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Digital Skills Research for Tourism and Hospitality Staff

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Abstract

There is a fundamental change in business processes in many areas of the economy including the tourism and hospitality industry in nowadays conditions of widespread digital transformation. The COVID 19 pandemic has accelerated this process and confirmed the vital importance of digital technologies for the development of the tourism business, which are the most important tool for obtaining a competitive advantage for tourism enterprises. These changes increase the need for the formation of various types of digital competencies for the tourism industry. The study is aimed at identifying the skills of using digital technologies of specialists in the field of tourism and hospitality. It is implemented through a questionnaire survey of tourism professionals, which made it possible to determine the gap between current and necessary skills for mastering digital competencies in the future. The largest gap was recorded for the most advanced, but also the least necessary, according to the respondents, skills in the field of artificial intelligence, robotics, augmented and virtual reality, the creation of digital resources, the use and implementation of security procedures on the Internet. The research data shows necessary competencies and skills of employees working in tourism and hospitality industry are described, as well as promising requirements for employees of the tourism industry. The results of the study make it possible to adapt the curricula of educational programs in the areas of "Tourism", "Hospitality", "Service" in order to increase the level of mastery of these competencies, provide an opportunity for more efficient employment of future graduates, and also improve career prospects in the field of tourism.

Keywords: tourism, hospitality, personnel, digital skills, digital literacy, digital technologies, education.

1. Introduction

The digitalization of the economy, which is based on a qualitatively new type of information and telecommunication technologies (Gálik, Gáliková Tolnaiová, 2022; Vrabc, Odziomková, 2021 and others), is the most important sign of sustainable economic development. However, the formation of the digital economy is transforming the essence of human labor, increasing the demand for digital literacy and the competence of workers. Modern transformations in the cultural, social and economic life of society create new requirements for the level of professional competence of specialists, which must meet the new demands of the digital society. The absence of having digital skills became especially relevant during the COVID-19 pandemic, exposing the lack of digital training for personnel in various sectors of the economy. The McKinsey study (Mckinsey, 2021) confirms the fact that most companies in the future will need new employee skills.

The importance of ICT competence is evidenced by numerous national and regional efforts to develop and implement digital literacy systems and strategic plans to strengthen digital literacy

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among citizens (Carlisle, 2021). Thus, digital skills are recorded in the European Competence Framework (Vuorikari et al., 2016), UNESCO reports (UNESCO UIS, 2018), etc.

Area with the most active introduction of digital technologies is tourism services (Morozov and Morozova, 2019). The tourism and hospitality industry has developed quite quickly over the past decades, remaining one of the most attractive sectors of the economy. The contribution of tourism to global GDP, according to the World Travel and Tourism Council (WTTC), was \$5.8 trillion in 2021, well below the pre-pandemic values of \$9.6 trillion. In 2021, the share of tourism in global GDP was 6.1 %, while before the pandemic the level was 10.3 %, while it is expected that until 2032 GDP growth will average 5.8 % per year, which is generally higher than expected economic growth (WTTC, 2022a). In 2021, the tourism sector accounted for 289.5 million people, one in eleven in the economy, with over 125 million jobs expected to be created over the next decade according to WTTC (WTTC, 2022b).

Strategic transformations of the tourism and hospitality industry in the time of the digital economy will affect the following areas (Chkhotua, 2021): transformation of business models for running and managing a business, through the introduction of technologies for automating and improving tourism services, improving means of interaction with customers, such as electronic marketing, automated and contactless services, etc. These changes require the formation of new professional competencies of tourism industry specialists in accordance with the new realities of digital transformation (Busulwa et al., 2022), such as digital innovations in organization management, digital interaction with consumers, digital quality management services, etc. In this connection, the Next Tourism Generation Alliance (NTG) project (Zaragoza-Sáez et al., 2022; Carlisle, 2021), together with the People 1st International agency, with the support of the European Commission, describes the new skills of tourism and hospitality employees by three definitions are digital, environmental and social skills. And the World Travel and Tourism Council (WTTC, 2022b) has identified the importance of current training, retraining and skills development programs that would provide the travel and tourism sector workforce with new and improved digital skills that can help overcome both the skills shortage problem in the future and improve the quality of customer service. In general, the digital competencies of employees of tourism enterprises will reduce financial and time costs, as well as lead to an increase in the competitiveness of organizations (Abdrakhmanova, 2022).

The Russian Federation also pays a big attention to the development of the digital economy and digital skills, which is reflected in the regulatory framework. "Digital Economy" is defined as one of the main directions of the strategic development of the Russian Federation for 2017–2030. (Prikaz..., 2019a), and the provision of training of highly qualified personnel for the digital economy is implemented in the federal project "Personnel for the Digital Economy" (Prikaz..., 2019b). At the same time, the importance of developing digital competencies is also noted for workers in the tourism and hospitality sector. Currently, the contribution of tourism to the country's GDP is about 4 %, which is an order of magnitude lower than the world's tourist destinations (WTTC, 2022c).

At the same time, the Federal National Project "Tourism and Hospitality Industry" sets the goal of increasing the industry's contribution to Russia's GDP from 3.7 trillion to 8.2 trillion rubles. by 2030, to attract 600 billion rubles to the industry. private investment, more than double the number of trips across the country – from 65 million to 140 million per year, increase the number of jobs in the industry – up to 4.2 million (Prikaz..., 2021a). The project also pays great attention to the problems of digitalization of management in the field of tourism and the development of personnel in the hospitality industry. Staffing and the problems of training specialists in the field of tourism have been standing since the formation of the Russian tourism market (Vorontsova, Vasilyeva, 2020).

Labor functions and requirements for knowledge related to the use of information technologies are contained in the professional standards of specialists in the service and tourism sector (Prikaz..., 2015a, 2015b, 2017, 2021b, 2022a, 2022b), as well as in the "Qualification characteristics of the positions of employees of organizations in the tourism sector" a unified qualification directory for the positions of managers, specialists and employees (Prikaz..., 2012). Knowledge and ability to work with computer systems used in various services of accommodation facilities is enshrined in the criteria for assessing the qualifications of hotel staff in accordance with the Regulations on the Classification of Hotels (Prikaz..., 2020). The Atlas of Digital Jobs also

reflects the transformation of the tourism and hospitality labor market in the context of technological changes in the digital economy (Varlamova et al., 2020).

Thus, current trends of increasing the importance of digital transformations allow us to talk about the leading role of personnel and its digitalized management (Romanov, 2021). In this regard, there is a need to assess the level of digital skills of tourism and hospitality workers based on a sociological study in order to develop a further strategy for the formation of a digital competency map based on the identified gaps.

2. Materials and methods

To study the level of development of digital skills among the staff of the tourism and hospitality sector, as part of a self-assessment, respondents are asked to determine their level of knowledge, skills and abilities to use them.

The study has three steps.

Step 1. Literature review to determine current digital skills needs

In today's dynamically changing world, labor market conditions affect the demands of employers for the skills of specialists and for the system of vocational education as a whole. In this connection, the competitiveness of tourism professionals depends on their training, taking into account the requirements of the market, including in the field of information technology.

However, nowadays there is a discrepancy between professional standards that reflect the requirements of employers and federal educational standards (Ivanova, 2016). Thus, the federal state educational standards of higher education for undergraduate students in the areas of 03/43/02 "Tourism", 03/43/03 "Hospitality" and 03/43/01 "Service" include two general professional competencies of the "Technology" and "Information and communication technologies for professional activities" groups: "OPK-1. Able to apply technological innovations and modern software in the tourism sector, hospitality and catering, in the service sector" and "OPK-8. Able to understand the principles of modern information technologies and use them to solve the problems of professional activity" (Prikaz..., 2017a, 2017b, 2017c). Within the framework of the federal state educational standards of higher education of the master's program in the areas of 43.04.02 "Tourism", 43.04.03 "Hospitality" and 43.04.01 "Service", one general professional competence of the "Technology" group (OPK-1) is reflected, reflecting the ability of a graduate to form the technological concept of the organization, organize the introduction of technological innovations and software in the relevant field (Prikaz..., 2017d, 2017e, 2017f).

An analysis of professional standards (Prikaz, 2015a, 2015b, 2017, 2021b, 2022a, 2022b) revealed a significant list of skills for a number of professions, however, the list presented indicates a lack of uniformity in the grouping of competencies (Table 1).

Table 1. Digital skills of tourism and hospitality professionals according to industry professional standards

Occupation	Skills
Tour guide	Use the e-ticket system. Use the technology of computer processing of orders for excursion services. Book, correct and accompany orders for services included in the excursion service program. Determine the need to use technical means to develop excursion service programs. Use technical means when accompanying tourists (tourists) along the excursion route.
Head/manager of a hotel complex/hotel chain	Use information technology to conduct office work and comply with the regulations of the reception and accommodation service. Have the skills to create and maintain databases on various indicators of the hotel complex.
Food business manager	Use information technology to conduct office work and comply with service regulations.
Guest receptionist	Use specialized software systems used in hotels and other accommodation facilities.

Waiter, bartender	Use instant messengers, chatbots for ordering and initial consultation. Use automated programs and mobile terminals when taking orders for food and drinks. Enter and edit data in the customer relationship management system. Use a computer and mobile devices with specialized software to track free tables for seating guests in catering. Enter and edit order data in specialized catering programs. Use an electronic menu, an interactive table / bar in catering. Use mobile terminals and specialized applications to coordinate the execution of tasks. Use a computer using specialized software for generating reports.
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It should also be noted that employers' requirements for job seekers posted on job search sites are often ignored. For this purpose, a content analysis was carried out of 223 vacancies in the Rostov region for the positions of specialists in the field of tourism and hospitality, posted on the HeadHunter website from October 8 to November 8, 2022 (HeadHunter, 2022). As a result, the requirements from the labor market for these specialists in the field of their possession of digital skills are determined. Vacancies for the positions of a cook, waiter, manager, administrator, manager, etc. were considered. In general, announcements from companies in the following industries were presented: restaurant, catering, fast food (80 %), hotel (16.5 %), travel companies (3,5 %). The analysis made it possible to single out two most common competencies: the ability to use a PC (standard programs: MS Word, MS Excel, MS Outlook, MS PowerPoint, search engines, etc.) and work in professional programs (Opera, KonturOtel, R-Keeper, SAMO-travel agent, etc.).

Step 2. Formation of a map of digital competencies.

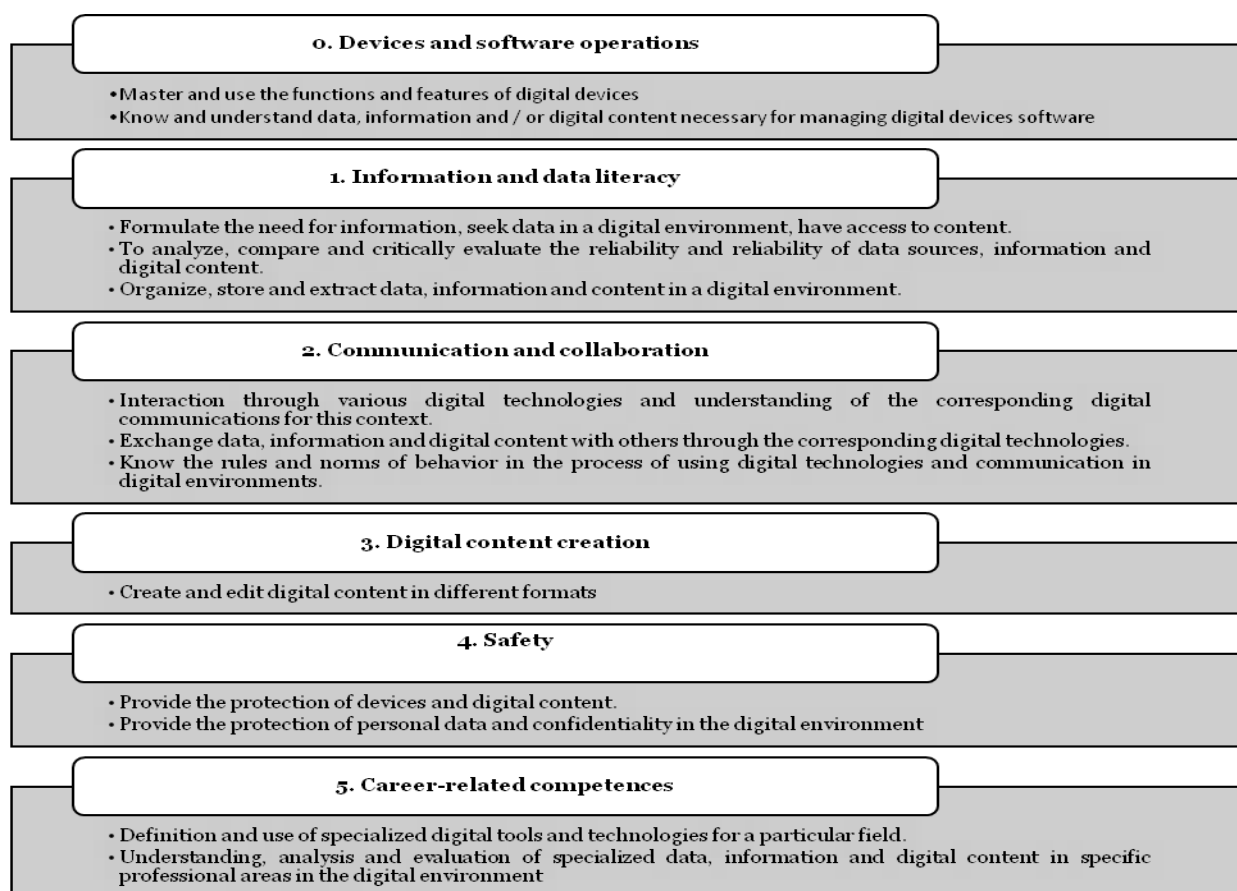


Fig. 1. Map of digital competencies in the field of tourism and hospitality

One of the main stages of the study was the formation of a digital skills map, which can later be used in the development of curricula for areas of higher education for specialists in the tourism

and hospitality industry. A wide array of information was analyzed: government documents, government strategies, scientific articles, Internet resources, described in professional standards (Figure 1).

The reference digital literacy system for this study was the European Competency Framework (The Digital Competence Framework for Citizens) (Vuorikari et al., 2016), which is the main and generally recognized both in the academic and expert fields (Dmitriev et al., 2021). At the same time, the European Competence Framework is, on the one hand, redundant, and on the other hand, does not take into account the specifics of the tourism industry. In this connection, this digital skills framework was supplemented by the data of the UNESCO report (UNESCO UIS, 2018), which expanded the DigComp 2.0 competency framework, including such competencies as “0. Devices and software operations” and “6. Career related competencies. We also used data obtained as a result of research by the Next Tourism Generation Alliance (NTG, 2019) in the field of tourism and recreation. The resulting frame was refined by the results of the study obtained at the previous stage of the study, namely the requirements of employers posted on the HeadHunter website, and the requirements for knowledge and skills for specialists in the field of tourism and hospitality.

Step 2. Questioning of employees in the field of tourism and hospitality

Based on the digital competency map, an online questionnaire was developed to survey employees of the tourism and hospitality industry. The questionnaire is posted on the Internet at the following link: https://docs.google.com/forms/d/e/1faipqlsfb4hwwvlghsjxzvfwjwtdmf_fib7c-ae51t5e8-bhkpxf43xa/viewform?usp=sf_link. The questionnaire is conditionally divided into three sections: a passport, an assessment of the current level of digital skills and an assessment of the need for future skills. The questions in the questionnaire were mostly closed-ended. The level of digital skills was assessed on a scale from 1 to 5, where "5" corresponds to the highest level of skills (competence) and "1" to the lowest level.

The survey involved 125 respondents from four sectors of the tourism industry: accommodation facilities, catering companies, tour operators and travel agents, destination management organizations of the Rostov region from September 1 to September 30, 2022 inclusive.

3. Discussion

The escalation of the epidemiological situation in 2020 has become a significant factor influencing international tourism at the present time. Unprecedented global travel restrictions are causing the worst disruption to the global economy since World War II (Gössling, 2021).

In the business context, the use of ICTs has become a strategic asset for corporations, changing the way they communicate and relate to their stakeholders. ICTs and the internet have altered the foundations of competition in all economic sectors, leading to the appearance of new products, services and processes. Therefore, there is no doubt that technology has also affected the tourism sector (Prentice, 2020).

The tourism sector has currently become a key driver of economic growth and job creation. The influence of ICTs on this sector has been twofold. On the one hand, by changing how organisations operate in the tourist market; on the other hand, by developing a new way for customers to interact with these tourism firms. Expressed differently, the future of the tourism sector is going to require a set of skills other than those used at present, namely, the so-called “digital skills” (Zaragoza-Saez et al., 2022).

Nowadays the tourism industry has become the largest category of products and services sold over the Internet. Such a rapid digitalization of the tourism industry is changing its structure: entry barriers, distribution channels via the Internet are changing, price comparisons are simplified, costs are being optimized, and, ultimately, the efficiency of the organization is increasing. Based on this, the development of digital competencies of employees employed in the tourism and hospitality industry is of particular importance. And the level of digital skills of personnel in the studied area can be considered as a key success factor in the industry. Less competitive territories are those where there is an underdeveloped hospitality infrastructure; no information on tour operators and services (digital platforms); insufficient qualifications and experience of staff (Egorova, 2022; Yankina et al., 2021).

Also, information and communication technologies (ICTs) can change both the management tourism organisations and the tourist experiences. Some technological systems that support tourism are those related to decision support systems, autonomous agents searching and mining Web sources, big data, virtual reality, artificial intelligence (AI) or chatbots (Soava, 2015). In fact,

big data offer challenges and opportunities both for existing firms and for new players in the tourism sector and make it possible to predict tourist demand, manage knowledge flows and interact with customers. This may lead to higher productivity, increased customer satisfaction, personalised marketing campaigns and more efficient operations (Ardito, 2019).

Many tourism enterprises use big data, various digital platforms to develop new types of tourism products and activities to promote them, to increase sales efficiency, personalize customer experience, optimize processes and generate strategic ideas for business development, use artificial intelligence systems, VR/AR-technologies to ensure a client-oriented approach, effective interaction of employees in the enterprise. In the context of such a digital transformation, one can distinguish such groups of knowledge and skills as professional digital skills, analytical and managerial skills, information knowledge and skills, communication and behavioral skills and personal qualities.

In this regard, an increasingly wide range of employees in tourism must work with increasingly complex devices and software packages. Without a doubt, it is important to identify gaps in the digital skills of employees of tourism companies in accordance with their position in order to identify those digital competencies that need to be developed and invested in. It is also noted that there are fundamental changes in the methods of studying and purchasing digital tourism products and services by customers.

Notwithstanding the above, it is necessary to bear in mind that there is also a dark side of technology (privacy issues and ethical dilemmas, digital exclusion, information overload, dehumanisation and depersonalisation of tourist experiences or threats to languages and cultures) and that it is usually accompanied by a serious lack of human-centred design (Dincer, 2020).

A review of scientific publications on the research topic allows us to state the lack of methodologically sound empirical research. For example, Ya.A. Gordienko key digital skills include online marketing and communication skills, social media skills, and online review tracking skills. The author focuses on the importance of modeling virtual reality (VR) and augmented reality (AR). Immersive views or “previews” give potential customers the opportunity to see hotels, travel destinations in virtual reality, and tourism businesses can improve their product through the use of these technologies. Obviously, the use of such digital tools requires the ability to use and manage them within the organization (Gordienko, 2022).

The analysis of the scientific literature of the topic of the study showed that the problem of the formation of digital competencies in the field of tourism and hospitality was out of the field of view of researchers. Only a small fraction of publications partially covers this issue. So, in the work of Yu. Pshenichnykh. A. considers new digital and information technologies as the most effective approaches to promote the activities of museums. The author notes that today remote technologies play a key role in the life of museums, since standard, classical forms of promotion are no longer able to attract and maintain the attention of the audience, especially during the period of covid restrictions (Pshenichnykh, 2021).

4. Results

Both heads of companies (42.3 % of respondents) and specialists (269 % of respondents) and employees (30.8 % of respondents) took part in the survey. Most of the respondents (88.5 %) have higher education. The characteristics of respondents by field of activity and size of the enterprise are presented in Figure 2.

Table 2 presents the current and future levels of digital skills of professionals in the tourism and hospitality industry across 15 competencies. Analysis of the results of a survey of professionals in the field of tourism and hospitality on digital literacy allowed us to draw the following conclusions. The best level of skills is noted primarily for basic skills of using the Internet (4.27 points), working with operating systems (3.5 points) and Microsoft Office programs (3.58 points), working with social networks (3.58 points). The lowest level was recorded in relation to computer programming skills (1.46 points), skills in working with artificial intelligence technologies, robotics, augmented and virtual reality (1.15 points).

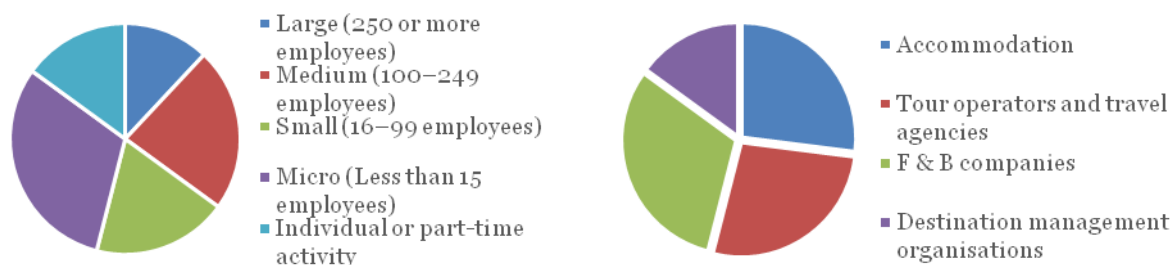


Fig. 2. Characteristics of respondents by field of activity and size (% of the total number of respondents)

Specific digital skills associated with the use of software and devices unique for professional activities are represented rather poorly (2.88 and 2.96 points). In the future, respondents believe that the skills of using the Internet information and telecommunication network to search for information and data (4.42 points) and work with social networks (4.08 points) will be most in demand, and the least demand will be advanced digital technologies in the field of artificial intelligence and robotics (2.12 points), computer programming (2.12 points), augmented and virtual reality (2.04 points).

Table 2. Current and future levels of digital skills for tourism and hospitality industry professionals

№	Digital skills	Average score		Absolute gap
		Current level	Future level	
1.	Operating system skills	3,50	3,58	0,0769
2.	Office suite skills	3,58	3,96	0,3846
3.	Digital equipment setup skills	2,96	3,35	0,3846
4.	Skills of office automation and electronic document management systems	3,04	3,54	0,5000
5.	Experience with specialized software systems	2,88	3,31	0,4231
6.	Skills in using the information and telecommunications network "Internet" to search for information and data	4,27	4,42	0,1538
7.	Skills in storing and processing personal data, including in the cloud	3,12	3,42	0,3077
8.	Strong data skills, data analytics, business intelligence	2,23	2,77	0,5385
9.	Social media skills	3,58	4,08	0,5000
10.	Online Marketing and Communication Skills	2,88	3,62	0,7308
11.	Skills in using and implementing security procedures on the Internet	2,15	2,92	0,7692
12.	Computer programming skills	1,46	2,12	0,6538
13.	Skills in creating information digital resources (websites, blogs, telegram channels, groups in social networks)	2,50	3,31	0,8077
14.	Skills of artificial intelligence and robotics technologies	1,15	2,12	0,9615
15.	Experience with augmented and virtual reality	1,15	2,04	0,8846

In general, respondents mention the need to improve their knowledge of almost all digital skills (Figure 3).

At the same time, the largest gap is recorded for the most advanced skills in the field of artificial intelligence, robotics, augmented and virtual reality, the creation of digital resources, the use and implementation of security procedures on the Internet. However, this set of advanced digital skills, according to the respondents, will be the least in demand in the tourism sector in the future. The minimum gaps are fixed for the basic skills of using a PC and the Internet.

Considering the current level of digital skills by area of activity, it can be noted that employees of tour operators and travel agency companies consider themselves the most competent in the field of digital technologies. The in-depth level of current skills in working with digital data and devices has also been formed for the staff of tourist administrations.

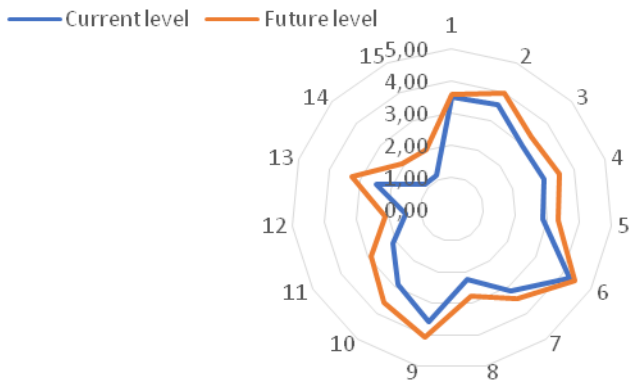


Fig. 3. Gap map of the current and future level of digital skills (numbers from 1 to 15 indicate digital skills, see Table 2)

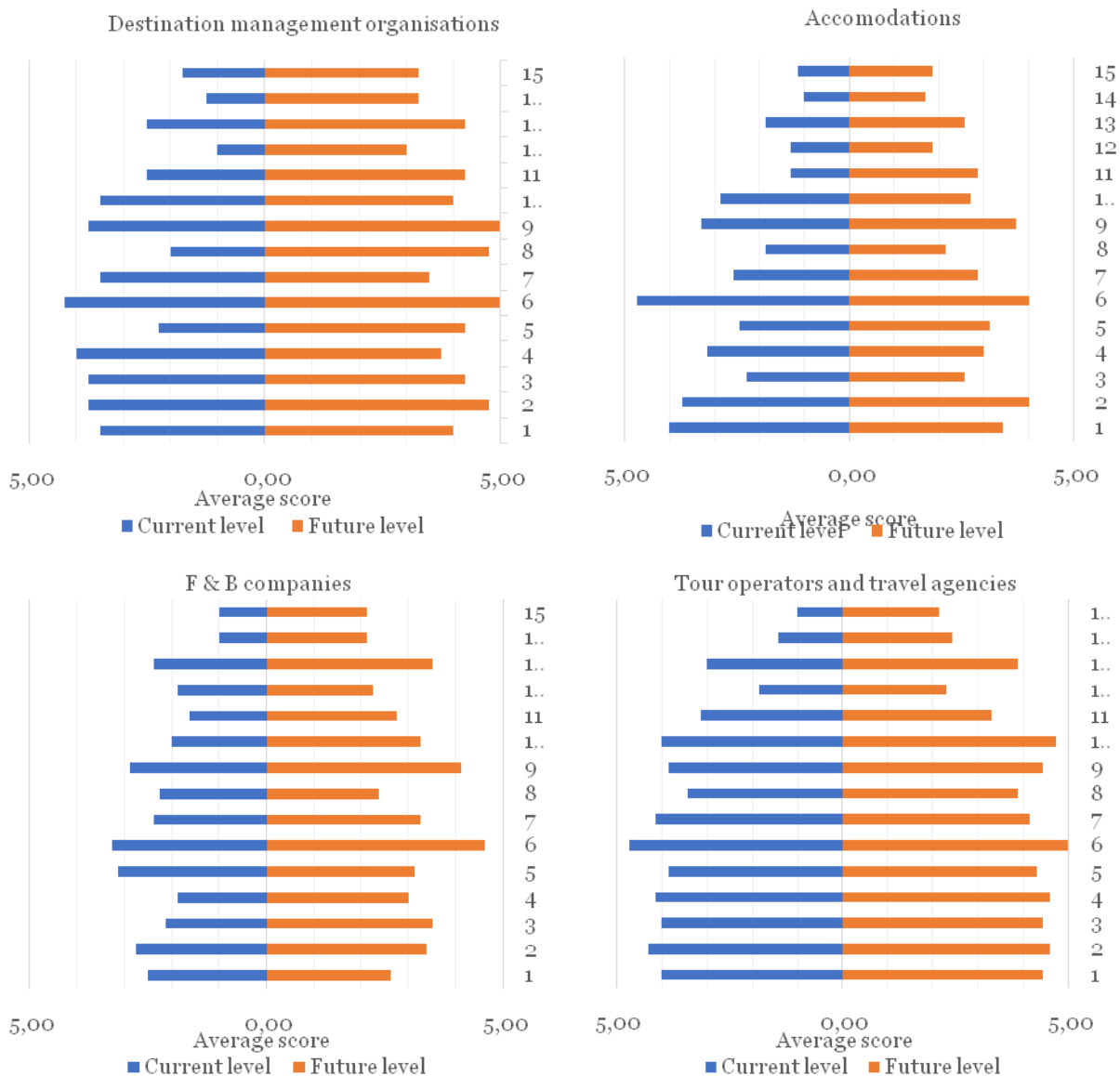


Fig. 4. Current and future levels of digital skills of respondents by field of activity (digits from 1 to 15 on the vertical axis indicate digital skills, see Table 2)

Specialists in these areas of activity also noted the greatest impact of digital technologies on the tourism and hospitality industry in the future and, accordingly, an increased demand for digital skills. In the hospitality sector, the largest gap was recorded in terms of information security skills

(1.57 points), and the most demanded skills in the future, in addition to basic digital skills of interacting with software and devices, will be the ability to work with social networks (3.71 points).) and specialized software systems (3.14 points). For 13 out of 15 skills, food workers rated below average current skills, while identifying the ability to use the Internet information and telecommunications network to search for information and data (4.63 points) and the ability to work in social networks as key skills in the future (4.13 points) (Figure 4).

Assessing the experience of teaching digital skills by employees of the studied companies, we note that the majority of respondents (65.4 %) had a similar experience, while 44 % of respondents were trained using online courses (Figure 5). Predominantly, the enterprises of the tour operator sector (mainly online) and the accommodation sector (at the workplace) are engaged in training their employees (71.4 % of respondents in both sectors were trained). A significant part of the respondents (34.6 %) did not undergo training, explaining this by the absence of the need or by obtaining the necessary skills in the process of work. At the same time, they note that the software as a whole is intuitive and has all the necessary instructions for working, and if necessary, you can get advice on a problematic issue from the organization of the software developer or customer.

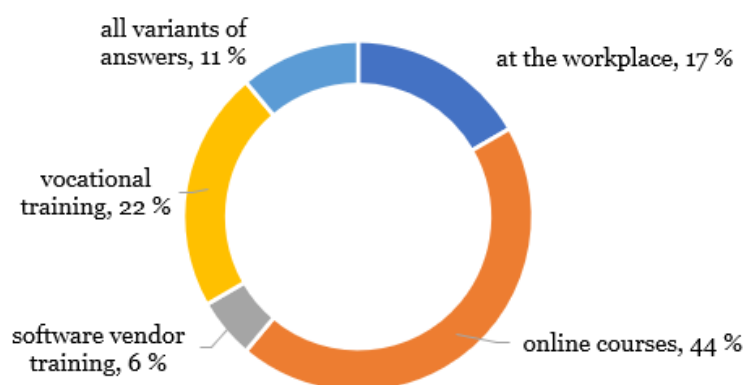


Fig. 5. Types of digital skills training

Thus, the study showed that the current digital skills of employees in the tourism and hospitality industry are reduced mainly to basic user skills of interacting with digital devices and searching for information. Most important in the future will be skills in social media, online marketing and communications, using the Internet to search for information, as well as basic skills in working with software and devices. The identified gaps in digital education make it possible to identify the digital skills that tourism companies need to invest in.

5. Conclusion

The relevance of the research topic is due to the change in the content and nature of the work of workers in the tourism and hospitality industry in the digital economy. This leads to the need to form a fundamentally new model of competencies for workers in the area under consideration, which should form the basis of the system for training in-demand personnel in the context of digital transformation. The article considers the most common approaches to the structure of the model of digital competencies of tourism workers in demand in the modern world. Within this study, these components include computer literacy, information literacy, communication literacy, digital content creation, digital security, and digital proficiency. All these components play an important role in the career of tourism and hospitality professionals in the face of fierce competition in the labor market and access to professional knowledge.

Based on the results of a study conducted by the authors of the article, it was substantiated that the most important competencies of specialists in the field of tourism and hospitality in the future will be the skills of working on the Internet, working with MS Office, working with social networks, as well as online marketing and communications. The hypotheses about the presence of gaps between the current and future levels of development of digital skills were partially confirmed, and these gaps for the tourism and hospitality sectors we analyzed are different.

In order to strengthen the training of personnel in the field of digital technologies and thereby ensure their demand in the labor market, it is necessary to provide for the formation of deeper digital skills (Gordienko, 2022). Despite the fact that the respondents did not pay due

attention to advanced skills in the field of artificial intelligence, robotics, augmented and virtual reality, the creation of digital resources, the use and implementation of security procedures on the Internet, big data, it is these technological trends that will have the greatest impact in the future. on business processes, communication and, in general, on the activities of tourism organizations. To this end, it is necessary to deepen the computer training of students of tourism specialties in the field of informatics and ICT, improve the system of training the tourism and hospitality industry in order to increase the digital literacy of tourism specialists and provide the digital economy with competent personnel.

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