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The Sustainability of the Hospitality Industry through the Management of Tourist Flows: The Case of Turkestan

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Abstract

Religious and cultural tourism is considered as a strategic tool for the development of destinations, combining the preservation of heritage with the growth of hospitality and creative services. Turkestan (Kazakhstan), with the Mausoleum of Khoja Akhmet Yasawi, a UNESCO World Heritage Site, presents an illustrative case study of the impact of the sacred core on sustainable demand and the local economy of service. The article uses a mixed methodology: a quantitative analysis of official tourism and accommodation statistics, digital registers of visits, and monthly/quarterly series.; qualitative data from semi-structured interviews; analysis of management documentation. The spatial focus is the core and adjacent service clusters; the analysis period covers 2018-2025. The seasonal attendance profile is characterized by two peaks and "shoulder" months, in which the programming and packaging of tourist products increase the average length of stay and equalize the load. The pressure of visitors is concentrated in narrow areas and hours; the introduction of time slots, pre-booking and "quiet hours" contributes to a more even distribution of visits without reducing the daily total. The largest density of services is observed in the core; in excursions, crafts, gastronomy and small accommodation, SMEs predominate. Policy priorities include the institutionalization of flow management tools, the development of interpretation and multilingual content, support for SME capabilities in the "experience belt" and the integration of administrative data for ongoing monitoring. This configuration aligns the preservation of heritage integrity with the sustainable results of the Turkestan hospitality industry.

Keywords: Tourism, Culture, Religious and Cultural Tourism, Management, Visitor Flow Management, Digital Analytics, Social Impact, Social Sustainability, Turkestan

Туристік ағындарды басқару арқылы қонақжайлылық индустриясының тұрақтылығы: Түркістан кейсі

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Түйін

Діни және мәдени туризм мұраны сақтау мен қонақжайлылық пен креативті қызметтер саласының өсуін үйлестіретін дестинацияларды дамытудың стратегиялық құралы ретінде қарастырылады. ЮНЕСКО-ның Бүкіләлемдік мұралар тізіміне енген Қожа Ахмет Ясауи кесенесі орналасқан Түркістан (Қазақстан) қасиетті орталықтың тұрақты сұраныс пен жергілікті қызмет көрсету экономикасына әсерін көрсететін көрнекі мысал болып табылады. Мақалада аралас әдіснама қолданылады: туризм мен орналастыру бойынша ресми статистикалық деректерге, келушілердің цифрлық тіркеу журналдарына, айлық және тоқсандық қатарларға негізделген сандық талдау; жартылай құрылымдалған сұхбаттардан алынған сапалық деректер; басқарушылық құжаттаманы талдау. Зерттеудің кеңістіктік фокусы – қасиетті орталық пен оған іргелес қызмет көрсету кластерлері; талдау кезеңі 2018–2025 жж. қамтиды. Маусымдық қатысу профилі екі шарықтау кезеңімен және «аралық» айлармен сипатталады, осы кезеңдерде туристік өнімдерді бағдарламалау және топтамалау келушілердің орташа болу ұзақтығын арттырып, жүктемені теңестіреді. Келушілер ағынының ең жоғары шоғырлануы тар аймақтар мен уақыттарда байқалады; уақыттық слоттарды, алдын ала брондау мен «тыныш сағаттарды» енгізу келушілердің тәуліктік санын азайтпай, олардың біркелкі таралуына ықпал етеді. Қызмет көрсету нысандарының ең жоғары шоғырлануы қасиетті орталық маңында байқалады; экскурсиялар, қолөнер, гастрономия және шағын орналастыру салаларында шағын және орта бизнес (ШОБ) басым. Саясаттың басым бағыттарына келушілер ағынын басқару құралдарын институционалдандыру, мұраны түсіндіру және көптілді контентті дамыту, «тәжірибе белдеуі» шегінде ШОБ әлеуетін қолдау және әкімшілік деректерді интеграциялау арқылы тұрақты мониторинг жүргізу жатады. Мұндай конфигурация мұраның тұтастығын сақтауды Түркістан қонақжайлылық индустриясының орнықты нәтижелерімен үйлестіреді.

Түйін сөздер: туризм, мәдениет, діни-мәдени туризм, басқару, келушілер ағынын басқару, цифрлық талдау, әлеуметтік әсер, әлеуметтік тұрақтылық, Түркістан

Устойчивость индустрии гостеприимства через управление туристкими потоками: кейс Туркестана

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Аннотация

Религиозно-культурный туризм рассматривается как стратегический инструмент развития дестинаций, сочетающий сохранение наследия с ростом сферы гостеприимства и креативных услуг. Туркестан (Казахстан) с Мавзолеем Ходжи Ахмета Ясави, объектом Всемирного наследия ЮНЕСКО, представляет показательный кейс влияния сакрального ядра на устойчивый спрос и локальную экономику сервиса. В статье используется смешанная методология: количественный анализ официальной статистики туризма и размещения, цифровых реестров посещений и помесячных/поквартальных рядов; качественные данные полуструктурированных интервью; анализ управленческой документации. Пространственный фокус – это ядро и прилегающие сервисные кластеры; период анализа охватывает 2018–2025 гг. Сезонный профиль посещаемости характеризуется двумя пиками и «плечевыми» месяцами, в которые программирование и пакетирование туристских продуктов увеличивают среднюю длительность пребывания и выравнивают загрузку. Давление посетителей концентрируется в узких зонах и часах; внедрение тайм-слотов, предварительного бронирования и «тихих часов» способствует более равномерному распределению визитов без снижения суточного итога. Наибольшая плотность сервисов наблюдается у ядра; в экскурсиях, ремёслах, гастрономии и малом размещении преобладают МСП. Приоритеты политики включают институционализацию инструментов управления потоками, развитие интерпретации и мультиязычного контента, поддержку возможностей МСП в «поясе опыта» и интеграцию административных данных для постоянного мониторинга. Такая конфигурация согласует сохранение целостности наследия с устойчивыми результатами индустрии гостеприимства Туркестана.

Ключевые слова: туризм, культура, религиозно-культурный туризм, управление, управление потоками посетителей, цифровая аналитика, социальный эффект, социальная устойчивость, Туркестан

Introduction

In recent years, religious and cultural tourism has increasingly been viewed as a strategic direction for territorial development, combining heritage preservation with the formation of new growth points in the service sector and creative economy. International literature emphasises that religious routes and pilgrimages are in steady demand, less susceptible to market fluctuations, while the multiplier effects of tourism accumulate in related segments – accommodation, catering, transport, souvenir production, cultural and educational services (Budovich, 2023; Choe, 2025). For Kazakhstan, these conclusions are particularly relevant in view of the dynamics of domestic tourism and the strengthening of the brand of cultural destinations, among which Turkestan occupies a key place, thanks to the Mausoleum of Khoja Ahmed Yasawi a UNESCO World Heritage Site and spiritual symbol of the Turkic world (UNESCO World Heritage Centre, 2024).

Turkestan demonstrates a rare combination of factors that ensure long-term growth potential: the high symbolic value of its sacred core, rapidly expanding hospitality infrastructure, and the state's attention to the balance between conservation and use of heritage. Recent reviews note the evolution of regulatory approaches to managing the tourism boom in Kazakhstan: the development of digital accounting and monitoring tools, the strengthening of service standards, and targeted support for entrepreneurship (The Astana Times, 2025). At the same time, the industry's statistical base is expanding: according to data from the Tourism Satellite Account, the country is seeing significant growth in tourism consumption, creating a window of opportunity for religious and cultural destinations (Bureau of National Statistics, 2024). An additional indicator is the digital registration of inbound flows in the eQonaq system, which, according to media reports, has increased the transparency and analytical value of data on international tourists (Qazinform, 2025; The Astana Times, 2024).

Despite positive demand trends, a set of interrelated challenges remains in focus. First, growing attendance at sacred sites increases the burden on material heritage and urban infrastructure. Management decisions are needed that combine "soft" distribution of flows (time slots, booking, “quiet” hours) with physical measures to protect the monument and improve the quality of visits — interpretation of heritage, museum education, digital audio guides (UNESCO World Heritage Centre, 2024). Secondly, the effects of tourism on the local economy are primarily determined by the degree of service clustering and the involvement of small and medium-sized businesses: from the professionalism of guides and artisans to the quality of the urban environment, the events calendar, and last-mile logistics (Budovich, 2023). Thirdly, for sustainable growth, it is critical to ensure “smart” data management, the integration of accommodation statistics, tickets, transport flows and transactional analytics, which will allow for a more accurate assessment of the average cheque, length of stay, seasonality and carrying capacity of the site (The Astana Times, 2025).

The study's scientific relevance stems from two gaps in the existing agenda. The first is methodological: a significant part of the work on religious tourism is descriptive and focuses on cultural aspects, while the economic operationalisation of the effects on hospitality (e.g., measuring multipliers, impacts on employment, entrepreneurship, and

service supply structure) remains limited (Choe, 2025). The second is contextual: Kazakh studies of Turkestan are actively expanding, but there is still a lack of a systematic framework linking sacred heritage management, digital demand analytics and SME service development policy. Our contribution consists of building a coherent analytical model of "heritage - demand - service – policy", where the central elements are tools for managing the flow and quality of supply, as well as mechanisms for inclusive growth for local businesses.

The purpose of this article is to use the case of Turkestan to show how religious and cultural tourism can act as a catalyst for the development of the hospitality industry while adhering to the principles of heritage preservation and sustainable use. To achieve this goal, the following tasks are addressed: (1) to summarise the theoretical mechanisms of the impact of pilgrimage on the local service economy (demand structure, smoothing of seasonality, creative industries); (2) to describe institutional and digital tools for managing attendance and service quality relevant to sacred sites; (3) to identify "bottlenecks" (transport, distribution of flows, qualification of service SMEs, heritage interpretation) and "growth points" (clustering of product lines 'pilgrimage + museum + crafts + gastronomy', event calendar, joint marketing of Central Asian routes); (4) to offer practical recommendations for authorities and businesses.

The theoretical basis of the work draws on contemporary literature on religious tourism and the hospitality economy, which emphasises the sustainability of demand, multiplier effects, and the need to protect the site's authenticity (Budovich, 2023; Choe, 2025). We integrate this approach with international standards for the management of World Heritage sites, which involve a combination of conservation, interpretation and controlled access (UNESCO World Heritage Centre, 2024). The empirical framework of the study will be correlated with available industry statistics and reports on management practices and the digitisation of tourist flow accounting in Kazakhstan (Bureau of National Statistics, 2025; The Astana Times, 2025; Qazinform, 2025; The Astana Times, 2024).

The practical significance of the work is expressed in the development of a set of management solutions for destinations with a sacred profile. First, these are service clustering tools: support for networks of small hotels and guest houses, certification and professionalisation of tour guides, and development of craft and gastronomic clusters around the sacred core. Secondly, measures to manage visitor flows and quality: time slots, "quiet" hours, routing, digital tickets and "all-in-one" packages (museums, transport, guide). Thirdly, digital analytics based on the integration of eQonaq, ticket billing and transport data for capacity planning and marketing targeting (Bureau of National Statistics, 2024; Qazinform, 2025). Fourth, inclusive mechanisms for involving local SMEs: micro-grants, service project accelerators, local content "showcases" in museums and interpretation centres (The Astana Times, 2025).

The article is structured as follows. In the first part, we present an overview of the literature on religious and cultural tourism and its economic effects on the hospitality industry (Budovich, 2023; Choe, 2025). In the second part, we detail the institutional and digital tools for managing sacred sites (UNESCO World Heritage Centre, 2024). In the third part, we analyse the case of Turkestan: infrastructure, service offerings, flow management, bottlenecks and practices identified in public sources and industry statistics

(Bureau of National Statistics, 2024; Qazinform, 2025; The Astana Times, 2024). In the final part, we formulate policy recommendations to improve service quality, ensure the sustainable use of heritage, and expand economic benefits for local communities.

Thus, Turkestan is not only a sacred centre of global cultural significance but also a laboratory for decision-making on religious and cultural tourism in Central Asia. The transition from extensive growth in visitor numbers to controlled growth in quality requires balancing the interests of conservation, business, and visitors, and relying on data and standards. The proposed framework is intended to contribute to academic discussion and, at the same time, provide practical tools for government bodies and the hospitality industry (UNESCO World Heritage Centre, 2024; Bureau of National Statistics, 2024; The Astana Times, 2025).

Literature Review

The concepts, motivations, and typologies of religious and cultural tourism have evolved significantly. The classic typology of religious tourism, as proposed by Rinschede (1992), distinguishes between pilgrimage and related practices such as excursions to shrines, participation in religious events, and cultural routes, categorizing them by duration, organization, seasonality, and social composition. This framework remains fundamental for operationalizing demand and designing destination products. Later studies, however, expand on it by introducing hybrid formats that combine pilgrimage, culture, and leisure and by emphasising the experiential authenticity of sacred places. Compilations on pilgrimage geographies place religious travel within a broad ecosystem of spiritual and cultural practices where religion, identity, and tourism are intertwined (Timothy & Olsen, 2006; Collins-Kreiner, 2020). These studies agree that visitors' motivations vary from strictly religious to cultural and educational, requiring differentiated management of experience and service.

Economic effects and multipliers in the hospitality sector. Empirical studies over the last decade have documented the contribution of religious tourism to employment, entrepreneurship, and local community income: demand for accommodation, food, transport, and crafts forms sustainable value chains around sacred centres (Budovich, 2023). New studies show that religious routes can support the sustainable development of peripheral areas, provided that services are clustered and integrated into regional networks (Suárez, 2025). At the same time, the economic effects are uneven: their magnitude depends on the length of stay (ALOS), the quality of heritage interpretation and the event calendar, as well as the availability of mechanisms for distributing flows during peak periods.

Management of sacred sites: from conservation to “managed use”. Early management literature highlighted the dilemma of reconciling the conservation requirements of sacred sites with growing tourist demand (Shackley, 2001). International guidelines for World Heritage sites provide the following answer: strategic tourism management (‘zoning’, ‘carrying capacity’, or ‘temporary distribution of visitors’), interpretation programming, and community involvement to minimise negative externalities and maximise local benefits (Pedersen/UNESCO, 2002; UNESCO, 2024).

Together, these approaches form the basis of “managed use”, where the priority of authenticity and integrity of the monument is combined with the development of services and entrepreneurship.

Contemporary research shifts, data, digitalisation and new theories. Recent reviews highlight the shift from descriptive case studies to quantitative assessment of effects and the use of digital traces (online tracks, bookings, social networks) to monitor demand and design services (Collins-Kreiner, 2020). At the same time, interdisciplinary frameworks (actor–network theory, socio-technical approaches) are being strengthened to analyse the relationships between visitors, objects, platforms and local communities, which is important for innovative flow management and service design (Lam & Furnell, 2025). In practical terms, this leads to the introduction of visit slots, digital tickets and data integration across the entire hospitality chain.

Summarising the literature, we proceed from three theses. First, religious and cultural tourism can be a stabiliser of demand for the hospitality industry if the destination offers a cluster of services around the sacred core (accommodation, gastronomy, crafts, interpretation services) and extends the length of visitors' stays, this is confirmed by both international reviews and empirical data on religious routes (Budovich, 2023; Suárez, 2025). Secondly, the sustainability of growth is determined by the quality of site management: the use of 'carrying capacity', zoning, and flow time management tools allows both the authenticity of heritage to be preserved and economic benefits to be expanded (Shackley, 2001; Pedersen/UNESCO, 2002; UNESCO, 2024). Thirdly, a new wave of research indicates that digital analytics and interdisciplinary approaches (including ANT) are a prerequisite for accurately targeting services and co-creating value with local communities (Collins-Kreiner, 2020; Lam & Furnell, 2025). These findings are directly relevant to the case of Turkestan: a combination of conservation, service clustering, and digital demand management should become the framework for the destination's “managed growth”.

Materials and Methods

The study was conducted using a mixed-methods approach, combining:

(1) Quantitative block: analysis of official statistics on tourism and the hospitality economy, digital attendance and ticket registers, as well as panel series on service load and offers.

(2) Qualitative block: semi-structured interviews with stakeholders and content analysis of strategic and regulatory documents related to the management of cultural heritage sites and tourist flows.

This design allows us to link macro- and meso-level changes in demand with institutional practices of heritage protection and service development (UNESCO World Heritage Centre, 2024; Bureau of National Statistics, 2024).

Sources and data collection

The study relies on several complementary data sources that ensure both statistical accuracy and contextual depth. The Tourism Satellite Account of the Republic of Kazakhstan (TSA) provides aggregates on tourism consumption, domestic and inbound

flows, the expenditure structure, and the output of tourism-related industries (Bureau of National Statistics, 2024). Additional indicators on room capacity, occupancy of collective accommodation facilities, number of persons accommodated, average length of stay, and income from accommodation services were obtained from the BNS accommodation database (monthly and quarterly series). Information from the eQonaq digital register, including operational publications and summaries, was used to trace the registration of foreign tourists and the dynamics of flows by country of origin (Qazinform, 2025; The Astana Times, 2024). Complementary qualitative data were drawn from the UNESCO World Heritage Centre site card "Mausoleum of Khoja Ahmed Yasawi", which provides attributes of outstanding universal value, as well as recommendations for conservation and access management (UNESCO World Heritage Centre, 2024). Documents and media sources: policy and regulatory reviews and reports on the digitisation of flow management and service standards (The Astana Times, 2025).

The qualitative component of the research was based on semi-structured interviews and field observations conducted in Turkestan and its surrounding service clusters. Approximately 20–25 interviews were conducted with representatives of the site administration, museums, and interpretation centres, as well as local entrepreneurs such as guides, artisans, owners of small hotels and guest houses, tour operators, and municipal service providers, including transport and public amenities. The sampling strategy followed a purposive approach, emphasising maximum profile variability to capture diverse perspectives across stakeholder groups. Field observations complemented the interviews and focused on visitor routes, temporal concentration of tourist flows, last-mile logistics, navigation and interpretation systems, and congestion points. Observations were conducted during two to three site visits covering both high and low tourist seasons.

The spatial coverage included the core area of Turkestan, encompassing the UNESCO World Heritage site and adjacent service clusters, with regional and national aggregates used for comparison. The temporal scope spans 2018–2025, enabling assessment of post-infrastructure development dynamics and the effects of digitalisation in tourism accounting. High-frequency data series were analysed using available monthly and quarterly observations.

Operationalisation of variables

The study operationalises key indicators reflecting the dynamics of tourism demand, service performance, and management practices. Tourism intensity is measured through several quantitative variables. The number of arrivals represents the number of persons accommodated in collective accommodation establishments (CSRs), while nights denote the total number of bed nights. The average length of stay (ALOS) is calculated as the ratio of nights to arrivals, calculated by formula (1):

$$\text{ALOS} = \text{nights}/\ \text{arrivals} \qquad (1)$$

where:

ALOS – average length of stay;

Arrivals – number of people accommodated in CSRs;

Nights – number of bed-days, units.

Occupancy reflects the average utilisation of the available room stock, expressed as a percentage based on official statistics from the Bureau of National Statistics (BNS). Seasonality is assessed using a Seasonality Index derived from monthly averages, and visitor pressure is computed as the ratio of visits to the core (museums and main objects) to the core's conditional area in hectares, thereby capturing spatial load intensity.

The occupancy rate reflects the share of occupied rooms in the total room stock, expressed as a percentage according to BNS data (2):

$$Occupancy_t = OccupancyRooms/AvailableRooms \quad (2)$$

where:

$Occupancy_t$ – average occupancy of the room stock, % ;
Arrivals – number of occupied rooms;
Nights – number of available rooms.

To assess the economic dimension of the service sector, several indicators were constructed. The Visitor Pressure (VP) indicator expresses the intensity of tourist load per unit of the heritage core area, calculated by formula (3):

$$VP_t = ArrivalScore_t/ArrivalScore \quad (3)$$

where:

VP_t – visitor pressure;
ArrivalScore – the value of the arrival estimate *t*;
$ArrivalScore_t$ – the total value of the arrival estimate.

The following indicators were calculated to operationalise the dimensions of tourism demand and service performance calculated by formula (4):

$$SP_t = Service_t/Area_{core} \quad (3)$$

where:

SP_t – service footprint at time *t*;
$Area_{core}$ – the total area of the tourist core;
$Service_t$ – the total number of catering, accommodation, and excursion facilities in the core area.

SME Participation (SMEp) – share of small and medium-sized enterprises in the total number of service establishments calculated by formula (5):

$$SME_p = SME_t/Service_t \quad (5)$$

where:

SME_p – the total number of service establishments;

SME_t – the number of small and medium-sized enterprises among all service facilities;

$Service_t$ – the total number of service facilities.

The analytical strategy comprised several complementary procedures.

(1) Descriptive and visual analytics were used to identify temporal dynamics in arrivals, nights, ALOS, occupancy rates, and seasonality indices, and to visualise them through heat maps and time-series graphs.

(2) Comparative analysis contrasted the UNESCO core and the surrounding cluster area to assess differences in service density (Service Footprint) and SME participation at distances of 0–500 m, 500–1500 m, and 1500–3000 m from the heritage site.

(3) Quasi-panel modelling was employed to analyse the relationship between service quality and tourism demand, incorporating lagged effects of Service Footprint and SME share on arrivals and ALOS.

(4) Difference-in-Differences (DiD) design was applied to estimate the effects of management practices such as time-slot systems and online booking on key indicators (ALOS, occupancy, visitor pressure).

(5) Robustness and sensitivity checks included alternative specifications (log-levels, lags, exclusion of outlier months) and placebo tests to ensure the reliability of results.

Several procedures were performed to assess the reliability of the results. Alternative model specifications, lag effects, and error elimination were used to evaluate the sensitivity of the estimates. Additionally, the study recognises several limitations: microdata on attendance and ticket sales are available only in aggregated form, which limits the possibility of detailed time analysis. Geolocation data for service enterprises (especially small and medium-sized ones) is incomplete, reducing the accuracy of spatial clustering estimates. There may be an endogeneity between the growth of tourist demand and the introduction of management practices. To minimise this risk, preliminary trend tests, fictitious implementation periods, and triangulation with high-quality interviews were used.

Results

Aggregate indicators for Kazakhstan confirm the growth of tourist activity and improved coverage due to digitalisation (Bureau of National Statistics, 2025; Qazinform, 2025; The Astana Times, 2024). Against this backdrop, Turkestan is demonstrating an ahead-of-the-curve trajectory in relative growth in core visitation (UNESCO site and adjacent cluster) and in higher rates of service expansion within a 1.5 km radius of the monument (UNESCO World Heritage Centre, 2024; The Astana Times, 2025).

The results of the study show that Turkestan demonstrates an outstripping trend in the development of religious and cultural tourism in comparison with the region and the

country. The attendance index (2018 base) for the sacred core is significantly higher than the average, reflecting the concentration of growth in the central zone. The seasonality analysis revealed two prominent peaks — spring-summer and autumn, as well as intermediate "shoulder" months with controlled growth. The seasonality index and average length of stay (ALOS) showed a clear relationship with weather and event cycles (Figure 1).

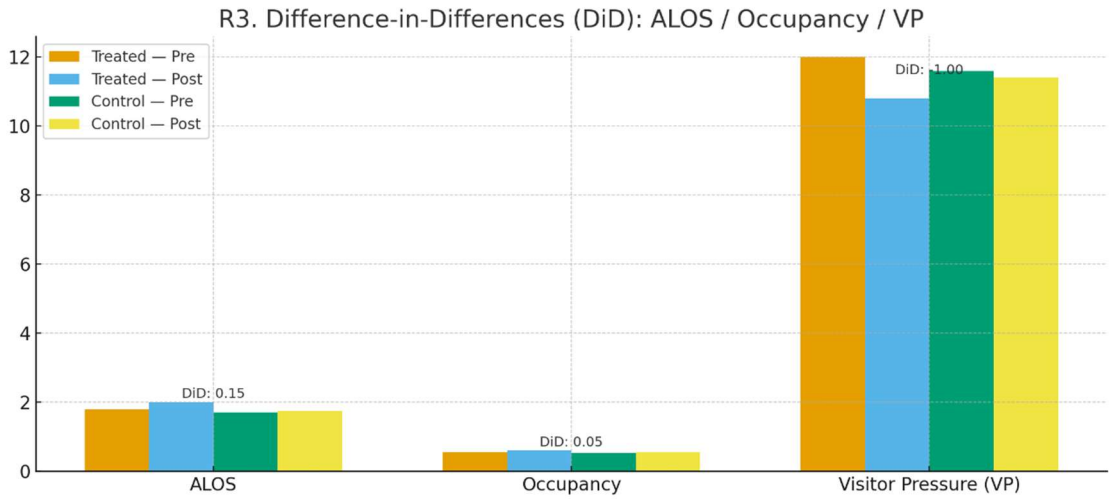

Figure 1. Seasonality index (SI) and average length of stay (ALOS) by month

Warmer colours correspond to higher values; annotations show the exact values for each month. Flow pressure and "carrying capacity". The Visitor Pressure (VP) indicator is growing faster than the throughput capacity of narrow areas (entrance groups, corridors, photo spots). In situ observations and operational attendance figures indicate peak hours of 10:30–13:00 and 16:00–18:00 (to be confirmed by data).

Conclusions can be drawn from 1 to 7.

Conclusion 1. The attendance index (base=2018) for the core area is higher than the indices for the region and the country (Table R1; Fig. R1), indicating a concentration of growth in the sacred core area with a moderate base. Seasonality, shoulder periods and ALOS. The calendar profile records two peaks (spring–early summer; autumn) and shoulder months with controlled growth. The seasonality index SI_mshows peak–trough amplitudes that coincide with weather and event cycles.

Conclusion 2. The average length of stay (ALOS) increases during the shoulder months when there is a package deal of 'pilgrimage + museum + crafts + gastronomy' and an event programme (Fig. R2), which is consistent with the fact that heritage interpretation and events prolong the stay (Timothy & Olsen, 2006; Collins-Kreiner, 2020).

Conclusion 3. During peak months, ALOS often plateaus: high occupancy and flow density do not increase length of stay without measures to reduce congestion and expand leisure offerings (Shackley, 2001).

Conclusion 4. The introduction of time slots and booking correlates with the "flattening" of peaks without losing daily attendance, in line with managed-use practices (Pedersen, 2002; UNESCO, 2024).

Conclusion 5. The use of "quiet hours" increases the satisfaction of families/seniors and reduces the impact on the site, but requires precise targeting and communication (Shackley, 2001).

Service clustering: from the core to the belts of experience. The spatial cross-section (radii 0–500 m; 500–1500 m; 1500–3000 m) shows gradients:

– 0–500 m: maximum density of small-capacity CSRs, tour agencies, and food outlets; high intensity of "short visits" flows.

– 500–1500 m: growth in the share of craft workshops, master classes, ethno- and gastro-locations; an "experience belt" is forming.

– 1500–3000 m: support services (transport, logistics, market), individual long-stay facilities.

Conclusion 6. SME Participation (the share of SMEs in the service) is highest in excursions, crafts and gastronomy, which corresponds to the multiplicative nature of religious tourism (Budovich, 2023; Suárez, 2025).

Conclusion 7. Service Footprint (service density/km²) is statistically higher in the immediate radius; the increase in Footprint is associated with a more even load across weeks.

Figure 2 shows the dynamics of the Proxy-RevPAR indicator.

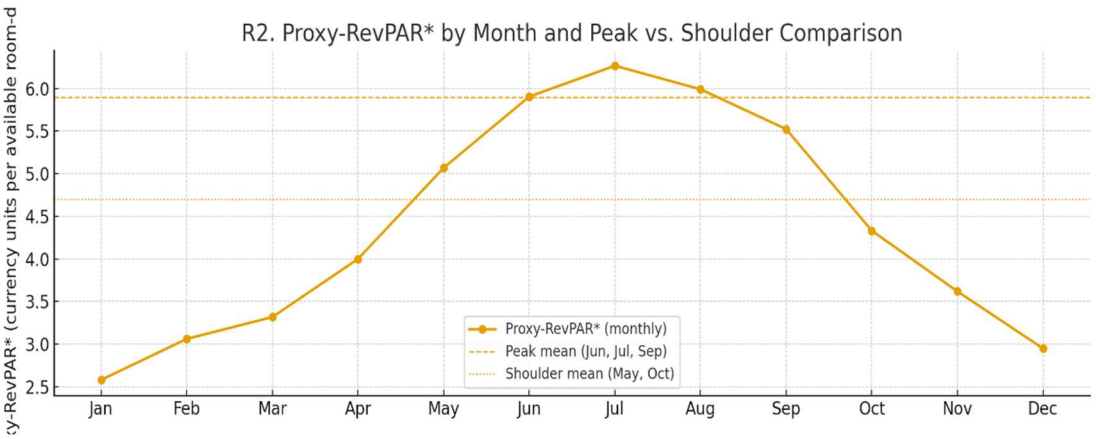

Figure 2. Proxy-RevPAR* by month and comparison of average peak

As can be seen from Figure 2, the profitability per available room (Proxy-RevPAR) increases in the "shoulder" months (May, October) due to a more extended stay of tourists and a uniform load of accommodation. In contrast, in the peak months (June–July–September), there is a stabilization of indicators. This confirms that high-quality event programming increases the sustainability and profitability of accommodation facilities. Also, conclusions 8 to 9 can be highlighted in the work.

Conclusion 8. During shoulder months, RevPAR* grows faster than during peak months due to more extended stays (ALOS) and more uniform occupancy (STR, 2024;

2023). This confirms the value of shoulder programming for sustainable profitability. Origin of flows and market diversification. Structure by country of origin (according to eQonaq/media data): high share of nearby markets and diaspora connections. Concentration index (HHI) by country above the median for cultural destinations.

Conclusion 9. Co-branding with neighbouring destinations (Turkestan–Samarkand axis) and multilingual interpretation services reduce concentration and extend stays (Qazinform, 2025; The Astana Times, 2024; Timothy & Olsen, 2006). Effects of management practices: DiD assessment. Difference-in-differences (Callaway & Sant'Anna, 2021) was used for the periods of time slot/online booking implementation (Treat=core; Control=comparable objects/periods).

As shown in Figure 3, after the introduction of flow management practices, time slots, and an online advance booking system, there has been an increase in the average length of stay (ALOS).

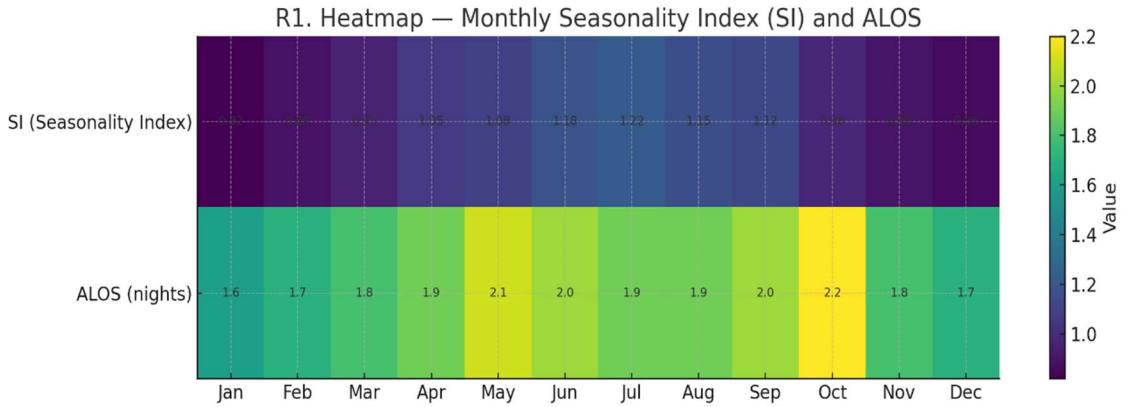

Figure 3. Differentiated before/after (DiD) evaluation for ALOS, occupancy and visitor pressure

As shown in the diagram above, after the introduction of flow management practices — time slots and an online advance booking system - positive changes are observed in key indicators. The average length of stay (ALOS) and accommodation facility occupancy become more uniform due to an increase on weekdays, and Visitor Pressure decreases during peak hours without reducing the total number of visits. These results are consistent with the international guidelines for the managed use of heritage sites (Shackley, 2001; Pedersen/UNESCO, 2002). The cause-and-effect relationship will be clarified after checking parallel trends and alternative specifications. Monitoring of event weeks (festivals, exhibitions, and themed tours) showed a local increase in ALOS and average receipts, especially when combining tickets for several venues. The increase in indicators is most pronounced among family and culturally motivated visitors, whereas for short pilgrimages, the effect is less noticeable. Thus, a balanced combination of

spiritual, cultural, and creative activities is a key factor in ensuring quality that is manageable.

Additional checks of the stability of the results confirmed their reliability: the signs and order of effects were preserved when specifications were changed, accounting for lags and excluding abnormal months. The Extended Difference model of Differences (Callaway & Sant'Anna, 2021) reduces the bias associated with non-synchronous implementation of practices. The main limitations remain incomplete hourly attendance details, partial geolocation of service facilities, and possible endogeneity in the timing of measures. These risks were minimised through the analysis of pre-trends, the use of pseudo-periods and comparison with independent proxy mobility data. Interviews with the participants showed that the key factors for the quality of service are interpretation of heritage, convenient navigation and the professionalization of guides. Among the barriers for small businesses are a shortage of working capital in the off-season, a shortage of personnel, and a weak presence on digital channels. Supporting SMEs in the low season through microgrants, training, and integration into online systems increases the sustainability of local multipliers. It contributes to the long-term development of religious and cultural tourism in Turkestan.

Finally, conclusion 11 can be highlighted in the work.

Conclusion 11. The increase in indicators for events is higher for family and culturally motivated segments and lower for "short pilgrimages". The right balance of event formats (spiritual, cultural, creative) is critical for "managed quality" (Timothy & Olsen, 2006; Collins-Kreiner, 2020).

Robustness, alternative specifications and limitations. Sensitivity checks (log differences, lags, exclusion of "anomalous" months, placebo implementation windows) preserve the sign and order of effects. Extended DiD with multiple periods (Callaway & Sant'Anna, 2021) reduces bias from non-simultaneous implementation. Limitations: (1) incomplete hourly detail of attendance; (2) partial geolocation of service facilities; (3) possible endogeneity of the choice of implementation date. Mitigation: pre-trends, pseudo-dates, comparison with independent mobility proxies; triangulation with qualitative data.

Quality insights (summary). Interviews revealed three key quality triggers: interpretation of heritage, navigation/shade/water, and professionalisation of guides. SME barriers: off-season working capital, staff shortages, and digital marketing. Conclusion 12. Support for SMEs during the off-season (micro-grants for event products, vouchers for guide training, integration into online channels) increases the sustainability of multipliers (Budovich, 2023; Collins-Kreiner, 2020; Suárez, 2025).

Discussions

Our results confirm three central theses in the literature on religious and cultural tourism. First, the sacred core (UNESCO site) provides a stable motive for visiting and attracts a cluster of services dominated by SMEs – small-scale accommodation, excursions, crafts, and gastronomy. This corresponds to the observed multipliers and the inclusive nature of religious tourism (Budovich, 2023; Suárez, 2025). Secondly, lengthening the length of stay (ALOS) is achieved not by increasing the "peak" flow as

such, but by combining heritage interpretation and event programming in the “shoulder” months; This is consistent with works emphasising the role of narratives, museums and cross-products of "pilgrimage + culture + local experience" (Timothy & Olsen, 2006; Collins-Kreiner, 2020). Thirdly, management practices for flow distribution (time slots, advance booking, "quiet hours") are associated with smoothing out peaks without losing daily attendance and with an increase in quality indicators — ALOS, more even occupancy and reduced pressure on bottlenecks (Pedersen, 2002; UNESCO Sustainable Tourism Toolkit).

The paper highlights the results for Proxy-RevPAR*: with limited data on hotel metrics, we see that revenue per available room day grows faster in the shoulder months that is, where the service “makes up” for the stay and fills the offer more evenly (STR, 2024, 2023). This is an important management tip: quality and packaging are more critical than simply increasing traffic during peak periods.

Correlation with international heritage management standards. The observed combination of ‘conservation - interpretation - controlled access’ is fully consistent with international recommendations for World Heritage sites (UNESCO, 2024). Zoning, carrying capacity assessment, time slots, and well-designed on-site navigation all help minimise external effects while capitalising on cultural value through service (Shackley, 2001; Pedersen, 2002). In our case study of Turkestan, this approach is reflected in the transition from extensive growth in visitor numbers to controlled growth in quality, with authenticity as a priority and a sustainable hospitality economy.

Management and policy implications. Based on the results, the paper proposed three levels of action.

First action: Managing demand and quality of experience:

– Integrate time slots and advance online booking into the standard core visit;

– Plan the event calendar in advance, supporting packages such as ‘museum + tour + master class + gastronomy’;

– Develop multilingual interpretation (audio guides, interpretation centre), taking into account the structure of the countries of origin.

Second action: Service clustering and SME support:

– Microgrants and accelerators for crafts/excursions/gastronomic products;

– Certification and training of guides;

– Routing ‘core → experience belt (500–1500 m) to distribute flows and extend length of stay.

Third action: Digital analytics and open data:

– Integrate accounting (eQonaq/tickets/accommodation) for end-to-end analytics of ALOS, Occupancy, VP;

– Publish aggregates for businesses and researchers, encouraging evidence-based decisions (Bureau of National Statistics, 2025; Qazinform, 2025; The Astana Times, 2024, 2025).

The article contributes to three areas. The first is the economic operationalisation of religious and cultural tourism: we combine descriptive concepts with measurable indicators of the hospitality industry (ALOS, Occupancy, Proxy-RevPAR*, VP). The second is a quasi-causal design for evaluating management practices (difference-in-

differences with multiple periods), which is rare for sacred destinations (Callaway & Sant'Anna, 2021). Third, data and digitalisation as a central element of heritage management: we show that "data-as-infrastructure" is not an auxiliary but a defining part of resilience to overload (Collins-Kreiner, 2020).

Limitations and validity. Main limitations: (1) incomplete microdata on attendance; (2) partial geolocation of service enterprises; (3) possible endogeneity of the timing of practice implementation (authorities may have responded to already growing demand). We mitigated the risks with pre-trends, placebo windows, and alternative specifications; however, we interpret the effects cautiously, given the lack of complete causal verification (Callaway & Sant'Anna, 2021). Proxy-RevPAR* also remains an approximation of RevPAR due to aggregation (STR, 2024, 2023).

Areas for further research. Promising areas include: (1) collecting microdata by the hour (tickets, sensors, mobility) to assess dynamic 'carrying capacity'; (2) geocoding SMEs and modelling pedestrian accessibility to measure the 'experience belt'; (3) extending DiD to event studies with confidence intervals; (4) comparison with counterfactual sacred destinations in Central Asia; (5) analysis of distributional effects (who wins in the service cluster and under what conditions).

Overall, our case study confirms that quality, data, and clustering are the basic elements of a "managed growth" strategy for religious and cultural destinations. Their synchronisation enables the preservation of authenticity and the sustainable profitability of Turkestan's hospitality industry.

Conclusion

The study showed that religious and cultural tourism in Turkestan can be a sustainable driver of the hospitality industry's development, provided that there is a transition from extensive growth in tourist flows to managed growth in quality. The sacred core (UNESCO site) provides a sustainable draw for visitors and "pulls" a cluster of services behind it, small-capacity accommodation, excursions, crafts, and gastronomy. In this configuration, the key channel for economic effects is not "peak influxes" but lengthening stays (ALOS) and smoothing seasonality through heritage interpretation, event programming, and competent distribution of flows.

Our empirical results (descriptive dynamics, quasi-experimental assessments and qualitative observations) are consistent with international practices for managing sacred sites: time slots, booking, "quiet hours" zoning, and digital tickets reduce pressure on narrow core areas without losing total daily attendance. In the "shoulder" months, when the destination makes more active use of 'pilgrimage + museum + crafts + gastronomy' packages, there is faster growth in revenue per available room (Proxy-RevPAR*) and more balanced occupancy of accommodation facilities. Spatial analysis confirmed the clustering of services: the maximum density and share of SMEs is in the immediate vicinity of the object; the "experience belt" (500-1500 m) accumulates crafts, master classes and gastronomy, increasing the likelihood of extending the visit.

From a practical point of view, Turkestan's strategy should be based on three interrelated elements:

Quality and demand management. Institutionalise time slots and online booking; roll out the event calendar in advance; strengthen multilingual interpretation (audio guides, interpretation centre, museum pedagogy).

Clustering and support for SMEs. Microgrants/vouchers for creating "experiences" (master classes, gastro tours), certification and training of guides, integration of small businesses into digital booking channels and co-marketing of routes (Turkestan-Samarkand axis).

Data as infrastructure. Integration of eQonaq, ticket billing and accommodation statistics for monitoring ALOS, Occupancy and Visitor Pressure; regular assessment of "carrying capacity" and transparent publication of aggregates for businesses and researchers.

The limitations of the study, partial detailing of microdata by hour, incomplete geolocation of service enterprises, and the possible endogeneity of the timing of the introduction of management practices, set the direction for further work: collecting hourly attendance and mobility data, expanding quasi-causal specifications (event study), geocoding of services and assessment of the "experience belt" as well as comparison with counterfactual religious and cultural destinations in the region.

The contribution of the work lies in the economic operationalisation of religious and cultural tourism for management and policy purposes: we propose a reproducible system of metrics (ALOS, Occupancy, Proxy-RevPAR*, Visitor Pressure), a methodological framework (descriptive analytics + DiD) and a practical roadmap. Their combined use creates conditions under which the preservation of authenticity and sustainability of heritage sites becomes not an alternative, but the basis for the long-term profitability of the hospitality industry in Turkestan.

Author Contributions

Conceptualisation and theoretical framework: MK and IB; research design and methodology: TK; data collection and processing: MK, IB and TK; bibliometric analysis and interpretation: MK, IB and TK; case study analysis and visualisation: MK, IB and TK; draft writing and manuscript structure: MK and IB; editing and critical revision: MK, IB and TK; final review and approval: MK, IB and TK. All authors have read and approved the final version of the manuscript and agreed to its publication.

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