

# *Digital tools for searching and booking of tourist products*

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**Abstract** — The article outlines the importance of solving the problem of effectively organizing the search and booking of travel products formed by tour operators, the success of which depends on the digital technologies and tools used. The aim of the article is to study approaches to the digital organization of these processes and the practice of its implementation, a comparative analysis and identification of the advantages of new solutions and technologies for searching and booking travel products, drivers and problems of their development. The study identified and characterized the stages, key points, and modern problems of improving digital tools for searching and booking travel products. The trend and the specifics of their development are indicated taking into account the results of the analysis of proven technologies and the nature of the interactions of key players in the tourism market, modern practice of promoting and selling travel products on the Russian tourism market.

**Keywords** — *tourism, service, search, digitalization, software product, consumer.*

## I. INTRODUCTION

Over the past twenty years, the forms of organizing the search and booking of travel services formed by tour operators have undergone significant changes: from "manual" and paper options to fully automate interactions. The following factors contributed to this: popularization of tourism and intensive expansion of the market, accessibility and diversity of travel services and their packages, growing demand for travel services, continuous improvement of information and communication technologies, implementation of professional automated systems in the practice of tourism activities, improvement and adaptation of software products and technologies to new tasks and volumes consumer services for travel services. All these years, the business has mastered new software products and technologies. We have seen the widespread penetration of digitalization in tourism and infrastructure. As a result, the cutting-edge touristic business has switched to digital format. It was digital innovations that became the driver of its development and increase of competitiveness of tourism organizations, and contributed to the development of distance forms of communication with

customers and between partners, the emergence and use of systems that aggregate tourist offers and the implementation of dynamic packaging and pricing strategies. The directions of improving digitalization determined the development trends of the tourism business and the entire tourism industry, and vice versa.

The development of relations between tourism market participants, based on the use of advanced digital technologies, is constantly in the field of vision of scientists and practitioners. An analysis of the results of scientific research published in Russian and foreign publications databases, as well as reports of businessmen at scientific and industry conferences, reports of software developers interested in the progress of digital technologies and the effectiveness of their use in the tourism business, allowed us to highlight the main directions of modern research: the impact of digitalization on the development of the tourism industry [1-4]; advantages and aspects of the development of e-tourism [5-7]; improving the efficiency of tourism through the use of modern software products [8-10]; factors affecting the perception of the value of online services, their digital skills in the implementation of tourist experience by consumers [11-16], which indicate the relevance and importance of the purpose of the study. However, the problem of digital organization of the processes of search and booking of travel products, formed by tour operators in the scientific literature is almost not reflected, requires reflection and consecration.

## II. RESEARCH METHODOLOGY

The research materials were sources containing information about digital technologies, problems of their development and use in tourism activities; the analysis of the functions and tasks of using digital technologies, the study of drivers and the problems of their improvement, the many years of experience of tour operators and travel agents in the Russian tourism market, including the authors. Conclusions are based on their own experience using search engines and booking systems. The authors relied on the synergy of practice and system-structural analysis of the digital transformation process in the Russian tourism market, the results of the study

of complex relationships, highlighting the most important signs and properties.

### III. RESULTS OF THE RESEARCH

The growth in demand for travel products (services, tours) formed by tour operators has identified the need to improve their search and booking technologies. In parallel with this, the technologies of interactions between participants in the tourism market were also improved. Digitalization of tourism activities has allowed to optimize these processes [17, 18].

Search and booking systems, implemented in the early 2000s on the sites of tour operators, simplified the process of selling tour products greatly. The first stage of large-scale digitalization of technologies for the search and booking of tour products, was an innovative breakthrough in the organization of travel activities. Travel agencies received a working tool, the use of which not only allowed us to optimize the processes of searching and booking, but also monitoring the status of booked tours, it simplified the procedures of paying and issuing documents for the services that are a part of travel products, and made it possible to conduct remote communications to accompany tours etc.

The active use of the capabilities of modern IT technologies at that time and their integration into operational processes gave tour operators significant competitive advantages and allowed them to implement online sales growth strategies, hold large shares of the Russian tourism market, and expand the range of services offered. A new approach to conducting tour operator activities was determined. The automation of the search and booking of tour products was provided by the software systems Amadeus, Samo-soft, Megatek and other developers. The use of new digital solutions gave not only qualitative, but also quantitative indicators, for example, the monthly growth of the booking of the tour operator Capital Tour in 2009 amounted to almost 10% [19]. All companies in the tourism market attended to the organization of online sales, the tourism business switched to electronic format.

The number of travel products similar in composition grew and travel agents had to visit the websites of different tour operators to look for winning offers when searching for tours. When changing or refining the parameters of the tour, the process was repeated many times. The problem of organizing an effective search was solved by developing aggregator systems that made it possible to quickly monitor new special offers in a single window format according to various criteria, including at the lowest cost. Initially, the data was uploaded to aggregator sites in the form of special offers (SPO) in the Word, Excel, Xml formats. In 2001, Lightsoft launched the AllSPO project, which aggregates SPO tour operators in a single database. Two years later, the Tourindex project was launched: an operational search system that carried out parametric processing of SPO tour operators when they were loaded. Search engines had a wide coverage of tour options and could be posted on the website of travel agencies. While working in the system, the travel agent could apply for a reservation and send it to the tour operator by e-mail, which needed time. During this period, with a further increase in the

number of offers and the speed of updating, SPO managed to update and the offers lost relevance. A new approach was required to generate lists of updated offers.

In 2006, Megatek and Samo-software companies implemented an application programming interface that allowed programs to interact with each other (hereinafter referred to as API) and implemented a new search engine project Bronni.ru, which aggregated the SPO of most famous tour operators. The exchange of information between the databases of tour operators and Bronni.ru is carried out automatically, which allows to upload and update SPOs quickly and accurately, which are now published within 3-5 minutes from the moment the tour operator had them, which made it possible to make an online booking, that almost did not differ from the booking on the site of the tour operator [20].

Tury.ru, Foros began to use similar technologies for gathering information from tour operator sites and downloading prices by API in XML. Tury.ru provided a customizable workplace, information on countries: departure schedules, flight schedules, excursions, maps, hotels, photo galleries, visas, etc., provided feedback to tourists: posting reviews; for tour operators - the ability to edit prices. A single information space provided communication between tourists, travel agents, tour operators and receiving parties, reception of orders, confirming and accompanying them. Each order had a settlement module and a module for communication between the parties. This made it possible to quickly resolve emerging issues. The program provided agents with the ability to maintain a customer database, upload documents, and format reports. The Foros system also performed similar functions - it provided automation of activities and maintaining the client base of a travel agency, made it possible to keep records of applications, issue reports, create and automatically fill in basic and primary accounting documents, etc. The web version of the search engine could also be installed on the agency's website.

Thus, professional systems for searching and booking tourist products for travel agencies and consumers were created.

The rate of growth in the amount of data in the field of tourism has steadily increased. In the early 2000s the volume of tours reached tens of thousands and the total volume of SPO fit on one server, by 2011 the number of tours, according to the Tourindex system, reached more than 150 million and the data physically occupied dozens of powerful servers. At that time, Tourindex was the leading system for travel agencies and was used in their daily work. However, search engines quickly lost the ability to automatically track updates of SPO tour operators, as information from tour operators was often updated, and accordingly quickly became outdated on the server (several times during the day). The technological sophistication of SPO processing has reached its limit. This was especially pronounced in the sector of "last-minute-tours" and during periods of maximum demand. Travel agents had to regularly check the relevance of SPO on the sites of tour operators, and again the choice was made in the use of search engines that aggregate offers of tour operators.

In addition, with increasing competition, tour operators improved SPO exposure technologies and their types, their update time continued to decrease. The practice of pricing has expanded with the use of "live" prices. So, the next stage in the development of digital tools for searching and selling tour products was marked by global automation of not only tour operator activities, but also tour aggregators. New search technologies were built on the synchronization of directories of the search engine and tour operators. The search system addressed directly to the sites of tour operators and extracted available offers at the time of the request. Thus, the RuSPO, Sletat.ru and Bronni systems implemented the technology of "live queries": direct parsing of tour operator sites, since there were no APIs capable of processing live queries at that time. Search engines began to carry out live queries, which increased the quality of information exchange to the level at which online sale of tours to the end customer became possible.

The outdated technology for parsing tour operator sites in the "live" query mode has been replaced by more advanced technologies for the rapid exchange of information - the API search for offers of tour operators generated using GDS (global distribution systems), which made it possible to organize interaction of all participants in the travel market in real time and ensured timeliness and maximum relevance of updated information. Tour operators actively began to use dynamic packaging technology. The task of integrating GDS offers was more complicated [21].

#### IV. DISCUSSION OF RESULTS

The paper describes the principles of building professional travel search engines. On the examples of specific developers, the principal approaches to their organization and construction with the elements of comparative analysis are indicated. The key points and trend (Figure 1) of the development of digital tools for searching and booking travel products generated by tour operators, the features and advantages of the implementation of digital solutions at each stage are identified.

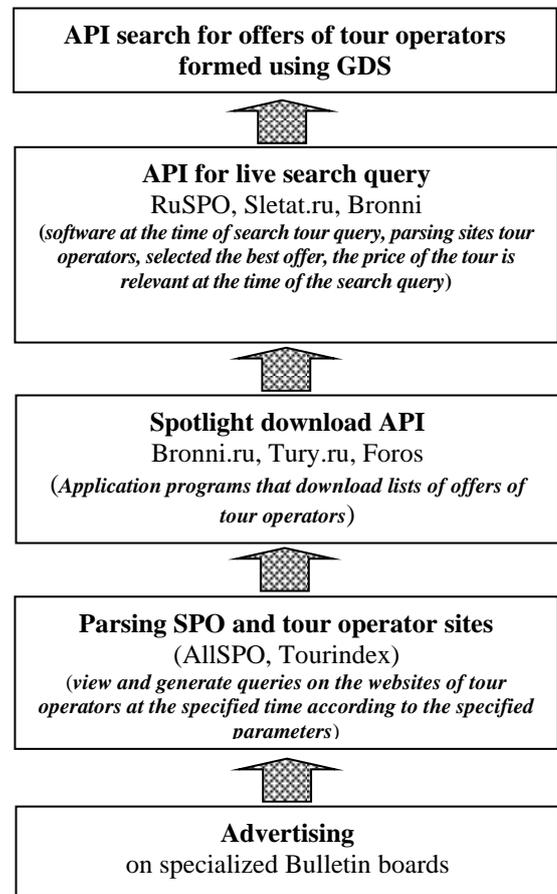


Fig. 1. The trend in the development process of digital tools for searching and booking travel products formed by tour operators.

It should be noted that each aggregator of travel offers from the number considered in the work contributed to the development of digital tools for searching and booking tourist products. However, not all of them managed to maintain their leadership in technology. Intense competition in the travel market entails the need for continuous improvement of digital technologies, in particular the feasibility of filtering responses to search queries in order to eliminate the tricks of tour operators to hide all kinds of surcharges for the tour (which allows their offers to rise to the first lines of the rating). So Sletat.ru decided to take the roughest measures in order to stop manipulations with tariffs and ensure the placement on the first rating lines of those offers that are relevant and announce the full cost [22]. Launching a service that will compare and analyze the cost of travel products in search results requires additional digital solutions.

According to the authors, a promising direction for the development of search aggregator systems is the improvement of technologies to a level that ensures end-to-end operation with booking systems of tour operators in a single window mode, which will ensure complete relevance of the data and the ability to select individual elements of the tour based on the use of GDS, that is, full automation of booking a travel product (service).

## V. CONCLUSIONS (INFERENCE)

Today, the sales gradient is actively shifting to the on-line environment, and for the tourist (mostly travel agent) business, the urgency of the problem of efficient organizing the search and booking of travel products is increasing and becoming more complicated due to the introduction of innovative tools and technologies for creating offers and pricing policies in the tourism industry. A successful solution to this problem is the basis for maintaining a stable position in the tourism market.

Understanding the ideas and principles of using digital tools will optimally organize the search and booking of travel products, and it is reasonable to choose the resource that is preferable for this.

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