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Digital Transformation and Service Quality as Determinants of Tourism Enterprise Competitiveness: Evidence from Uzbekistan

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Abstract: Research objectives: This study examines how digital transformation and service quality are positioned as determinants of tourism enterprise competitiveness in Uzbekistan, and it derives a testable framework for enterprise-level research. Design/Methodology/Approach: A triangulated secondary-evidence analysis was conducted. It combined official foreign-arrival statistics for 2021–2025, reported tourism export revenue, the 17 pillar scores of the World Economic Forum's Travel & Tourism Development Index (TTDI) 2024, and a chronology of national digital-tourism initiatives. Growth rates, shares and pillar gaps were computed and mapped onto a framework linking digital transformation, service quality and competitiveness. Research findings: Foreign arrivals rose from 1.88 to 11.68 million between 2021 and 2025 (compound annual growth of 57.9%), and tourism exports reached USD 4.8 billion in 2025. Visits to relatives made up 67.3% of arrivals, and leisure and business trips together 27.8%. Uzbekistan ranked 78th of 119 economies in TTDI 2024 with a score of 3.68. Its ICT Readiness score (5.02) exceeded its Tourist Services and Infrastructure score (1.45) by 3.57 points. Theoretical contributions/Originality: The study links national digital-platform initiatives and TTDI pillars to enterprise-level constructs, identifies a gap between digital readiness and service capacity, and formulates five testable propositions. Implications for practitioners/policy: Enterprises should pair digital tools with service-quality capability and staff skills. Policymakers can connect the national tourism platform with quality standards and enterprise-level data collection. Limitations/Research implications: The data are aggregate and secondary, TTDI 2024 reflects data collected up to the end of 2023, and no enterprise-level effects were estimated. A survey-based structural model of tourism enterprises is needed.

Keywords: digital transformation; service quality; competitiveness; tourism enterprises; Travel & Tourism Development Index; Uzbekistan

1. Introduction

Tourism is an information-intensive service industry, and its enterprises have been reshaped by successive waves of information and communication technology, from online distribution to mobile, data-driven and platform-based services [1], [2], [3]. The literature increasingly distinguishes digitisation, which converts processes into digital form, from digital transformation, which changes how an organisation creates and captures value and which depends on strategy, structure and capabilities rather than on technology alone [4], [5]. For tourism enterprises such as hotels, travel agencies, tour operators and restaurants, digital transformation concerns booking channels, payment, customer relationship management, data analytics and the digital presentation of services.

Service quality is the second long-standing pillar of tourism competitiveness. The conceptual gap model and the SERVQUAL instrument define service quality as the difference between customers' expectations and perceptions across dimensions such as reliability, responsiveness, assurance, empathy and tangibles [6], [7]. Higher service quality is associated with favourable behavioural intentions, including loyalty and

willingness to pay more [8], and customer satisfaction has been linked to profitability and market share [9].

Competitiveness has been studied mainly at the destination level, where resources, supporting factors, management and demand conditions determine the ability to attract visitors and generate prosperity [10], [11]. At enterprise level, the resource-based view explains advantage through valuable and hard-to-imitate resources [12], and the dynamic capabilities approach stresses the ability to integrate and reconfigure competences in changing environments [13]. Digital transformation and service quality can be understood in these terms, as a capability and as an outcome-producing resource respectively. In much of the literature, however, they are examined in separate streams, and evidence for transition economies with rapidly growing tourism sectors is limited.

Uzbekistan is an instructive case. Foreign visitor trips rose from 1.88 million in 2021 to 11.68 million in 2025, and the government targets more than 12 million in 2026 [14]. Tourism service exports reached USD 4.8 billion in 2025, and the World Travel & Tourism Council identified Central Asia as the world's fastest-growing tourism region in 2025, with Uzbekistan contributing nearly half of the region's visitor exports. Over the same period the state has promoted digitalisation, including electronic visas, online registration of foreign visitors and a unified national tourism platform. Whether this growth rests on enterprise-level digital and service capabilities, or mainly on demand-side and policy factors, is an open question.

This article therefore asks four research questions. RQ1: How have inbound tourism volumes and structure developed in Uzbekistan in 2021–2025? RQ2: What national digital-tourism initiatives have been introduced? RQ3: What does the TTDI 2024 pillar profile show about digital readiness and service-related capacity? RQ4: What framework and propositions follow for research on enterprise competitiveness? The study contributes a consolidated, source-traceable evidence base for Uzbekistan, a diagnosis of the relationship between digital readiness and service capacity, and a set of propositions for enterprise-level testing. Section 2 describes the methodology, Section 3 reports the results, Section 4 discusses them, and Section 5 concludes.

2. Materials and Methods

Design. A triangulated secondary-evidence analysis was used. Triangulation means combining several independent data sources and perspectives to examine one phenomenon, and it reduces dependence on any single source. No primary data were collected from tourism enterprises or visitors.

Sources. Four evidence sets were assembled. (i) Official inbound and outbound trip statistics of the National Statistics Committee for 2021–2025, as reported by. (ii) Tourism export revenue for 2025 reported by and the World Travel & Tourism Council data cited in. (iii) The World Economic Forum's TTDI 2024, from which the overall score, rank and the 17 pillar scores for Uzbekistan were extracted, supplemented by pillar ranks reported in and Kazakhstan's results in. (iv) Reports on national digital-tourism initiatives. Online sources were retrieved on 13 October 2026. The TTDI 2026 edition was released in September 2026 with recalculated methodology, but Uzbekistan's results in it were not retrieved and are not used.

Data processing. Year-on-year growth, compound annual growth rate (CAGR), purpose-of-visit shares and the ratio of inbound to outbound trips were computed from the published figures. Tourism export revenue per foreign trip was calculated as an indicative ratio only, because definitions of trips and exports differ. For the TTDI, each pillar's gap to the overall score was calculated, dimension means were computed as unweighted pillar averages, and the 17 extracted values were checked by confirming that their mean reproduces the published overall score of 3.68.

Framework mapping. Evidence was assigned to three constructs: digital transformation (ICT Readiness pillar and national platform initiatives), service quality capacity (Human Resources and Labour Market, Tourist Services and Infrastructure, Health and Hygiene and Price Competitiveness pillars) and competitiveness outcomes (arrivals, exports and TTDI rank). The mapping is conceptual, and it supports proposition development, not hypothesis testing.

3. Results

3.1 Inbound tourism volumes and structure

Foreign visitor trips for tourism purposes were 1.88 million in 2021, 5.23 million in 2022, 6.63 million in 2023, 7.96 million in 2024 and 11.68 million in 2025. Annual growth was 178.2% in 2022, 26.8% in 2023 and 20.1% in 2024, and officially 46.8% in 2025, an increase of about 3.7 million trips [15]. The 2025 figure is 6.2 times the 2021 figure, corresponding to a CAGR of 57.9% over four years, and 1.76 times the 2023 figure. Outbound trips by residents were 2.19, 5.16, 4.79, 6.18 and 7.56 million in 2021–2025, which gives ratios of inbound to outbound trips of 0.86, 1.01, 1.38, 1.29 and 1.54, respectively.

In 2025, 7.86 million trips (67.3%) were visits to relatives, 1.92 million (16.5%) were leisure and recreation, and 1.32 million (11.3%) were business trips, so the last two categories together accounted for 27.8%. Citizens of neighbouring countries made 9.5 million trips, or 81.5% of the total, with Kyrgyzstan (3.3 million), Tajikistan (2.7 million) and Kazakhstan (2.7 million) in the lead. Tourism service exports reached USD 4.8 billion in 2025 [16], which is about USD 411 per foreign trip. WTTC data show that Central Asian visitor exports reached USD 9.9 billion in 2025, up 26.4%, and that Uzbekistan was the most popular destination for Central Asian residents, at 25% [17].

3.2 National digital-tourism initiatives

The reported initiatives include an electronic visa system, digitised registration of international visitors through the E-mehmon platform, and visa-free entry for more than 90 countries by May 2024 and for 94 countries by January 2026. In December 2024 the Cabinet of Ministers approved a Unified National Tourism Platform for online booking of accommodation, car rental and taxis, transport tickets, museum and landmark entry tickets, and access to guides, interpreters and tour operators. It was planned to support 14 foreign languages, to integrate with transport systems such as Uztrans, Uzbekistan Railways and Uzbekistan Airways, to start test operation on 1 September 2025 and to roll out fully by 1 December 2025, financed by the Tourism Support Fund. By December 2025 the Tourism Committee reported that the platform (sayohat.uz) integrated hotel bookings, ticket purchases, digital identification and tourism services. In January 2026 authorities were tasked with integrating public and private information systems, introducing proactive digital services, expanding cashless payments and improving data analytics on tourist flows, with the expectation that digitalisation would curb the shadow economy and raise tourist-levy revenue.

3.3 TTDI 2024 profile

Uzbekistan was added to the TTDI in the 2024 edition, ranked 78th of 119 economies with an overall score of 3.68. Compared with 2019 it gained 16 places and 7.8% in score, the largest improvement in the index. Table 1 lists the 17 pillar scores on the 1–7 scale and each pillar's gap to the overall score. The mean of the 17 values is 3.68, which reproduces the published overall score. Eight pillars lie above the overall score and nine below. The dimension means were 4.92 for Enabling Environment, 4.06 for T&T Policy and Enabling Conditions, 2.65 for Infrastructure and Services, 1.92 for T&T Resources and 4.00 for T&T Sustainability.

Table 1. Uzbekistan's TTDI 2024 pillar scores (scale 1–7) and gap to the overall score (3.68).

Dimension	Pillar	Score	Gap to overall
Enabling Environment	Business Environment	4.06	+0.38
	Safety and Security	6.17	+2.49
	Health and Hygiene	5.00	+1.32
	Human Resources and Labour Market	4.35	+0.67
	ICT Readiness	5.02	+1.34
T&T Policy and Enabling Conditions	Prioritization of T&T	3.30	–0.38
	Openness to T&T	3.38	–0.30
	Price Competitiveness	5.49	+1.81
Infrastructure and Services	Air Transport Infrastructure	3.05	–0.63
	Ground and Port Infrastructure	3.44	–0.24
	Tourist Services and Infrastructure	1.45	–2.23
T&T Resources	Natural Resources	2.49	–1.19
	Cultural Resources	1.85	–1.83
	Non-Leisure Resources	1.43	–2.25
T&T Sustainability	Environmental Sustainability	3.08	–0.60
	T&T Socioeconomic Impact	4.80	+1.12
	T&T Demand Sustainability	4.13	+0.45
Overall TTDI (rank 78 of 119)		3.68	—

Source: author's extraction from [18]; gaps computed by the author. The mean of the 17 pillar scores reproduces the published overall score.

Pillar ranks reported in were 25th for Price Competitiveness, 26th for Safety and Security, 33rd for T&T Socioeconomic Impact, 40th for T&T Demand Sustainability, 105th for Prioritization of T&T, 111th for Openness to T&T and 113th for Non-Leisure Resources. The ICT Readiness score of 5.02 compares with 5.42 for Kazakhstan, which ranked 52nd overall. The ICT Readiness score exceeded the Tourist Services and Infrastructure score by 3.57 points and the Human Resources and Labour Market score by 0.67 points, and the Human Resources and Labour Market score exceeded the Tourist Services score by 2.90 points. TTDI 2024 reflects data collected up to the end of 2023.

4. Discussion

4.1 Demand growth and supply-side readiness

The results show a pronounced contrast between demand outcomes and supply-side conditions. Arrivals multiplied more than six-fold in four years, yet the Tourist Services and Infrastructure pillar, which captures the availability of quality accommodation and

tourism capital investment and productivity, scored 1.45, 2.23 points below the overall score. Because the TTDI measures enabling conditions and not visitor numbers, the two sets of figures are not contradictory. They indicate that demand has expanded faster than the supply side was measured to be ready for, at least up to the end of 2023. The ratio of inbound to outbound trips, which rose from 0.86 to 1.54, shows that the country has become a net receiver of trips, which increases the importance of enterprise capacity to serve visitors.

The regional comparison adds nuance. Uzbekistan's 78th place lies between Kazakhstan (52nd) and the Kyrgyz Republic (102nd). Kazakhstan's ICT Readiness score is only 0.40 higher than Uzbekistan's, so the 26-place gap in overall rank cannot be attributed to digital readiness alone. Other pillars, such as the weak infrastructure and resources dimensions in Uzbekistan's profile, must account for a large part of the difference, although the data used here do not allow that contribution to be quantified.

4.2 What the structure of arrivals implies for service quality

Visits to relatives accounted for 67.3% of trips and neighbouring countries for 81.5%. Such flows may be less dependent on commercial accommodation and organised services than leisure travel, so aggregate arrival growth may overstate the exposure of tourism enterprises to quality-sensitive demand. Leisure and business trips, 3.24 million in 2025, are the segments in which hotels, restaurants and tour operators compete on service quality, and their share (27.8%) is the more relevant base for enterprise competitiveness. The indicative export revenue of about USD 411 per trip should be read with caution, as noted in Section 2, but it suggests that the average revenue per trip is modest. If the goal is to raise revenue per visitor, the evidence points to service quality and higher-value segments as the main lever, a conclusion consistent with the view that satisfaction and loyalty drive willingness to pay.

4.3 Digital transformation: national rails, enterprise capabilities

Uzbekistan's digital initiatives are largely state-led and platform-level: electronic visas, E-mehmon registration and the unified tourism platform. They lower transaction costs for visitors and create a common channel for enterprises. The ICT Readiness score of 5.02 supports the view that infrastructure conditions are comparatively favourable, although Kazakhstan scored 0.40 higher. In the language of digital transformation research, however, platforms and infrastructure are enabling conditions, whereas transformation occurs when enterprises change processes, data use and customer interaction. The dynamic capabilities perspective adds that the competitive effect of a shared platform depends on each enterprise's ability to integrate it with its own operations. The available do not measure these enterprise-level capabilities, which is why digital transformation appears here as an enabling condition and not as a demonstrated determinant.

4.4 A digital readiness–service capacity gap

The main analytical finding is the gap between a comparatively strong ICT pillar (5.02) and a weak Tourist Services pillar (1.45), with Human Resources and Labour Market (4.35) in between. If this pattern also holds at enterprise level, digital tools may be adopted faster than the service processes and skills they are meant to support. Two consequences are plausible. First, digital front-ends such as online booking and review channels make service failures more visible, because expectations are set and compared transparently. Second, digital tools raise service quality only where operational reliability and staff competence already exist, in line with SERVQUAL's emphasis on reliability and responsiveness. These are hypotheses, not findings, and they motivate the framework below.

4.5 Propositions for enterprise-level research

The evidence supports five propositions. P1: Enterprise-level digital transformation is positively related to competitiveness, measured by market share, revenue growth and profitability. P2: Digital transformation is positively related to service quality, in particular

reliability and responsiveness. P3: Service quality is positively related to competitiveness through satisfaction and loyalty. P4: Service quality partly mediates the relationship between digital transformation and competitiveness. P5: Staff skills and service infrastructure moderate the effect of digital transformation on service quality, so that the effect is weaker where they are low. These can be tested in a survey of hotels, restaurants, travel agencies and tour operators using partial least squares structural equation modelling [18], with SERVQUAL-type items for service quality and a multi-item scale for digital transformation. Digital transformation should be measured by the breadth and depth of digital use across customer-facing, operational and managerial processes. Service quality should be measured from the customer's and, where possible, the employee's perspective. Competitiveness should combine perceived and financial indicators. Enterprise size, age, type and region, and the share of relatives-visiting versus leisure clientele, are necessary controls, and the sample should be stratified by enterprise type and by tourism region.

4.6 Implications for practice and policy

For enterprises, the evidence suggests sequencing investment so that digital tools are linked to service processes and staff training, instead of being adopted as stand-alone channels. For policymakers, three steps follow. The national platform could be linked to quality standards and visible service-quality indicators for listed enterprises. Enterprise-level data on digital adoption and service quality could be collected, because the present evidence is national and aggregate. The weak Tourist Services and Human Resources results suggest that support for accommodation quality, productivity and workforce skills would complement the existing visa and platform measures. Prioritization of T&T (3.30, rank 105) and Openness (3.38, rank 111) also scored below the overall score despite visa liberalisation [19], [20], so the indicators behind these pillars merit separate study.

4.7 Limitations

This study has five main limitations. The evidence is aggregate and secondary, and several figures are reported through media coverage of official statistics, not through original statistical releases. The TTDI 2024 pillar scores reflect data collected up to the end of 2023 and predate the 2025 platform launch and the growth of 2024–2025, and the 2026 edition was not analysed for Uzbekistan. Arrival and export figures follow different definitions, so the revenue-per-trip ratio is indicative only. No enterprise-level data were analysed, so no effect of digital transformation or service quality on competitiveness was estimated. Finally, the framework mapping was performed by one analyst. Future work should update the TTDI profile with the 2026 results and test P1–P5 with enterprise survey data.

5. Conclusion

This study examined digital transformation and service quality as determinants of tourism enterprise competitiveness in Uzbekistan, using a triangulated analysis of official arrival statistics, reported export revenue, the World Economic Forum's TTDI 2024 and national digital-tourism initiatives. Inbound tourism grew rapidly. Foreign trips rose from 1.88 million in 2021 to 11.68 million in 2025, a compound annual growth rate of 57.9%, and tourism exports reached USD 4.8 billion in 2025. The structure of arrivals was dominated by visits to relatives (67.3%) and by citizens of neighbouring countries (81.5%), while leisure and business trips accounted for 27.8%. The state introduced electronic visas, online visitor registration, visa-free entry for 94 countries and a unified national tourism platform, with further digital services planned.

In TTDI 2024, Uzbekistan ranked 78th of 119 economies with a score of 3.68. Its ICT Readiness score (5.02) was 1.34 points above the overall score, whereas its Tourist Services and Infrastructure score (1.45) was 2.23 points below it, a difference of 3.57 points between the two pillars. Human Resources and Labour Market scored 4.35. This pattern points to a

gap between digital readiness and service capacity, which is the main analytical result of the study.

On this basis five propositions were formulated: digital transformation is related to competitiveness and to service quality, service quality is related to competitiveness, service quality partly mediates the first relationship, and staff skills and service infrastructure moderate the effect of digital transformation on service quality. These propositions are not tested in this study. They imply that enterprises should link digital tools to service processes and staff training, and that policymakers could connect the national platform with quality standards and collect enterprise-level data. The conclusions are limited by the use of aggregate secondary data, by the date of the TTDI 2024 data, and by the absence of enterprise-level evidence. The next step is a survey-based structural model of tourism enterprises, together with an update of the TTDI profile using the 2026 edition.

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