

# From e-Tourism to Digital Tourism. Terminologically Review

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**Abstract.** The modern level and capabilities of ICT form new forms of communication interactions, including in the field of tourism services. The fourth industrial revolution did not bypass the tourism industry, highlighting Tourism 4.0. Globalization and digital transformations of the industry have spawned new directions in business and a new scientific interdisciplinary direction – the digitalization of tourism. Since the development of digital tourism is associated with modern information technologies, which are also called smart or digital, there is a need to understand the current terminology. The article offers interpretations of the term-concepts of the terminological core of the scientific direction associated with the widespread use of digital technologies. Thematic search, explication, and analysis of contextual knowledge, carried out on an array of scientific publications in English and Russian sources, made it possible to create a thesaurus of the scientific direction. The results of the analysis of the terminological landscape open up new research opportunities, especially in areas where there is still a lack of academic research related to the application of modern digital technologies in tourism.

**Keywords:** digital tourism, eTourism, information and communication technology, interdisciplinary research, smart tourism, terminological core, terminological landscape, trend

## 1. Introduction

Today tourism is a powerful industry that provides employment to millions of people of different professions and qualifications, an economic sector that simultaneously plays a social and economic role. Tourism is a high-budget component for many countries, an ecosystem driver, which contributes to significant industry consolidation. At the same time, this is a sphere that is directly influenced by modern processes

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and trends of globalization. The importance of the development and digitalization of the industry has highlighted as part of the implementation of the Digital Economy program of the Russian Federation. Moreover, the primary tasks of modern tourism are formed and reflected in "The strategy of tourism development till 2035" as "...reaching the level of world leaders in the development of digital infrastructure and services, the development of digital platforms for promoting tourism products and brands, digital navigation aids and the formation of a tourist product" [30].

The choice of solutions and technologies for their implementation is a priority task, the resolution of which should correspond to interdisciplinary scientific research directions. Identification and refinement of the object of these studies should begin with an analysis of the categorical-conceptual apparatus. Therefore, the tasks of defining the common terminology prevailing in the digital era of tourism, identifying the drivers of the tourism ecosystem and the subsequent construction of management models for the industry and tourism products are relevant.

One of the obvious drivers of the current stage is undoubtedly the global pandemic and all the measures that are associated with it. In the conditions of the arisen restrictions, business and information processes in tourism have been beginning to manifest themselves through new forms of interaction in society on a global scale.

Thus, the relevance of the presented results is also determined by the complex epidemiological situation, when habitual, traditional forms of tourism are largely paralyzed.

## **2. The research methodology**

Revealing contextual knowledge through the application of methods, approaches, technologies and tools of digital humanities, as well as text mining is one of the trends in modern scientific interdisciplinary research. Contextual knowledge is generally understood as the ability to correctly "read" the context, extract and interpret professionally significant information through contextual search.

To clarify our own beliefs and developments, as well as to harmonize the scientific methods of searching, extracting, and studying contextual knowledge used in practice, the general methodological approaches to the search and analysis of textual unstructured information and approaches to the preparation of analytical reviews in relation to topics related to tourism has been examined. The review of research approaches was carried out in a selection of articles in the Science Direct library and revealed that three of keyword selection methods are widely used in tourism research: empirical (or experimental), territorial and technological approaches. An empirical approach identifies keywords simply based on the knowledge and experience of the researcher. The territorial approach is an extension of the empirical one, first using the empirical method to determine the terminological core, and then adding related term-concepts related to both basic and recommended (using the search engine recommendation function). The technological method involves the selection of keywords from a wide range of terms, based on predicted or frequency values and in terms of their correlation with predictive variables.

From the point of the study task and research idea set by the authors, which implies the formation of the terminological core of the digital tourism research area based on

the regulatory documents of the Russian Federation in terms of tourism digitalization, the territorial method is optimal. Expert analysis of scientific sources allows you to supplement the terminological core with a basic conceptual apparatus. The next step is the use of an extended thematic search and content analysis of the corpus of scientific publications for the formation of semantic groups and a thesaurus of the scientific direction, the construction of thematic trends.

The methodology of that research is a comprehensive approach developed by the authors (named "synthetic method"). The approach allows one to explore the developing interdisciplinary directions and practices of human activity through the study of the conceptual and terminological apparatus and contextual knowledge in dynamics. The approach involves the extraction of contexts from unstructured or semi-structured information resources, allowing through explication and mapping to form collections of relevant text fragments (thematic contexts). The concept of context is interpreted as an independent conceptual unit of the categorical apparatus, which can be used as a basis for the classification of scientific texts, visualization of hierarchical and associative relationships between terms. In this case, the context is a part of the text, the verbal environment of the selected text element (term-concept) for analysis. The term-concept means a single term or collocation that carries the semantic load of a certain context [25, 26].

The synthetic method is consistent with the approaches adopted in that kind of research. However, the method has several features, such as the consistent application of ICT at all stages of the study, taking into account and integrating several different methods and tools, namely:

- synthesis of various search methods integrated coverage of research tools and varying the sequence of application of search technologies, selection, explication and analysis of contextual knowledge, depending on the initial conditions and characteristics of specific research;
- expert assessment of documents and, on its basis, a qualitative selection of the most relevant of them;
- the use of tools for analyzing contextual knowledge to form thematic collections containing fragments (contexts) relevant to the studied subject area from selected resources;
- the use of information environments and analytical software for full-text analysis of the generated thematic collections, processing and interpretation of the obtained contextual analysis data;
- building trends that demonstrate the development and topics of the studied subject area.

There are several attitudes inherent in the Synthetic method. The attitudes are the principles of conducting research, which include:

- selection of digital resources containing text arrays, reflecting both scientific and socio-political discourses;
- refusal to study a thematic sample of highly cited scientific journals with a high impact factor in favor of considering a wider range of publications from thematically different editions, which makes it possible to explicate a larger number of rel-

evant terms, as well as to take into account various trends in the development of interdisciplinary research areas, regardless of their prevalence.

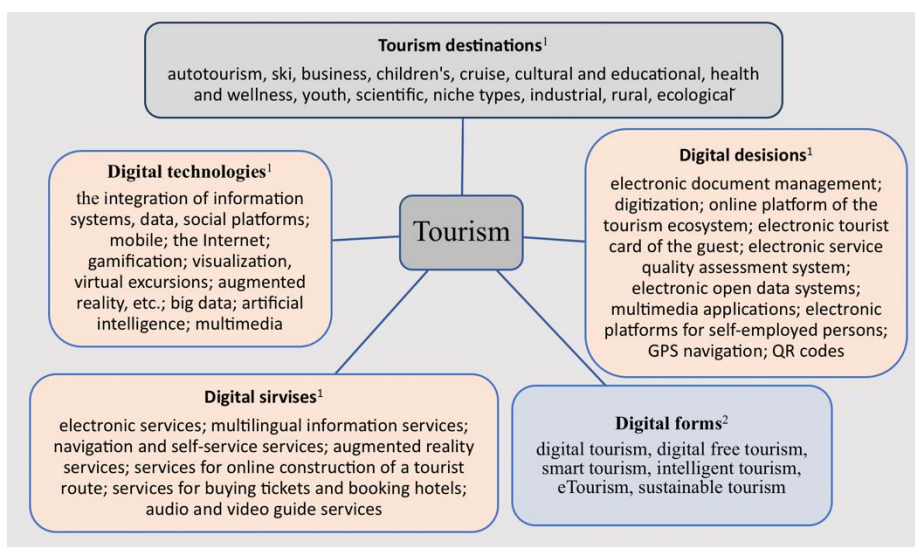
The application of the synthetic method is independent of the choice of specific information environments and software, which provides flexibility in its use and availability of its application, depending on the capabilities of research teams.

### **3. Terminological core of "Tourism Digitalization" interdisciplinary direction**

According to the Federal Law "On the Basics of Tourist Activity in the Russian Federation" tourism is interpreted as "temporary departures (travel) of citizens of the Russian Federation, foreign citizens and stateless persons from a permanent place of residence in health-improving, recreational, cognitive, physical culture, professional and business and other purposes without engaging in activities related to earning income from sources in the country (place) of temporary stay" [34]. The foundations of tourism activity, laid down in this definition, are characterized by the breadth and scale of the structural elements of tourism, covering the activities of many related areas, which indicates an interdisciplinary scientific topic. The current level of digitalization of society forms new forms of communication interactions and relationships between producers and consumers, including in the field of tourism services [35]. Manufacturers of tourism services are forced to introduce modern digital technologies, thereby forming a new scientific direction – digitalization of tourism. All this confirms the interdisciplinary nature of the topic and the need to apply modern methods of studying the terminological landscape of the scientific direction.

The terminological core of the research area under study was formed using the analytical apparatus of the Scientific electronic library (NEL, <http://elibrary.ru>) and the analysis of the text of the Russian Federation's Tourism Development Strategy for the period to 2035. As a result of the terminological analysis of the Russian Federation's Tourism Development Strategy for the period to 2035, the authors identified three groups of concepts that are directly associated with digitalization. Those are digital technologies, digital solutions and digital services. Figure 1 demonstrates the tourism information model summarizing the analysis results.

Digital forms of tourism are not explicitly defined in the document, but the primary analysis of both foreign and domestic literature made it possible to identify some basic concept terms that determine the processes of digitalization in tourism: 'digital tourism', 'smart tourism', 'e-tourism' and some others. The term-concepts identified based on the analysis of the Strategy, along with the main term-concepts 'e-tourism', 'smart tourism', 'digital tourism', have constituted the terminological core of the interdisciplinary direction. Subsequently, the term-concepts of the terminological core have been included in search queries to form a terminological landscape, supplement the list of digital forms of tourism, and build a thesaurus of the subject area.



**Fig. 1.** The tourism information model (prepared based on analysis of <sup>1</sup>Strategy for the development of tourism in the Russian Federation for the period up to 2035 and <sup>2</sup>review of scientific publications)

As shown by the analysis of scientific publications, the wordings and concepts of the term-concepts as 'digital tourism', 'e-tourism', 'smart tourism' are unsettled yet. Various interpretations of the term-concept 'digital tourism' and synonymous terms-concepts 'smart tourism', 'e-tourism', and others are widely used in science; there is no single point of view. Despite this, in scientific and media discourse, it is possible to trace the formation of a certain type of this phenomenon through the prism of digitalization, which makes it possible to clarify the understanding of each of the terms, distinguish semantic groups of term-concepts and build trends.

#### **4. Digital forms of tourism: the analysis of the term concepts and the definitions**

To replenish the terminological core with significant term-concepts and create a thesaurus of the subject area, a contextual search for publications was carried out in three text arrays. The first array contained scientific publications selected from the Russian Scientific Electronic Library (NEL, <http://elibrary.ru>) and the Google Scholar information retrieval system (<https://scholar.google.ru>). The second includes Russian-language publications from the information resources ScienceDirect, Web of Science and Scopus. The third array consisted of publications from electronic archives of federal and on-line newspapers and magazines, as well as Internet publications, representations in the Integrum information system (<https://integrum.ru>). The search for the term-concepts of the terminological core was carried out according to the bibliographic description (publication name, keywords, abstract), the full text of the publication and the list of sources.

Then, content analysis of expertly selected scientific publications with a high degree of relevance to queries was carried out. The selection is based on statistical data on the distribution of keywords in the result of complex requests that includes the main term-concepts of the direction – 'e-tourism', 'smart tourism', 'digital tourism' and the subsequent allocation of definitions of those key concepts, as well as definitions of additional term-concepts presented by various researchers.

At the next stage of the research, a content analysis of the selected texts and an explication of contextual knowledge were carried out, the semantic load for each of the term-concepts that define digital forms of tourism was clarified. The results are summarized in table 1 and can be correlated with the interpretations of terms accepted in the Russian-language discourse.

Several digital forms of tourism were detected in that conducted research. They have found the semantic group with the same name. There are 'e-tourism', 'smart tourism', 'digital tourism', 'm-tourism', 'intelligent tourism', 'tourism 4.0', 'virtual tourism', 'digital free tourism' (DFT), 'sustainable tourism'.

The basic, most used ones include 'e-tourism', 'smart tourism', 'digital tourism' term-concepts. Those term-concepts and their definitions are presented in Tables 1–3.

**Table 1.** Definitions of eTourism

Definition of the term-concept	Year, Authors
<i>eTourism</i>	
not only electronic distribution of tourist services, but also electronic excursions, which are also called virtual;	2013, Moshnyaga E.V. [29]
the widespread use of ICT opportunities for a full cycle of business activity;	2015, Kalma-kova A.A. [24]
study of tourism manifestations by ICT broadly;	2018, Jingjin Li et al. [8]
ICT in tourism management;	2018, J. Navio-Marco et al.[11]
just one of the outcomes of the tourism industry's incorporation of technology;	2019, Sanaz Shae et al. [20]
“Due to computing and pervasive connectivity, technology today is no longer just a tool for e-tourism but is used in all aspects of life and travel”;	
a part of e-commerce that integrates rapidly developing areas such as telecommunications and information technology into the hospitality and management industry;	2019, Shevchenko E.M. et al. [33]

The analysis showed that some authors operate with such a concept as 'e-tourism' and characterize it as “not only electronic distribution of tourist services, but also electronic excursions, which are also called virtual” [29], noting that the appearance of this term connected is associated “with the transformation of the term e-business, which is the use of a wide range of ICT capabilities for organizing a full cycle of business activities (e-commerce, e-marketing, e-finance, e-production, e-strategy, e-management)” [24]. The phenomenon is “part of e-commerce and integrates rapidly developing areas such as telecommunications and information technology into the hospitality and management industry” [33].

The development and large-scale implementation of IoT technologies, big data, neural network technologies and the mobile Internet have led to the emergence of the concept of 'smart tourism'. In modern publications of domestic and foreign authors it is noted that “smart tourism is a growing trend, thanks to which both locals and tourists get the opportunity to interact with a more convenient, safe, interesting environment” [28] and “smart tourism is a combined model of the developing tourism industry and innovative technology S&R ”[32]. The scientific community also notes that 'smart tourism' is tourism with "the comprehensively maximizing environmental, cultural, social and economic values through IT – the Internet of Things, cloud computing, GIS, virtual reality and the mobile Internet" [32].

**Table 2.** Definitions of smart tourism

Definition of the term-concept	Year, Authors
<b><i>smart tourism</i></b>	
employing of mobile digital connectivity to create more intelligent, meaningful and sustainable connections between tourists and the destination; a form of deep civic engagement, and not just as a simple form of consumption.	2012, J.G. Molz, [10]
clean, eco-friendly, ethical and high-quality services offered at all levels of the service chain	2012, UNWTO [23]
the comprehensively maximizing environmental, cultural, social and economic values through IT - the Internet of Things, cloud computing, GIS, virtual reality and the mobile Internet;	2016, Sjaocjan' K. [32]
a combined model of the developing tourism industry and innovative technology S&R;	
an individual tourist support system within the context of information services and an all-encompassing technology;	2017, Yu. Li et al. [9]
ubiquitous tour information service provided to tourists, not tourist groups, received by tourists during the tourist process anytime, anywhere and based on the individual needs of people;	
the ease with which users can automatically obtain suitable and precise services (being “Smart” can privately perceive users' needs and provide accurate service information) by data accumulation with technological means (devices);	
includes not only sensors application, data mining (location-based service information collation and dissemination), but also other techniques such as positioning technology, the SNS (social network system), and the social network technology applications;	
the tourism supported at the level of the tourist region by integrated efforts to find innovative ways for the accumulation and the aggregation or the use of data extracted from infrastructure, social connections, government or organizational sources;	2017, Smirmov A.V. et al. [31]
a trend that gives both locals and tourists the opportunity to interact with a more comfortable, safer, more interesting living environment;	2017, Molchanova V.A. [28]
the tourism, in which the constant and systematic use of smart elements leads to the creation of additional travel value for the tourist	2017, Kormjagina N.N. [27]
connected with devices generating big data of various nature for monitoring tourist behavior, tourism management and tourism mar-	2018, Jingjing Li et al. [8]

Definition of the term-concept	Year, Authors
keting	
the potential replacement of much of the human labor in travel, tourism and hospitality industries through digital technologies	2018, J. Navío-Marco et al. [11]
a logical evolutionary development of traditional tourism and e-tourism in which the ground for technology-driven innovation has been established; was inspired by the idea of smart cities;	2019, Sanaz Shaei et al. [20]
tourism products that use technological components;	2020, Inta Egger et al. [3]
logical evolutionary development of traditional tourism and e-tourism as a consequence of technology-based innovation;	2020, A. Kontogianni, E. Alepis [4]
the conception included privacy preserving, context awareness, cultural heritage, recommender systems, social media, internet of things, user experience, real-time, user modeling, augmented reality and big data.	

The modern smart concept is used to describe processes in society and many areas of activity. In practice, the smart-concept is used to describe technological, social, economic systems that are actively introducing big and open data, Internet technologies, all kinds of sensors, new ways of communication and information exchange. Russian authors in several publications interpret 'smart tourism' as 'intelligent tourism', meaning by this "the tourism supported at the level of the tourist region by integrated efforts to find innovative ways for the accumulation and the aggregation or the use of data extracted from infrastructure, social connections, government or organizational sources "[31] and as" tourism, in which the constant and systematic use of smart elements leads to the creation of additional value of the travel for the tourist" [27].

**Table 3.** Definitions of digital tourism (digitalization of tourism)

Definition of the term-concept	Year, Authors
<i>digital tourism</i>	
the convergence between the physical and digital worlds, supported by sensors that collect data resulting from the interaction of tourists and the environment;	2018, Julio Navío-Marco et al. [11]
the online purchase of ready-made tours formed by tour operators; development and implementation of mobile applications, including for tourists;	2019, Cherevichko T.V. et al. [35]
the online purchase of ready-made tours formed by tour operators; development and implementation of mobile applications, including for tourists;	
the digitalization of amateur tours through the creation of online schools for novice travelers, and others.	
the formation of a digital sector of the tourism economy;	2019, Voronkova L.P. [40]
a new type of tourism, which is often associated with e-tourism, developing in the vastness of the virtual world;	
includes the formation of a new type of tourism and a new type of tourist – "digital tourist"	

In general, as the analysis has shown, the term 'digital tourism' is not the most common term in foreign and domestic studies.



The extra term-concepts 'intelligent tourism', 'virtual tourism', 'digital free tourism' (DFT), 'm-tourism', 'tourism 4.0', 'sustainable tourism' added to the terminology core as a result of content analysis, as well as definitions of those term-concepts are represented in the Tables 4, 5.

**Table 4.** Digital forms of tourism: the extra term-concepts and their definitions

<i>Definition of the term-concept</i>	<i>Year, Authors</i>
<b><i>intelligent tourism</i></b>	
means being able to change its state or action in response to varying situations, differing requirements, and previous experiences, which means that intelligence can generate appropriate results based on different needs, different states and different historic experiences;	2017, Yu. Li et al. [9]
focuses on a technical capability offering more convenient and efficient services (including tangible products) to the users;	2017, Yu. Li et al. [9]
<b><i>m-tourism</i></b>	
type of e-tourism using mobile technologies;	2013, Moshnyaga E.V. [29]
<b><i>virtual tourism</i></b>	
a promising means of promoting a particular destination, which gives the tourist an opportunity to get acquainted with the cultural, historical, recreational opportunities of the places of visit and choose the most interesting objects and activities for themselves;	2018, Kleyman A.A., Babanchikova O.A. [41]
understood as a newly emerging electronic entertainment system	2019, Voronkova L.P. [40]
<b><i>digital free tourism (DFT)</i></b>	
tourist spaces in which the Internet or mobile signals are either absent or the use of digital technologies is controlled;	2018, Jing Li et al. [7]
characterized by a lack of or severely limited access to ICTs;	

M-tourism be able to consider as a type of e-tourism “used by mobile technologies in the form of applications for mobile phones (iPhone, iPad, Windows phone, Android) and allowing users to book flights, hotels, cars by phone from anywhere” [29]. The changes in the technological structure named the Fourth Industrial Revolution characterize modern world production. In 2011, the term "Industry 4.0" was introduced into scientific circulation. In general terms, the concept of Industry 4.0 is interpreted as a transition to fully automated digital production controlled by intelligent systems in real-time in constant interaction with the external environment, going beyond the boundaries of one enterprise, with the prospect of merging into a global industrial network of things and services [36].

**Table 5.** The connected term-concepts and their definitions

<i>Definition of the term-concept</i>	<i>Year, Authors</i>
<b><i>tourism 4.0</i></b>	
the name of the modern concept of processing large data collected as a result of researching various tourist destinations to create a personalized information space of tourist resources; based on the mechanisms of Industry 4.0, contributes to the development of tourist destinations in the region and allows you to devel-	2019, Shhedrina E.Yu. et al. [37]

Definition of the term-concept	Year, Authors
op an effective tourism policy through digitalization and automation processes;	
<b><i>sustainable tourism</i></b>	
«meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future. ... management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems»	1993, UNWTO [21]
«the control and local planning of tourism processes; ... the achievement of maximum efficiency in resource consumption and the minimization of the impact of the tourism activity on the environment»;	2013, UNWTO [22]
a philosophical concept or ideological approach to the development of tourism of the future that respects the natural, cultural and social;	2013, Moshnyaga E.V. [29]
the tourism industry that takes measures to achieve a minimum impact on the environment and local culture, preserve local ecosystems and the diversity of ethnic cultures while contributing to the formation of income, employment, infrastructure;	2013, Moshnyaga E.V. [29]
the concepts of sustainability and smartness share many common elements; a tourism destination cannot be considered as being smart if it is not sustainable;	2018, Perles J.F., Ribes J.I.B. [15]

The fourth industrial revolution changes the way of doing business, not only in the industry but also in other sectors of the world economy. That is why it's possible to speak about the new formation of the tourism industry – tourism 4.0. In scientific works, the following interpretation was given: tourism 4.0 is “the name of the modern concept of processing large data collected as a result of researching various tourist destinations to create a personalized information space of tourist resources” [37]. Moreover, tourism 4.0 is “based on the mechanisms of Industry 4.0, contributes to the development of tourist destinations in the region and allows you to develop an effective tourism policy through digitalization and automation processes“ [37] to help people travel by making travel fun, efficient, safe and personalized.

## 5. The presence of a structured description of thesaurus element

The purpose and result of the study of the terminological landscape of the interdisciplinary direction of research "Digitalization of tourism" is the subject domain thesaurus.

The application of an ontological approach and the synthetic method, which involves the phased explication of contextual knowledge from the relevant arrays of information resources and bases on the results of frequency-oriented queries, has been allowed ranking the significance of the term-concepts even at the stage of thesaurus formation [39].

To describe the thesaurus elements, the Dublin Core Metadata Element Set (DCMES) metadata schema was used. The combination of values of the elements of this scheme was used as a structured description of the thesaurus elements, which correlated with the General approach of using this specification for textual infor-

mation resources. This allows you to present the thesaurus in machine-readable form for presentation in an information resource, as well as for automated search and identification by search engines.

In the proposed approach, the thesaurus element is a key term-concept and has a thesaurus type of context.

Based on the technique of applying the automated extraction and explication of contextual knowledge using a hybrid query, the thesaurus of the categorical and terminological base of the interdisciplinary scientific domain “Digitalization of tourism”. The following instance represents the meta-description of a thesaurus element consisted of the Dublin Core metadata set:

```
dc.title: e-tourism
dc.subject: public administration
dc.description: the term is obtained as a result of a
cascade query on an array of relevant texts of articles
from Russian scientific journals for the requests “digital
economy” (2016, 2017) and “digital technologies”
(2011, 2017, 2018, eLibrary); corps of texts from the
Federal and Regional press at the request of the digital
economy (2017, Integrum).
dc.date: 11-11-2020
dc.source: digital economy: e-tourism and smart technolo-
gies
dc.language: russian
dc.type: key term-concept
dc.coverage: digital economy
dc.coverage: digital technology
dc.coverage: information technology
dc.coverage: public administration
dc.coverage: smart tourism
dc.coverage: digital tourism
dc.coverage: big data
subject.other: text
```

## 6. Conclusion

The analysis showed that there is pluralism in the academic environment, which, as we see it, is supported by different approaches to research, the bias of authors, as well as the absence of any standards at the international level that somehow regulated the use of terminology.

The analysis showed that there is pluralism in the academic environment, which, as we see it, is supported by different approaches to research, the biases of the authors, as well as the absence of any standards at the international level that somehow regulated the use of terminology. Nevertheless, the results obtained and the identified terminological landscape of the subject area opens up new research opportunities, especially in those areas where there is still a lack of academic research and reviews of scientific literature. First of all, topics on models of digital transformations of tour-

ism associated with the use of modern digital technologies, such as big data, artificial intelligence, virtual reality, smart technologies, etc. Future research initiatives may focus on the study of human-machine interaction technologies. We consider scientific research, tracking scientific trends and building their predictive models no less important. Such research is of value to both scientists and practitioners. This is especially true in light of predicting the development of the tourism industry after the end of the pandemic.

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