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The Impact Of The Coronavirus Pandemic To The Tourism Of Uzbekistan

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ABSTRACT: *The article is devoted to the state of the coronavirus pandemic in Uzbekistan, modeling, and forecasting economic growth within the context of the pandemic. Changes within the scale of the coronavirus pandemic and its impact on the economy have been studied on the premise of time series and figure models. The changes within the country's GDP and development rates under the influence of the pandemic, the factors that increase the volume of Uzbek exports are portrayed. The model of alter within the request for tourism within the Republic of Uzbekistan over a long time, the impact of the widespread on the number of foreign tourists..*

Key words: *Economic Growth, Tourism, Coronavirus Pandemic, Demand in Tourism, Model, Correlation, Time Series, Regression Analysis, Determination Coefficient, Sales Volume, Volume Of Services.*

1. INTRODUCTION

This year, the challenge is to anticipate the spread of coronavirus disease, to preserve sustainable socio-economic improvement within the confront of the widespread, which has driven to the limitation of various human movements and the activities of undertakings. From the earliest times when the threat of disease spread to Uzbekistan, the measures taken by the government to secure the population from disease and social protection of the poor helped to diminish the impact of the pandemic and avoid economic impoverishment.

As a result of the spread of coronavirus infection in Uzbekistan, various negative factors were identified as a result of the spread of coronavirus infection in Presidential Decree No. PD-5969 of March 19, 2020 "On priority measures to mitigate the negative impact of the coronavirus pandemic and the global crisis on sectors of the economy", PD-5969 of April 3, 2020 "On priority measures to mitigate the negative impact of the coronavirus pandemic and the global crisis on sectors of the economy", "Additional measures to support the population, industries and businesses during the coronavirus pandemic", PD-5978 of April 27, 2020 "On additional measures to support the population and businesses during the coronavirus pandemic", PD-5986 of July 30, 2020 "On social protection and assistance during the coronavirus pandemic on additional measures to provide financial support to the needy ". This, in turn, requires effective preventive measures to mitigate the negative effects of this situation, including the

need to pay special attention to supporting and ensuring the sustainability of rapidly developing sectors of the economy, such as tourism, transport, pharmaceuticals and textiles highlighted.

President Sh. Mirziyoev's Decree No. PF-6038 of March 19, 2020 states that various negative factors affect the economy of Uzbekistan as a result of the spread of coronavirus infection, which, in turn, requires effective preventive measures to mitigate the negative effects of this situation. At the same time, the need to pay special attention to the support and sustainability of rapidly developing sectors of the economy, such as tourism, transport, pharmaceuticals and textiles, was emphasized.

President Sh.M.Mirziyoev's Decree No. PD-5969 "On priority measures to mitigate the negative impact of the coronavirus pandemic and the global crisis on sectors of the economy" dated March 19, 2020, states that different negative factors influence the economy of Uzbekistan as a result of the spread of coronavirus infection, which, in turn, requires successful preventive measures to moderate the negative impacts of this situation. They got to pay special attention to support the rapidly creating divisions of the economy, such as tourism, transport, pharmaceuticals, and textiles, and guaranteeing their sustainability.

The pandemic has extremely hampered the development of numerous sectors of the Uzbek economy, particularly services and tourism. Taking into account the positive impacts of tourism, the government pays awesome attention to the advanced development of tourism in our nation, expanding the level of the industry in the national economy.

In recent years, the Republic of Uzbekistan has developed a legislative system within the field of tourism, transport, inns, recreation and sports, the infrastructure of entertainment facilities, historical monuments and cultural heritage, development of relations with outside nations, visa facilitation, training, tourism infrastructure. Construction work is in full swing. No matter how effective the changes within the tourism division, the negative impact of the coronavirus pandemic have been highly reflected in the development of the tourism sector.

Modeling economic development trends, analyzing the impact of factors and conditions affecting the development of industries, and forecasting the improvement of the industry in the near future is a topical issue, the model of the pandemic, economic development, and send out changes in the country in the event of a pandemic.

2. THE MAIN FINDINGS AND RESULTS

Modeling the development trends of the tourism industry, analyzing the level of impact of variables and conditions affecting the improvement of the industry, and forecasting the improvement of the industry within the near future may be a topical issue. The ponder created the level of the pandemic, issues of financial development and tourism improvement in the country within the occasion of a widespread, a model of economic growth and tourism development, and a forecast based on it.

3. ANALYSIS OF THE RELEVANT LITERATURE

Theoretical and practical aspects of modeling and forecasting economic processes, especially in the field of tourism, have been studied by many foreign economists, including Allen L. Webster [6, p. 1047], J.R. Amaikuima, L.I.Amakuima [7, pp. 11-17], Barbara Illovsy, Di Anza Kollig [8, pp. 673-704], T. Chorn, Ch.Chainbunsri [9, pp. 1-19], Ch.Chainbunsri, Prasert Chaitip [10, pp. 1-8], Damodar N. Gujarati [11, p. 1024], studied by the Francis H.Diebold [12, p. 371], G.Kaplan, G.L.Violante [13, pp. 167-194], Petrevska Birjana [18, pp. 45-55]. Among the scientists of the Commonwealth of Independent States: I.A. Bashmakov [20, pp. 32-63], II Eliseeva [21, p. 346], I.A. Kiseleva [22, pp. 1-7], V.A. May [23, pp. 5-28], Z.M. Mamaeva [24, p. 72] , M.A.Morozov, N.S.Morozova [25, pp. 32-36] studied in scientific works.

The issues of modeling and forecasting of socio-economic processes from Uzbek scientists have been studied in the scientific works of RH Alimov [19, p. 166], B. Hodiev, T. Shodiev, Kh.I. Muminov [14, pp. 83-89, 15, pp. 36-42, 16, pp. 19-26, 17, pp. pp. 117-128], B. Berkinov [18, p. 175] and others.

4. RESEARCH METHODOLOGY

The article uses statistical grouping, econometric modeling, induction and deduction, logical analysis methods. Theoretical and methodological basis is the general strategy developed in the country for economic growth and tourism development, decrees of President Sh.M. Mirziyoev on prevention of coronavirus pandemic, development of economic growth and tourism in pandemic conditions, support of entrepreneurs, social protection and scientific –methodological literature.

The data of the Statistics Committee of the Republic of Uzbekistan was used as a database. The status and outbreak of the coronavirus pandemic in the country were studied on the basis of time series and factor analysis. The model of economic growth and tourist visits in the country, as well as forecasting issues after the coronavirus pandemic were developed on the basis of Microsoft Excel 2013.

5. ANALYSIS AND RESULTS

The negative impact of the current coronavirus pandemic on the world economy in 2020 is reflected in economic development within the country, a sharp decrease in the improvement of a few sectors of the economy, which are zones of coordinated trade with the population. The decrease in incomes and living standards of the population of Uzbekistan has become more pronounced. In this case, it is important to study the coronavirus epidemic, to analyze its level.

We considered it critical to analyze the flare-up of the coronavirus pandemic in our country from March 15 to October 30, 2020.

From March 15 to October 30, 2020, the number of patients diagnosed with coronavirus was 66,705, with an average of 267 cases per day during the past 230 days. Also, the number of patients during this period was developed using the trend equation based on Microsoft Excel, and the incidence of the disease was determined to be consistent with the following model with a coefficient of determination $R^2 = 0.83$:

$$Kt = 129,25 - 79,58t + 13,52t^2 - 0,43t^3 \quad (1);$$

Where: Kt is the number of patients treated at ten-day intervals based on the model, per person; t - time interval, ten days is taken as a unit.

In preparing the chart, 23 data in the form of aggregate amounts of the 10-day period were used instead of the 230-day data to make the indicator period look more convenient (Figure 1).

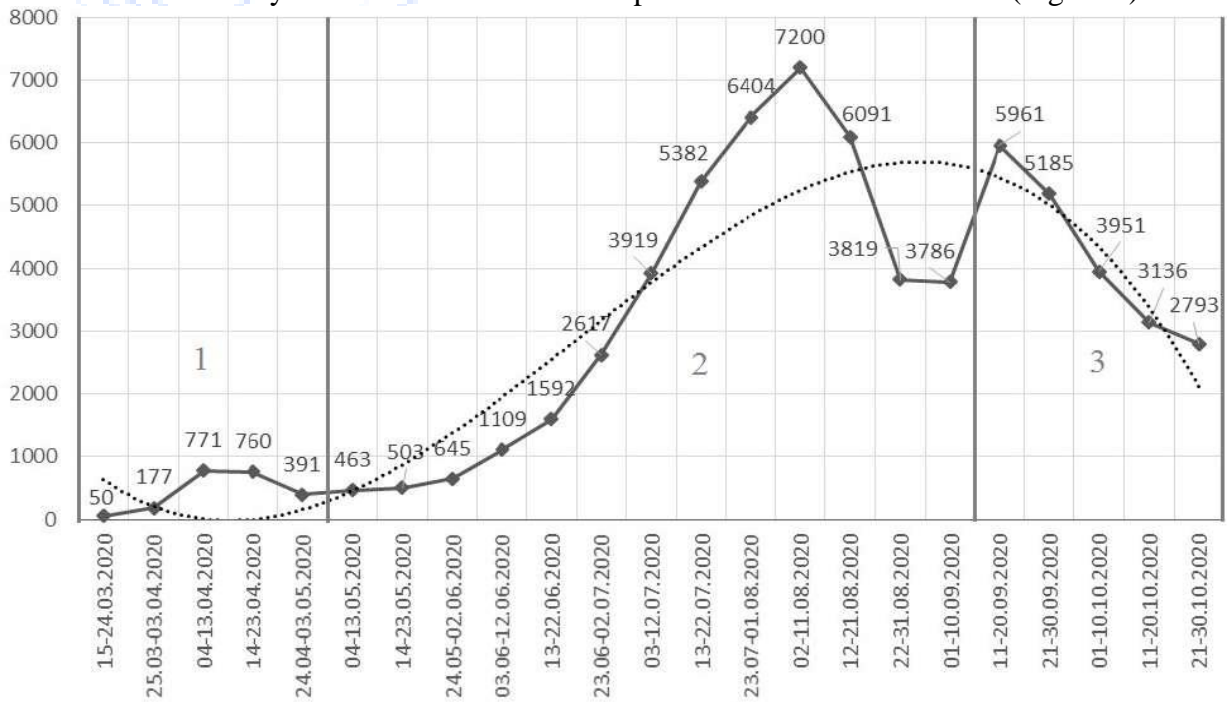


Figure 1. The dynamics of the number of patients with coronavirus disease in the period from March 15 to October 30, 2020, per capita

Source: Prepared on the basis of information from the Ministry of Health of the Republic of Uzbekistan.

The picture data show that the number of patients with the disease has a waveform pattern, and the change in the morbidity rate from March 15 to November 30, 2020 can be divided into periods when three waves are formed:

1. The period from March 15 to May 3, 2020, the highest rate was 04-13.2020 for 10 days from 771 patients;
2. The period from April 4 to September 10, 2020, the highest rate was 0200.08.2020 for 10 days from 7200 patients;
3. The period from August 11 to October 30, 2020, the highest figure was 11-20.2020 for 10 days 5961 patients.

Taking into account that the frequency of coronavirus in our nation corresponds to the model appeared in Formula 1, it is possible to predict a diminish in the rate of coronavirus in the next ten days.

It is important to study the analysis of the coronavirus epidemic, the decline in incomes and living standards of the population of Uzbekistan. From March 15 to October 30, 2020, the number of patients diagnosed with coronavirus was 66,705. The number is 267 people. Also, the number of patients during this period was developed on the basis of Microsoft Excel using the trend equation, and the incidence of the disease with a coefficient of determination $R^2 = 0.83$, the suitability of the following model was determined:

$$Kt = 129,25 - 79,58t + 13,52t^2 - 0,43t^3 \quad (1);$$

Where: Kt – the number of patients treated at ten-day intervals based on the model, per person; t - time interval, ten days is taken as a unit.

The number of coronavirus patients varies by region, and the socio-economic indicators of the regions were studied to determine the causes of this differentiation (Table 1).

TABLE 1 NUMBER OF CORONAVIRUS CASES BY REGIONS OF THE COUNTRY AND SOCIO-ECONOMIC INDICATORS OF THE REGIONS

Regions	Patients with coronavirus, as of 30.10.2020, person	The population density, as of 01.01.2020, per person / sq.km.	The volume of services provided per capita in January-December 2019, thousand soums	Gross regional product in January-December 2019 amounted to billion soums	Gross regional product per capita in January-December 2019, thousand soums	Per capita income, in January-December 2019, thousand soums	The volume of services provided per capita in January-December 2019, thousand soums	Retail sales per capita in January-December 2019 amounted to one thousand
The Republic of Karakalpakstan	752	11,4	3010,4	18735,7	9944,1	3390,5	3010,4	3028,4
Andijan	1892	727,4	3165,3	32897,2	10621,6	4108,7	3165,3	4101,7

Bukhara	1310	47,7	4406,3	26695,0	13980,1	5641,3	4406,3	5399,2
Jizzakh	597	65,2	3148,8	15211,9	11126,3	3906,4	3148,8	4302,9
Kashkadarya	1400	114,7	2710,7	36470,1	11233,3	3768,3	2710,7	3277,0
Navoi	619	9,0	5115,9	36685,2	37119,5	7431,4	5115,9	6856,2
Namangan	2400	379,8	2785,0	23239,0	8353,6	3454,4	2785,0	3581,1
Samarkand	2333	230,8	3331,5	37593,9	9793,9	3982,1	3331,5	3615,7
Syrdarya	1113	196,8	3253,6	10477,7	12500,3	4022,5	3253,6	3427,5
Surkhandarya	932	130,8	2685,8	22349,3	8597,2	3959,7	2685,8	4253,0
Fergana	590	551,8	3142,9	32943,3	8861,5	3506,7	3142,9	3697,0
Khorazm	700	306,0	3113,5	19136,5	10337,4	4563,3	3113,5	3735,9
Tashkent	13105	192,3	4988,8	50117,8	17164,2	4904,6	4988,8	5965,3
Tashkent city	38962	8572,3	25881,1	74527,6	29331,2	9041,0	25881,1	15046,0

Source: Data from the Ministry of Health of the Republic of Uzbekistan and the State Statistics Committee of the Republic of Uzbekistan.

According to the table, the number of patients with coronavirus in Tashkent is very high, which is significantly different from other regions. The number of patients with coronavirus in Tashkent is the lowest in the region (590 people). 66.0 times more than in Fergana region, as a result of such a high difference, the quadratic difference (s) between the indicators of patients with coronavirus by region is (σ) 9981.0.

Factors such as population density, per capita services, and per capita retail sales appear to be high in the number of patients with coronavirus disease. The impact of factors such as gross regional product, per capita gross regional product, per capita income on the number of patients with coronavirus disease is relatively low.

We created a regression equation based on components with a tall correlation coefficient (0.95), per capita services (0.96) and per capita retail sales (0.93) and calculated the elasticity coefficient (Table 2)

TABLE 2 ONE-FACTOR STRAIGHT-LINE REGRESSION EQUATIONS AND ELASTICITY COEFFICIENTS BASED ON FACTORS HIGHLY DEPENDENT ON THE NUMBER OF PATIENTS WITH CORONAVIRUS DISEASE

Factors	R	Regression equations	R ²	Fisher (F) criterion	Elasticity coefficient
Population density, 01.01.2020 position, per person / sq.km.	0,95	$y_{x1}=1156,9+4,4x_1$	0,89	103,8	0,76
The volume of services provided per capita in January-December	0,96	$y_{x2}=-3569,4+1,6x_2$	0,93	153,3	1,75
The volume of retail trade per capita, thousand soums	0,93	$y_{x3}=-10947,4+3,1x_3$	0,87	80,2	3,30

Source: Based on the data in Table 1, prepared by the researcher in Microsoft Excel.

It can be seen from the table information that the correlation coefficient speaking to the calculate and result in dependence is within the extend of 0.93-0.96, the determination coefficient is within the extend of 0.87-0.93, and the Fisher basis is higher than the table values. According to the regression equations, the increment in the number of patients per capita will be due to an increase within the populace thickness by 0.76 units per 1 sq. Km, the volume of services per capita by 1.75 thousand soums, retail deals by 3.30 thousand soums per capita.

The coronavirus pandemic this year has had a negative impact on the positive development of the country's GDP and growth rates in recent a long time (Figure 2).

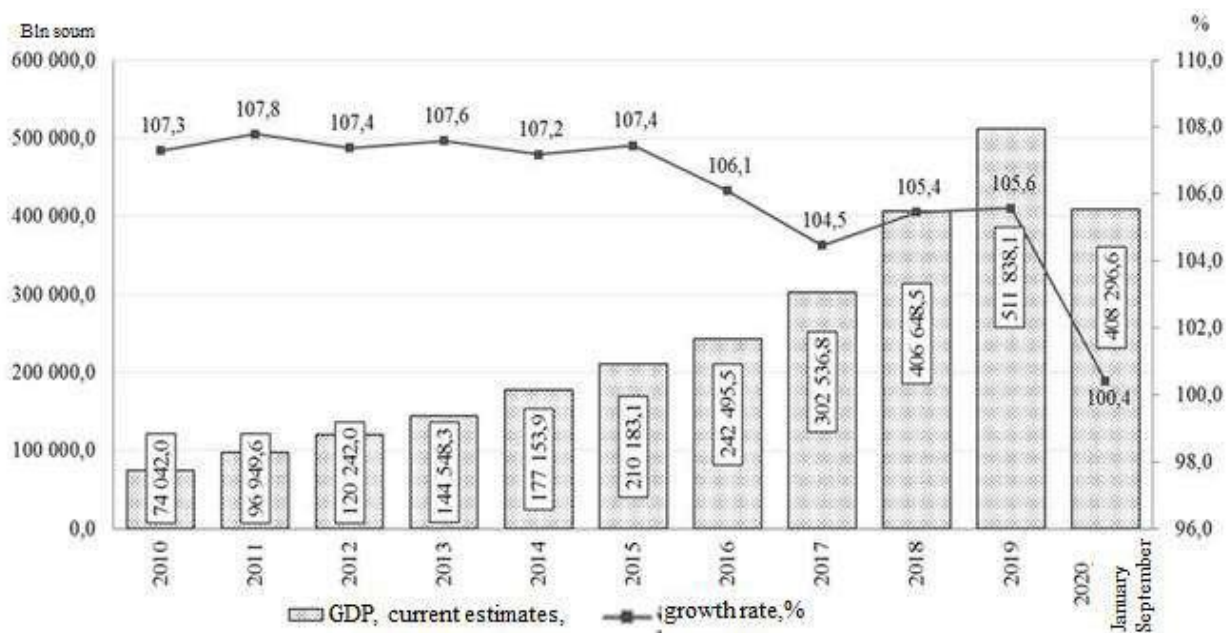


Figure 2. Changes in GDP and GDP growth rates in 2010-2020

Source: Data of the State Statistics Committee of the Republic of Uzbekistan.

The information shows that from 2010 to 2019, the volume of GDP developed quickly in current prices, especially in 2017-2019, due to the increment in inflation in the nation, the nominal GDP increased significantly. In recent years, the normal inflation rate was 14.0-15.0 percent and the GDP deflator was 20.0-25.0 percent, which contributed to the normal GDP growth rate of 105.0 percent. The model of alter within the sum of GDP in current prices in recent years appears that this indicator will grow at higher rates in later years (Table 2).

The three models have a really near coefficient of determination of 1.0, indicating that the models are precise and have a parabola-shaped curve, and GDP at current prices is expected to develop quickly in the coming years. 5-106.0 percent, the current GDP is estimated at 625.0 trillion soums. Tragically, the coronavirus pandemic has a serious negative impact on the economic development of the country, causing a diminish in economic growth by 5.0% and GDP in current costs by about 100.0 trillion soums.

TABLE 2 MODELS OF GDP CHANGE IN CURRENT PRICES

Model view	Regression equations	R ²
Exponential	$GDP_t = 62542e^{0,2047t}$	0,9947
2-degree	$GDP_t = 99552 - 13360t + 5262,2t^2$	0,9865
3-degree	$GDP_t = 28908 + 49297t - 8323t^2 + 823,35t^3$	0,9981

Source: Prepared by the researcher in Microsoft Excel based on the data in Figure 2.

Over the past five years, the January-September GDP growth rate was the highest in 2016 (6.6 percent) and the lowest in 2017 (104.0 percent). Over the past two years, GDP growth has averaged 5.8 percent, and in January-September 2020, the impact of the coronavirus pandemic was 5.4 percent year-on-year, down from 100.4 percent.

In a video conference chaired by President Sh.M.Mirziyoev in October 2020 to discuss the results of 9 months and the tasks to be completed by the end of the year, it was acknowledged that the consequences of the coronavirus pandemic had a negative impact on all sectors of the economy.

Due to the backwardness of production in a few industries and regions, the total output of the industry decreased by 2.7%. The assembly focused on the issue of expanding trades through the expansion of production. In 2019, the foreign trade turnover of the Republic of Uzbekistan amounted to 41 billion 751 million US dollars, exports amounted to 17 billion 458.7 million US dollars, imports -

24 billion 292.3 million US dollars. There is a negative balance within the foreign trade turnover of Uzbekistan, and this prepare is growing over the years. Beneath the impact of the widespread, the decay in sends out and a further increment in imports will further increase the negative balance of foreign trade.

Under the influence of the coronavirus pandemic in Uzbekistan, some types of services, especially in the field of tourism, have undergone negative changes (Figure 1).

The figure's information shows that the number of tourists going by amid the analyzed period has expanded, particularly within the last three to four years, when the growth rate of this indicator was very tall. The truth that the trend of alter within the number of tourists visiting will take the frame of a parabola within the studied period means that the forecast data for future periods will be tall.

The trend of time-dependent change in the number of tourists visiting our country in the period from 2005 to 2019 with a coefficient of determination (R^2) of 0.9683 can be expressed as follows:

$$Y_t = -470,85 + 897,35t - 164,8t^2 + 9,1173t^3(2);$$

Here: The number of tourists calculated on the basis of the Y_t -model, thousand people. The unit of time t is taken to be one unit of a year.

This situation is reflected in the drift bend, which reflects the alter within the number of tourists visited within the figure and the figure direction for 2020 based on this show. The figure data based on the model shown in Formula 2 may have reached 8 million of the number of foreign tourists visiting Uzbekistan in 2020.

The number of tourists expected to visit the country in 2020, calculated on the basis of the model, has sharply decreased due to the coronavirus pandemic, and in January-September 2020 amounted to only 1.4 million people, which is 6.0-6.5 million less than forecast. As the pandemic continues, the total number of tourists who can visit this year is around 2.0 million and may be less than the forecast by 6.0 million.

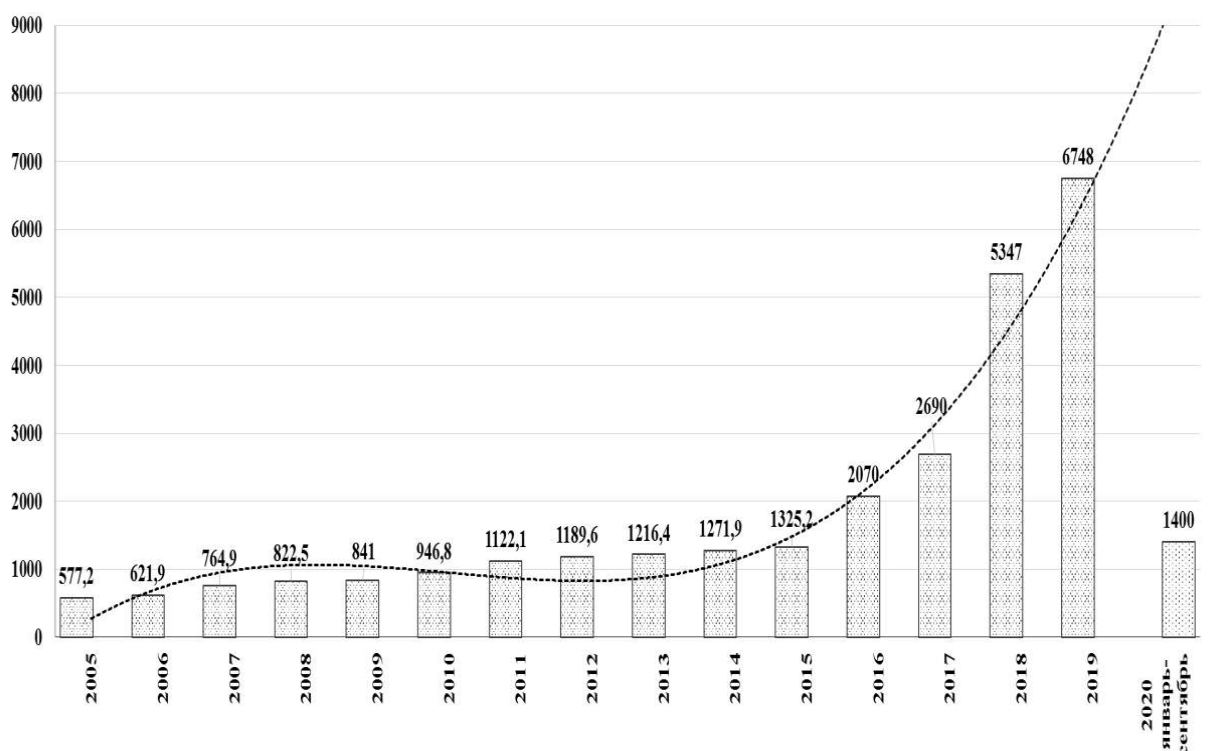


Figure 1. The trend line of the number of foreign tourists visiting the Republic of Uzbekistan and the change in the number of foreign tourists

Source: Data of the State Statistics Committee of the Republic of Uzbekistan and data of the State Committee for Tourism Development of the Republic of Uzbekistan.

In January-September this year, the number of foreigners visiting Uzbekistan for tourism amounted to 1.4 million people. This figure decreased by 72.6% compared to the same period last year. During this period, the number of Uzbek citizens traveling abroad for tourism amounted to 1.6 million people (a decrease of 73.5% compared to the same period last year).

The main destinations of foreigners visiting Uzbekistan are visiting relatives (88.5%), tourism (8.6%), medical treatment (1.0%), services (0.9%), trade (0.7%), and education (0.3 percent). In January-December this year, the majority of tourists are 31-55 years old and 19-30 years old, with a small share of those under 18 and over 56 years old.

6. CONCLUSION

Study of the coronavirus epidemic, analysis of its level amid the period from Walk 15 to October 30, 2020, in the Republic of Uzbekistan 66,705 people were infected with the disease, or an average of 267 people per day amid this period. Forecast information based on a time-based model of changes in the number of patients with coronavirus during the period considered shows that the incidence rate will drop to a least in the near future. Another positive perspective of the country is that 96.0% of sick patients are cured as a result of care for wiped out patients, provision of quality medical care, short-term treatment.

The coronavirus pandemic has had a negative impact on the economic growth of the Republic of Uzbekistan, the development of some sectors of the economy, which are direct trade with the population, such as declining incomes and declining living standards. Due to the negative impact of the pandemic in January-September 2020, the share of industries in the country's GDP changed compared to the previous year, this year the share of net taxes in GDP decreased by 1.4% compared to last year, industry (1.5%), agriculture (1.1%) the share of products decreased, the production of construction (1.6%) and services (0.7%) increased due to the facilities created for the population, buildings under construction and services provided.

According to the model of time-based changes in the GDP of the Republic of Uzbekistan for 2010-2019, the current forecast of GDP in 2020 at current prices was expected to be 625.0 trillion soums and a growth rate of 106.0%. The pandemic in 2020 led to a decrease in GDP of the Republic of Uzbekistan by 100.0 trillion soums and economic growth by 5.0%.

Given that the pandemic of 2020 had a negative impact on economic growth in the Republic of Uzbekistan, it is necessary to develop measures to mitigate the effects of the pandemic in the future. Great attention should be paid to the rapid development of industries, agriculture, industry, which are less likely to be infected with coronavirus in the short term.

In the future, it is possible to increase the volume of exports by focusing on the automation of jobs, the use of robots in the service and manufacturing industries.

Study of the coronavirus epidemic, investigation of its level during the period from March 15 to October 30, 2020, within the Republic of Uzbekistan 66,705 people were tainted with the disease or a normal of 267 people per day amid this period. Prescient data based on a time-based model of changes within the number of patients with Coronavirus within the period studied appears that the incidence rate will drop to a least within the close future. Another positive perspective of the nation is that 96.0% of sick patients are cured as a result of care for wiped outpatients, provision of quality medical care, short-term treatment.

The main reason for the contrasts in the number of patients with coronavirus in different regions of Uzbekistan is the distinction in population density and per capita services, as well as per capita services, which are the main factors influencing the alter in the number of patients. The models created on the basis of variables influencing the alter in the number of patients led to an increment in the population density by 0.67 people per 1 sq. Km, per capita services by 1.75 thousand soums and 3.3 thousand soums per capita is happening.

Given that the pandemic of 2020 had a negative impact on economic growth and tourism in the Republic of Uzbekistan, it is vital to develop measures to relieve the effects of the pandemic within the future. Incredible attention ought to be paid to the quick development of industries, agriculture, industry, which are less likely to be infected with coronavirus in the short term.

In the future, it is advisable to pay attention to the use of robots in workplaces in the automation, maintenance and manufacturing of workplaces.

Following the rules of quarantine, it is necessary to gradually revitalize the service sector, create great opportunities for the development of domestic tourism in the context of a pandemic, the population to carry out tourist activities in the regions of the country.

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