Received on: 12 February 2025 **Revised on: 06 March 2025** **Published: 30 March 2025**

RESEARCH ARTICLE
DOI: 10.47703/ejebs.v69i1.466

Econometric Analysis of the Tourist Flow in Kazakhstan: Trends, Factors and Forecasts

Saule G. Serikbayeva[1] | **Zhaxylyk M. Akimov**[2]* | **Sandugash Bissariyeva**[3] | **Mauye Anuarkhan**[3] | **Gulzhazira D. Kenzhebayeva**[4]

[1] Almaty Technological University, Almaty, Kazakhstan
[2] International Kazakh-Turkish University named after Khoja Ahmed Yassawi. Turkestan, Kazakhstan
[3] Kazakh Ablai Khan University of International Relations and World Languages. Almaty, Kazakhstan
[4] K. Zhubanov Aktobe Regional University, Aktobe, Kazakhstan.

Corresponding author:
***Zhaxylyk M.Akimov** - International Kazakh-Turkish University named after Khoja Ahmed Yassawi. Turkestan, Kazakhstan.
Email: akimov404@mail.ru

How to cite this article:
Serikbayeva, S.G., Akimov, Zh.M., Bissariyeva, S., Anuarkhan, M. & Kenzhebayeva, G.D. (2025). Econometric Analysis of the Tourist Flow in Kazakhstan: Trends, Factors and Forecasts. Eurasian Journal of Economic and Business Studies, 69(1), 47-63.

Conflict of interest:
author(s) declare that there is no conflict of interest.

ABSTRACT

Tourism is an important economic sector that has a multiplier effect on employment, investment, and infrastructure development. However, tourist flows are subject to significant fluctuations caused by external and internal factors. This study aims to analyze the dynamics of tourist flow in Kazakhstan, identify key factors influencing the sector's profitability, and forecast its future development. Research methods include econometric analysis, studying the elasticity of demand, the sensitivity of tourism revenues to various factors, and forecasting the future state of the industry using the Markov model. The results showed that the tourist flow in Kazakhstan is characterized by high variability. The elasticity analysis revealed that a 1% decrease in air ticket prices increases the number of tourists by 0.75-11.3% over the years. Elasticity analysis showed that changes in airfare prices affect the number of tourists, and income sensitivity helped to identify which parameters – the number of tourists, the cost of accommodation, or the number of international flights – have the most significant impact on the financial sustainability of the industry. The forecast showed a 73.5% probability of tourism growth in 2024-2025 but a possible decrease after 2026. The results showed that the tourist flow in Kazakhstan is characterized by high variability, is subject to seasonal and crisis fluctuations, and requires a systematic approach to management. Future research may focus on developing strategies to reduce tourism's dependence on external crises and create mechanisms to ensure its sustainable development.

KEYWORDS: Tourism, International Tourism, Tourism Business, Seasonal Fluctuation, Global Economy, Economic Growth

SCSTI: 06.71.57

JEL Code: C53 L83 Z32

FINANCIAL SUPPORT: The study was not sponsored.

1. INTRODUCTION

Tourism is one of the leading sectors of the global economy, ranking third among the most significant export categories after fuel and chemical products. Its contribution to global GDP in the pre-COVID period was 10.4%, and international tourist flows reached 1.5 billion people. Tourism is an important sector of the economy worldwide, contributing to GDP growth, job creation, and infrastructure development. It is essential for developing countries, where tourism provides an influx of foreign currency and contributes to economic growth, but its potential has not yet been fully realized.

Tourism has a multiplier effect on related industries such as transport, hospitality, and retail. One of tourism's most important aspects is its environmental impact. High energy consumption levels, CO2 emissions, and an increase in anthropogenic load accompany tourism activity. Research shows that tourism is directly related to greenhouse gas emissions: it accounts for about 5% of global CO2 emissions, 75% for transport and 50% for air travel. However, implementing sustainable tourism practices can reduce negative environmental impacts, as studies in several countries confirmed. Tourism plays a vital role in the economies of many countries, providing jobs, stimulating investment, and developing infrastructure. According to the World Tourism Organization (UNWTO), before the COVID-19 pandemic, tourism accounted for about 10% of global GDP, and the industry provided every tenth job. However, after the pandemic, the tourism sector faced sharp fluctuations. In 2021, the number of international trips remained 71% below 2019. However, a partial market recovery was observed in 2022, and 2023 is predicted to mark a return to pre-crisis levels.

In many countries, tourist flow management has become integral to public policy. For example, Spain actively uses Big Data and artificial intelligence technologies to forecast demand, manage seasonal fluctuations, and distribute tourists by region. France has introduced methods for analyzing social networks and online platforms to assess traveler preferences and adjust marketing strategies. Thailand uses econometric models to forecast tourism revenues and optimize air traffic, while the UAE and Japan use cluster analysis and dynamic pricing to manage the load on tourism infrastructure. Tourism development is also of strategic importance for Kazakhstan. With unique natural resources, cultural heritage, and potential for developing eco- and adventure tourism, the country can significantly increase its industry contribution to the economy.

In the current context, special attention is paid to the issues of the industry's recovery after the pandemic and the potential of sustainable tourism models as a tool for economic growth and poverty reduction, especially in developing countries. However, one of the key problems remains the high variability of tourist flow, dependence on international air travel, and seasonal fluctuations in demand. This study aims to analyze the dynamics of tourist flow in Kazakhstan, identify key factors influencing the sector's profitability, and forecast its future development.

2. LITERATURE REVIEW

Tourism plays a key role in economic development (Akbar et al., 2017), but its impact depends on many factors, including income levels, quality of infrastructure and government policies. Tourism is a source of long-term growth, stimulating the economy by increasing the inflow of foreign investment, creating jobs and helping to revive consumer demand. Moreover, low-income countries find it more difficult to exploit the tourism potential due to a lack of infrastructure and institutional constraints.

The impact of tourism depends on the degree of its integration into the country's economy (Pablo-Romero & Molina, 2013). Thus, in economies mainly focused on service exports, the contribution of tourism is higher than in countries with diversified economies.

Jucan and Jucan (2013) examined the experience of Romania, where tourism became one of the most critical drivers of recovery after the 2008 economic crisis and identified tourism as a factor in economic recovery after crises. Therefore, the impact of tourism on GDP growth varies depending on a country's infrastructure level and macroeconomic policies.

Tourism significantly impacts GDP growth, with a 10% increase in international tourist expenditure leading to a 0.4% increase in GDP (Fayissa et al., 2008). However, Du et al. (2014) found that although tourism has a positive impact on the economy in most cases, it is not always a sufficient growth driver. They noted that economic determinants such as investment levels and human capital levels play an equally important role. Therefore, the social and financial status of the population translated into income increase, which results in tourists seeking more unique and environmentally sustainable places to travel, leading to increased competition among countries for tourist flows (Dwyer, 2015). Thus, it is worth considering tourism development's economic benefits and social and institutional aspects. Goffi et al. (2018) and Rahman et al. (2022) noted that environmental and social factors directly affect the attractiveness of the tourism sector in developing countries. Countries implementing sustainable practices have a competitive advantage, as modern tourists increasingly choose environmentally friendly destinations. Li et al. (2018) identify several ways tourism contributes to growth: capital accumulation, poverty reduction, improvement of quality of life, and infrastructure development. However, in countries with unstable economies, tourism can exacerbate social inequality.

In addition to affecting the overall tourist flow, economic instability has a powerful impact on business tourism, which is more sensitive to crises. Tsui et al. (2017) identified four key determinants of business tourism flows: the New Zealand Economic Uncertainty Performance (EPU) index and the volume of bilateral trade, and two non-economic factors, flight distance and the number of direct flights. Summing up, active trade relations between the countries contribute to an increase in the flow of business tourists. At the same time, long distances reduce the intensity of travel, and direct flights increase the convenience of travel and contribute to the growth of business tourism.

Unexpected non-economic factors (terrorist attacks, natural disasters, and military conflicts) significantly impact stock markets. However, the nature of the response varies depending on the type of event and the region (Zopiatis et al., 2019). Thus, economic crises have a heterogeneous impact on tourist flows: inflationary crises have the most negative impact on international tourism, reducing it in receiving and sending countries (Khalid et al., 2019; Kyrylov et al., 2020). However, sovereign debt crises increased international tourist arrivals in host countries as currency devaluations made tourism more affordable (Duan et al., 2022). Banking crises mainly reduced tourist flows in the Americas and Latin America but had virtually no impact on tourism in Asia and the Middle East. Thus, using the example of European countries, Palazzo et al. (2022) showed that countries' income level is an important factor in determining the extent of recovery since, although tourism partially began to recover from the pandemic, the recovery was uneven.

The tourism industry is vulnerable to external economic shocks related to changes in energy prices, which affect the demand for air travel, accommodation, and tourist spending. In addition, rising fuel costs significantly reduce the number of international tourists, especially from long-distance destinations, as higher airfares reduce the affordability of travel. Furthermore, Becken and Lennox (2012) showed that tourists' responses to price changes vary depending on distance, travel motivation, and income. Peng et al. (2014) showed that tourists from different regions respond differently to income changes, with the highest elasticity observed for European tourists (3.419) and the lowest for African tourists (1.147). In addition, long trips have a

higher income elasticity than short trips, suggesting that rising wealth encourages longer and more frequent trips. Seetaram et al. (2016) investigated the elasticity of outbound tourism demand. They found that the real exchange rate yields a very low elasticity (-0.002), while the price competitiveness index more accurately reflects tourists' sensitivity to price changes (-1.07). Thus, to accurately forecast tourism demand, it is necessary to consider not only macroeconomic indicators but also the specific characteristics of price competitiveness in each market. Morlotti et al. (2017) found that the elasticity of demand varies significantly depending on various factors that affect the decision-making behavior for traveling.

The most common factors include route type, season, and booking time. Moreover, low-competitive routes exhibit lower elasticity since consumers have fewer alternative options. Therefore, low-cost airlines can flexibly manage prices, stimulating demand depending on the season, competitive environment, and passenger type. Balcilar et al. (2020) found that short-term economic shocks, such as financial crises, can sharply reduce outbound tourism demand while the sector's recovery is slow. Matsuura and Saito (2022) confirmed that in the post-COVID-19 period, the government's travel support program stimulated domestic tourism. However, the effect of subsidies depends on the level of perceived risk: in regions with high COVID-19 infection rates, even subsidies failed to significantly increase travel. In addition, tourism is influenced not only by macroeconomic indicators but also by social factors such as the level of trust in the economy and the availability of tourism offers. Stråle (2022) found that households with low tourism expenditures show the highest elasticity, meaning that their travel habits are more sensitive to changes in income. At the same time, wealthier households are less elastic, indicating that their travel behavior remains relatively stable regardless of the economic situation.

Before the pandemic, hotel room prices were determined mainly by seasonality and significant events, but the COVID-19 crisis has seen a considerable drop in prices (Wu et al., 2020). However, demand seasonality appears to be much more pronounced than price seasonality, indicating the important role of pricing policy in mitigating demand fluctuations (Lozano et al., 2020). Korinth (2022) noted that countries with high tourism dependence experienced the most significant financial losses, while developed economies were able to adapt more quickly by diversifying their tourism products and supporting the sector. At the same time, developing countries faced a prolonged downturn, as their recovery depended on external factors such as the resumption of international flights. Perić et al. (2022) found that increased tourist arrivals pressure accommodation prices, especially in regions with high tourist facilities. However, they also found that the development of the hotel sector can partially offset this effect, as the growth of hotels reduces the demand for short-term rental housing, stabilising prices. Thus, governments seeking to develop tourism should consider its impact on the real estate market and provide mechanisms to maintain housing affordability.

An analysis of the literature shows that tourism plays a vital role in economic development. However, its impact is determined by many factors, including the macroeconomic situation, the population's income level, investments in infrastructure, and government policy. The contribution of tourism to a country's GDP is exceptionally high in those focused on exporting services. However, its effect on economic growth is not universal and depends on factors such as investment and human capital. Social and environmental aspects are also becoming increasingly important. Modern tourists prefer environmentally sustainable destinations, which creates competitive advantages for countries implementing “green” practices. At the same time, tourism can exacerbate social inequality in unstable economies.

Analysis of existing studies has shown that several factors, including the key roles of tourist flow, the dynamics of accommodation

prices, and air travel, significantly influence tourism development. These indicators form the basis for assessing the sustainability of tourism and its susceptibility to macroeconomic and social changes. It is important to consider that tourism is subject to external shocks, such as economic crises, changes in energy prices and pandemics, which require constant monitoring of its sustainability. In addition, differences in the elasticity of tourism demand depending on the region and socio-economic status of the population emphasize the need for a detailed analysis of the factors influencing tourism activity. The review of existing studies allowed us to highlight following factors which are regarded as main factors of tourism development: tourist flow, price change for accommodation and flights. Therefore, it is important to analyse the sustainability of tourism and its sensitivity to external factors.

3. RESEARCH METHODS

The study uses quantitative analysis methods to identify key factors influencing the dynamics of the tourist flow in Kazakhstan. The main focus is assessing the elasticity of demand for tourism services, the sensitivity of industry revenues to changes in the external environment, and forecasting possible scenarios for the development of the sector. To achieve these goals, econometric tools were used, including the analysis of demand elasticity, modeling the sensitivity of income to price and infrastructural changes, as well as forecasting the dynamics of tourist flow using the Markov chain model. First of all, the elasticity of demand for tourism was calculated, which makes it possible to determine the degree of dependence of the number of tourists on changes in the cost of air travel. The demand for tourist trips, especially in the international segment, directly depends on the prices of air tickets. The elasticity analysis makes it possible to assess the sensitivity of the tourist flow to price changes, which is a key indicator for further research.

Next, the analysis of the sensitivity of tourism income to the primary factors, such as the number of tourists, the cost of accommodation, and the number of international flights, was carried out. The variables that have the most significant impact on the industry's financial stability have been identified, taking into account the revealed patterns of changes in the tourist flow. At the final stage, a forecast of the future dynamics of the tourist flow was carried out, allowing it to fix existing trends and determine the likely scenarios for further development. The probability of various industry conditions, including growth, recession, and stability, is estimated. This analysis is especially important for strategic planning: a high probability of recession requires the development of measures to support the industry, while steady growth opens up opportunities for its scaling.

The leading indicators used in the analysis of the tourism sector of Kazakhstan are presented in Table 1.

TABLE 1. Indicators of tourism in Kazakhstan

Indicator	Description	Applied analysis
International tourists (mln)	Total number of foreign visitors to Kazakhstan	Elasticity & Forecasting
Domestic tourists (mln)	Total number of Kazakhstani citizens traveling domestically	Trend Analysis
Revenue from international tourism (bln tenge)	Total revenue generated from inbound tourism	Revenue Sensitivity Analysis
Number of international flights	Total number of incoming international flights	Revenue Sensitivity & Forecasting
Average airfare price (tenge)	Average price of international airfare to Kazakhstan	Elasticity Analysis
Average hotel price (tenge/day)	The average daily cost of a hotel stay	Revenue Sensitivity Analysis

Note: compiled by authors

Thus, this paper aims to gain a deeper understanding of the dependence of the tourism sector on price and economic factors, as well as assess the prospects for its sustainable development. An integrated approach, including analysis of elasticity, income sensitivity, and forecasting, allowed us to obtain a holistic view of the mechanism for the formation of the tourist flow and its role in the economy of Kazakhstan. A sensitivity analysis of tourism income was used to assess the impact of key factors on the industry's profitability, which made it possible to determine which parameters have the most significant impact. Sensitivity was calculated using the formula (1):

$$S = \frac{\%\Delta D}{\%\Delta X} \qquad (1)$$

where:

S – revenue sensitivity;

$\%\Delta D$ – percentage change in tourism revenues;

$\%\Delta X$ – percentage change in one of the factors (number of tourists, average accommodation cost, or number of international flights).

To assess the elasticity of tourism demand, the following formula (2) was used:

$$E = \frac{\%\Delta T}{\%\Delta P} \qquad (2)$$

where:

E – demand elasticity;

$\%\Delta T$– percentage change in the number of tourists;

$\%\Delta P$– percentage change in airfare prices.

Future tourism flow forecasting was conducted using Markov chain modeling. A transition matrix was constructed based on historical data, representing the probabilities of shifting from one tourism state (growth, decline, or stability) to another. The forecasted probabilities were determined using the following formula (3):

$$S_{t+1} = S_s \times T \qquad (3)$$

where:

S_{t+1}– current tourism flow state;

T– transition probability matrix;

S_s – predicted distribution of tourism state probabilities for the following year.

The developed approach for the analysis based on the sequence of elasticity → income sensitivity, → forecast allowed us to provide a logical structure for the study, moving from demand fundamentals to economic implications and possible future scenarios.

The use of an integrated approach to analyzing the tourism sector of Kazakhstan is due to the need to consider both macroeconomic and behavioural determinants. Income sensitivity analysis allows us to identify key factors that influence the industry's financial sustainability, and assessing the elasticity of demand helps determine how much changes in price and income affect tourist flows.

The Markov chain model is used to forecast tourism development, which allows for determining the probabilities of transition from one state to another (growth, stability, decline). The method's main advantage is the ability to take into account historical data and analyze the stability of trends over time. The Markov transition matrix is calculated based on changes in tourist flow over previous years and then used to model probable scenarios for the future state of the industry. This allows for assessing the sustainability of growth or identifying the risks of a possible decline, which is of practical importance for developing tourism regulation strategies.

A gradation system of changes was used based on relative growth rates to assess the dynamics of the tourist flow. If the change in the flow compared to the previous year did not exceed 5%, it was assigned the value "0" (stability); if the growth exceeded 5% - "1" (increase in flow); if the decline was higher than 5% - "-1" (decline). This approach is based on macroeconomic logic, according to which minor fluctuations within 5% are considered a

statistical norm and do not significantly impact the industry. This method allows us to identify critical changes and conduct more accurate forecasting based on the Markov model.

4. FINDINGS AND DISCUSSIONS

The data analysis made it possible to identify key patterns in the dynamics of the tourist flow in Kazakhstan, assess the impact of price and infrastructure factors on the industry, and predict possible scenarios for its development. This section presents the research results, including calculating the elasticity of demand for travel services, analyzing the sensitivity of tourism industry revenues to changes in airfare, cost of accommodation, and number of international flights, and predicting future trends using the Markov chain model.

One of the key aspects of the study was the study of the elasticity of demand, which makes it possible to determine how much the change in the cost of air travel affects the number of tourists arriving. The calculated elasticity indicators demonstrate the degree of sensitivity of the tourist flow to price changes and make it possible to identify periods when this factor had the most significant impact on the industry.

The main results of the analysis of the dynamics of the tourist flow and calculations of the elasticity of demand are presented in Table 2.

TABLE 2. Dynamics of changes in tourist flow and elasticity of demand

Year	Number of foreign tourists visiting Kazakhstan	The average price of air tickets for international flights	The elasticity of demand for tourism
2014	-7,42581	1,699381	-4,36972
2015	1,53166	1,670984	0,916621
2016	1,228616	1,64607	0,746394
2017	18,3131	1,616906	11,32602
2018	14,12804	1,591178	8,878977
2019	-7,66868	1,566256	-4,89618
2020	-74,923	1,542103	-48,5849
2021	966,3391	1,518683	636,3006
2022	16,12826	1,495964	10,78118
2023	-63,4918	1,473915	-43,077

Note: compiled by authors

The calculated values show that the demand for tourism in Kazakhstan varies significantly depending on external conditions and is sensitive to external changes. In some periods, changes in air ticket prices were accompanied by a significant increase or decrease in the number of tourists, while in other years, the impact of price fluctuations was minimal. During periods of economic growth and active development of the tourism sector, elasticity exceeded one. Demand was sensitive to changes in air ticket prices: when prices decreased, the tourist flow increased significantly, and when prices increased, a decline was observed. This situation is typical for 2017 and 2018, when there was active growth in international tourism in Kazakhstan. During this period, the impact of air ticket prices was especially noticeable. On the contrary, during years of economic instability and crises (2014, 2019, and 2023, when external factors such as global economic problems or changes in tourist preferences dominated demand), elasticity decreased sharply, sometimes acquiring a negative value. Moreover, even with a decrease in airfare prices, the flow of tourists did not increase; on the contrary, it decreased.

Particular attention should be paid to 2020-2021, when the tourism industry experienced unprecedented shocks due to the COVID-19 pandemic. In 2020, the elasticity of demand

took a negative value, which means that even a decrease in airfare did not lead to an increase in tourist flow. Strict restrictions were introduced, where strict sanitary measures and restrictions on movement affected international travel, border closures, and decreased population mobility.

In 2021, on the contrary, there was a sharp jump in elasticity when tourism demand recovered immediately after the restrictions were lifted. During this period, even a slight change in airfare led to a significant change in the flow of tourists. This effect was caused by deferred demand - people who could not travel in 2020 began actively booking trips immediately after the borders opened. The analysis shows that in addition to airfare prices, tourism demand in Kazakhstan depends on many external factors, including economic crises, global events such as the COVID-19 pandemic, the country's tourist attractiveness growth, marketing strategies, and government support for tourism. The elasticity results are presented separately in Figure 1, which shows the dynamics of the elasticity of demand for tourism by year.

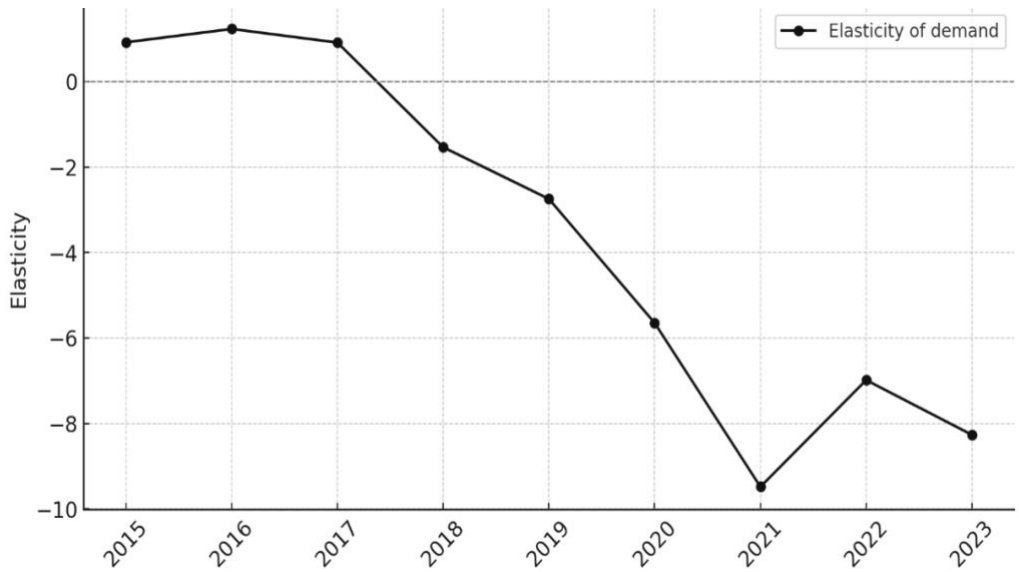

FIGURE 1. Results of correlation analysis

Note: compiled by authors

Figure 1 illustrates the dynamics of the elasticity of demand for tourism in Kazakhstan, demonstrating when elasticity was significantly higher than one, indicating a significant impact of price factors on the flow of foreign tourists. According to the results, a sharp jump in 2021 is observed, which can be associated with the industry's recovery after the COVID-19 pandemic. During periods of stable growth, such as 2017-2018, elasticity is high; in crisis years, for example, 2014, 2019, and 2023, negative values are observed, and in 2020, the pandemic sharply reduced tourism despite a possible price decrease. In 2021, there was an abnormal jump in elasticity due to the recovery of demand. Thus, the analysis of the elasticity of demand for tourism demonstrates that the cost of air tickets is a significant but not the only factor influencing the flow of tourists.

An analysis of income sensitivity to key factors was conducted to assess the tourism industry's resilience to external changes. Detailed data reflecting income sensitivity is presented in Table 3.

TABLE 3. Sensitivity of tourism revenue to key factors

Year	Number of foreign tourists visiting Kazakhstan		The average cost of hotel accommodation		International flights arriving in Kazakhstan	
	Million	Sensitivity	Tenge/per night	Sensitivity	Number	Sensitivity
2013	6,841	34,96565	5000	0,04784	4,25	56,28235
2014	6,333	37,54934	5200	0,045731	4,62	51,47186
2015	6,43	36,76516	5408	0,043713	4,98	47,46988
2016	6,509	36,10386	5624	0,041785	5,35	43,92523
2017	7,701	30,33372	5849	0,039938	5,71	40,91068
2018	8,789	26,43077	6083	0,038188	6,08	38,20724
2019	8,115	28,4658	6327	0,03651	6,45	35,81395
2020	2,035	45,40541	6580	0,014043	6,82	13,54839
2021	21,7	6,387097	8400	0,0165	7,19	19,27677
2022	25,19983	7,150841	9500	0,018968	7,54	23,8992
2023	9,2	24,34783	14400	0,015556	7,9	28,35443

Note: compiled by authors

The intercept, as shown in table 2, means that when all independent variables (soil surface temperature, producer price index, sown area, and employment) are zero, then the expected value of the dependent variable would be 301.99. This is the baseline level of agricultural productivity not explained by the other factors in the model. A 1-degree increase in the soil surface temperature is associated with an increase of 0.84 units in agricultural productivity, holding other variables constant. However, since the p-value is only 0.07, being slightly above 0.05, this relationship cannot be said to be statistically significant at the 5% level, although it is at the 10% level. The wide confidence interval is from -0.06 to 1.73, which might indicate some uncertainty regarding exactly how productivity is affected by temperature. Each 1-point rise in the agricultural product producer price index decreases agricultural productivity by 1.95 units, assuming all other variables are held constant. The negative coefficient would suggest that higher prices of the agricultural product could reduce productivity because either the higher price increases input costs or reduces market demand. This relation is highly significant because of the p-value of 0.00, meaning it is very unlikely to have occurred by chance. Holding all other variables constant, agricultural productivity decreases by 0.01 units with every additional unit area sown. This result is somewhat counterintuitive because one might expect a positive relationship between the sown area and agricultural output. The increase in agricultural productivity is very slight, 0.01 units, for every additional 1,000 persons in total employment, assuming other conditions remain constant. The results seem to indicate that the variables of producer prices and sown area are stronger predictors of agricultural productivity, and at the same time, the employment and temperature variables may not strongly determine agricultural productivity in this specific context. It may be further explored for what reasons larger sown areas and higher producer prices act to depress productivity.

The calculation results demonstrate how much changes in various factors affect international tourism revenues in Kazakhstan. Sensitivity shows how much revenues change when one of the factors changes by 1%. First of all, it is worth noting that the sensitivity of revenues to the number of foreign tourists remains positive and high in most years.

Based on this analysis, weights for the Integral Index Weights are made. The absolute value of coefficients of regression is taken and applied to the data below (Table 4).

TABLE 4. Key Indicators of Agricultural Development Across Regions of Kazakhstan

Region	Soil surface temperature	Producer price index for agricultural products	Employed in the economy	Total adjusted sown area
Abay	7,26	103,30	292,5	767,18
Akmola	6,17	93,30	407,1	5 360,03
Aktobe	8,40	104,60	434,9	743,56
Almaty	13,59	105,40	704,8	442,72
Atyrau	14,82	110,50	335,1	7,78
East Kazakhstan	7,41	100,50	368,8	631,98
Zhambyl	14,86	105,30	543,7	745,18
Zhetysu	10,84	106,60	309,3	509,65
West Kazakhstan	9,95	103,90	333,3	620,78
Karaganda	7,54	99,10	535,8	1 225,52
Kostanay	6,56	90,00	449,5	5 576,76
Kyzylorda	16,27	106,80	331,5	190,58
Mangistau	16,07	105,00	336,7	0,97
Pavlodar	7,12	101,70	385,2	1 631,30
North Kazakhstan	5,34	94,40	274,5	4 458,02
Turkestan	17,15	103,00	800,6	863,39
Ulytau	9,46	116,50	100,9	32,77
Almaty city	11,85	105,40	1 045,5	0,49
Astana city	7,63	106,60	658,7	1,41
Shymkent city	15,88	103,30	433,5	27,00

Note: compiled by authors

Thus, an increase in the number of tourists directly contributes to the rise in revenues. However, in crisis years, for example, in 2020, there was a sharp jump in values, which is associated with the COVID-19 pandemic: the number of tourists decreased, but the impact of their number on profitability changed due to the specific conditions of that period.

Another critical factor is the average cost of staying in hotels. In the early years (2013-2019), the influence of this factor was relatively stable, but since 2020, the sensitivity has increased significantly. This is due to a sharp decrease in hotel service prices during the pandemic when tour operators and hotels tried to retain customers by reducing room rates. However, in 2021–2023, there was a slight recovery, and the sensitivity of accommodation prices decreased slightly. As for the number of international flights, the impact on revenues has proven to be the most unstable. Until 2019, the number of flights was declining. However, tourism revenues remained relatively stable, indicating a possible increase in the average tourist check or the share of domestic travelers. However, in 2020, when the number of flights fell sharply, the sensitivity increased sharply, indicating this factor's critical importance in the crisis. In 2021–2023, there was a gradual increase in the number of flights, which was accompanied by a gradual recovery in tourism revenues.

Figure 2 shows the dynamics of the sensitivity of tourism revenues in Kazakhstan to the primary factors (the number of tourists, the average cost of accommodation, and the number of international flights).

The graph shows how the influence of each factor on the formation of tourism sector revenues changed in different years. The most noticeable fluctuations were observed in 2020. The consequences of the measures taken during the COVID-19 pandemic led to a sharp change in the structure of tourism demand and the availability of travel. The sensitivity of revenues to the number of foreign tourists remains high in most years, confirming the key role of traveler flow in forming industry revenues caused by the global decline in tourism traffic and border closures. After 2021, the sensitivity gradually stabilizes.

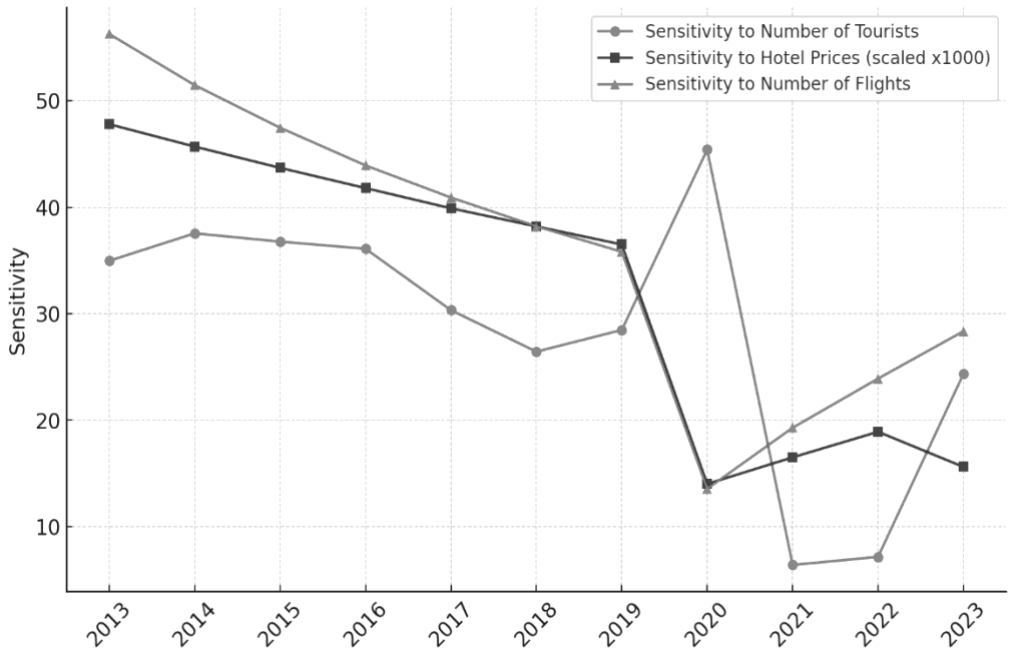

FIGURE 2. Sensitivity of tourism revenue to key factors in Kazakhstan for 2013-2024

Note: compiled by authors

The number of international flights (red graph) plays a critical role in times of crisis. Until 2019, this factor's influence declined, indicating a possible increase in domestic tourism or diversification of travel modes. Despite improvements, the sector's profitability was affected by a considerable decline in international flights in the next year. Therefore, Kazakhstan's tourism depends on the availability of air travel, especially in times of crisis.

The graph also shows that the recovery of the tourism sector after the pandemic was accompanied by a gradual decrease in sensitivity to each factor, indicating a return to traditional revenue generation mechanisms. In 2021-2023, the impact of the cost of accommodation and the number of flights gradually weakened, and sensitivity to the number of tourists returned to more stable values. The flow of tourists and the accommodation cost significantly impact profitability, and the number of international flights becomes critical in periods of instability. Thus, the sensitivity analysis of tourism revenues shows that the number of tourists and accommodation costs significantly impact profitability. The sector's recovery after the pandemic is accompanied by the normalization of sensitivity values, which indicates a return to traditional income generation models.

The analysis of the presented data shows that during the period under review, there were significant fluctuations in the number of tourists, indicating the instability of Kazakhstan's tourism market. There is a predominantly positive trend in the first half of the period (2013-2018): the number of foreign tourists increased annually, especially in 2017 and 2018, when the growth was 1.192 million and 1.088 million people, respectively. However, in 2019, the first decline was observed when the number of foreign tourists decreased by 0.674 million people.

Thus, Table 4 presents an analysis of the dynamics of tourist flow in Kazakhstan from 2013 to 2023.

TABLE 4. Dynamics of the tourist flow in Kazakhstan for 2013–2023

Year	Foreign tourists (visitors)			Local tourists (citizens)		
	Million	Change	State	Million	Change	State
2013	6,841	-	-	4,7	-	
2014	6,333	-0,508	-1	5	0,3	1
2015	6,43	0,097	1	5,3	0,3	1
2016	6,509	0,079	1	5,7	0,4	1
2017	7,701	1,192	1	6	0,3	1
2018	8,789	1,088	1	6,7	0,7	1
2019	8,115	-0,674	-1	6,7	0	0
2020	2,035	-6,08	-1	4,5	-2,2	-1
2021	21,7	19,665	1	4,8	0,3	1
2022	25,19983	3,499833	1	5,4	0,6	1
2023	9,2	-15,9998	-1	9,7	4,3	1

Note: compiled by authors

The most significant decline was observed in 2020 when the number of foreign tourists decreased by 6.08 million people. In 2021, the number of foreign tourists rebounded sharply by 19.665 million, driven by the resumption of air traffic and high demand for international travel. In 2022, growth continues but at a more moderate level (3.5 million tourists), which indicates a gradual normalization of the situation. In 2023, a significant decrease in the number of foreign tourists by 15.99 million people is again recorded, which may be due to several factors, including economic instability, rising airfare prices, and changing tourist preferences.

As for domestic tourists, their dynamics are more stable. Unlike the international flow, domestic tourism grew in almost all years, except in 2020, when the decline was 2.2 million people due to the pandemic. The recovery of domestic tourism was faster, and in 2023, it reached the highest value of 9.7 million tourists, which may indicate an increased interest in domestic travel. Figure 3 visualizes the dynamics of the tourist flow in Kazakhstan in 2013–2023.

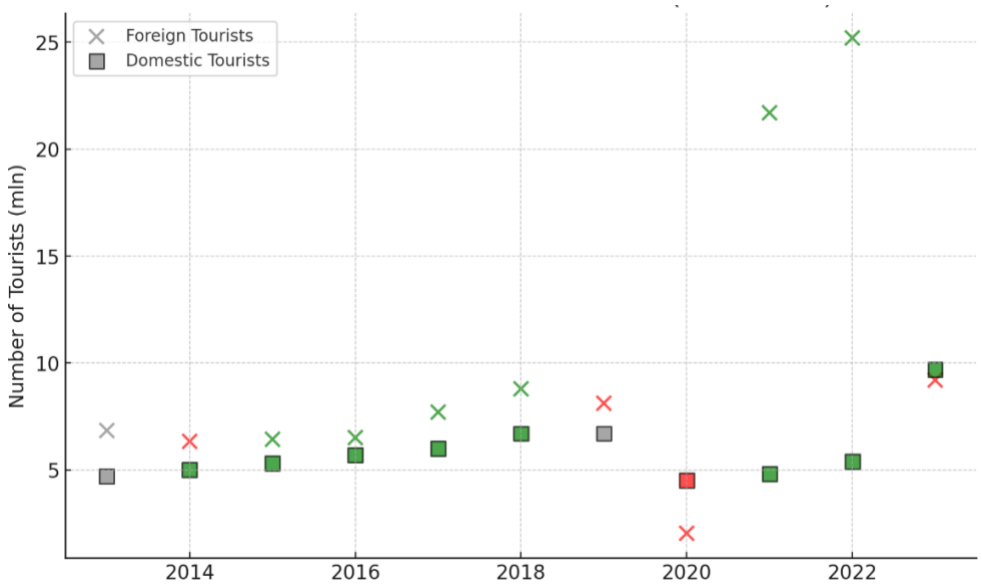

FIGURE 3. Tourism flow trends in Kazakhstan for 2013-2023

Note: compiled by authors

There are visible periods of growth, decline, and stability. In the early years, there was a predominantly positive trend, especially among foreign tourists, which may be due to the development of tourism infrastructure and marketing campaigns. However, in 2019, a decline began, and 2020 became a crisis year due to the COVID-19 pandemic, when the number of foreign tourists dropped sharply. Domestic tourism also declined, but not as significantly. In 2021-2022, rapid growth is seen, especially among foreign tourists, which is associated with recovery from the pandemic and deferred demand. However, in 2023, there is again a decline in international flow, possibly due to external economic and geopolitical factors. Surprisingly, domestic tourism continued to grow in 2023, while international tourism in Kazakhstan is subject to significant fluctuations, and domestic tourism remains more stable.

Figure 4 visualizes the tourism state transition matrix, demonstrating the probability of changing its dynamics.

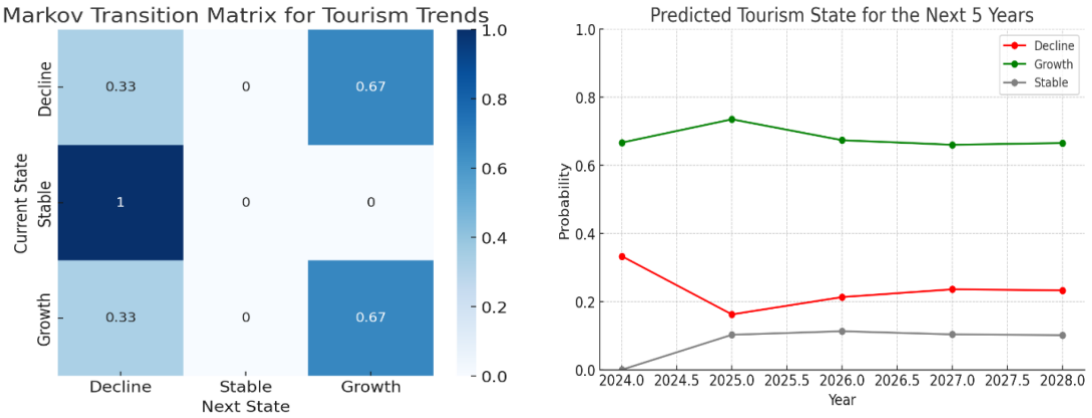

FIGURE 4. Analysis and forecast of the dynamics of tourist flow based on the Markov model

Note: compiled by authors

The results of the state transition matrix of the tourist flow in Kazakhstan show that the most probable scenario is continued tourism growth. It provides data on the number of foreign and domestic tourists and calculates changes in the number of tourists compared to the previous year. Based on these data, the states of tourist flow are determined, where the values “1” mean growth, “0” - stability, and “-1” - a decrease in the number of tourists. This approach allows us to identify patterns in changes in tourist flow and assess periods of active growth or decline in the tourism industry.

Based on data for 2013-2023, it was found that in most cases, an increase in the number of tourists leads to further growth, but there is still a possibility of a transition to a decline, especially after sharp increases. There is instability in the industry, which is influenced by external factors. However, the probability of long-term stabilization remains low, indicating the sector's high dynamism. Forecasts based on the transition matrix showed the following results. In 2024-2025, growth probability remains predominant and reaches 73.5%, confirming positive industry recovery trends. However, starting from 2026, the probability of a decline gradually increases, which may indicate possible fluctuations in tourism development in the long term. The lack of a high probability of stability emphasizes the need for strategic management and adaptation to possible changes in demand.

To formalize strategic decisions in the tourism sector, binary coding, where 1 means that the strategy is applied and 0 means that it is not applied, is proposed. This approach

allows the systematization of possible measures and comparisons with similar initiatives in neighbouring countries, which will help forecast regional tourism development. Next, a comparative analysis with neighboring countries describes Table 5.

TABLE 5. Binary coding of tourism management strategies in Kazakhstan and comparative analysis with neighboring countries

Strategy	Kazakhstan	Uzbekistan	Kyrgyzstan	Russia
Increase marketing expenditures	1	1	0	1
Development of sustainable tourism	0	1	1	0
Expansion of the hotel sector	1	1	0	1
Subsidizing domestic travel	0	1	1	1
International promotion of tourism	1	1	0	1
Introduction of digital tourism services	1	1	0	1
Liberalization of the visa regime	1	1	1	0
Support for ecotourism	0	1	1	0

Note: compiled by authors

A review of strategic approaches in Central Asian countries and Russia allows us to identify key areas where Kazakhstan needs to strengthen its position to increase the competitiveness of its tourism industry.

First, Kazakhstan actively invests in marketing and international promotion, similar to Uzbekistan and Russia, which helps attract foreign tourists. However, unlike Uzbekistan and Kyrgyzstan, Kazakhstan has not yet focused on developing sustainable tourism. Introducing targeted ecotourism initiatives can help diversify the tourism product, which is especially important given the growing demand for ecotourism among young people.

Second, Kazakhstan is already implementing programs to expand the hotel sector, which positively affects the accommodation sector. However, countries in the region, such as Uzbekistan, additionally subsidize domestic tourism, stimulating demand during low seasons. In this regard, Kazakhstan could consider support measures for domestic tourists, especially in post-pandemic recovery.

Digital tourism services is an important area for Kazakhstan for development and keep up with Uzbekistan and Russia. However, Kyrgyzstan is still lagging in this area, which could become a competitive advantage for Kazakhstan in attracting tourists focused on the convenience of online services.

Kazakhstan's most notable difference is its liberalization of the visa regime for citizens of many countries. This makes Kazakhstan a more accessible destination than Russia but is on par with Uzbekistan and Kyrgyzstan, which are also actively developing tourism diplomacy.

Finally, support for ecotourism remains underdeveloped in Kazakhstan, unlike Uzbekistan and Kyrgyzstan, which implement programs to protect natural attractions and promote sustainable routes. This direction is promising for Kazakhstan, especially given its unique natural resources, such as the Charyn Canyon, Kolsay Lakes and Altyn-Emel.

Using binary coding of strategies allows us to identify Kazakhstan's key competitive positions in the tourism sector and identify areas that require improvement. The analysis shows that Kazakhstan is a leader in international promotion, visa liberalization and digitalization of tourism but lags behind neighbouring countries in developing ecotourism and domestic tourism. Introducing support measures for local travellers and focusing on sustainable tourism initiatives can increase Kazakhstan's attractiveness among travellers and diversify industry revenues.

5. CONCLUSIONS

The study aimed to analyze the dynamics of the tourist flow in Kazakhstan from 2013 to 2017, considering both foreign and domestic

tourists. Special attention was paid to identifying trends and changes in the number of tourists and assessing the stability of the sector's growth. The literature review shows that tourism is vital to the country's socio-economic development, contributing to increased employment and infrastructure development and expanding the region's attractiveness for investors. Research confirms that domestic and inbound tourism are important components of the national economy, and their growth requires comprehensive measures, including government support, improved logistics, the development of the hotel business, and increased service levels.

Moreover, the number of tourists and the cost of accommodation have the most significant impact, resulting in the sector's financial stability, making them key factors that determine the financial sustainability of the tourism sector. The more tourists come to the country and the higher the accommodation cost, the more income the hotel and transport business receives. The reduction of international flights during crises leads to a decrease in the number of foreign tourists, resulting in a restriction of income for the hotel business, transport, restaurants, and other relevant industries, increasing the inflow of investment into the country's GDP.

Forecasting the further development of the industry showed that positive dynamics of growth in tourist flow are expected in the coming years, which can contribute to an increase in income in related sectors of the economy. However, the results of tourism sensitivity revealed its high dependence on external factors, such as global economic crises, exchange rate changes, and political stability. This highlights the need for adaptive management and strategic planning to diversify the tourism offer, develop infrastructure, and increase the sector's resilience to external shocks.

Kazakhstan demonstrates strong positions in international marketing and visa liberalization but lags behind neighboring countries in developing sustainable tourism and supporting the domestic market. Additional incentives for domestic tourism, the creation of environmentally sustainable routes, and digitalising tourism services are key factors for long-term growth.

AUTHOR CONTRIBUTION

Writing – original draft: Saule G. Serikbayeva, Zhaxylyk M. Akimov.
Conceptualization: Saule G. Serikbayeva, Zhaxylyk M. Akimov.
Formal analysis and investigation: Saule G. Serikbayeva, Zhaxylyk M. Akimov.
Funding acquisition and research administration: Zhaxylyk M. Akimov, Sandugash Bissariyeva, Mauye Anuarkhan, Gulzhazira D. Kenzhebayeva.
Development of research methodology: Saule G. Serikbayeva, Zhaxylyk M. Akimov.
Software and supervisions: Sandugash Bissariyeva, Mauye Anuarkhan, Gulzhazira D. Kenzhebayeva.
Data collection, analysis and interpretation: Sandugash Bissariyeva, Gulzhazira D. Kenzhebayeva.
Visualization: Sandugash Bissariyeva, Gulzhazira D. Kenzhebayeva.
Writing review and editing research: Zhaxylyk M. Akimov, Mauye Anuarkhan.

REFERENCES

Akbar, J., Shah, S.T., Khan, M.N., & Naeem, A.J. (2017). Role of Facilities Available and Un-Available in Attracting of Tourist in Swat Valley Pakistan. *Journal of Landscape Ecology*, *10*, 19 - 5. https://doi.org/10.1515/jlecol-2017-0006

Balcilar, M., Aghazadeh, S., & Ike, G. N. (2020). Modeling the employment, income, and price elasticities of outbound tourism demand in OECD countries. *Tourism Economics*, *27*(5), 971-990. https://doi.org/10.1177/1354816620910929

Becken, S., & Lennox, J. (2012). Implications of a long-term increase in oil prices for tourism. *Tourism Management*, *33*(1), 133-142. https://doi.org/10.1016/j.tourman.2011.02.012
Du, D., Lew, A. A., & Ng, P. T. (2014). Tourism and economic growth. *Journal of travel research*, *55*(4), 454-464. https://doi.org/10.1177/0047287514563167
Duan, J., Xie, C., & Morrison, A. M. (2022). Tourism crises and impacts on destinations: A systematic review of the tourism and hospitality literature. *Journal of Hospitality & Tourism Research*, *46*(4), 667-695. https://doi.org/10.1177/1096348021994194
Dwyer, L. (2015). Globalization of tourism: Drivers and outcomes. *Tourism Recreation Research*, *40*(3), 326-339. https://doi.org/10.1080/02508281.2015.1075723
Fayissa, B., Nsiah, C., & Tadasse, B. (2008). Impact of tourism on economic growth and development in Africa. *Tourism economics*, *14*(4), 807-818. https://doi.org/10.5367/000000008786440229
Goffi, G., Cucculelli, M., & Masiero, L. (2018). Fostering tourism destination competitiveness in developing countries: The role of sustainability. *Journal of cleaner production*, *209*, 101-115. https://doi.org/10.1016/J.JCLEPRO.2018.10.208
Jucan, C. N., & Jucan, M. S. (2013). Travel and tourism as a driver of economic recovery. *Procedia Economics and Finance*, *6*, 81-88. https://doi.org/10.1016/S2212-5671(13)00117-2
Khalid, U., Okafor, L. E., & Shafiullah, M. (2019). The effects of economic and financial crises on international tourist flows: A cross-country analysis. *Journal of Travel Research*, *59*(2), 315-334. https://doi.org/10.1177/0047287519834360
Korinth, B. (2022). Impact of the COVID-19 pandemic on international tourism income in tourism receiving countries. *Sustainability*, *14*(19), 12550. https://doi.org/10.3390/su141912550
Kyrylov, Y., Hranovska, V., Boiko, V., Kwilinski, A., & Boiko, L. (2020). International tourism development in the context of increasing globalization risks: On the example of Ukraine's integration into the global tourism industry. *Journal of Risk and Financial Management*, *13*(12), 303. https://doi.org/10.3390/jrfm13120303
Li, K. X., Jin, M., & Shi, W. (2018). Tourism as an important impetus to promoting economic growth: A critical review. *Tourism management perspectives*, *26*, 135-142. https://doi.org/10.1016/j.tmp.2017.10.002
Lozano, J., Rey-Maquieira, J., & Sastre, F. (2021). An integrated analysis of tourism seasonality in prices and quantities, with an application to the Spanish hotel industry. *Journal of Travel Research*, *60*(7), 1581-1597. https://doi.org/10.1177/0047287520947807
Matsuura, T., & Saito, H. (2022). The COVID-19 pandemic and domestic travel subsidies. *Annals of Tourism Research*, *92*, 103326. https://doi.org/10.1016/j.annals.2021.103326
Morlotti, C., Cattaneo, M., Malighetti, P., & Redondi, R. (2017). Multi-dimensional price elasticity for leisure and business destinations in the low-cost air transport market: Evidence from easyJet. *Tourism Management*, *61*, 23-34. https://doi.org/10.1016/j.tourman.2017.01.009
Pablo-Romero, M.D.P., & Molina, J.A. (2013). Tourism and economic growth: A review of empirical literature. *Tourism management perspectives*, *8*, 28-41. https://doi.org/10.1016/j.tmp.2013.05.006
Palazzo, M., Gigauri, I., Panait, M. C., Apostu, S. A., & Siano, A. (2022). Sustainable tourism issues in European countries during the global pandemic crisis. *Sustainability*, *14*(7), 3844. https://doi.org/10.3390/su14073844
Peng, B., Song, H., Crouch, G. I., & Witt, S. F. (2014). A meta-analysis of international tourism demand elasticities. *Journal of Travel Research*, *54*(5), 611-633. https://doi.org/10.1177/0047287514528283
Perić, B. Š., Smiljanić, A. R., & Kežić, I. (2022). Role of tourism and hotel accommodation in house prices. *Annals of Tourism Research Empirical Insights*, *3*(1), 100036. https://doi.org/10.1016/j.annale.2022.100036
Rahman, M. H., Voumik, L. C., Islam, M. J., Halim, M. A., & Esquivias, M. A. (2022). Economic growth, energy mix, and tourism-induced EKC hypothesis: evidence from top ten tourist destinations. *Sustainability*, *14*(24), 16328. https://doi.org/10.3390/su142416328
Seetaram, N., Forsyth, P., & Dwyer, L. (2016). Measuring price elasticities of demand for outbound tourism using competitiveness indices. *Annals of Tourism Research*, *56*, 65-79. https://doi.org/10.1016/j.annals.2015.10.004
Stråle, J. (2022). Household level heterogeneity in the income elasticities of demand for international leisure travel. *Tourism Economics*, *28*(8), 2154-2175. https://doi.org/10.1177/13548166211033406

Tsui, W. H. K., Balli, F., Tan, D. T. W., Lau, O., & Hasan, M. (2017). New Zealand business tourism: exploring the impact of economic policy uncertainties. *Tourism Economics*, *24*(4), 386-417. https://doi.org/10.1177/1354816617731387

Wu, F., Zhang, Q., Law, R., & Zheng, T. (2020). Fluctuations in Hong Kong hotel industry room rates under the 2019 Novel Coronavirus (COVID-19) outbreak: Evidence from big data on OTA channels. *Sustainability*, *12*(18), 7709. https://doi.org/10.3390/su12187709

Zopiatis, A., Savva, C. S., Lambertides, N., & McAleer, M. (2019). Tourism stocks in times of crisis: An econometric investigation of unexpected nonmacroeconomic factors. *Journal of Travel Research*, *58*(3), 459-479. https://doi.org/10.1177/0047287517753998

AUTHOR BIOGRAPHIES

Saule G. Serikbayeva – Cand. Sc. (Econ.), Associate Professor, Almaty Technological University**,** Almaty, Kazakhstan. Email: s.serikbayeva@mail.ru, ORCID ID: https://orcid.org/0000-0001-7053-6503

***Zhaxylyk M. Akimov** – PhD in tourism, International Kazakh-Turkish University named after Khoja Ahmed Yassawi, Turkestan, Kazakhstan. Email: akimov404@mail.ru, ORCID ID: https://orcid.org/0000-0002-5476-9742

Sandugash Bissariyeva – M. Ped. (Sc.), Kazakh Ablai Khan University of International Relations and World Languages, Almaty, Kazakhstan. Email: bissariyeva.s@mail.ru, ORCID ID: https://orcid.org/0009-0006-7179-8023

Mauye Anuarkhan – M. Ped. (Sc.), Kazakh Ablai Khan University of International Relations and World Languages, Turkestan, Kazakhstan. Email: maue_94@mail.ru, ORCID ID: https://orcid.org/0009-0006-1019-8956

Gulzhazira D. Kenzhebayeva – M. Fin. (Sc.), K. Zhubanov Aktobe Regional University, Aktobe, Kazakhstan. Email: meru12122012@mail.ru, ORCID ID: https://orcid.org/0000-0003-3708-2591