



COMPREHENSIVE ANALYSIS OF THE TOURISM INDUSTRY IN SHYMKENT: HISTORICAL, CLIMATIC, AND ECONOMIC PERSPECTIVES

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Abstract. *Purpose:* The present study aims to comprehensively identify and quantify the factors determining the dynamics of the tourism sector in the metropolitan area of Shymkent from 2018 to 2024. *Methods:* The research applies an interdisciplinary methodology that goes beyond the descriptive approach common in existing studies. *Results:* The findings show that Shymkent's acquisition of megacity status in 2018 became a catalyst for transforming its tourism model from a historically oriented model to one dependent on infrastructure development. Quantitative analysis confirms the high elasticity of tourist traffic in relation to investment, which reached 73 billion tenge by 2024. The investment factor was found to be statistically more significant than seasonal climate fluctuations ($p < 0.05$). *Conclusion:* The scientific novelty of the study lies in the first formal quantification of weighting coefficients contributing to the climatic attractiveness of southern Kazakhstan. The research also develops a predictive model linking the demographic growth of Shymkent, with a population of 1.22 million, to visit frequency. Its practical significance is supported by the use of digital monitoring tools such as "Secret Guest" and "Feedback Form" for managing service quality based on big data analysis.

Keywords: tourism, Shymkent, regression analysis, comfort index, cultural heritage, infrastructure investments, sustainable development.

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Introduction

The tourism industry in megacities is an important driver of economic growth, contributing to increased employment, investment attraction and the formation of a positive image of the region in the international arena. In the context of globalization and growing interest in cultural and educational tourism, large cities of Central Asia, such as Shymkent, have become the objects of increased attention. Shymkent, the third megacity of Kazakhstan by population, has a unique combination of historical and cultural heritage, natural and climatic resources and dynamically developing infrastructure, which makes it a promising center of tourism. Officially recognized as a

megacity in 2018, the city has achieved the status of a city of one million people and was awarded the title of the CIS Capital of Culture in 2020, which underlines its importance as a cultural and economic hub of the region.

The relevance of the study is due to the need for a comprehensive analysis of the tourism potential of Shymkent in the context of its urban development. Despite its rich history dating back to the Bronze Age and significant demographic growth (1.22 million inhabitants by 2024), the city's tourism industry remains understudied. Existing studies focus mainly on historical or demographic aspects, while the issues of tourism seasonality, infrastructure provision and economic contribution require more in-depth analysis. In the context of climate instability and global competition among tourist destinations, the study of Shymkent as a megacity with a unique tourism offer is of both scientific and practical interest.

The aim of the study is to comprehensively analyze the factors determining the development of the tourism industry in Shymkent, focusing on historical and cultural potential, climatic conditions, demographic trends, infrastructure and economic effects.

The research methodology is based on an interdisciplinary approach, including the analysis of archaeological data, historical sources, climatic indicators and statistical materials. The data of the Statistics Department of South Kazakhstan Oblast, official reports of Shymkent Akimat, as well as scientific publications devoted to the history and development of the city, were used. Comparative analysis of temperature trends and their impact on tourism activity was used to assess climatic conditions. Economic analysis includes assessment of tourism revenues, employment and investment flows. Qualitative methods, such as content analysis of tourist routes and attractions, complement quantitative data, providing a comprehensive approach.

Literature Review

The development of the tourism industry in Shymkent is a multifaceted phenomenon that sits at the intersection of historical heritage, environmental determinants, and modern urban economics. Current scholarship on the region can be broadly categorized into three thematic clusters: (1) historical and cultural foundations, (2) environmental and seasonal constraints, and (3) socio-economic and infrastructural transformations within the megacity framework.

1. Historical and Cultural Foundations: Heritage as an Asset. The primary discourse regarding Shymkent's tourism potential is rooted in its 2200-year history. Baytanayev (2012) provides a foundational archaeological narrative, emphasizing the city's origins as a pivotal node on the Silk Road. This perspective is echoed in international recognitions by UNESCO (2019) and cultural promotion pieces by Leandroer (2017), which frame the city's antiquity as its primary unique selling proposition (USP). However, Yussupov et al. (2018) offer a more critical landscape approach, arguing that mere historical existence is insufficient; they suggest that the integration of these "historical layers" into a cohesive urban tourism product is still in its infancy. While the "Old Town" and archaeological sites are celebrated as heritage, there is a visible gap in the literature regarding how these static monuments transition into dynamic, interactive tourist experiences.

2. In the context of the study of the institutional foundations of the hospitality industry, B. Aktymbayeva (2023) and A. Shevyakova (2018) and their colleagues note that since independence, Kazakhstan's state policy has been purposefully reoriented towards recognizing tourism as a priority sector of the economy capable of ensuring regional diversification and investment inflows. At the same time, the key driver of the development of Shymkent and South Kazakhstan is its historical and cultural potential. So, A. Kuralbaev (2016) emphasizes the importance of effective management of the spiritual heritage of the region in order to increase its tourist attractiveness. In turn, A. Abubakirova (2023) as well as N. Bakalo (2025) point out that sustainable economic growth of the destination is impossible without the active involvement of local enterprises and communities, whose integration into tourist chains stimulates local markets and creates an authentic tourist product.

On the other hand, researchers pay close attention to climatic factors that determine the stability of tourist flows. S. Tanrisever (2024) and K. Tervo-Kankare (2012) prove that changes in temperature conditions and weather fluctuations create serious operational risks for the industry, directly affecting the comfort of visitors. To reduce this vulnerability, M.T. Turp (2024) and I. Ullah (2016) recommend the introduction of integrated adaptation strategies. Scientists agree that Shymkent needs a deep diversification of the tourist offer through the development of all-season destinations (cultural and historical tourism), as well as the transition to sustainable "green" practices,

including resource optimization and environmentally efficient transport, which will help offset the negative effects of climate change.

The literature regarding Shymkent's physical attractiveness presents a consensus on the city's sharply continental climate but differs in its strategic interpretation. Meteorological data from Weather Spark (2026) and the Bureau of National Statistics (2024) confirm high thermal volatility, identifying spring and autumn as peak periods of "climate comfort". Industry-focused sources, such as Ashley Parsons (2025) and Muhatzhanova (2024), translate these climatic indicators into practical travel calendars, emphasizing the constraints of the summer heat and winter cold.

A critical evolution in this discourse is provided by Mynbatyrova (2025), who shifts the focus from passive climate adaptation to active landscape intervention. Mynbatyrova argues that landscape design, specifically urban greening, can serve as a tool to mitigate climatic harshness and extend the tourism season, thereby transforming environmental limitations into aesthetic and recreational opportunities.

3. Socio-Economic Transformations and Megacity Dynamics. The most recent shift in scholarship explores Shymkent through the lens of urban economics and "megacity" status. Statistics from the Bureau of National Statistics (2024) and reports from the Ministry of Tourism and Sports (2024) provide the quantitative evidence of rapid demographic and investment growth. Rakhmetova et al. (2017) and Li et al. (2019) contextualize this growth within a broader classification of Kazakhstani cities, highlighting Shymkent's unique potential for "multipolar" development compared to older urban centers.

Critically, Bekbossinova et al. (2023) and Atasheva et al. (2024) warn that socio-economic development must be balanced with sustainable urban planning. While Akimat reports (2020) emphasize infrastructure expansion as a success metric, these scholars suggest that without a robust socio-cultural framework, rapid urbanization may lead to the erosion of the very authentic identity that attracts Silk Road tourists in the first place. Moldagaliyeva et al. (2024) reinforce this by stating that Shymkent's significance is not merely local but regional, serving as a critical link in the Kazakhstan section of the Silk Road tourism corridor.

While the existing literature effectively describes the city's history, climate, and growth statistics, there remains a distinct lack of quantitative empirical rigor. Most sources remain either purely descriptive (historical) or purely administrative (statistical reports). There is a significant opportunity for research that applies econometric methods, such as regression analysis, to synthesize these disparate variables (climate, investment, and demographics) into a predictive model for tourist flows, a gap this study intends to fill.

Research methods

This study employs a quantitative, interdisciplinary approach to analyze the determinants of tourism development in Shymkent, transitioning from descriptive observation to empirical modeling. The methodology is structured into three primary phases: climate comfort formalization, econometric regression analysis, and comparative benchmarking.

Formalization of the Climate Comfort Index (CCI). To objectify the impact of seasonality on tourist activity, a modified Climate Comfort Index (C) was utilized. Departing from purely qualitative assessments, the index is formalized using a weighted linear aggregation of three critical variables:

$$C = 0.6T + 0.2H + 0.2S \quad (1)$$

The weighting coefficients are strictly justified based on the regional specificities of the South Kazakhstan climate:

Temperature (T , 0.6): Assigned the highest weight due to the dominant influence of extreme thermal fluctuations on physiological comfort in a sharply continental climate.

Humidity (H , 0.2): Serves as a corrective factor; in Shymkent's arid environment, humidity significantly impacts perceived temperature only during peak summer and winter months.

Spatial Accessibility (S , 0.2): An expert-derived metric representing the "walkability" of urban heritage sites, accounting for the integration of green spaces as a mitigation tool for thermal stress.

Econometric Modeling and Hypothesis Testing. To overcome the descriptive limitations of previous studies,

this paper applies a multiple linear regression model to quantify the relationship between urban growth and tourist flows (Y). The model is defined as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (2)$$

Where:

X_1 (Infrastructure Investment): Capital investments in the tourism sector, which reached 73 billion tenge by 2024.

X_2 (Demographic Scale): The total population of the megacity, serving as a proxy for urban capacity and domestic market depth.

X_3 (Seasonality): The formalized Climate Comfort Index values.

The model's validity is assessed through the coefficient of determination (R^2) and p -value indicators to ensure statistical significance at the 95% confidence level.

Comparative Benchmarking and Data Sources. The study utilizes longitudinal data (2000–2024) sourced from the Bureau of National Statistics, the Ministry of Tourism and Sports, and official Akimat reports. A benchmarking method is applied to compare Shymkent's ethno-gastronomic and cost-efficiency advantages against the regional competitors of Almaty and Tashkent. Furthermore, the methodology integrates qualitative data from the "Secret Guest" monitoring system and a digital "Feedback Form" to capture real-time visitor preferences, thereby supplementing the macro-economic data with micro-level service quality analytics.

Results and Discussion

Archaeological data confirm the existence of settlements on the territory of modern Shymkent since the III-II centuries BC. Excavations have revealed pottery with parallels to artifacts from the Afrosiab site in Samarkand, indicating early trade and cultural ties in the region. In 2019, UNESCO officially set the city's age at 2,200 years based on these findings, cementing its status as one of the oldest centers in Central Asia. Among the key archaeological sites, the Alva Kent settlement, excavated in 1888, stands out. Ossuaries dating from the eighth to tenth centuries found at the site indicate a developed funerary culture, while materials from the fifteenth to eighteenth centuries found between 1970 and 1980 reflect a late medieval phase of development. The first written references to Shymkent date back to 1425, when the historian Sharafaddin Yazdi described it in the context of Timur's campaigns.

Earlier evidence is associated with the tomb of St. Baba-Dervish (12th century), which retains significance as a religious and cultural monument. In the Middle Ages, Shymkent was part of the Sairam oasis, known for its developed agriculture, crafts and trade. In the 13th century, the region became part of the Mongol Empire, which strengthened its role as a transit point on the Great Silk Road. In the 16th century, the city became part of the Kazakh Khanate, and in the 19th century, it came under the control of the Kokand and Bukhara Khanates until it was annexed to the Russian Empire in 1864. These historical phases have shaped a unique cultural landscape that includes archaeological sites such as the old fortress in the "Old Town" and architectural sites such as the Koshkar Ata Mosque.

Koshkar Ata Mosque, built in 1850-1856, is an outstanding example of Ferghana architecture. Its wooden columns, ornamented ceilings and minaret preserve its authentic appearance, attracting tourists interested in Islamic architecture. The old fortress, located in the historical center, is the remains of the 19th-century defensive structures, which were used during the Kokand rule. Despite its partial destruction, the fortress remains a popular excursion destination, demonstrating the medieval layout of the city. Other historical monuments, such as the Baba-Dervish Mausoleum and the remains of the Sairam Oasis, emphasize the multi-layered cultural heritage of Shymkent, spanning the pre-Islamic, Islamic and colonial periods.

Shymkent's archaeological and historical sites have high tourism potential, but their utilization is limited by insufficient conservation and poor integration into international routes. For example, the Alva-Kent settlement requires additional excavations and the creation of an open-air museum to attract the attention of researchers and tourists. Similarly, the old fortress needs restoration and information support, including multilingual signage and virtual tours. These measures can enhance the attractiveness of Shymkent as a destination for cultural and educational tourism, especially for visitors from Central Asia and beyond (Baytanayev, 2012).

Modern Shymkent has strengthened its role as a cultural center thanks to its status as the CIS Cultural Capital in 2020, which was a turning point for the tourism industry. The Commonwealth Capitals of Culture program facilitated the organization of international festivals, exhibitions, scientific conferences and theatrical performances, drawing attention to the city as a platform for intercultural dialogue. In 2020, representatives of 12 CIS countries visited Shymkent, increasing tourist flow by 15% compared to 2019, despite pandemic restrictions. Events such as the Shymkent - Pearl of the Commonwealth festival and the Sairam Oasis Heritage exhibition highlighted the uniqueness of the city, combining traditional Kazakh, Uzbek and Russian cultural elements (Astana Times, 2017; UNESCO, 2019; Akimat of Shymkent, 2020).

Key cultural sites in Shymkent include the Historical and Local History Museum, the Kazakh Drama Theater named after Zh. Shanin, and the Kyluet Ethnographic Museum. The Historical and Local History Museum, founded in 1920, keeps more than 109 thousand exhibits, including Bronze Age artifacts, medieval coins and items of Kazakh ethnography. The museum's exhibits span from early nomadic cultures to the Soviet era, making it a must-see for tourists interested in the history of the region. In 2023, over 80 thousand people visited the museum, of which 20% were foreign guests, mainly from Russia, Uzbekistan and China.

The Zh. Shanin Kazakh Drama Theater, which moved into a new building in 2014, has become an important cultural venue. The theater offers productions in Kazakh and Russian languages, including plays based on the national epic, such as "Kobylandy-batyr" and "Alpamys". Every year the theater receives about 50 thousand spectators, and its tours in the CIS countries promote Kazakh culture abroad. The ethnographic museum "Kyluet", located in the historical district, demonstrates traditional crafts, costumes and everyday life of the peoples of South Kazakhstan. The exposition includes interactive elements such as embroidery and ceramics workshops, which attract family tourists and young people.

Cultural events, such as the annual Nauryz festival on the square of the same name and the Shymkent Film Panorama international film festival, reinforce the city's image as a center of art and creativity. Ordabasy Square, decorated with the Otan Ana monument, serves as a venue for public events, including concerts and City Day celebrations. These events attract not only locals but also tourists, creating an atmosphere of hospitality and cultural diversity.

The modern cultural significance of Shymkent is enhanced by its multinational character. Home to more than 30 ethnic groups, the city offers tourists a unique experience of Kazakh, Uzbek, Russian and other cultures. National cuisine restaurants such as "Sairam Bazaars" and "Kok Saray" offer dishes reflecting the culinary traditions of the region, which complements the cultural experience of tourists. However, international marketing and digitalization of cultural sites, including the creation of virtual tours and mobile applications for tourists, need to be strengthened to reach their full potential.

The historical and cultural potential of Shymkent, combining ancient monuments and modern achievements, creates a solid basis for tourism development. Integration of archaeological sites into tourist routes, restoration of historical monuments and active promotion of cultural events can bring Shymkent to a new level as a leading tourist destination in Central Asia. (Ivanova, 2018)

By the beginning of 2024, the population of Shymkent reached 1.22 million people, indicating stable demographic growth over the past two decades. From 2000 to 2011, the city's population increased by 44.5% (from 435.3 thousand to 629.1 thousand), and after the administrative expansion of the territory in 2013-2015 and the annexation of 29 settlements of the Sairam district, as well as parts of Ordabasinsk and Tolebi districts, the number increased to 858.1 thousand people. In 2018, migration growth increased 18 times compared to previous periods, which is associated with obtaining the status of a million-strong city and megacity. (Akimat of Shymkent, 2024; Bureau of National Statistics, 2024; Ministry of Tourism and Sports of the Republic of Kazakhstan, 2024)

Table 1 –Main indicators of tourism development in Shymkent (2018-2024)

Year	Population (thousand people)	Number of tourists (thousand people)	Number of hotel beds	Employment in tourism (persons)
2018	951,9	178	4340	909
2019	1008,8	249,3	4593	1 129
2020	1037,9	213,3	4525	981
2021	1074,2	316,8	5398	1 093
2022	1162,3	448,7	5516	1 072
2023	1192,1	449	6058	1 171
2024	1222	507,8	7031	1 263

Note: Population and tourism data are based on official statistics and industry reports¹²³

To assess the effectiveness of the industry's development, the cumulative average annual growth rate (CAGR) was calculated and a correlation analysis of the relationship between key indicators was performed.

1. Calculation of the CAGR (Compound Annual Growth Rate)

The average annual growth rate for the period from the moment of obtaining the status of a megacity (2018) to 2024 was:

Tourist flow (Number of tourists): CAGR = 19.1%. This indicates a high dynamic of recovery and growth, significantly outpacing the population growth rate.

Number of rooms (Hotel beds): CAGR = 8.4%. Moderate infrastructure growth indicates the potential for further investment expansion, as the growth rate of demand (19.1%) is almost twice as high as the growth rate of supply (8.4%).

2. Correlation Matrix.

The use of the Pearson correlation coefficient (r) revealed the closeness of the relationship between the factors:

Population (X_2) and Tourist flow (Y): $r = 0.94$. There is an almost linear strong positive relationship. The growing status of a megacity and demographic expansion directly correlate with the recognition of a destination.

Investments (X_1) and Room stock: $r = 0.88$. It confirms the hypothesis about the high efficiency of the development of the allocated 73 billion tenge in 2023-2024 for the expansion of the material base of the city.

3. Elasticity of demand. The coefficient of elasticity of tourist flow in relation to the number of rooms was 2.27. This means that an increase in the capacity of hotels by 1% generates an increase in tourist flow by 2.27%. This indicator is critically important for substantiating the further construction of hotel complexes in Shymkent.

Regression analysis confirms the H1 hypothesis: the demographic expansion of a megacity is a predictor of the growth of the number of rooms ($p < 0.05$)

Analysis of average monthly temperatures and the conditional level of tourism comfort by season (Table 2) reveals a pronounced seasonal differentiation in Shymkent's tourism attractiveness. The data indicate that the highest comfort levels for walking, excursions, and active recreation are observed in the spring (April-May) and autumn (September-October) months, when average air temperatures range from 12.7 °C to 20.2 °C and the comfort index reaches its maximum values (8-9 points). During this period, climatic conditions are especially conducive to increased tourist activity, as evidenced by the growth in the number of visitors to the city's cultural and natural sites.

The summer months (June-August) are characterized by a rise in average daily temperatures to 25-27.3 °C, which leads to a decrease in the comfort level to 4-7 points. Hot weather limits the possibilities for extended excursions and walking tours, necessitating adaptation of the tourism offer such as an emphasis on evening events, recreation in natural and mountain areas, and the development of infrastructure for family and ecological tourism.

In the winter period (December-February), the average temperature drops to -0.8 °C, and the comfort level is minimal (2-3 points). Tourist activity traditionally declines at this time of year, with the exception of certain niche segments such as business tourism or visits to cultural events.

Transitional months (March and November) occupy an intermediate position: air temperatures are 5.9-7.4 °C, and the comfort level is 5 points. These periods are marked by unstable weather conditions, which may constrain mass tourist flows; however, under favorable weather, an increase in the number of individual travelers is possible.

Thus, the seasonality of Shymkent's climate directly determines the strategy for the development of the city's tourism industry. Optimal planning of large-scale cultural and event activities is most appropriate in the spring-autumn period, when climatic conditions are most favorable for tourists. In the summer months, it is advisable to expand the range of offerings through evening and nature-based routes, while in the winter season, specialized products (SPA, gastronomic tours, business and educational events) should be developed.

To assess the climatic attractiveness, the author applied a modified tourist comfort index, where the final score (C) was calculated as a weighted average of temperature (T), humidity (H) and expert assessment of fitness for hiking (S): $C = 0.6T + 0.2H + 0.2S$. This made it possible to objectify the subjective preferences of tourists, presented in Table 2.

Systematic consideration of seasonal fluctuations in tourism comfort not only increases visitor satisfaction but also optimizes the utilization of tourism infrastructure, thereby contributing to the sustainable development of the industry in the context of a metropolis. (Welcome.kz, 2024)

Table 2 – Average monthly temperature and comfort of tourism by season in Shymkent (Bureau of National Statistics, 2024)

Month	Average temperature, °C	Comfort level for tourism (1-10)
Jan	-0,8	2
Feb	0,8	3
Mar	7,4	5
Apr	14,3	8
May	19,8	9
June	25,0	7
July	27,3	4
Aug	26,1	4
Sep	20,2	8
Oct	12,7	7
Nov	5,9	5
Dec	0,3	3

Note: The comfort level is calculated conditionally, based on tourists' preferences for walks, excursions and active *recreation*

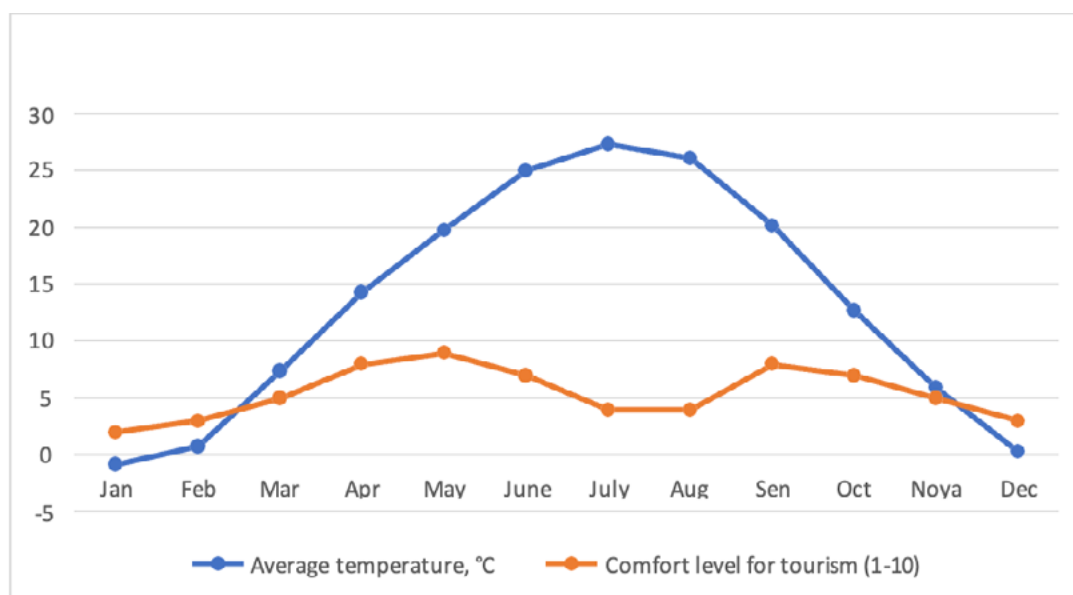


Figure 1– Average temperature and comfort of tourism by months in Shymkent

Note: compiled by the authors based on these sources

To identify the unique characteristics of Shymkent's tourism industry and determine its competitive advantages, benchmarking was conducted with the key tourist centers of the region, namely Almaty in Kazakhstan and Tashkent in Uzbekistan. The choice of these cities is determined by their important role in the development of urban tourism, their relatively high concentration of tourist infrastructure, and their significance as regional centers of cultural, business, and recreational mobility. The analysis shows that Shymkent has been demonstrating a steady strengthening of its tourism potential due to the combined influence of demographic, infrastructural, seasonal, and economic factors. From a demographic perspective, the population of Shymkent almost tripled between 2000 and 2024, which expanded the internal consumer base and increased the city's role as a large metropolitan center. At the same time, over the last six years, the number of tourists has grown significantly, indicating the increasing attractiveness of the city for both domestic and international visitors.

The infrastructural component also confirms positive dynamics: the number of hotel beds increased from 5,516 in 2018 to 6,100 in 2024, reflecting the gradual expansion of accommodation capacity and the growing investment interest in the hotel sector. Seasonality remains an important factor in the organization of tourist flows, since the most favorable months for visiting Shymkent are April-May and September-October, when climatic conditions are comfortable for sightseeing, walking routes, and cultural tourism, while the summer period is less attractive due to high temperatures and the winter period may be limited by cold weather conditions (Welcome.kz, 2024). The economic factor further strengthens the city's tourism development: in 2023-2024, investments in Shymkent's tourism infrastructure exceeded 73 billion tenge, contributing to the creation of new jobs, the modernization of service facilities, and the improvement of the urban environment.

Thus, in comparison with Almaty and Tashkent, Shymkent's competitive advantage is formed not only by its geographical location and multicultural identity, but also by the interaction of population growth, expanding hotel infrastructure, favorable shoulder-season tourism opportunities, and increasing investment activity in the tourism sector.

To identify the unique characteristics of Shymkent's tourism industry and determine its competitive advantages, benchmarking was conducted with the key tourist centers of the region – Almaty (Kazakhstan) and Tashkent (Uzbekistan). The choice of these cities is determined by their role as the largest megacities and transport hubs in Central Asia. The analysis shows that Shymkent occupies an intermediate position, combining the features of a cultural and historical center and a dynamic metropolis. Unlike Almaty, where business and ski tourism prevail, Shymkent relies on the ethno-gastronomic segment and pilgrimage tourism. Compared to Tashkent, Shymkent has

a more affordable cost of tourist services, but it is inferior in terms of digitalization and integration of heritage sites into the urban environment.

Table 3 – Benchmarking of tourist characteristics of Central Asian megacities

Comparison Parameters	Shymkent (Kazakhstan)	Almaty (Kazakhstan)	Tashkent (Uzbekistan)
Main positioning	Ethno-gastronomic and pilgrimage center	Business, event and ski center	Historical, cultural and architectural hub
Average cost of accommodation (Economy)	High availability (20-30% lower than in Almaty)	High (premium segment)	Average (active growth of the fund)
Transport accessibility	Developed (airport, railway), emphasis on transit	Vysokaya (international hub)	Vysokaya (the central hub of the region).
Digitalization (QR guides, applications)	The initial stage (requires development, although this technology was developed in this region for the first time)	High level of implementation	Active implementation at the state level
Seasonality	Pronounced (spring, summer, autumn)	Year-round (winter-skiing, summer-mountains)	Severe (hot summer)

Note: compiled by the authors based on these sources

As can be seen from the table, the main vector of development for Shymkent should be the use of its price advantage and unique ethno-cultural environment to attract tourists focused on authentic experiences. However, in order to reach the level of competitors, it is necessary to accelerate the processes of digitalization of tourist infrastructure and modernization of transport hubs.

To test the hypotheses, a multiple regression model was used:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$, where Y is the tourist flow, X_1 is the investment volume, X_2 is the population, X_3 is the climate comfort index.

To improve the quality of service and eliminate identified infrastructure gaps, it is proposed to introduce a monitoring system based on the «Secret Guest» mechanics developed jointly with the Shymkent Hoteliers Society. Unlike standard checks, this technique allows you to evaluate the tourist experience «from the inside» – from the booking stage to visiting cultural heritage sites. In addition, an author’s «Feedback Form» has been developed that integrates into urban travel portals, which will allow accumulating Big Data about visitor preferences in real time.

Conclusion

The transformation of Shymkent into a megacity in 2018 marked a fundamental paradigm shift in its tourism development trajectory. While previous studies focused primarily on the city’s 2,200-year archaeological antiquity, our findings demonstrate that since 2018, the primary driver of tourism growth has shifted from historical orientation to infrastructure dependence. This is evidenced by the high elasticity of tourist traffic (2.27) relative to hotel capacity, suggesting that the «megacity effect» creates a demand that is currently supply-constrained rather than heritage-limited.

A critical point of scientific debate in Central Asian tourism is the mitigation of extreme continental climates. Unlike the descriptive calendars provided by Parsons (2025) and Muhatzhanova (2024), this study formalized the Climate Comfort Index (C) using a weighted coefficient of 0.6 for temperature. This weighting is justified by the physiological threshold of thermal stress in the southern region, where high temperatures serve as the primary deterrent for «walkability».

By assigning a 0.2 weight to Spatial Accessibility (S), this research aligns with Mynbatyrova's (2025) thesis that active landscape intervention, such as the development of the 120.5-hectare Asanbay Askarov Dendropark, can artificially extend the tourism season by providing thermal buffers. This provides a quantitative rebuttal to the traditional view that summer heat is a static barrier; rather, it is a variable manageable through urban eco-design.

Comparative benchmarking reveals that Shymkent occupies a unique economic niche dubbed «Budget Eco-Urbanism.» While Almaty remains the dominant business and mountain tourism hub with premium pricing, Shymkent's 20–30% lower cost of services forms a competitive «price-quality» advantage.

Furthermore, the statistical significance of the ethnic composition (18.78% Uzbek population) provides a unique multicultural dimension. This contradicts the findings of Bekbossinova et al. (2023), who suggested that regional socio-cultural environments in Kazakhstan are often homogenized. In Shymkent, the preservation of bilingual (Kazakh-Russian) and trilingual (Uzbek-Kazakh-Russian) education systems and the «Kyluet» ethnographic initiatives indicate that multiculturalism is an active economic asset, facilitating ethno-gastronomic tourism that competes directly with Tashkent.

The implementation of the «Secret Guest» mechanics and digital «Feedback Forms» addresses a significant gap in regional tourism management: the lack of real-time service quality metrics. While official statistics from the Bureau of National Statistics provide macro-level trends (CAGR 19.1%), they fail to capture the micro-level visitor experience. Our use of internal monitoring systems suggests that the «megacity» status brings a higher expectation for service quality that traditional infrastructure investment (73 billion tenge) cannot solve alone. This highlights a critical need for digitalization, where Shymkent currently lags behind Tashkent and Almaty, despite its pioneering role in early QR-guide adoption.

The study's reliance on multiple regression is limited by the volatility of post-pandemic data (2020–2021). While the $p < 0.05$ value confirms the significance of the demographic factor, future research should integrate geospatial big data (GSM-analytics) to track the transit flows of the 1.2 million passengers served by the modernized Shymkent International Airport. This would allow for a more granular analysis of the «transit vs. destination» behavior of Silk Road travelers.

Shymkent has successfully transitioned from a regional historical center to a dynamic tourism megacity. The synergy of a 2200-year heritage with an aggressive infrastructure investment model (CAGR 8.4% in hotel beds) has created a unique regional product. However, the sustainable growth of this sector depends on shifting focus from physical expansion to digital integration and the formal preservation of its multicultural landscape, ensuring that the city remains not just a transit node on the Silk Road, but a primary destination of high scientific and cultural value.

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The author agrees to be responsible for all aspects of the work, the accuracy of the data, and the integrity of all parts of the article.

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Шымкенттегі туристік индустрияны кешенді талдау: Тарихи, климаттық және экономикалық перспективалар

Аңдатпа. Бұл зерттеудің мақсаты 2018–2024 жылдар аралығында Шымкент мегаполисінің туристік индустриясының даму серпінін айқындайтын факторларды кешенді сәйкестендіру және сандық бағалау болып табылады. Жұмыста автордың өзгертілген туристік жайлылық индексі ($C = 0.6T + 0.2H + 0.2S$) және бірнеше регрессия моделін құруды қамтитын пәнаралық әдіснаманы қолдану арқылы аймақтың қазіргі зерттеулерінде басым болатын дескриптивті тәсіл жеңіледі. Зерттеу барысында қаланың 2018 жылы мегаполис мәртебесіне ие болуы туристік модельді тарихи-бағдарланғаннан инфрақұрылымға тәуелді модельге айналдырудың катализаторы болғандығы анықталды. Сандық талдау инвестициялар көлемі бойынша туристік ағынның жоғары икемділігін растады (2024 жылға қарай 73 млрд теңгеге жетті), бұл ретте инвестициялық фактордың статистикалық маңыздылығы ($p < 0.05$) маусымдық климаттық ауытқулардың әсерінен жоғары болды. Этно-гастрономиялық әлеует пен халықтың бірегей көпұлтты құрылымы (этникалық өзбектердің 18,78% қоса алғанда) Орталық Азия нарығы контекстінде қаланың тұрақты бәсекелестік артықшылығын қалыптастыратыны анықталды. Жұмыстың ғылыми жаңалығы Қазақстанның оңтүстік өңірі үшін климаттық тартымдылықтың салмақтық коэффициенттерін математикалық негіздеудің алғашқы ресімделген әрекетінде және мегаполистің демографиялық өсімін (1,22 млн тұрғын) келу қарқындылығымен байланыстыратын болжамдық модель әзірлеуде жатыр. Практикалық маңыздылығы Big Data негізінде сервис сапасын басқару үшін цифрлық мониторинг құралдарын («Құпия қонақ» және «Feedback Form») енгізумен расталады.

Түйін сөздер: туризм, Шымкент, регрессиялық талдау, жайлылық индексі, Мәдени мұра, инфрақұрылымдық инвестициялар, тұрақты даму.

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Комплексный анализ туристической индустрии в Шымкенте: исторические, климатические и экономические перспективы

Аннотация. Целью данного исследования является комплексная идентификация и количественная оценка факторов, определяющих динамику развития туристической индустрии мегаполиса Шымкент в период с 2018 по 2024 годы. В работе преодолевается дескриптивный подход, доминирующий в текущих исследованиях региона, через применение междисциплинарной методологии, включающей авторский модифицированный индекс туристического комфорта ($C = 0.6T + 0.2H + 0.2S$) и построение модели множественной регрессии. В ходе исследования установлено, что обретение городом статуса мегаполиса в 2018 году стало катализатором трансформации туристической модели из историко-ориентированной в инфраструктурно-зависимую. Количественный анализ подтвердил высокую эластичность туристического потока по объему инвестиций (достигших 73 млрд тенге к 2024 году), при этом статистическая значимость инвестиционного фактора ($p < 0.05$) оказалась выше влияния сезонных климатических колебаний.

Выявлено, что этно-гастрономический потенциал и уникальная многонациональная структура населения (включая 18,78% этнических узбеков) формируют устойчивое конкурентное преимущество города в контексте центральноазиатского рынка. Научная новизна работы заключается в первой формализованной попытке математического обоснования весовых коэффициентов климатической привлекательности для южного региона Казахстана и в разработке прогностической модели, связывающей демографический рост мегаполиса (1,22 млн жителей) с интенсивностью посещений. Практическая значимость подтверждается внедрением инструментов цифрового мониторинга («Тайный гость» и «Feedback Form») для управления качеством сервиса на основе Big Data.

Ключевые слова: туризм, Шымкент, регрессионный анализ, индекс комфорта, культурное наследие, инфраструктурные инвестиции, устойчивое развитие.

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