



DIGITALIZATION AND INFORMATION SOCIETY. SELECTED ISSUES

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DIGITALIZATION AND INFORMATION SOCIETY. SELECTED ISSUES

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and Tetyana Nestorenko

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3.7. DEVELOPMENT OF THE DIGITAL INDUSTRY IN THE FIELD OF HOTEL AND RESTAURANT AND TOURIST BUSINESS

The rapid development of the digital economy in the world ensures an increase in the competitiveness of states, industries, and enterprises. The ubiquitous level of digitalization entails significant changes in the process of organizing a business. The trend of today is digital transformation, affecting all areas, focused on the global application of digital technologies in the activities of economic entities, the formation of the information society and the digital economy as a whole. Digital transformation is the main development trend economy in the 21st century, based on the transition to a digital format for presenting information to increase the efficiency of the economy and improve the quality of life. The use of digital technologies contributes to an increase in the speed of exchange, accessibility and security of information during all spheres of life. Tourism, hotel and restaurant activity, being an information-rich industry that quickly responds to all changes, was one of the first to feel the impact of global digitalization. The introduction of digital technologies in the field of tourism forms new trends in its development.

One of the factors contributing to the digitalization of the industry tourism and hotel and restaurant business is the availability of the Internet environment. Over the past decade, the number of Internet users worldwide has grown from 21.2% to 63.7%, i.e. more than 2.5 times. For most of the population, the Internet has become an accessible means of obtaining, collecting and exchanging information.

The main factor in the development of the economy in modern conditions are data, presented in digital form. In this regard, IT technologies play a leading role in ensuring the competitiveness of companies, industries and entire states. Digitization across the board is driving fundamental change in the process of organizing a business. The digital economy has a primary impact on the service sector: a variety of trade, transport organizations, catering, hotels and tourism are undergoing a major transformation. With the help of the latest digital technologies, businesses succeed in in the shortest possible time to expand its target audience, advertising coverage, improve the quality of customer service. These and other achievements of digitalization allow develop business at an accelerated pace and remain competitive, because in the conditions of the fourth industrial revolution, they will be able to effectively and long-term operate only those companies, in whose arsenal the most advanced digital developments will be involved.

Particularly relevant are the processes of digital visas are for the service industry. Trading and transport companies, enterprises activities of the tourism and hospitality industry, public catering were given the opportunity expand the target audience and coverage, improve service quality, develop at an accelerated pace, taking into account the notion that in the global digital economy trouble will be won by those in whose arsenal children involved more quantity and quality number of digital platforms.

The impact of digital technologies on tourism, hotels and restaurants is today one of the most studied in the international scientific community, as confirmed by a study by I. Khatri, reviewed publications on the use of digital technology in hospitality. Conceptual aspects of the impact of digital technologies on the hospitality industry are presented in the conferences of J. Pesonen and J. Neidhardt. A. Yavornik's scientific article is devoted to the peculiarities of the application of augmented reality technologies in tourism. The issue of digital discrimination in The content of the Airbnb platform is considered in the work of K. Williams and I. Gorodnich. The negative effects of digital technologies on tourism are highlighted in the work of M. A. Fereidouni and A. Kawa. Some aspects of the digitalization of the hospitality industry are devoted to works O. Artemenko, V. Pasichnyk, V. Yegorova, M. V. Bosovska, L. A. Bovsh and A. M. Rasulova, G. I. Gaponenko, V. Y. Vasylenko, V. Proskurina, Y. Trach. However, despite existing works, the issue of digitalization of tourism still needs constant attention. Given the speed of emergence of new digital technologies, the pace of their development and distribution.

The development of telecommunication networks and information technologies has radically changed the activities of tourism and hospitality enterprises: the main processes have become

automated and can be controlled remotely, data volumes are stored in digital form, the time for processing requests and performing operations is minimized. But the issue of innovative development for each organization is relevant, since great competition in this area forces participants in the tourism market to find, develop and introduce digital solutions into their activities.

The relevance of the research topic is determined by the introduction of digital technologies in the tourism and hospitality industry at a practical and methodological level, which play an important role in the activities of service enterprises, as they can radically change the methodological, informational and technological components of management, production and marketing processes and carry them out. at a higher, more efficient level.

The purpose of the study is to theoretically substantiate the essence of digital technologies in the tourism industry and the hotel and restaurant business, and also to present the priority directions for the development of such technologies.

To achieve this goal provides for the following tasks:

- to characterize the concept of digital technologies of hospitality;
- determine the problems that hinder the development of digital trends in Ukraine and the transformation of the Ukrainian economy into digital;
- consider one of the most promising digital big data technologies is the blockchain.
- consider digital technologies of hospitality, aimed at improving comfort, security and determine the role of CRM in hotel management;
- to analyze the digital platform of the tourism industry "Tourism 4.0", which identifies the main technological capabilities of the hospitality industry,
- to identify promising areas for the development of digital technologies of hospitality.

The object of research is the activity of hospitality enterprises based on the introduction of more promising digital technologies.

The subject of research is the theoretical and methodological principles of digital technologies of hospitality.

In the field of tourism and hospitality, digital technologies are actively developing, the purpose of their implementation is a commercial effect, maintaining and expanding market share, and increasing competitiveness in the industry. Existing digital solutions are aimed at:

- researching consumer demand and individualizing service, focusing on impressions as an important effect that ensures tourist loyalty to a particular company or brand;
- change in service technologies;
- formation of new types of services or products.

The digital economy is characterized by the transition from the third industrial revolution to the fourth industrial revolution. "Digital Economy" reflects the radical changes of the second half of the 20th century that became possible in digital computing and communication technologies. Under the digital economy, they consider an economy that is directly related to the development and implementation of digital computer technologies in all areas of economic production and consumption. As a rule, it covers the field of providing online services and goods, namely electronic payment services and e-commerce, online commerce and the Internet of things. (IoT – Internet of Things), crowdfunding, Internet banking and more. Among the latest digital technologies that act as a platform for digitalization and the digital economy, there are Big Data technologies, the development of cloud services and artificial intelligence (neural networks), smart technologies and location technologies, the Internet cabbage soup, as well as the Industrial Internet of Things (Industrial Internet of Things), 3D printing.

Digitalization and availability of infrastructure ensures the full interaction of participants in economic activity. As distinctive features of the digital economy, one can note the presence of personalized service models, as well as the development of the sharing economy and sharing services. Digitalization processes are especially relevant for the service sector. Trade and transport companies, enterprises in the tourism and hospitality industry, public catering got the opportunity to expand the target audience and coverage, improve the quality of service, develop

at an accelerated pace, taking into account that in the global digital economy, the victory will be won by those whose arsenal will involve more and quality of digital platforms.

Data analysis indicates an increase in the share of the digital economy by 1.3% in the GDP of developed countries. If this figure for the leading countries of the world community G20 was 4.1%, then by 2021 it reached 6.3%. At the same time, South Korea, Great Britain and China lead the rating in terms of the level of digitalization (12.4%), the Chinese government is pursuing a policy of protectionism in combination with the venture model and the Internet + state program.

The share of the digital economy in global GDP will be at least 50% – \$ 100-200 trillion – in the next 15-25 years. The rapidly developing sector of the economy, which includes communications at the intersection of digital and physical spaces, will become one of the most promising by 2030.

Problems that are that hinder the the development of digital trends in Ukraine and the transformation of the Ukrainian economy into digital:

1. Institutional – Low inclusion of state institutions for the implementation of the Concept for the development of the digital economy and society (Digital Agenda of Ukraine)

- Invisibility of the relevant legislation to the global implications and possibilities (progressive development of bills did not become laws)

- Invisibility of national, regional, Galuzev strategies and programs for the development of digital capabilities.

2. Infrastructure – Low cost of covering the territory of the country with digital infrastructures (for butt, meta EU until 2020E, cover 100% of the territory with wide-range access to the Internet, in Ukraine, this indicator is close to 60%)

- Availability of other digital infrastructures (for applications, Internet speech infrastructure, electronic identification and trust only)

- Uneven access of the population to digital technologies and new opportunities (digital development).

3. Ecosystem – Weak sovereign policy for incentives and for the development of an innovative economy – Unseen market for investment capital

- Outdated the system of education, teaching methods, introducing a focus on STEM education, soft skills and apprenticeships, incomplete models of technology transfer and consolidated knowledge and knowledge

- Shortage of highly qualified personnel for the overall development of the digital economy and digitalization in the future.

4. In the sphere of the electronic order, that ordering (“power in smartphones”)

- Low level of automation and digitalization of state services through weak motivation of the ranks (there is no clear potential benefit in the face of total digitalization)⁵⁸⁸.

Analysts at Accenture predict up to 2021, the positive dynamics of the use of digital technologies TOP-10 leading world economies to 1.36 trillion dollars USA, or 2.3% of gross domestic product in total. GDP of developing countries will increase by 3.4% due to digitalization economy, and for developed countries, the contribution of digital economy will give an increase in gross domestic its product by an average of 1.8%. According to The Boston Consulting Group" digital economy by 2035 to reach 16 trillion US dollars. A significant part of digitalization is goes to the sphere of consumption (services, inter– no-trade, offline shopping and online search) – 63 billion US dollars, a huge role in the other one is the Internet of things. Development this segment cannot be considered outside the global trends of digital transformation mation. By 2025, the annual contribution of the Internet things into the world economy can amount to from 4 to 11 trillion USD.

The use of digital technologies in the tourism industry and hotels and restaurants is rapidly gaining momentum. According to the World Tourism Organization, 89.6% of travelers are interested in using online travel services.

⁵⁸⁸ Ukraine 2030 is a country with a developed digital economy.

This indicator indicates a high level of digital competencies of Internet users in the field of tourism. The latest digital technologies that have been used in tourism activities include:

- artificial intelligence;
- big data technologies (Big Data), blockchain (blockchain);
- Internet of Things (Internet of Things – IoT and IIoT – Industrial Internet of Things);
- mobile applications, etc.

Thus, the use of artificial intelligence, in particular recognition technology, provides additional convenience and increases the safety of staying in hotels around the world. Access to the rooms is done by means of a retinal scan or a scan fingerprints. Facial recognition technology improves the customer experience by personalizing services. In modern conditions, service personalization is one of the most important competitive advantages that cannot be obtained without digital technologies.

By personalizing content, travel companies show travelers that are attentive to their needs. This is not only pleasant, but also beneficial for customers: this way they do not waste time on studying offers that are definitely not suitable for them. One of the most promising digital technologies is Big Data processing, blockchain.

Blockchain is, first of all, the security of committing transparent transactions without the participation of banking structures of different countries, the chance of a sudden blocking of the card, while there is the possibility of protecting your cryptocurrency wallet with at least two-factor authentication. Currently, blockchain technologies are already widely used in the tourism industry. On the digital blockchain technology, platforms are built that are designed to track information in real time about free rooms in various hotels without the services of intermediaries, for paying for accommodation without charging a commission, booking tourist services without intermediaries, for managing customer identification, etc.

Modern cognitive platforms make it possible analyze the behavior of a person directly in the process of communicating with him and draw operational conclusions. With the help of blockchain technology many processes are simplified. Another very promising area in tourism is the Internet of Things (IoT). The Internet of Things is one way travel companies can differentiate their offerings from the competition.

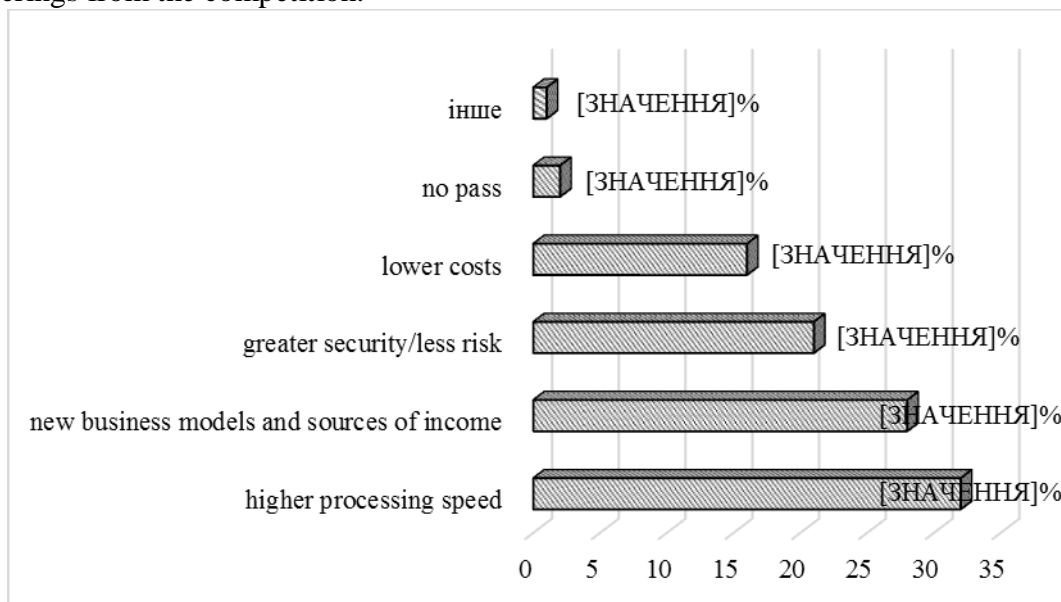


Fig. 1. Advantages of blockchain over existing systems

Source: generalized based on data⁵⁸⁹

In recent years, the emergence of the blockchain and the fascination of many because of its potential to dramatically transform the way storage is used to data and other sources.

⁵⁸⁹ Sixtin, E. (2017). TUI tourism group will adopt Ethereum blockchain technology.

This technology promises to increase the transparency and security of transactions, forcing the hospitality industry to experiment with it. Ultimately, the blockchain is a tool for implementing a business model rather than a technology. Deloitte's research, based on data from blockchain professionals, shows that the benefits of using a blockchain include greater speed of operations, as well as new models and sources of revenue⁵⁹⁰.

Blockchain can make access and storage important information is simpler and more reliable because responsibility for their storage is shared by the whole network. The use of blockchain in tourism focused on the following key areas: loyalty programs, insurance, systems identification, accommodation booking services and airline tickets, luggage tracking, systems payments. Consider the possibilities of technology on them example in more detail.

1. Loyalty programs. Blockchain is capable increase the effectiveness of loyalty programs. Tourism industry (airlines, hotels, etc.) in relies heavily on incentive programs. Loyalty programs are created for their own customers to turn them into regular ones. Blockchain can also help with these programs, simplifying the process by allowing it is easier for customers to get information about their own loyalty points and allowing use their. It can also help fight fraud in this area.

2. Insurance in tourism. Very promising direction for the introduction of distributed technology registers. Currently in the process of obtaining compensation for delayed or cancelled flight is associated with many problems, because of which travelers lose time and money. Help in smartGcontracts, specifics will be able to this situation which will allow you to pay automatically injured tourists insurance compensation, and also book new tickets⁵⁹¹.

3. Identity identification. Services Identifications are extremely important for tourism industry, and the blockchain could potentially become the industry standard for storing this information. Used as follows technology has the ability to dramatically reduce time check-in or queues at airports since a simple fingerprint or retina can replace the displayed document.

4. Accommodation booking services, shopping air tickets. After the emergence of online platforms G booking travel industry significantly has expanded, and its weight in the market continues increase. If in 2017 the travel market was estimated at 630 billion dollars, then by 2022 year is projected to double it. Initially, online travel agencies promoted progress of the tourism industry, establishing direct contacts between customers and facilities real estate. However, growing consolidation service providers in this market over time led to a decrease in transparency and strengthening competition. As a result, the lion's share of power on this market is concentrated in the hands of several key associations that absorbed 2/3 of the world online tourism market. This led to the emergence of an environment where travelers do not can make their own travel decisions.

5. In the service sector, in particular in the hotel and restaurant business, digital technologies must meet the requirements of security, speed, flexibility of operations and actions, which is their competitive advantage. Therefore, all involved digital marketing tools must be constantly monitored and updated. Given the above, consider the possibilities of digitalization of the hotel and restaurant business through the prism of digital technology trends (Fig. 2).

Thus, the participants of the hotel and restaurant services market in cooperation with the hotel and restaurant business entities create different combinations of mutual communications and relationships. Depending on the type of behavior and interests of owners and management, available financial opportunities, different models are formed business: classic, adaptive and digital.

The classical model is based on traditional principles and approaches of management, characterizes the predominance of individual approaches, personal conditions and direct contact with customers and partners, based on the concept of impression marketing.

The adaptation model creates mechanisms of gradual influence on conditions, situations, partners, as a transitional status to the digital model. In essence, the adaptation model can be

⁵⁹⁰ Gaponenko, G. I. & Vasilenko, V. Yu. (2019). Prospects for the use of blockchain technology in the tourism industry. *Bulletin of KhNU named after V. N. Karazin. Series "International Relations. Economy. Local lore. Tourism"*. 10. 193-199.

⁵⁹¹ Giancaspro, M. (2017). Is a 'smart contract' really a smart idea? Insights fr om a legal perspective. *Computer Law and Security Review*.

a symbiosis of classical and digital, which for the hotel and restaurant business is an effective option for reputational branding and marketing relationship formation. After all, service processes require different solutions: consulting, booking, registration, cleaning, calculations – digital; information, service at all stages of consumption of hotel and restaurant product, changes in reservations, conflict resolution, etc. – classic.

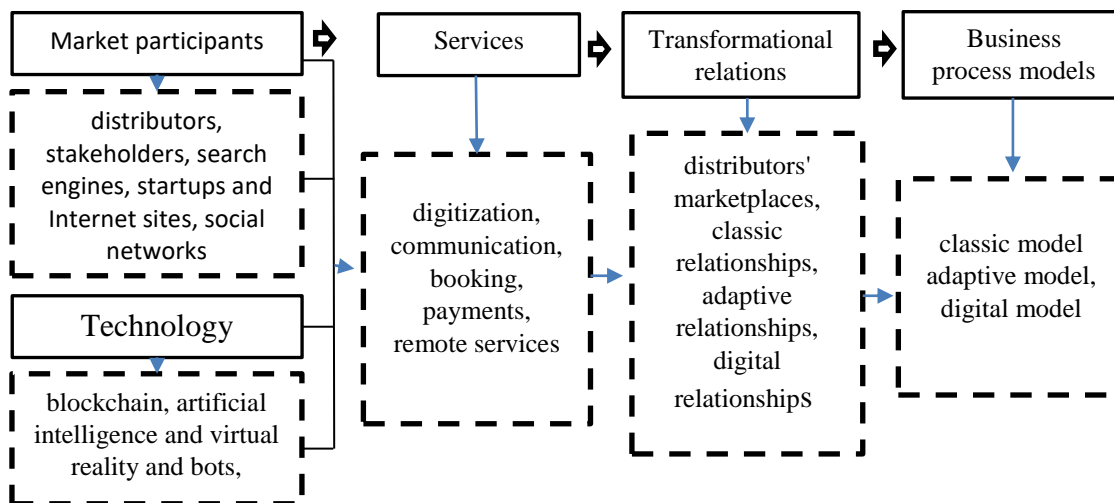


Fig. 2. Model of the impact of digital technologies on the market hotel and restaurant services
 Source: generalized based on data⁵⁹²

Thus, the digital model in the hotel and restaurant business can only serve certain business processes.

The issues of digitalization of business processes in the hotel and restaurant business have become especially relevant in the context of the pandemic crown virus and related quarantine restrictions. The tourism and hotel and restaurant industries suffered a "clinical death" during the pandemic. Most experts note that unemployment is the main one segments of the industry reached 50-60%. Worldwide hotel occupancy fell by 85-95% in just a few weeks. At the peak of the corona crisis, the congestion of airlines decreased by about 75-80%, most carriers and network distributors have cut staff to the level of "minimum survival". Tour operators are overwhelmed by the flow of requests for cancellation of travel, and the processing time for applications for refunds has increased to 30- 90 days, which put the travel companies on the verge of bankruptcy⁵⁹³.

In the last 5-10 years in the restaurant business there is a trend of digitalization of all its components (online marketing, advertising, production process, food delivery and even its manufacture), which was named FoodTech. The spread of digital technologies has also transformed marketing approaches to sales of goods and services. In the digital market began to develop multi-channel (in all possible sources of information) and psychological (more deeply and comprehensively studies the habits of modern market consumers) marketing.

The digitalization strategy is considered as a basic component that provides the necessary flexibility and ability to adapt hotel and restaurant businesses to consumer needs and other requirements caused by various circumstances rapprochement of customers and manufacturers, manufacturers and suppliers, strengthening the reverse connections, expanding the range of services and market segments⁵⁹⁴.

⁵⁹² Bosovska, M. V., Bovsh, L. A. & Rasulova, A. M. (2021). Influence of digitalization on the market of hotel and restaurant services.

⁵⁹³ Kravchenko, A. V. & Boyko, V. V. (2021). Digitization of the tourism industry in the post-covid-19 period. *Efficient economy*.

⁵⁹⁴ Haustova, K. M. (2021). Digitalization as a basic component of the strategy of hotel and restaurant business development in modern conditionshttps.

The Internet of Things has been successfully applied in the travel industry to achieve the best match of travel conditions to the individual preferences of travelers. For example, this technology allows travelers to set the room temperature from their smartphone, order a service. Thus, the entire tourism industry is already undergoing cardinal changes. Moreover, the transformation is happening quite rapidly, for example, the creation of digital platforms fundamentally changes the relationship between the subjects of the tourism market, simplifying interaction between them and pushing out intermediaries. The active development of mobile technologies designed for travelers provides a wide range of functionality, including the purchase of air tickets, hotel reservations, navigation on the ground, providing background information about attractions, ratings of accommodation facilities, food. Digital transformation makes it possible to create new forms of tourism industry enterprises, spatially distributed network companies. In the conditions of the digital economy, a single information space is being created in the field of world tourism, new principles of information support and tourism management are being formed. Thus, digital transformation opens up new opportunities for the development of the tourism industry, providing an increase in the competitiveness of the industry.

Foreign tourist and travel-com- companies actively and effectively conduct digital lization of their activities, receiving significant solid income. Asian countries, in the economy which tourism contributes significantly contribution, embarked on digital transformation at the government level. Sri Lanka organized a large-scale digital promotion of the country as an attractive tourist destination, thanks to which it is planned to attract 2.5 million tourists. Indonesia, in response to Airbnb's international expansion, has launched its own guesthouse and villa booking network, the Indonesia Travel Exchange (ITX), with more than 2,000 different households. There are dozens of technology start-ups in the tourism industry around the world that are striving to bring their original ideas to the industry. For example, the Cambodian plateau "CamboTicket" form via email allows you to reserve a place on ferries, in buses and private taxi services simultaneously in Laos, Thailand, Cambodia, Vietnam. Thai startup Local Alike, which received an award from Booking.com, is promoting a new concept of local tourism: as part of online platform, the company plans to connect and advise local residents around the world who provide services to tourists.

Many tourism startups are trying try to find their niche by concentrating on a certain type of tourism. For example, French platform "Tripnparty" allows travelers to search anywhere country authentic bars and pubs, about which usually only locals are well informed residents. In 2018, Bali hosted the Startup Weekend Bali contest, during which the best ideas in the field of tourism were selected. The list of winners reflects the trend to satisfy niche requests. At various mobile applications are offered, including those providing communication with local guides and drivers in Bali ("Travelis"), to purchase products from local farmers ("Finger Farm"), informing about Indonesian hotels that provide guests with clean water in a renewable container ("Botol Wisata")

According to Google statistics, during the period Travel planning users make about 400 search queries. This huge layer of data is actively used by travel companies in order to influence the decision of the traveler and thread it in favor of a specific route, companies and hotels. 78% of travelers in the world plan their trip online, which determines the prospects for the online tourism services market. The main share of domestic tourists in the process of planning and organizing trip used the Internet.

In Europe, the services of tour operators with visits to the physical offices of companies are used by no more than a third of travelers. The rest plan the trip on their own using online services. In Ukraine the market develops taking into account world trends, so a similar situation will not force itself wait. Online sales will grow, and in two planes – self-compilation of the tour by buying tickets and hotels separately on the Internet, as well as buying already "collected" trips from tour operators online. E-sales will replace offline agencies, some of which will close, while others will reorient themselves to the digital environment.

According to Booking.com, a third tourists around the world prefer to travel actions planned by artificial intelligence lecture, taking into account their previous general search queries, methods

and amounts payment, and other preferences. Half of the respondents does not attach importance to the person who discusses the trip with them - a chatbot or a live person, if the wishes are fully taken into account. Motivation to make a booking is also increased if the proposed artificial intelligence options meet the wishes of the traveler, which is confirmed by a large proportion of respondents. Hotels are also interested in offering potential customers digital services as quickly as possible, from the stage of choosing a room to paying for accommodation on the website or through a special application. Among the technologies currently being tested is Hilton Honors, which allows users to book hotel services through the application and adapt vacation according to your desires. The hotel business uses this information to automatically develop an individual plan for each guest on subsequent visits.

Most of the currently used the moment of means of digitalization of the tourism sector occupied by applications. The first digital services for tourists appeared in the early 2000s and were focused on online booking of accommodation and buying tickets:

Booking.com – the hotel aggregator gave potential customers the opportunity to see small hotels around the world, provided them with the widest access to the client base;

AirB&B – repeated the success of Booking.com, creating a new market for apartment rentals;

Uber, Gett – taxi aggregators, attracted a huge number of people to small businesses, gave them opportunities the ability to earn money using your own car and, at the same time, made taxi services much more accessible.

Without the use of such platforms modern travel imagine complicated. With their help, confidence ratings between participants are automatically formed, allowing you to unite sellers and buyers of goods and services on the market as soon as possible, including when concluding transactions and making settlements, thereby eliminating intermediary links, minimizing the costs of production and exchange processes.

In general, the use in the operation of platforms allow to significantly strengthen the relationship with the client (inform and accompany clients on the way), sell more services and increase their price; improve the quality services (smartphone as a key to the room, check-in at the hotel through the application, messaging with the hotel staff through the application), improve emotional perception (from- tag where you have been and sorting photos by places, reminders, directions and instructions at the airport, train station, port and on board the ship); create new opportunities for customer outreach and understanding (notifications, advertising, reviews), integrated for use in conjunction with social networks to identify personal preferences of the client and further searching for potential clients.

Summarizing the elements of digitalization of tourism and hospitality in Ukraine and the experience of those countries that have already implement the concept of "Industry 4.0" in this industry, the model of a digital platform for the tourism and hospitality industry in Ukraine is shown in Fig. 4. The model of the digital platform "Tourism 4.0" is characterized by the following principles:

- ultimate automation of all links;
- is the maximum specific gravity and significant R&D bridge;
- control of all subsystems and links carried out by an autonomous system with using the Internet of things;
- all stages of the life cycle of a tourist of the product are provided with functional links in the form of a single interconnected whole, regulated in the online system feedback flows.

Digitalization will become the main tool for achieving the strategic goal of Ukraine – an increase in GDP by 8 times, up to 1 trillion dollars. in 2030, that security of kindness, comfort, and the quality of life of Ukrainians on the river, which is higher than the average show in Europe.

The potential of digitalization for development small and medium business in the tourism and hospitality industry depends on the financial and technological capabilities of each individual entity and the industry as a whole. Several key technological opportunities can be identified:

1. Artificial intelligence – will provide the most personalized result when planning a trip. Based on information about the preferences of the client, offering solutions used by other travelers

hacks, AI systems can significantly simplify the organization of a vacation or travel, help save money.

2. The Internet of Things is a key element of the service that provides a "seamless" journey – flight, transfer, hotel, car booking. By exchanging data, the devices can reduce any waiting time to a minimum, preventing problems ranging from running out of parking spaces to getting lost in an unfamiliar city.

3. Robotization – technologies of bots, robots that can understand and work with people, are becoming more and more real. Cleaning robots – already the most common item of household appliances. By reducing the need for personnel, such a technique can significantly simplify, for example, the maintenance family hotel business.

4. Voice technologies – effective speech recognition makes it possible to optimize many processes. Thanks to them, even a small family hotel can provide customers with round-the-clock service and eliminate language barriers.

5. Blockchain – creating a "trusted digital environment", can significantly increase the reliability of orders, bookings and payments, ensuring the reliability of information tions and reviews about services.

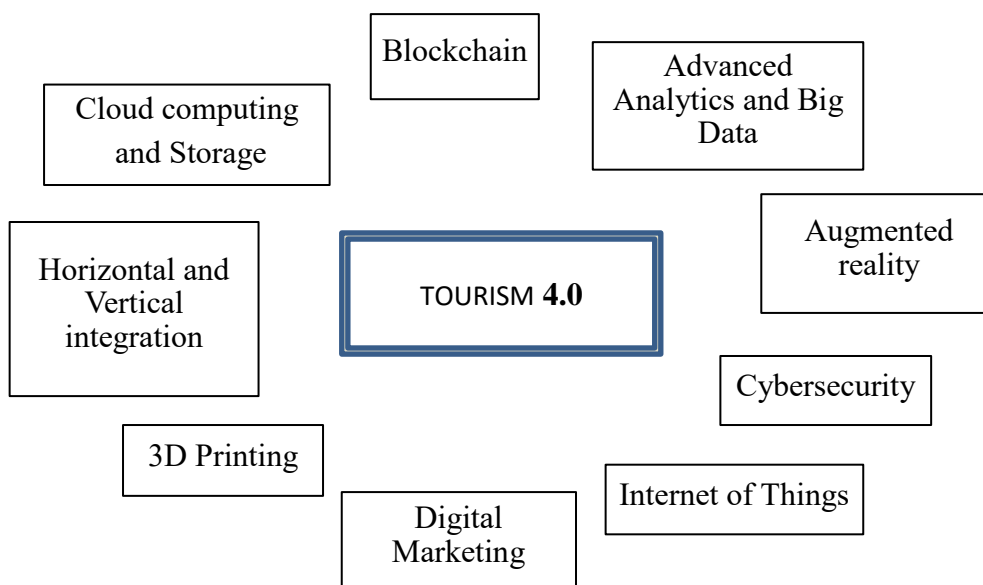


Fig. 4. Model of a digital platform for tourism and hospitality «Tourism 4.0»

Tourism related companies influenced by new trends, one way or another, trying to collect information about transactions of their customers to personalize the re-slick offers. It is logical that attention airlines, hotel aggregators and other many tourism services attracted by technology blockchain. Potentially, it is capable of we want to change the sphere of tourism services – a request from travelers for reliability at travel planning will be satisfied with the help of blockchain. Data on ticket purchases, hotel reservations and loyalty programs will exist in one digital space and will help all parties involved in provision of services within one trip, focus on factual information customers and anticipate their desires. Of the market players associated with tourism, airlines are the most flexible. They are the first to see the benefits of introducing business innovations, and, first of all, payment innovations.

It is thanks to information technology (IT) that the tourist product becomes more individual, more accessible and flexible for each consumer every year. IT solutions found application for tour operators and hoteliers, as well as for travelers. For example, VR technology allows you to travel without leaving home – many tour operators offer to visit "digital" landmarks, and in virtual tours the user is accompanied by a personal guide who tells about the sights.

The popularity of this type of pastime confirms for many the fair thesis that traveling in the virtual world can be no less interesting than real. AR-reality technology is used for easy navigation in an unfamiliar city: on the screen of a smartphone, the tourist sees important objects – attractions, restaurants and bars, municipal authorities (for example, the AR City application). AR-reality applications are able to locate and display traffic indicators, and AR browsers provide information about a specific object when you point the phone's camera at it. Some travel agencies, using MR reality technology, organize numerous excursions, for example, when travelers, standing near a landmark, use VR glasses to learn what it looked like hundreds or thousands of years ago. Fans of gastronomic tours will also find AR useful – it will suggest places with delicious food on the nearby streets, and when pointing the camera at the menu - will provide recommendations for selection. AR-reality applications in combination with machine translation systems allow tourists to feel more comfortable abroad. Suffice it to say the camera of the smartphone into unfamiliar characters and they are "converted" into clear text (for example, Wikitude or Layar applications). Today, with the help of such services, you can even translate custom content that takes into account idioms vernacular and dialects. Virtual reality is actively used in their business processes by large hotel chains on their sites⁵⁹⁵.

Digital technologies in the hospitality industry are aimed at improving the comfort, convenience and safety of consumers:

1) cars with an autopilot for excursions, excluding possible fraud and the occurrence of unpleasant situations;

2) virtual glasses with which the client can visit the resort remotely. This innovation has already been successfully introduced by many hoteliers, and some travel agencies use virtual glasses when choosing a hotel for a client. A person feels real emotions during the show, and impressions from fir-trees determine the choice of the tour;

3) an electronic key to a hotel room in the format of a mobile application. The phone receives a notification about the readiness or cleaning of the room;

4) an electronic passport in a mobile phone. The tourist will be able to independently extend or obtain a visa online or quickly and easily perform other necessary procedures;

5) chipping during flights, which simplifies the purchase of tickets and check-in for a flight.

Accommodation facilities are actively exploring mobile applications using NFC technology (from the English. Near field communication – near field communication or near contactless communication) – a short-range wireless data transmission technology allows you to exchange data between devices.

The first hotel to showcase the innovation was the Clarion Hotel Stockholm. NFC technology is changing the normal check-in process for accommodating guests at a hotel. At the set time, before arrival at the hotel or when he has already arrived, the guest receives a notification that his room is ready for occupancy and he can go through the registration procedure. After completing the online registration in the mobile application, the key to the number is activated. By attaching a mobile device to the electronic lock, the guest gets access to the room. Thus, the working process in the hotel is changing and becoming the most perfect in terms of safety and reliability, as well as convenient for guests and staff.

The hotel industry enterprises actively use and develop various information technologies (IT):

information terminals and 3D application modules for self-check-in and check-in guests at airports and hotel lobbies (Module Logus);

the use of information technology and information applications for mobile phones, allowing the visitor to personally check in and out of the hotel, booking additional services, as well as access to the room without a key using a mobile phone, and many others functions.

The ability to use BigData technologies has become one of the most necessary factors for a successful business.

⁵⁹⁵ Shevelyuk, M. M. (2021). Digitalization in the field of tourism: innovative trends and priority areas of development. *Questions of Cultural Studies*. 38. 226-235.

There are also innovative technologies that increase the efficiency of management decisions in the hospitality industry:

1) Thanks to the Passive User Interface technology, it is possible to receive information about the actions of buyers from their mobile devices, and then process it using artificial intelligence. Major brands are already using this method. For example, the information obtained through the Passive User Interface is personalized content and adaptation of the price offer for each hotel visitor;

2) Facebook, Instagram, which can lead online broadcasts. Mobile phones and apps have become part of everyday life, if you add virtual reality, there will be new opportunities. For example, many hotels already show rooms to customers without them visiting the hotel;

3) the emergence of technologies for determining feelings on the retina. Practical application for advertising: the content can be selected taking into account the emotional state of buyers. For example, spa services in a luxury chain hotel;

4) dynamic cost modification requires accurate analysis and clear calculations using innovative computer technologies. Already, prices on many sites and applications are constantly changing, it depends on the demand and activity of customers.

A special role in the tourism and hospitality industry belongs to CRM (Customer Relationship Management) and customer analytics systems, which are not intended for customers, but are aimed at providing managers with a better understanding of customers, anticipating their requirements and behavior, the creation of a new proposal, taking into account previous orders and characteristic types and forms of services. CRM system is a client database with which you can get complete information for each client, his solvency, consumer choice ram. Through such systems, companies can achieve higher service level.

It is significant that CRM-systems are brought up to the number of business information systems. To that, with a method the argumentation of the payback of such systems, in the first place, is brought up to the standards of information systems (Table 1).

Table 1. Standards of information systems in the hospitality industry

Name	Application
ITIL (Information Technology Infrastructure Library)	Recommendations for the provision of quality services, as well as processes and components needed to support them
CobiT (Control Objectives for Information & Related Technology)	Guidance in the field of IT, as well as audit and information security. Control and audit of all aspects of IT
MOF (Microsoft Operations Framework)	Management of information systems maintenance provided in in the form of service management functions (Service Management Functions)
IPMA, PMI, PRINCE2	Project management methodologies
ISO9000-9001 Quality Management Systems	Standards that define system requirements regardless of industry specifics
ISO 20000 Information Technology-Service Management (ITSM)	Standards defining requirements for service management systems implementation of which provides guarantees of quality of IT services for consumers
ISO 27001 Information Technology-Security techniques	Standards in the field of information security management

Source: generalized based on data⁵⁹⁶

In many standards of corporate information systems it is necessary to allocate CobiT (Control Objectives for Information & Related Technology) entitled “Information and Related Technology Tasks”, developed by the IT Governance Institute (ITGI) and Information Systems Audit and Control Association (ISACA). It is in this standard that a balanced system of business indicators (BSC) is proposed – a system of indicators that combines long-term strategic goals and short-term tactics, indicators and activities that stimulate the implementation of the strategy. BSC should

⁵⁹⁶ Savchenko, O. V. (2017). CRM-systems of hotel and restaurant enterprises and views on evaluating their effectiveness. *Bulletin of Khmelnytsky National University*. 2 (2). 280-282.

be at the heart of every consumer segment, defined for CRM; monitor all channels of interaction with customers; prevent ineffective implementation of the strategy by implementing consistent actions and simultaneous evaluation of results on all major CRM processes and channels of interaction with consumers. The BSC focuses the evaluation system on four closely related areas of strategy implementation (prospects): financial results; consumers; internal organization (business processes); training and staff development.

In addition to virtual, augmented and mixed reality technologies, other applications, services and technologies are used in the field of tourism. Hostels with automated check-in / check-out have appeared in many European cities. To track luggage, the traveler is offered so-called smart suitcases. Samsonite is working with Samsung on a project based on the idea of microchips embedded in luggage. Beacons will notify the owner of their location and will signal when hacking attempt. Another idea of the company – self-registered luggage, or smart luggage, has long been commonplace for the traveler. The passenger puts it on the tape, the built-in scales measure its weight, then "smart" the suitcase will send to the owner's smartphone a code by which you can pick up your things. Such ideas are used by companies such as Rimowa, Bluesmart⁵⁹⁷.

Management digital technologies are also being actively introduced into the activities of tourism and hospitality enterprises. The main direction is analytics and scenario forecasting of financial and economic indicators depending on changes in the parameters of the external and internal environment. The introduction of such intelligent systems can significantly reduce the risks of making inefficient decisions, reduce negative consequences based on the implementation of preliminary measures to control and monitor significant factors of influence. Similar developments and solutions make it possible to improve the quality of strategic and tactical management of industry enterprises in the field of tourism and hospitality.

Conclusions. Thus, the entire tourism industry and the hotel and restaurant business are already undergoing cardinal changes. And the transformation takes place rapidly, for example, the creation of digital platforms fundamentally changes the relationship between the subjects of the tourism market, simplifying the interaction between them and pushing out intermediaries. The active development of mobile technologies designed for travelers provides a wide range of functionality, including including, buying airline tickets, booking hotels, navigating the area, providing background information about attractions, ratings of accommodation facilities, food, etc. Digital transformation makes it possible to create new forms of enterprises, spatially distributed network companies. In the conditions of the digital economy, a single information space is being created in the field of world tourism, new principles are being formed information support and tourism management.

The main aspects of digitalization of strategic development in accordance with new trends and lifestyles, which is formed in terms of integration processes:

- digitalization of business processes (management, marketing, procurement, production), which allows you to optimize information flows, increases efficiency decisions made and the quality of goods and services;
- formation and use of new, more efficient formats of logistics (fast delivery of products, services to the consumer), which involves the creation of new mobile applications and collaboration with the most progressive delivery companies in the local market;
- creation of the most effective communication models for the promotion of goods and services, study of needs, problems and consumer preferences on the basis of direct contact;
- monitoring and using new market development opportunities that appear in the context of digital progress.

Thus, the strategy of digitalization of the hotel and restaurant business involves the development of a digital model of the enterprise, which is best adapted to the features, conditions of its work and aimed at achieving development goals enterprises through constant analysis, selection and selection of the most relevant alternatives.

⁵⁹⁷ Irish Examiner. (2016). LVMH to control luxury case maker Rimowa.

The enormous potential of the blockchain and its ability to transform the tourism industry make its study extremely important. Using blockchain technology, tourists will be able to plan their trips and hotel reservations through the conclusion of smart Gcontracts, thus eliminating intermediaries such as Expedia and Hotels.com. The advantage for the hotel business or airlines is that their customers' payments will come instantly, while payment providers often face failures that lead to inconvenience for customers. Thus, the tourism industry is facing ambitious task of innovative tourism development, active promotion on the world market of quality tourist product. The use of blockchain will simplify its solution, thus guaranteeing the buyer the quality of the tourist product.

The use of CRM-systems by enterprises of the hotel and restaurant sector is becoming more widespread. Hotels and restaurants focus on new standards of service, new methods of competition, the struggle for the client intensifies. At the same time, evaluating the effectiveness of CRM, taking into account the introduction of automated systems of accounting and information analysis, carried out with an insufficient level of justification. It is necessary to develop an approach that would be at the intersection of strategic management, information technology management, financial management. Only in this case, we could highlight the impact of CRM performance on the degree of achievement of strategic goals of the enterprise through CRM technology, not forgetting the value aspect information system for employees and consumers.

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Part 3. CURRENT PROBLEMS OF DIGITAL ECONOMY DEVELOPMENT

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