

# Study on Digitalisation of the Tourism Industry in the Regions of the Russian Federation

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## Summary

The relevance of the published study lies in the fact that since the introduction of the first Global Distribution System, new information and communication technologies have constantly been changing the tourism industry. In the context of a current digital environment, travel agencies can't avoid participating in digital transformation processes aimed at rethinking operational models, skills, and organisational structures in the regions. This publication aims to present and provide a critical overview of digitalisation processes in tourism development in the regions of the Russian Federation, as well as to reflect on the challenges to the widespread digitalisation processes in the regional tourism sector. The subject of research is digitalisation processes, as they radically transform the modern tourism industry, in the regions as well. The pragmatic research paradigm was considered the most appropriate for the study of tourism digitalisation processes in the regions, as it does not require the selection of a specific theoretical basis for data collection. The pragmatic approach forms an alternative to classical theoretical approaches and serves as a particular type of grounded theory, combining both inductive and deductive methods. No software was used for the inductive part of the analysis. The deductive part was conducted using the qualitative data analysis software Nvivo 11. Given the wide diversity of interested parties in the regional tourism digital area, a stratified purposive sampling method was preferred due to its ability to adequately represent the full picture of the phenomenon under study. The selection and stratum criteria were chosen to maximise the representation of different perspectives in the regional tourism digital area. The novelty of the study is due to the digitalisation processes, with an implication of new needs, while opening up promising opportunities for more productive tourism business in the regions of the Russian Federation. Currently, e-tourism in the Russian Federation has become a subject of lively debate among scholars and practitioners. However, the involvement of advanced digitalisation technologies in the field of information processes in the regions of the Russian Federation is of a very sporadic character.

## Keywords:

*travel ecosystem, e-format, infrastructure development, advanced technology, algorithmic culture.*

## 1. Introduction

The rise of tourism in Russia's regions aims to ensure sustainable economic activity, to revitalise regional development. In the Russian regions, tourism is considered

to be a factor of economic growth [1]. The successful establishment of tourism in remote regions is difficult, reflecting the new global challenges, the first of which are the processes of digitalisation. The relevance of the published study is substantiated by the fact that, since the introduction of the first Global Distribution System (GDS), new information and communication technologies have constantly been changing the tourism industry. There are several waves of dramatic transformations of the tourism industry initiated by information and communication technology processes [2]. The most recent wave of technological modifications was named digitalisation, and has revolutionised the travel ecosystem on a large scale, paving the way for a highly personalised digital travel industry, as well as a boom in online distribution via mobile channels [3]. Today's global business landscape requires travel agencies to relentlessly implement digitalisation processes, including in regional tourism.

Within today's digital environment, tourism companies have to engage in a digital transformation aimed at redefining operational models, skills, and organisational structures in the regions. Currently, the diversification in the tourism industry, triggered by the development of digitalisation processes, is reflected in a variety of aspects relevant in the context of new digitalisation perspectives [4]. Digitalisation processes have been given a strategic priority role in tourism development in many countries. In modern conditions, old marketing tools are losing their effectiveness. Regions are forced to invent new marketing concepts [5], fully meeting the requirements of today's target audience. In this regard, the concept of diversification marketing in tourism radically transformed the global tourism industry long ago, opening up new prospects for development [6], especially in terms of improving the competitiveness of the organisation. Digitalisation processes around the world have greatly facilitated information processes, bringing innovative travel companies to life [7]. Hopper forecasts airfare fluctuations via a mobile app. Accommodation finder Trivago compares prices among online travel agencies. Digital law agencies AirHelp and ClaimCompass assist customers seeking compensation from airlines. JetSmarter handles charter flight bookings. Triptogo provides planning of shared

travels on a social platform. Viator is a global marketplace for regional tours and excursions. These companies would hardly exist without digital technology.

The subject of the research is digitalisation processes, as they fundamentally transform the modern tourism industry, including in the regions. Recent developments in information and communication technologies are contributing to the development of the digital economy of tourism. In the digital economy of tourism in the regions [8], there is a convergence of information and communication technologies with other advanced technologies that transform physical processes into digital form, consequently contributing to the exchange of information and increasing the demand for digital products and services [9]. Digital, as well as physical products, equipped with chips and networking capabilities, are delivered to the consumers of regional tourism services through the mediation of digital infrastructure. The novelty of the published research lies in the processes of digitalisation, with implications of new needs, while opening up promising opportunities for more productive tourism business in the regions of the Russian Federation. Thus, tourism enterprises in the regions are encouraged to implement various e-activities [10], a non-exhaustive list of which includes e-business, e-commerce, e-marketing, e-investment, e-identification. Currently, e-tourism in the Russian Federation has become a subject of lively discussions among scholars and practitioners. However, the involvement of advanced digitalisation technologies in the sphere of information processes in the regions of the Russian Federation is of a very sporadic character.

This publication aims to present and provide a critical overview of digitalisation processes in tourism development in the regions of the Russian Federation, to reflect on the challenges to the widespread digitalisation processes in the regional tourism sector.

## 2. Materials and Methods

The research problem underlying the research involves the identification of different processes of tourism digitalisation in the regions [11]. A review of research approaches in the Science Direct library showed that three keyword selection methods are widely used in tourism research, namely empirical or experimental, territorial, and technological approaches. Accordingly, it was decided to rely on a pragmatically grounded theory as a research approach, for it is crucial to accept the possibility of multiple perspectives and, at the same time, to bring these perspectives together into a single reality. For these reasons, a pragmatic research paradigm was deemed most suitable for the study of tourism digitalisation processes in the regions, as it does not require the choice of a specific theoretical framework for data collection.

The pragmatic approach forms an alternative to classical theoretical approaches and serves as a special type of grounded theory, combining both inductive and deductive methods. The combination of inductive and deductive methods provides the advantages of both methods and increases the validity and reliability of the results. The inductive part included deriving codes, categories, and themes from the data, while the codes and categories for the deductive analysis were developed through a review of the body of research literature. The development of the categorisation matrices was carried out under Meiring's systematic framework. No software was used for the inductive part of the analysis. The deductive part was conducted using the qualitative data analysis software package Nvivo 11. The coding of the text started with the identification and marking of the key segments and was followed by a thematic generalisation of the key segments of tourism digitalisation processes in the regions [12] into the themes of simplicity, transparency, usability, and economy of use.

At the preliminary stage of the research of tourism digitalisation processes in the regions, a range of data from various sources was gathered. Some secondary data was collected from freely available documents, primarily from highly authoritative independent information sources such as Lonely Planet, electronic databases Google Scholar, Elsevier, ScienceDirect, Springer Link, Emerald and Taylor & Francis, known for their reliability and credibility. Some secondary data was derived from the Russian Federation's strategic documents on environmental policy and implementation of sustainable development principles as well as data collected from official websites, such as Statista, CEIC Data. Another part of secondary data was collected from online travel agencies' websites including booking.com and Trivago, peer-to-peer booking sites such as Airbnb, platforms that provide access to accurate high-resolution digital images worldwide, such as Google StreetView. The analysis in the preliminary stage determined the methodology and criteria for the selection of the research materials. Given the wide diversity of interested parties in the digital space of regional tourism [13], the stratified purposive sampling method was preferred because of its ability to adequately reflect the full picture of the phenomenon under study. The selection and stratum criteria were chosen to maximise the representation of the different perspectives in the regional tourism digital space.

## 3. Results

The term digitalisation is used in different interpretations. On the one hand, digitalisation refers to the conversion of analogue information into an electronic format that allows information to be processed, stored, and

transmitted using digital circuits, equipment, and networks. On the other hand, digitisation is the process of implementation of digital technologies. There are different levels of intensity of digitalisation: from presentation of information at the website level, from functioning as a sales channel at the e-commerce level, from the integration of business processes at the e-business level to new business models equipped with virtual products and services. Due to widespread interpretation digitalisation means an intelligent business processes that leverage efficient technological concepts such as big data, cloud and mobile computing, and the Internet of Things. In this context, digitalisation brings with it promising potential in the industry of tourism, affecting all business processes before, during, and after travel, including the preparation of tour offers, submission of requests, and their subsequent processing, opening opportunities for new business models in tourism [14]. Some examples of such business models are virtual travel, in addition to the sharing of accommodation and transport services.

Following the desire for greater self-realisation, consumers are choosing remote tourist destinations, regions not previously recognised as major tourist destinations. Since the mid-nineties, popular ecotourism areas in the regions of the Russian Federation began to open for visits. The development of regional tourism in the Russian Federation has for many years been hampered by the insufficient quality of transportation and infrastructure systems which did not allow fast and efficient transport between regions. A trip to Siberia from the European part of Russia takes longer and is more expensive than a trip to most European cities. Russia's size is also the reason for the extremely slow dissemination of information between the regions. Lake Baikal is one of the most popular tourist regions of the Russian Federation, despite its remoteness from the capital city. St. Petersburg and Karelia are important tourist regions as well. The examples of Baikal and Karelia show that even remote tourist destinations are now able to position themselves in those segments of the tourism market which specialise in unique natural and cultural resources.

Visits to ecotourism areas in the regions have increased in the early XXI century, but little is known about where tourists come from and the reactions of tourists to what they observe while in the regional tourist areas. Inequalities between Russian regions are evident in many ways. The thirty poorest regions, where about thirty percent of Russia's population lives, regularly depend on transfers from the federal budget, forming half or more of the budget revenues in the poorest regions [15]. Indigenous residents of the regions are worried about new possible tourist routes and resorts. They fear losing their land and are concerned about the possibility that small producers will be squeezed

out of the market, leaving only low-paying jobs for locals. In many regions, a lack of start-up capital prevents most locals from participating in the operation of new tourism routes and resorts. Problems of regional economic development and improvement of local living standards have a fundamental impact on the development of regional tourism in the Russian Federation. Regional tourism should be considered as an information-rich industry. The importance of information for regional tourism stems from the fact that travel products and services are based on imagination and trust. In addition, travellers often experience a state of information scarcity, hence the penetration of digitalisation in the tourism industry is quite obvious. However, the effort to collect and provide information, combined with the huge storage capacity and broadband connectivity, devalues information due to information overload. Traditional approaches to information retrieval and data filtering do not reflect the current amount of information and people's needs.

Digital information systems use relatively fixed structures for dealing with information that is encoded in applications and does not assume easy changes when new information tasks related to knowledge management need to be solved. Therefore, there is room for applications that use different knowledge representations and mimic human approaches to data filtering with complex approaches related to artificial intelligence and machine learning [16]. The tourism sector needs information technology because of its close relationship with emotions and experiences. There is a clear need for a tourism infrastructure that is ready to develop and provide products and services appropriate to consumer needs. The digitalisation of tourism in the regions is significantly increasing consumers' knowledge of how to access tourism products and services, increasing the sophistication of marketing and promotional techniques used by tour operators, thus evolve the way consumers make decisions when choosing a tourist destination. Customers' trust and intention to use e-tourism services can be influenced by the support of mobile payments on e-tourism platforms. Mobile payments are essential to complete the entire booking process in e-tourism. A digital tourism infrastructure designed for regional tourism must assume that a major challenge for an e-tourism platform in the triple format of research, booking, and payment is the security of the link between financial transactions and transactions through intangible channels, from the intention of customers to make a payment to the receipt of booking confirmation.

Further, the availability of mobile applications influences customer attitudes towards regional tourism digitalisation processes, due to the intention of consumers to use e-tourism services. The design and quality of e-tourism platforms are also important. Mobile phones have

become a part of communication and socialisation in any society. Travel platforms need high-quality video images and rich content in mobile applications that can attract users and generate interest in the promoted services [17]. The highest quality of marketing content ensures lasting engagement and influences customer satisfaction, who values mobility and accessibility. When using e-tourism platforms, consumers first encounter the interface of websites and mobile applications. An attractive interface with high interactivity, simple design, and navigation increases the likelihood of response and the amount of time spent on such an e-tourism platform. In addition, content design, in other words, the information component of websites and mobile applications, is of significant importance, as only the provision of relevant high-quality information and graphics will retain customers, and encourage them to keep coming back to the platform whenever they intend to plan their trips. The vast amounts of data that are generated in e-tourism websites and mobile applications are sources for finding interesting hidden information. Database mining is a set of principles, approaches, tools, and techniques that can be used to extract valuable information in the form of potentially useful patterns, relationships, correlations, and rules, from vast amounts of stored data that were previously unknown and beyond human capabilities.

Data mining is an interdisciplinary field that uses advanced technology to store a certain amount of data, statistics, which includes approaches to describing and explaining the specific characteristics found in data, and artificial intelligence, which applies intelligent approaches and machine learning techniques to recognise potentially useful patterns in data. Commonly used approaches in data mining include data description, clustering, also known as segmentation, classification, regression analysis, or dependency analysis. The application of data mining to tourism digitalisation processes is mainly used for demand forecasting. For example, the global distribution system Sabre applies data mining to spatial data, customer ranking, sales opportunity assessment, and time series modelling. Amadeus global distribution system offers statistical processing and trend analysis in terms of hotel bookings and time of service delivery. Similarly, data mining can help regions understand patterns of visits to a particular locality, thereby laying the base for sustainable management of the tourism industry in the region. In addition to demand forecasting, there are also applications in the format of recommendation systems for the tourism industry – they usually use a kind of market basket analysis, seeking to understand how patterns are used, trying to create a user profile, and then applying content filtering techniques to recommend products and services that match the pattern in the user's settings.

#### 4. Discussion

The development of tourism digitalisation processes in the regions of the Russian Federation is complicated by the fact that there are almost no authentic regional cultures left in Russia. A positive exception is Altai, where people respect and preserve their traditions. Altai residents still speak Altai as their mother tongue, organise folk festivals, and follow traditional cuisine. In the majority of other Russian regions, as polemically argued by scholars [18], genuine regional cultures should be restored. Local people in the Russian regions would have a lot of work: perform national dances, prepare national food for tourists, accommodate tourists in national-style lodgings. The development of tourism in the regions of the Russian Federation, especially in Siberia, requires the conservation of natural resources, the protection of the natural environment and regional authenticity, as well as the preservation of intact forest landscapes. According to the views of experts of the World Wide Fund for Nature (WWF) [19], the so-called ribbon pine forests of the Altai Mountains, relict ribbon pine forests, which have no analogues in Russia or the world, are under threat of extinction. These natural complexes, a unique type of valuable forest, are currently being leased out for timber extraction. Selective registration in ribbon pines is done for purely commercial reasons and has nothing to do with preserving their value. In order to preserve the ribbon pines in the Altai Mountains, a wide range of actions must be taken. Forest areas of special value should become specially protected natural territories of regional importance in accordance with the current legislation.

Anyone trying to assess the potential of regional tourism in Siberia, including the Altai Mountains and Lake Baikal, must take into account not only the vast territory and countless resources, but also specific characteristics such as the high vulnerability of northern ecosystems, extreme climatic conditions resulting in a highly seasonal tourism product, underdeveloped infrastructure, relatively small market capacity and, consequently, the low interest of travel agencies in developing and selling regional tourism. A range of Russian villages, located in beautiful locations and potentially attractive to tourists, are in decline. Quality infrastructure in the villages is usually non-existent. The average age of the local population is quite high due to the migration of young people to the cities, and the economic depression causes high rates of alcoholism. In Siberia some villages near trunk roads leading from the west to the east of the country depend on tourists staying there overnight. Digitalisation processes aimed at professional tourism marketing that of rural attractions in the Russian regions have the potential to make regional tourism profitable for locals.

In the context of digitalisation processes, as experts and researchers polemically suggest [20], the development of

regional tourism infrastructure and the restoration of local cultures require the participation of successful managers working at the regional level. Russian tourism specialists familiar with Western concepts of digitalisation and interested in replicating experience from other countries on Russian soil, as well as participants in regional tourism enterprises from the local community, with specialists from other countries with experience of successful implementation of tourism projects in conditions similar to those in Russian regions, should rally ambitious and successful regional tourism projects able to generate profit and form a positive image for their original sponsors. Successful projects could push the development of digitalisation processes of tourism in the regions of the Russian Federation in the right direction of improving infrastructure, enhancing environmental aspects, and restoring degraded local cultures and villages.

One cannot but fully agree with the perception gaining influence in public and academic opinion [21] that the advent of technological solutions that have opened the way to hypermobility has led to a seismic shift in the digitalisation of tourism in the regions. Increased mobility goes hand in hand with the immediacy of information, which is henceforth available regularly through digital media, with just a click or tap on a smartphone. Artificial intelligence technology, present in map services, relies on the global positioning system (GPS) to provide information on the shortest and most convenient routes. On social media, even remote and physically inaccessible regions are viewed by a wide range of bloggers. The result is an incredible profusion of mediated experiences and travel opportunities that seemed unreal just a few decades ago. Countless reviews, evaluations, and discussions of regional tourism destinations on the internet imply that physical travel through the region reveals only one side of a tourism experience that is increasingly dominated by digital interaction. The hypermobility of virtual spaces forces proximity to remote and exotic regions, breaking down temporal and spatial boundaries. It is no coincidence that movement metaphors, in particular internet surfing, the information superhighway, emerged in the nineties of the XX century to describe the new area of cyberspace. Today, all kinds of tourism platforms offer tourists regional spaces for communication and experiences, suggesting the discussion on the rethinking of tourism caused by the ubiquity of digital technologies that customise virtual spaces based on human interests.

Digitalisation processes are transforming regional tourism by creating new business linkages and opportunities across business and cultural sectors, facilitating market access, expanding the customer base, sharing information, and building partnerships. The processes of digitalisation of tourism in the regions of the Russian Federation foster the development of web portals for integrated booking and transaction systems, thus promoting better sales and

revenues for regional tourism. Indeed, online marketing and sales are rapidly becoming the accepted and preferred method of tourism development in the regions. The travel and tourism industry in the regions has to work hard to integrate several digitalisation channels that will allow customers to switch easily between them. Digitalisation processes visualise innovation through mapping, facilitating the identification of patterns and the formulation of strategies. In regional tourism, digitalisation processes form a network infrastructure that blurs the boundaries between design, networking, project management, and marketing in airlines, restaurants, hotels, and motels, car rentals, among tour operators, and travel agencies. Nowadays, both the competitive environment and consumer preferences are constantly changing in the regional tourism industry. In this environment, regional tourism businesses have a duty to keep abreast of digitalisation processes. Intelligent digitalisation processes make business life easier, shorten working hours and enable certain professions to be dispensed within good time. It is, therefore, necessary to pay attention to the need for human labour in regional tourism, which is a very labour-intensive industry.

Digitalisation processes are entering the regional tourism industry relying on intelligent technologies and clouds, which are fuelled by technological infrastructure. In these developments, as experts and researchers [22] rightly suggest, new intelligent systems and technological representations, ways of communication and information exchange transform the world into a small village, accelerate communication, enable integration and data sharing, interpret and optimise complex analytical models, allowing for more accurate operational decisions. Smartphones and smart cards in everyday life are supported by various physical infrastructures. The tourism industry has developed the concept of a smart city, which is equipped with modern information and communication technologies at the highest level. Smart tourism is an important part and a practical attempt to implement the smart city strategy. These dimensions can also be applied directly to regional tourism destinations, so it can be said that the concept of a smart city generates the concept of smart tourism in the regions. It is impossible to separate the modern regional tourism development from the innovations of the modern world where information and communication technologies are widely used. Information and telecommunications in regional tourism are mobile due to integration with global distribution channels, central booking systems, adaptation to social networks and web technologies. New tourism destinations in the regions are being created in the context of smart tourism by combining social media and the mobile Internet with tourism. Mobile technology is in the hands of potential regional tourists, allowing them to choose travel alternatives and make online bookings in the regions, making the information more interactive and more

reflective of users' interests and providing new opportunities and resources.

The regional tourism sector is service-oriented and has to constantly adapt to the needs and demands of customers and markets. Consequently, regional tourism, including all tourism enterprises, travel agencies, and hotels, has an urgent need for specialised skills in the field of digitalisation in terms of marketing, planning, promotional events. Digitalisation processes act as a driver of innovation in regional tourism and should be placed at the heart of corporate strategies. The processes of digitalisation of tourism in the regions of the Russian Federation are a part of a broader movement towards an algorithmic culture in which the sorting, classification, and hierarchisation of people, places, objects and ideas are increasingly entrusted to computational processes. Therefore, the processes studies of tourism digitalisation in regions require adherence to the framework of a broader regime of computational monitoring. The algorithmic personalisation that is present on all platforms is a paradoxical phenomenon because, on the one hand, the importance of individuality in the creation of personal experiences is recognised, yet, on the other hand, the platforms themselves function within a collective, pre-formatted experience in which individual objects are subdivided into predictable functions. For example, deep learning and neural networks use granular inputs representing objects from the outside world, which are processed through layers of neurons that interact with the inputs. Statistical correlations between input and output data, as the researchers seek to convince the public [23], conceal new ways of calculating social space, allowing to demonstrate with high representativeness the complex socio-technical relationships that need to be considered in studies of tourism digitalisation processes in regions of the Russian Federation.

At the same time, it should not be forgotten that the existence of algorithmic systems is a product of social forces integrating human representations on multiple levels beyond transparency in algorithmic systems, as different interested parties need different types of interpretations of artificial intelligence [24]. For example, engineers are interested in the statistical nature of chatbots or virtual assistants on a tourism platform, while tourism researchers are more interested in the underlying sociality not only within the platform but also in the wider context. Developments in the artificial intelligence area are increasingly being integrated into regional tourism digitalisation research. Digital technologies have not only paved the way for new case studies and the development of analytical sites, but they also provide new forms of research strategies targeting ephemeral and unstable online data in nature. To summarise the results of this study, it is necessary to highlight the importance of scientific debate on the digitalisation of tourism in the regions of the Russian Federation. A comprehensive study of the issue has shown

that there is no alternative to this approach to tourism development in the regions of the Russian Federation, especially in Siberia, which requires conservation of natural resources, protection of the natural environment and regional authenticity, preservation of pristine forest landscapes. A topical academic debate, involving experts and researchers, has led to a substantiated view that, in the context of digitalisation processes, the restoration of local cultures will inevitably push tourism development in the Russian Federation regions in the right direction of expanding ecological aspects and reviving degraded local cultures and villages.

## 5. Conclusions

This study aims to present and provide a critical overview of digitalisation processes in the development of tourism in the regions of the Russian Federation and to understand the challenges to the widespread digitalisation processes in the regional tourism sector. It has been scientifically established that the extremely slow dissemination of information between Russian regions is caused by the insufficient quality of transport systems, which do not allow fast and efficient transportation between regions. It has been found out that for the development of regional tourism in the Russian Federation the increase of local living standards in the context of solving regional economic development problems is of decisive importance. A clear need for a regional tourism infrastructure ready to develop and provide products and services appropriate to the needs of consumers has been identified. A digital tourism infrastructure designed for regional tourism must assume that the emergence of technological solutions that have opened the way to hypermobility has led to a seismic shift in the digitalisation of tourism in the regions. A limitation of this study is the lack of statistical generalisation of quantitative research results. The pragmatically substantiated theoretical approach applied has strong advantages in developing hypotheses, but needs to be complemented by quantitative research on the impact of digitalisation processes on tourism development in the regions of the Russian Federation.

The ubiquity of the impact of digitalisation processes on tourism development in the regions of the Russian Federation is indisputable, but the research capacity to quantify the impact of digitalisation processes is limited by the nature and type of data currently collected by federal statistical agencies and other sources. Several conceptual issues remain unresolved, which contribute to the difficulties of evaluation. In particular, researchers continue to try to measure the revolutionary development of digitalisation processes by traditional methods. Another limitation is caused by the rapid changes experienced by the travel ecosystem. The study presented gives an insight into

the digitalisation processes of regional tourism at the time of data collection. It is evident that, under the influence of digitalisation processes, tourism in the regions of the Russian Federation is progressively evolving into a dynamic industry. In future studies, it is worth exploring the links between configurations of digitalisation processes and configurations of income patterns, as digital configurations in the regional tourism industry tend to be characterised by typical income patterns. Another promising topic is the research on the relationship between digitalisation processes and value factors. In particular, future research projects could address the study of values in the context of digitalisation processes.

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