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FORMATION OF A SYSTEM OF DIGITAL INDICATORS FOR ASSESSING THE EFFICIENCY OF THE TOURISM SERVICES MARKET

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Abstract
This article substantiates the need to develop a system of digital indicators for assessing the efficiency of the tourism services market in the context of digital transformation. The study argues that traditional indicators, such as the number of tourists, tourism revenues, employment and investment volume, are no longer sufficient to reflect the actual performance of tourism services. The proposed approach integrates indicators of digital infrastructure, online sales and booking, digital marketing, customer satisfaction and digital governance into a comprehensive assessment framework. The article also emphasizes the relevance of this framework for Uzbekistan, where tourism flows and digital connectivity are expanding rapidly, while the National Unified Tourism Platform is becoming an institutional basis for data-driven tourism management.

Keywords: Digital tourism, tourism services market, efficiency assessment, digital indicators, online booking, smart tourism, customer satisfaction, digital reputation, tourism platform, Uzbekistan.

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Introduction

Digital transformation processes in the global economy are fundamentally changing the content, structure and management methods of the tourism services market. Today, the tourism market is developing not merely as a combination of tourist attractions, accommodation, transport and guide services, but as a complex digital ecosystem consisting of online platforms, mobile applications, electronic payments, digital marketing, artificial intelligence, Big Data, and rating and review systems generated by customers. According to UN Tourism, in 2025 the number of international tourist arrivals reached 1.52 billion, increasing by 4 percent compared with 2024; total export revenues from international tourism were estimated at around USD 2.2 trillion.[1]

The role of tourism in the global economy is also strengthening. According to WTTC estimates, in 2025 the travel and tourism sector contributed USD 11.6 trillion to global GDP and supported 366 million jobs. Under such conditions, assessing the efficiency of the tourism services market only through the number of tourists or gross revenue indicators is neither scientifically nor practically sufficient. In a digital environment, market efficiency is also determined by ease of access to services, booking speed, real-time information exchange, online reputation, customer

[1] UN Tourism. World Tourism Barometer, Vol. 24, Issue 1, January 2026: in 2025 international tourist arrivals reached 1.52 billion and tourism export revenues were estimated at USD 2.2 trillion. URL: https://www.e-unwto.org/doi/abs/10.18111/wtobarometereng.2026.24.1.1

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satisfaction and the level of cross-platform integration.[2]

The need to form a system of digital indicators is also explained by the expansion of global internet coverage. ITU data indicate that in 2024, 5.5 billion people worldwide used the internet, representing 68 percent of the global population. Thus, a considerable part of tourism demand is first formed in the digital space and subsequently transformed into the consumption of real services. Therefore, digital traces - searches, clicks, bookings, payments, reviews, ratings and repeat requests - have significant analytical value in assessing the efficiency of tourism services.[3]

For Uzbekistan, the development of digital tourism indicators is of particular importance. At the beginning of 2025, the country had 32.7 million internet users, an internet penetration rate of 89.0 percent, and 11.7 million active social media user identities. These figures demonstrate the growing role of digital channels in promoting, selling and evaluating tourism services.[4]

According to preliminary data from the National Statistics Committee, in 2025 a total of 11.7 million foreign citizens visited Uzbekistan for tourism purposes, which was 3.7 million people, or 46.8 percent, more than in 2024. Such rapid growth in arrivals requires the tourism services market to measure not only volume indicators but also quality, responsiveness, digital convenience and tourist experience in a systematic manner.[5]

A regulatory framework for digitalizing the tourism sector is also being formed in the Republic of Uzbekistan. Resolution No. 820 of 7 December 2024 supported the initiative to launch the National Unified Tourism Platform, which enables foreign and domestic tourists to remotely book accommodation facilities and use the services of tour operators, travel agents, transport providers, guide-interpreters and other tourism-related services[6]. Presidential Decree No. PF-87 of 15 May 2025 further established that, starting from 1 June 2025, all state electronic systems and platforms related to tourism shall be developed within the framework of the National Unified Tourism Platform.[7]

These regulatory and legal foundations create an important institutional basis for introducing digital governance mechanisms into the tourism sector. In particular, the ability to consolidate, process and analyze data on tourism services within the National Unified Tourism Platform requires new approaches to assessing the efficiency of the tourism services market. In this regard, the formation of a system of digital indicators appears as a logical continuation of the digitalization process in tourism. This system represents a set of interrelated indicators that reflect digital infrastructure, online sales, customer behavior, service quality and management

[2] WTTC. Travel & Tourism Sees Best Year Ever..., 14 April 2026: in 2025 the sector contributed USD 11.6 trillion to global GDP and supported 366 million jobs. URL: https://wttc.org/news/travel-tourism-sees-best-year-ever%2C-outpacing-the-global-economy-in-2025

[3] ITU. Facts and Figures 2024 - Internet use: in 2024, 5.5 billion people used the internet worldwide, equal to 68 percent of the global population. URL: https://www.itu.int/itu-d/reports/statistics/2024/11/10/ff24-internet-use/

[4] DataReportal. Digital 2025: Uzbekistan: at the beginning of 2025, Uzbekistan had 32.7 million internet users, 89.0 percent internet penetration and 11.7 million active social media user identities. URL: https://datareportal.com/reports/digital-2025-uzbekistan

5 National Statistics Committee of the Republic of Uzbekistan. 11.7 million tourists visited Uzbekistan in 2025, 16.01.2026: arrivals reached 11.7 million, up 46.8 percent. URL: https://stat.uz/oz/19-news/committee-news/66311-11-7-million-tourists-visited-uzbekistan-in-2025

[6] Decree of the President of the Republic of Uzbekistan No. PF-87 of 15 May 2025. On measures to increase tourist flows and expand the scope of tourism services in 2025-2026. URL: https://lex.uz/uz/docs/-7252698

7 Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 820 of 7 December 2024. On measures to digitalize the tourism sector and launch the National Unified Tourism Platform. URL: https://lex.uz/uz/docs/-7531559

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efficiency in the tourism services market. Its main function is to monitor the efficiency of tourism services in near real time, compare regions and types of services, and create an evidence-based information base for decision-making.

Table 1. System of Digital Indicators for Assessing the Efficiency of the Tourism Services Market

Indicator group	Key indicators	Content	Data sources
Digital infrastructure	Internet coverage, Wi-Fi availability, mobile internet speed, electronic payment coverage	Determines the technological accessibility and convenience of using tourism services.	Ministry of Digital Technologies, ITU, GSMA, DataReportal
Online sales and booking	Share of online bookings, sales through OTAs, bookings via mobile applications, share of electronic payments	Shows the extent to which tourism services are sold through digital channels.	National tourism platform, hotel PMS/CRM systems, OTA data
Digital marketing	Website visits, conversion rate, advertising ROI, social media reach	Measures the effectiveness of demand generation and tourist attraction.	Google Analytics, Meta/Instagram Ads, SEO/SMM reports
Customer satisfaction and digital reputation	Online ratings, number of reviews, CSI, NPS, repeat visit rate	Assesses service quality and tourist experience based on digital traces.	Booking, TripAdvisor, Google Reviews, surveys
Digital governance and innovation	Implementation of CRM/ERP systems, Big Data analytics, AI chatbots, electronic document management, API integration	Identifies the digital governance capacity of enterprises and regions.	Enterprise information systems, state platforms, API logs

As can be seen from the table, digital indicators do not replace traditional statistical indicators; rather, they supplement them with new measures that reflect service quality, customer experience, digital activity and management efficiency. For example, while the growth in the number of tourists reflects the overall scale of the tourism market, online ratings, reviews, the Customer Satisfaction Index and NPS make it possible to determine the quality level and consumer satisfaction on which this volume is based. Therefore, the use of separate indicators is not sufficient for assessing the efficiency of the tourism services market; it is necessary to develop a comprehensive assessment mechanism that integrates them into a single system. This necessity requires the formation of an integral index based on digital indicators. In this case, each indicator is normalized from 0 to 1, and weight coefficients are assigned to groups of indicators:

$$RTSI = w_1DI + w_2OB + w_3DM + w_4SQ + w_5GI; \quad \Sigma w_i = 1$$

Here, RTSI denotes the Digital Efficiency Index of the Tourism Services Market; DI represents digital infrastructure; OB denotes online booking and sales; DM denotes digital marketing; SQ represents service quality and customer satisfaction; and GI denotes digital governance and innovation. The weight coefficients may be determined through expert assessment, the Analytic

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Hierarchy Process (AHP), correlation-regression analysis or the entropy method.

The advantage of this approach is that it enables the efficiency of tourism services to be assessed not by a single macro-indicator, but through a systemic indicator that integrates the market's digital readiness, sales channels, marketing effectiveness, customer experience and management innovation. As a result, it becomes possible to develop regional rankings, identify weak links, determine investment priorities and improve tourism policy on the basis of data.

From this perspective, when introducing this system of indicators into practice, it is first necessary to establish a digital data center for the tourism services market on the basis of the National Unified Tourism Platform. In this process, data from accommodation facilities, tour operators, transport services, guides, cultural sites and regional tourism departments should be integrated according to a unified standard.

Second, it is advisable to maintain indicators by region. Comparing online booking, hotel occupancy, tourist satisfaction, digital marketing reach and the share of electronic payments across Tashkent city, Samarkand, Bukhara, Khorezm, Karakalpakstan and other tourist regions will contribute to more precise planning of regional tourism policy.

Third, tourism enterprises should establish a system for continuous monitoring of customer satisfaction and digital reputation. If ratings and reviews are processed through sentiment analysis, problems related to service quality, price-quality imbalance, staff competence and infrastructure shortcomings can be identified more quickly.

Fourth, open or semi-open dashboards on tourism services efficiency can be developed on the basis of digital indicators. Such a dashboard may serve as a monitoring tool for public authorities, an information source for investors, a market signal for entrepreneurs and an empirical base for academic researchers.

In conclusion, in the context of the digital economy, the approach to assessing the efficiency of the tourism services market must be fundamentally renewed. Although traditional indicators - the number of tourists, revenue, employment and investment – reflect the scale of the market, they do not fully capture service quality, customer satisfaction, online sales, digital marketing and innovative management efficiency in the digital environment.

The findings of the study suggest that the system of digital indicators for assessing the efficiency of the tourism services market should consist of five main blocks: digital infrastructure, online sales and booking, digital marketing, customer satisfaction and digital reputation, and digital governance and innovation. Calculating the integral RTSI index on the basis of these blocks enables a comprehensive, comparative and evidence-based assessment of the tourism services market.

In Uzbekistan, the implementation of this system will contribute to improving the quality of tourism services, identifying interregional competitiveness, substantiating investment decisions and enhancing mechanisms of digital tourism governance. In this regard, the system of digital indicators should be viewed not only as an assessment tool, but also as a modern institutional mechanism for the effective management of tourism policy.

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