

# EXPLORING THE DIGITAL LANDSCAPE: INTERDISCIPLINARY PERSPECTIVES



## EXPLORING THE DIGITAL LANDSCAPE: INTERDISCIPLINARY PERSPECTIVES

Monograph

Edited by Olha Blaha and Iryna Ostopolets

The University of Technology in Katowice Press

#### **Editorial board :**

Zhanna Bogdan – PhD, Associate Professor, Simon Kuznets Kharkiv National University of Economics (Ukraine) Olha Blaha – PhD, Associate Professor, Ivano-Frankivsk Educational and Scientific Law Institute of the National University «Odesa Law Academy» (Ukraine) Nadiya Dubrovina – CSc., PhD, Associate Professor, Bratislava University of Economics and Management (Slovakia) Yuliana Irkhina – PhD, Associate Professor, South Ukrainian National Pedagogical University named after K. D. Ushynsky (Ukraine) Tamara Makarenko – PhD, Associate Professor, Berdyansk State Pedagogical University (Ukraine) Tetyana Nestorenko – Professor AS, PhD, Academy of Silesia, Associate Professor, Berdyansk State Pedagogical University (Ukraine) Aleksander Ostenda – Professor AS, PhD, Academy of Silesia Iryna Ostopolets – PhD, Associate Professor, Bogdan Khmelnitsky Melitopol State Pedagogical University (Ukraine)

#### **Scientific reviewers :**

Antonina Kalinichenko – DSc, Professor, University of Opole Oleksandr Nestorenko – PhD, Academy of Silesia Iryna Yemchenko – DSc, Professor, Lviv Polytechnic National University, Ukraine

The authors bear full responsible for the text, data, quotations, and illustrations.

Copyright by Academy of Silesia, Katowice, 2024

#### ISBN 978-83-969890-9-3 DOI: 10.54264/M036

#### **Editorial compilation :**

The University of Technology in Katowice Press 43 Rolna str., 40-555 Katowice, Silesia Province, Poland tel. (32) 202 50 34; fax: (32) 252 28 75 email: kontakt@wydawnictwo.wst.pl www.wst.pl, www.wydawnictwo.wst.pl

### **TABLE OF CONTENTS**

Preface	9
Part 1. Interdisciplinary insights into modern digitalization and management	12
1.1. Digitalization and management of the modern educational process <i>Natalia Bobro</i>	12
1.2. Lviv Medical University's architectural complex: a historical perspective on its establishment and development	24
1.3. Control software by electronic load of the household Vasyl Kot, Valentyna Yuskovych-Zhukovska	37
1.4. Optimization of the stages of accepting administrative decisions to minimize the impact of uncertainty	50
1.5. Remote work: analysis of the essence and strategic significance Sviatoslav Shaforenko, Svitlana Zaika	63
1.6. Pedagogical prognostication of formation of innovative and entrepreneurial competence in future managers of education Iryna Shumilova, Nataliia Hrechanyk, Serhii Kubitskyi	77
1.7. Information technologies as a driver of tourism business development Svitlana Zaika, Andriy Avriata	87
1.8. Information privacy: threats and challenges in the conditions of hybrid war in Ukraine Iryna Hrabovets, Liudmyla Kalashnikova, Liudmyla Chernous	100
1.9. The essence of the concept «choregraphic projects» in the media industry social-humanitarian dimensions	111
1.10. Cross-cultural communication: Ukrainian-Polish informational-educational connections <i>Tetiana Koliada-Berezovska, Stanislav Berezovsky</i>	123
1.11. Electronic evidence in the criminal process of Ukraine	134
1.12. The music of the Ukrainian composer V. Bibik in the global information space of the 21st century	157

#### 1.7. Information technologies as a driver of tourism business development

Information technologies play a key role in the modern economic space and contribute to the growth of national economies and the entire world economy. They have penetrated all areas of our lives, from production to trade, from education to entertainment.

Information technology has a significant impact on the economy, contributing to the growth of labor productivity, increasing the efficiency of production and sales of goods and services, as well as the expansion of markets. The acceleration of transactions provided by information technology stimulates manufacturers to work more efficiently, increasing the skill of personnel and the quality of products.

Modern society feels the colossal influence of information technologies. Television, the Internet, cellular communication, specialized information programs – all these are information technologies that have changed our everyday life.

Information technologies have integrated into the field of tourism, turning it into a powerful segment of global trade in services. International and domestic tourism has become a component of modern computerized business, with the participation of major airlines, hotel complexes, and travel companies. The use of information technologies in tourism has made tourist products more individualized, flexible, and accessible to a wide range of consumers (Dziubata, 2022; Гапоненко & Шульга, 2020).

The introduction of information technologies in the tourism sphere took place gradually. Initially, data was integrated with the aim of increasing the efficiency of tourism enterprises through the automation of information processes. Subsequently, management information systems were implemented, improving management efficiency by enhancing information transfer processes, and integrated networks were established, enhancing the direct activities of tourism enterprises and facilitating relationships with other organizations. Following that, networks were merged at different levels, from local to global. This reduction in the number

of equipment, operational costs, and increased reliability contributed to the enhanced efficiency and competitiveness of tourist enterprises.

Among the main trends in the development of information technologies in the field of tourism at that time, the following were identified:

- complication of information goods (services): the strategic importance of information products, such as software, databases, and expert support services, increased. Tourism businesses increasingly relied on information technology to support their operations.

- ability to interact: with the growing importance of an information product, the ability to conduct an ideal exchange of this product between a computer and a person or between information systems became a leading technological problem. This also concerned the compatibility of technical and software tools, with a focus on processing and transmission speed.

- elimination of intermediate links: the development of the ability to interact improved the exchange process of information products, leading to the elimination of intermediaries in the relations between suppliers and consumers. Direct orders using information technology made intermediaries unnecessary.

- globalization: information technology enabled tourism enterprises to conduct business anywhere, receiving comprehensive information. The globalization of the information product market aimed at obtaining advantages by distributing fixed and contingent costs over a wider geographical region.

- convergence: distinctions between products and services, information products and facilities, household and business use, information and entertainment, and between different modes of operation such as audio, digital, and video transmission, are disappearing (Войнаренко et al., 2019).

In relation to the tourism business, these trends have led to:

1. Distributed personal computing: tourism enterprises can use distributed personal computing to enhance the efficiency of management and service delivery. For example, employees can use portable devices to access information and complete tasks from anywhere.

2. Developed communication systems: tourism enterprises can leverage advanced communication systems to improve the efficiency of interaction with customers and partners. For instance, they can utilize email, websites, and social media for customer communication, while employing video conferencing and chatbots for partner interactions.

3. Flexible global communications: tourism businesses can utilize flexible global communications to access information and markets worldwide. For instance, they can use mobile networks to access information from any location and employ e-commerce platforms to sell services internationally.

4. Creation and development of electronic trade systems: tourism businesses can utilize e-commerce systems to sell their services online, enabling them to reach a broader customer base and increase sales efficiency.

5. Elimination of intermediate links in the system of integration of tourist organization – external environment: tourist enterprises can use information technologies to eliminate intermediate links in the integration system with the external environment. For example, they can use reservation systems to directly interact with customers and supply chain management systems to directly engage with suppliers (Аврята, 2023; Войнаренко et al., 2019; Князевич et al., 2021; Савіцька, 2021).

Concrete examples of how these trends are implemented in the tourism business include the following:

- distributed personal computing: Amadeus utilizes distributed personal computing, providing travel agencies with software for booking flights, hotels, and other services. This software allows agents to access real-time information from anywhere.

- advanced communication systems: Booking.com employs advanced communication systems, allowing tourists to book hotels and other services through its website. This platform enables real-time communication between tourists and company representatives, along with the ability to provide feedback about their trips.

- flexible global communications: Hilton takes advantage of flexible global communications, offering tourists the ability to book hotels worldwide through its multilingual website. This website accommodates tourists in choosing suitable hotels based on their preferences.

- e-commerce systems: Ryanair utilizes e-commerce systems, allowing tourists to purchase airline tickets through its website. The website facilitates the selection of flights that meet tourists' needs and enables payment through various methods, including credit cards.

- elimination of intermediate links: Airbnb eliminates intermediate links, enabling tourists to book accommodations directly from private individuals. This approach provides cost savings for tourists and offers a unique experience.

These trends significantly impact the development of the tourism business, enhancing efficiency, competitiveness, and accessibility of services. Information technologies have become pivotal for the technical advancement of tourism, ensuring its efficiency and accessibility. This influence has been profound for all industry participants, regardless of size or offered products, leading to substantial transformations in the tourism business. The study of economic processes worldwide in recent years, especially in tourism, indicates innovative transformations, particularly the integration of digital technologies. (Zaika & Kharchevnikova, 2022; Грідін & Заїка, 2022; Калініченко et al., 2023). Among them, several notable technologies stand out:

• *Big Data and Analytics technologies*: These technical solutions transform unstructured data into valuable information, facilitating personalization and individualization in tourism. They aid in defining target audiences, understanding the needs of different segments and individual tourists, implementing personalized approaches to formulating tourist products, and assessing their value. At the enterprise level, these solutions enable market monitoring, targeted advertising campaigns, and efficient management of human resources.

• *Cloud services*: These services allow tourism enterprises to access powerful computing resources and software over the Internet, optimizing equipment and personnel costs.

• *Artificial intelligence (AI)*: Specially developed software algorithms perform various tasks in the tourism industry, supporting decision-making and providing personalized results during the planning, organization, and evaluation of tourist trips. AI encompasses:

- *hotel Management Systems (PMS – Property Management System)*: Automate hotel processes and functions for efficient operations.

- *real-time risk management and anti-fraud systems*: Ensure security and timely response to potential risks and fraudulent activities.

- *automated virtual assistants*: Digital assistants for various departments, such as marketing, analytics, room service, food, and entertainment.

- *data analysis and analytics systems*: Process and analyze information to derive useful knowledge and strategies.

- *customer services*: Include chatbots for 24-hour hotel service, «service concierge», «room service», and «smart home» systems.

- *neural networks*: Used to automate operational activities in tourist offices, restaurants, hotels, or networks.

- *neurointerface systems*: Facilitate information exchange between the human brain and electronic devices.

• *Smart and location-based technologies*: These enable travel businesses to provide more personalized, location-based services, enhancing the quality of customer service.

• *Internet of Things (IoT)*: Allows tourism businesses to collect data about tourism infrastructure facilities, such as hotels, museums, and attractions. This helps improve the management of these facilities and enhance customer service quality.

• *Robotics*: Encompassing both electromechanical and virtual agents, robotics automates operational processes and actions in tourism, including itinerary development, hotel reservations, accommodation, fare, and load management. Future

expectations involve intelligent robots interacting and communicating with people, processing information, and making management decisions related to tourism.

• *Biometric technologies*: Digital systems determining the authenticity and identification of individuals based on biometric data. They reduce the need for identity documents, facilitate cashless payments, and streamline procedures for customs formalities, settlement, transport registration, and other travel aspects (Мазаракі et al., 2020).

• *3D printing*: which allows you to create realistic models of tourist objects and destinations. This enables tourists to better plan their trips and get more realistic impressions from visiting these objects.

• *Personalized service models*: thanks to which tourism enterprises can offer customers services adapted to their individual needs and interests. This allows you to increase customer satisfaction and increase their loyalty.

Innovative digital technologies have a significant impact on the tourism business, including:

- increase the efficiency of management: contribute to the optimization of equipment and personnel costs, increase the efficiency of decision-making, and improve the management of relationships with clients;

- improve the promotion of the tourist product: make it possible to reach a wider audience, increase the effectiveness of advertising and promotion of the tourist product, and improve interaction with potential customers;

- improve the quality of providing tourist services: provide an individual approach to each client and make tourist services more accessible (Мазаракі et al., 2020).

The identified trends give rise to challenges and potential risks facing the participants of the tourism sector, which can be grouped into the following groups:

I. Economic challenges and risks:

- urbanization: The growth of the urban population can lead to excessive tourist pressure on specific areas, causing problems of infrastructure and sustainability of natural resources.

- turbulence and crisis phenomena: Negative external influences, such as crises and turbulence, can significantly affect tourism activity and financial stability.

- economic and social cataclysms: Risks associated with catastrophic economic and social events may affect the demand for tourism services and investments in the industry.

- divergence of economies: The gap between the economic indicators of different countries and regions can lead to changes in consumer habits and volumes of tourist traffic.

- low propensity for innovation: Insufficient readiness of society and the tourism industry for innovation can slow down the introduction of new technologies and concepts.

- financial constraints: A lack of financial resources can lead to a loss of competitiveness and complicate the duration of investment payback.

II. Organizational and managerial challenges and risks:

- he turbulence of «vertical» and «horizontal» progress: Rapid changes at the level of countries and the creation of new technologies can create difficulties in the implementation and use of digital innovations in tourism.

- aging of technological solutions: Rapid aging of technological solutions can become an obstacle to effective functioning and competitiveness.

- low level of cybersecurity: The danger of losing resources and information due to a low level of cybersecurity and crime in the information space.

- risks of inconsistency and complications of work in the digital space: Difficulties of interaction and complications of processes in the digital environment can generate negative consequences for tourism enterprises.

- information noise: Information overload and poor information processing can lead to confusion and uncertainty in the digital space.

III. Social and environmental challenges and risks:

- growing gap between the standard of living of different strata of the population: Social inequalities can affect consumer opportunities and demand for tourist services.

- transformation of values: Changes in the values of society can affect the choice and expectations of tourists.

- aging of knowledge: The increasing level of aging of knowledge can become an obstacle for adaptation to new technological and socio-cultural trends.

- growing unemployment and mass job losses: Economic difficulties can lead to large job losses in the tourism industry.

- the need for highly qualified specialists: High competition in the field of tourism can increase the need for qualified personnel.

- change in a person's personality and needs: Changes in personal preferences and needs can affect tourist preferences and expectations.

- environmental pollution and scarcity of natural resources: Environmental problems can lead to changes in tourist destinations and create new challenges for sustainable tourism (Мазаракі et al., 2020).

Recently, in the field of tourism, there has been a growing interest in innovative technologies such as:

• *Virtual and Augmented Reality Technologies*. These technologies can make tourism more accessible and attractive to people with disabilities and can be utilized to create new types of tourism products and services, such as virtual tours and interactive museums.

Virtual and augmented reality technologies will enable tourists to immerse themselves in the virtual world and obtain realistic experiences of visiting tourist sites without leaving home. This makes tourism more accessible to people with disabilities and those who do not have the time or money to travel.

• *Blockchain Technologies*. These technologies can provide greater transparency and security in travel operations. They can also be applied to create new travel payment models, including electronic currencies.

Additionally, blockchain technologies can be employed to establish secure and reliable systems for storing and sharing information about travel services. This can enhance trust between tourists and tourism businesses, making tourism services more convenient and accessible.

• *Neural Network Technologies.* These technologies can be used to develop more personalized service offers for tourists, focusing on individual needs and interests.

For example, they can suggest travel itineraries that align with tourists' interests and budgets.

Table 1 displays examples of innovations in digital technologies for tourism in different countries worldwide (Петренко, 2023).

In the examples provided in the table, it is evident that various innovative technologies are employed in the field of tourism across different countries worldwide. This diversity stems from the distinct needs and preferences of tourists, as well as the varying economic and social conditions in these countries. These examples underscore that digital technology innovations exert a significant impact on the evolution of tourism. They empower tourists with more information about travel destinations and services, enhance travel safety and convenience, and offer a more personalized travel experience.

As a result, information technologies are reshaping tourism, altering its structure, processes, and the relationships among market participants.

On one hand, information technologies contribute to the democratization of tourism, making it more accessible to a broad spectrum of people. This is attributed to the fact that information technologies enable tourists to independently plan their trips, acquire information about tourist products and services, and make reservations.

On the other hand, information technologies are centralizing the tourism market, providing advantages to large tourism enterprises equipped with the necessary technologies and resources. This is because information technology enables large enterprises to efficiently manage their operations and compete globally.

Table 1. Global innovation in digital technologies for tourism

Country	Digital technologies
Bali	• «Startup Weekend Bali» startup contest: the best ideas in the field of tourism
	are selected to satisfy niche requests. Various mobile applications are offered that
	facilitate quality communication with local guides and drivers («Travelis»),
	purchase products from local farmers («Finger Farm»), and inform about
	Indonesian hotels that provide guests with clean water in renewable containers
	(«Botol Wisata»).
Indonesia	• «Indonesia Travel Exchange» (ITX): an own network for booking guesthouses
	and villas in Indonesia. The network was created to avoid the negative
	consequences of the expansion of certain airlines and increase the competitiveness
	of local enterprises.
Cambodia	• « <i>Cambo Ticket</i> »: a platform that allows you to book a place on ferries, buses,
	and private taxi services in Cambodia, Thailand, Laos, and Vietnam by email. The
	platform facilitates travel for tourists who do not speak the local language.
Canada	• <i>«Digital identification of the traveler»:</i> a system that allows tourists to pass
Junuuu	control at the border using digital passport data. The system reduces waiting time at
	the border and improves security.
China	• The «Smart City» project: program aimed at the development of digital
0	technologies in Chinese cities. As part of the program, more than 500 «smart cities»
	have been created in the country, in which various technologies are used, including
	technologies of artificial intelligence, machine learning, and the Internet of Things.
	• <i>Travelchain and Trip.com Blockchain:</i> blockchain platforms for booking flights
	and hotels in a more secure and efficient mode.
	• Ctrip Big Data Center: a data center that collects and analyzes data about
	tourists for the development of new products and services.
Thailand	• Airport infrastructure development project: a program aimed at reducing
1 manuna	terminal congestion and improving tourist service at Thai airports. As part of the
	program, it is planned to rebuild and modernize several airports in the country.
Finland	• Cepsic Space Nation: a service that popularizes space tourism. The service
1 milana	offers tourists the opportunity to visit the International Space Station using virtual
	reality.
France	• <i>Tripnparty</i> : a platform that helps tourists find authentic bars and pubs in
Fance	different countries worldwide. The platform uses data from local residents to
	provide tourists with the most up-to-date information.
Sri Lanka	Large-scale digital promotion of the country: a campaign aimed at attracting
511 Lanka	tourists to Sri Lanka. The campaign includes advertising on social networks,
	creating content for tourists, and holding events that promote the country as a
	tourist destination.
Japan	• Implementation of 5G communication in the hospitality industry: a project
Japan	aimed at using 5G communication to improve tourist services in hotel complexes,
	airports, and other tourist facilities. 5G communication allows for fast and reliable
	access to the Internet, necessary for providing high-quality services to tourists.
	• Service from Sony: uses artificial intelligence to create virtual guides for
	tourists. Virtual guide robots can provide tourists with information about tourist
	attractions and help them navigate the city.
	• <i>Xploration Station</i> : an amusement park that offers visitors virtual tours of
	different countries worldwide.
USA	Application from the Disney World company: allows tourists to use augmented
USA	reality for entertainment, including seeing Disney characters interacting with them
	in the real world.
	In the real world.

	• Google Earth VR: a service that allows tourists to travel the world using virtual
	reality.
	• <i>TripAdvisor AI</i> : a service that uses artificial intelligence to create personalized
	recommendations for tourists.
	• Google AI for Travel: a project that develops new artificial intelligence
	technologies for use in tourism.
	• Siri Travel: a voice assistant from Apple that can provide tourists with
	information about tourist destinations and services.
	• Expedia Traveler Intelligence: a service that uses machine learning to forecast
	demand for travel services in different regions of the world.
Germany	• Blockchain platform from Lufthansa: allows tourists to get an electronic visa in
	a shorter time and without the need to visit a visa center.
Poland	• Virtually Poland: a platform that offers virtual tours of Polish cities and
	attractions.
Spain	• Amadeus B2B Travel: a blockchain platform that allows travel agencies to
	exchange information and make payments in a more secure and efficient manner.
Netherlands	• Booking.com Insights: a service that uses big data analysis to study the behavior
	of tourists.

Looking ahead, information technologies will persist in transforming tourism, ushering in new opportunities and challenges for market participants. To adeptly navigate digital transformation, tourism enterprises should:

- understand the challenges and potential risks associated with implementing information technologies;

- develop adaptation strategies to digital transformation that account for the industry's specifics and the enterprise's unique needs;

- invest in the development of information technologies and skills in their utilization;

- collaborate with other participants in the tourism market to devise and implement joint innovations.

#### **References:**

Dziubata, Z. (2022). Labour market trends teaching in tourism industry in the context of eurointegration processes. *Збірник наукових праць ТДАТУ імені Дмитра Моторного (економічні науки)*. № 1 (46), 44-51. https://doi.org/10.31388/2519-884X-44-5.

Zaika, S. O., & Kharchevnikova, L. S. (2022). The role of innovations in the development of tourism. *Глобалізація та розвиток інноваційних систем: тенденції, виклики, перспективи:* матеріали I Міжнар. наук.-практ. конф., 3-4 листопада 2022 р. Держ. біотехнологічний ун-т. Харків, 76-78.

Аврята, А. В. (2023). Дослідження технологічних трансформацій і глобальної інформатизації туристичного бізнесу. *Наука і техніка сьогодні*. Вип. 3 (17), 97-109. https://doi.org/10.52058/2786-6025-2023-3(17)-97-109.

Войнаренко, М. П., Кузьміна, О. М., & Янчук, Т. В. (2019). *Інформаційні системи і технології в управлінні організацією*: навч. посіб. для студентів ВНЗ. Вінниця: Едельвейс і К., 496.

Гапоненко, Г. І., & Шульга, Н. В. (2020). Сучасні тенденції та перспективи впровадження інформаційних технологій в туристичній галузі України. Вісник ХНУ імені В. Н. Каразіна. Серія «Міжнародні відносини. Економіка. Країнознавство. Туризм». Вип. 11. 111-120. URL:

https://periodicals.karazin.ua/irtb/article/view/15913.

Грідін, О. В., & Заїка, С. О. (2022). Інноваційний розвиток туристичної сфери України: стан, проблеми, перспективи. *Актуальні проблеми та перспективи розвитку агропродовольчої сфери, індустрії гостинності та торгівлі: тези доповідей Міжнар. наук.-практ. інтернет-конф. (2 листопада* 2022 р.). Державний біотехнологічний ун-т. Електронні текстові дані. Харків, 260-261.

Калініченко, С., Грібіник, А., & Аврята, А. (2023). Вплив цифровізації туристичної інфраструктури на розвиток регіонального туризму. *Modeling the development of the economic systems*, (1), 133-138.

https://doi.org/10.31891/mdes/2023-7-19.

Князевич, А. О., Дяченко, Л. А., Крайчук, С. О., & Демидюк, С. М. (2021). Інформаційні технології як ключова складова системи комунікативного менеджменту підприємств туристичної галузі. *Електронне наукове фахове видання «Ефективна економіка»*. Вип. 9. URL:

http://www.economy.nayka.com.ua/pdf/9\_2021/6.pdf.

Мазаракі, А., Бойко, М., & Босовська, М. (2020). Трансформація туризму в суспільстві 5.0. *Scientia Fructuosa (Вісник Київського національного торговельно-економічного університету*), 132 (4), 33-54.

Петренко, С. (2023). Аналіз інформаційного розвитку підприємств в сфері туризму. *Innovations and Technologies in the Service Sphere and Food Industry*, (4 (10), 28-38. https://doi.org/10.32782/2708-4949.4(10).2023.4.

Савіцька, О. П., & Савіцька, Н. В. (2021). Сучасні тренди інноваційного розвитку сфери туризму в Україні. *Бізнес Інформ*, 9, 124-130. https://doi.org/10.32983/2222-4459-2021-9-124-130.