій у ресторанному сервісі дозволить якісно і швидко вирішувати безліч управлінських завдань, підвищити якість обслуговування і, як наслідок, збільшити доходи підприємства. **Мета дослідження.** Метою дослідження є аналіз сучасного стану та визначення ключових аспектів впровадження і використання сучасних цифрових технологій задля підвищення ефективності діяльності підприємств ресторанного бізнесу. **Методи дослідження.** При проведенні дослідження використовувались загальнонаукові методи: аналізу, абстракції, індукції, дедукції, синтезу, умовиводу, узагальнення, порівняння. **Результати.** У статті розглянуто основні тренди розвитку ресторанного ринку в епоху цифрової економіки. Особливу увагу приділено аналізу використання цифрових технологій у діяльності підприємств ресторанного господарства. Досліджено основні напрямки та інструменти цифровізації ресторанного бізнесу. Окреслено перспективні інформаційно-технологічні інновації для захисту бізнесу в період пандемії коронавірусу. **Висновки та обговорення.** Визначено, що саме інформаційний супровід ресторанного бізнесу та використання цифрових технологій є стратегічним ресурсом, що сприяє залученню якомога більше клієнтів, максимальної кількості продажів та відвідуваності закладу, завоюванню довіри гостя, а також формуванню позитивного іміджу підприємства. Наукова новизна дослідження полягає в обґрунтуванні особливостей використання сучасних інформаційних технологій в управлінні підприємствами ресторанного бізнесу із метою забезпечення їх ефективного функціонування. Перспективні напрямки подальшої цифровізації, що потребують відстеження та прийняття відповідної стратегії, засновані на більш складних рішеннях, включаючи технології інтернету речей, аналітику великих даних, робототехніку, мобільні технології.

Ключові слова: ресторанний бізнес, цифровізація, пандемія COVID-19, digital технології, цифровий маркетинг.