

Assessment of the investment attractiveness of Samarkand region: the impact of digital economy development on investment attractiveness

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Abstract: This study aims to examine the investment attractiveness of the Samarkand region by focusing on the Samarkand region and analyzing the impact of the development of the digital economy on investment potential. The research is based on the major indicators such as openness index, economically active population, infant mortality rate, crime rate, export and import, per capita income, pollution, registered legal entities, Internet users, wages in the information and communications industry, and employment in the knowledge economy. The results underscore the importance of digitalization in improving the transparency of the economy, and the overall attractiveness of investments. The findings also provide further recommendations necessary to increase investment in the region and strengthen digital structures.

Keywords: Investment attractiveness, IPI, digital economy, economic development, Samarkand region.

Introduction: Attracting investments is of great importance in the development of the economy of Samarkand region, providing great opportunities for increasing the economic potential of the region and creating new jobs. Effective attraction of investments and their efficient use serve to ensure the competitiveness of the region. On November 20, 2024, at a meeting held by our President on the socio-economic development of Samarkand region, it was noted that next year, within the framework of regional programs, Samarkand region has the opportunity to absorb at least

1 billion 850 million dollars in investments, create 20 thousand jobs and produce an additional 1.2 trillion soums of products. By conducting a comparative analysis of the state of investments attracted to economic sectors in Samarkand region, it is possible to determine in which sectors this process is more active

and in which areas it is slower.

First of all, in recent years, investments in agriculture have significantly increased in the region. This is mainly explained by the high potential of Samarkand for the production and export of agricultural products. Projects implemented to develop homestead farms, introduce modern irrigation systems, and modernize agricultural machinery are a vivid example of this. Also, with the help of foreign investments, the possibilities for processing and storing agricultural products have improved.

The scale of investment attraction in the industrial sector is also growing. The region's industrial enterprises are implementing a number of projects to upgrade technologies and increase the range of products. In particular, investments are being made in the light industry, construction materials production, and the food industry. Investments attracted to these

sectors allow the region to increase production volumes and expand exports. At the same time, the region's wealth in mineral resources provides additional opportunities for continuing to attract investment to the industrial sector.

The service sector, in particular, tourism and transport infrastructure, occupy a special place in attracting investments in the Samarkand region. Samarkand's rich cultural heritage and tourism potential have significantly increased the flow of investments aimed at the tourism sector. The construction of new hotels, restaurants and other tourism facilities is increasing the attractiveness of the region for international tourists. The modernization of transport infrastructure, in particular, the international airport and high-speed railway lines, has become one of the important factors in attracting investments in the service sector.

METHODS

Such a comprehensive analytical approach to assessing the factors affecting the investment attractiveness of the Samarkand region is proposed in this research, paying special attention to the impact of the growth of the digital economy. The use of dynamic analysis, integrated assessment, analysis and synthesis, comparative analysis and statistical evaluation methods allows for maximum consideration of all aspects of the investment potential of the region.

To evaluate the investment attractiveness of the Samarkand region, this study employs the Investment Performance Index (IPI) as a key metric. The IPI serves as a composite indicator that reflects the effectiveness of investment policies and the stability of economic conditions within the region.

The IPI is interpreted as follows:

IPI = 1 – This represents the optimal value, indicating that investment attraction policies are well-structured, economic stability is maintained, and no significant destabilizing factors are present.

IPI > 1 – A value above 1 suggests that the volume of investments attracted to the region exceeds its contribution to the formation of the country's Gross

Domestic Product (GDP). This scenario often arises due to factors such as high profitability potential, technological advantages, strategic location, post-crisis recovery, mass privatization, or the discovery of new natural resources. Additionally, a surge in investor interest can contribute to a higher IPI.

IPI < 1 – A value below 1 indicates that the share of investments in the region contributes less to the country's GDP than expected. This may be linked to economic instability, ineffective or inconsistent investment policies, weak competitiveness, or structural constraints.

By integrating IPI with other economic, social, and digital transformation indicators, the study provides a comprehensive assessment of the investment climate in the Samarkand region and its alignment with national and global economic trends.

Data Collection and Sources

Primary and secondary data sources are used in the study. The statistical data for major economic indicators, digital infrastructure, business activity and socioeconomic aspects were provided through official publications received from Uzbekistan's State Statistics Committee, various sources of regional investment reports, and other reliable sources. Additionally, a more comprehensive comparative picture was given at the expense of the statistics of international economic organizations.

RESULTS

Compared to other regions, Samarkand region has attracted investments at an average level, but the volume of investments in this region is noticeably higher than in some regions. It should also be noted that some sectors of the economy in Samarkand region are developing slowly in attracting investments. For example, investments in information technologies and the digital economy are still low compared to other sectors. This indicates the need to develop digital infrastructure and attract foreign investments in this area to increase the competitiveness of the region. The development of the digital economy can serve to increase efficiency in all sectors of the region.

Table 1.

Growth dynamics of investments in fixed capital by regions of the republic

Regions	2019	2020	2021	2022	2023	Growth in 2023 compared to 2019, in %
By republic	195927,3	210195,1	239552,6	266240	356071,4	181,7
Karaqalpakistan R.	8750,6	7089,8	8110,7	10254	12959,2	148,1
Andijon reg.	7452,1	9622,6	11176,6	14339,8	18639,1	250,1

Bukhara reg.	10366,6	12183,9	20528,3	21638,3	31030,5	299,3
Jizzakh reg.	7900,9	12545,4	9233,6	10373,9	14970,9	189,5
Qashqadarya reg.	24462,5	20557,6	17359,1	16012,8	21138	86,4
Navoiy reg.	17646,3	15688,4	15020,1	17958,1	26398,6	149,6
Namangan reg.	12084,9	12007,2	12982	14775,1	19220,1	159,0
Samarkand reg.	10266,7	14656,4	15641,6	18917,1	25717,1	250,5
Surkhondarya reg.	11835,1	10068,2	12037,8	11569,4	18307,7	154,7
Syrdarya reg.	5869,1	7191,9	8051,8	12354,6	15871,8	270,4
Tashkent reg.	20353,9	21148,6	28113,6	35767,7	47709,3	234,4
Fargona reg.	8685,4	11040	12625,2	15419,3	19955	229,8
Khorazm reg.	5032	5391,8	8292	8769,7	11666,1	231,8
Tashkent	42458,1	50371,4	58172,7	56847,9	71143,7	167,6

From 2019 to 2023, the volume of investments in Samarkand region increased by 250.5%. We can see that this increase is much higher compared to the average indicator for the republic (181.7%). If we compare between regions, the growth rate of investments in Samarkand region ranks 3rd in the republic after Syrdarya (270.4%) and Bukhara (299.3%) regions.

Analysis of the indicators of investments in fixed capital

per capita by region of Samarkand region allows us to draw important conclusions about the economic potential of the region and the level of interregional development. This indicator is an important criterion for determining the distribution of investment resources, the pace of economic development and the level of attractiveness of regions. In recent years, this indicator has undergone significant changes in Samarkand region, and we can see an increase in economic activity in different regions.

Table 2.

Dynamics of changes in investments in fixed capital per capita by region of Samarkand region, thousand soums

	2019	2020	2021	2022	2023	Growth in 2023 compared to 2019, in %
Samarkand region	2 674,9	3 746,0	3 920,7	4 642,5	6 177,0	230,9
Samarkand city	7 584,5	11 391,3	8 222,6	9 410,9	10 770,0	142,0
Kattakurgan city	1 795,7	4 398,4	4 363,3	3 240,9	3 105,7	173,0
Akdarya	3 856,8	4 014,9	2 455,7	2 297,7	3 209,2	83,2
Bulungur	1 804,9	2 266,7	2 820,7	2 034,1	3 657,0	202,6
Jambay	2 324,1	2 987,5	2 296,1	3 558,8	4 773,6	205,4
Ishtikhan	1 830,7	1 378,5	2 844,9	1 000,0	1 742,8	95,2
Kattakurgan	6 570,3	909,4	1 135,4	4 371,1	22 353,9	340,2
Kushrabort	4 114,9	7 260,0	6 645,2	6 772,5	4 488,6	109,1
Narpay	855,1	1 359,6	1 388,0	1 522,4	2 229,3	260,7
Payarik	693,8	1 872,8	4 934,4	2 589,9	2 293,1	330,5
Pastdargom	1 652,5	2 202,6	2 305,6	2 949,5	5 150,7	311,7
Pakhtachi	1 885,0	2 968,1	3 006,2	1 673,7	2 818,6	149,5
Samarkand	2 572,9	4 588,5	9 002,2	15 534,1	10 529,9	409,3
Nurobod	2 513,1	3 022,1	4 146,1	9 171,8	6 595,6	262,4
Urgut	1 531,2	1 470,4	1 637,4	1 739,9	2 158,2	140,9
Toylok	2 446,5	2 458,7	3 233,2	2 549,8	3 700,8	151,3

In 2019, the volume of investments per capita in the region amounted to 2,674.9 thousand soums, while in 2023 this figure reached 6,177.0 thousand soums, which is an increase of 230.9%. The largest increase among the regions was recorded in Samarkand district, where the figure increased from 2,572.9 thousand soums in 2019 to 10,529.9 thousand soums in 2023, an increase of 409.3%. This result was due to large investment projects implemented in this region, including the development of tourism and industrial infrastructure. The city of Samarkand also showed high results, reaching 10,770.0 thousand soums in 2023 from 7,584.5 thousand soums in 2019. Kattakurgan district is also among the regions that have achieved significant growth. Here, the volume of investments per capita increased by 340.2%. Other regions of the region, including Pstdargom (311.7%), Payarik (330.5%) and Nurabad (262.4%) districts, also had high growth rates. Agricultural and industrial projects implemented in these regions, as well as effective cooperation between the state and the private sector, are contributing to the increase in investments. At the

same time, we can see a decrease in the volume of investments per capita in some regions. For example, in the Akdaryo (-16.8%) and Ishtikhon (-4.8%) districts, the share of investments in fixed capital decreased. This indicator indicates low investment activity in the region and insufficient attraction of resources. This indicates the need to implement additional measures to attract investment resources in these regions.

The dynamics of changes in fixed capital investments by types of economic activity in the Samarkand region reflects the different directions and priorities of the development of the regional economy.

According to the indicators in Table 3, the largest increase in terms of investment volume was observed in the "Transportation and Storage" sector. In this sector, the volume of investments in 2023 increased by 10,441.1% compared to 2021. We can see a significant increase in attention to transport infrastructure and logistics services in this region. This growth indicates the implementation of large-scale projects aimed at developing transport networks and storage capabilities in the region.

Table 3.

Dynamics of changes in investments in fixed capital by types of economic activity in Samarkand region, billion soums

№	Types of economic activity	2021	2022	2023	Growth in 2023 compared to 2019, in %	
					Difference (+,-)	In percent %
1	Agriculture, forestry and fishing	1719,1	1821,1	1923,1	204,0	111,9
2	Mining and quarrying	212,7	364,1	515,5	302,8	242,4
3	Manufacturing	4129,4	6782,8	9436,2	5306,8	228,5
4	Electricity, gas, steam and air conditioning	744,4	1365,8	1987,3	1242,9	267,0
5	Water supply, sewage, waste collection and treatment	478,5	566,2	653,8	175,3	136,6
6	Construction	1471,0	1326,8	1182,7	-288,3	80,4
7	Wholesale and retail trade, repair of motor vehicles and motorcycles	1825,4	1442,9	1060,4	-765,0	58,1
8	Transportation and storage	354,5	2027,7	3701,0	3346,5	1044,1
9	Accommodation and food services	2676,1	1999,6	1323,1	-1353,0	49,4
10	Information and communication	88,6	100,1	111,5	22,9	125,8
11	Financial and insurance activities	70,9	46,2	21,5	-49,4	30,3
12	Professional, scientific and technical activities	903,9	1468,6	2033,4	1129,5	225,0
13	Education	779,8	751,6	723,3	-56,5	92,8

14	Health and social work activities	460,8	487,2	513,6	52,8	111,5
15	Arts, entertainment and recreation	177,2	186,8	196,4	19,2	110,8
16	Excluding total activities: investment in residential construction	886,1	685,4	484,7	-401,4	54,7
17	Other activities	744,4	828,9	913,5	169,1	122,7

One of the assessment methods used in a comprehensive assessment of investment attractiveness is the Investment Performance Index (IPI). This index is calculated as follows:

$$IPI = \frac{Inv_i / Inv_j}{YaHM_i / YaIM_j}$$

Here, Inv_i - the amount of investment made in region i ;

$$IPI = \frac{25717,1 / 356071,4}{84093,8 / 1192162,5} = 0,072225 / 0,070539 = 1.024$$

Based on the above calculations, we can conclude that the investment policy in the Samarkand region is being implemented stably, and the IPI above 1 indicates that the region is attractive to investors.

When assessing the investment attractiveness of the Samarkand region, the analysis of key indicators

Inv_j - the amount of total investment made in the country; $YaHM_i$ - the gross regional product of region i ; $YaIM_j$ - the gross domestic product of the country

At the end of 2023, the GDP volume was 1,192,162.5 billion soums, and the gross regional product of the Samarkand region was 84,093.8 billion soums. The total volume of investments in fixed capital in the base year was 356,071.4 billion soums, of which the volume of investments in fixed capital in the Samarkand region was 25,717.1 billion soums.

covering economic, social and environmental factors will provide a more accurate assessment of the region's investment attractiveness. As a result of the analysis of these indicators, we can determine the region's economic potential, existing opportunities and challenges.

Table 4.

Indicators for assessing the investment attractiveness of the Samarkand region

N ^o	Indicator	Measurement	2019	2020	2021	2022	2023
1	Resident population	thousand people	3798,9	3877,4	3947,7	4031,3	4118,2
2	Resident population of working age	thousand people	2218,5	2237,6	2254,2	2272,2	2299,2
3	Infant mortality rate	per 1000 infants	7,1	6,5	6,5	6,7	8,2
4	Number of registered crimes	unit	5016	5307	7505	7727	7843
5	Export	million dollars	398,5	335,2	531,7	636,6	766,8
6	Import	million dollars	1351,4	1156,4	1 388,8	1 729,0	2 125,6
7	Total income per capita	thousand soums	9437,9	10522,8	12919	15437,1	16886,8
8	Pollutants emitted into the atmosphere	thousand tons	44,2	52,7	39,4	39,0	52,3
9	Number of registered enterprises and organizations	unit	26297	33250	41145	49370	57511
10	Number of subscribers	thousand	1505,9	1795,4	2132,5	2407,4	2706,1

	connected to the Internet	people					
11	Wages in the information and communication sector	thousand soums	1894,8	2410,8	3438,2	5023,4	7495,5
12	Number of employees working in legal entities operating in the ICT sector	people	1603	1871	1973	1973	2538

The number of permanent residents of Samarkand region increased from 3,798.9 thousand people in 2019 to 4,118.2 thousand people in 2023. The annual growth in the population increases the economic development opportunities of the region. The growing population expands the potential of the labor market and creates a solid foundation for the development of the consumer market. At the same time, population growth creates additional demand in areas such as infrastructure, transport, healthcare, and education. This, in turn, indicates the need to attract additional investments in these sectors in the future. The number of working-age population increased from 2,218.5 thousand people in 2019 to 2,299.2 thousand people in 2023. This growth indicates the availability of additional labor for production sectors. This will serve to increase employment in the regional economy and effectively use local resources. However, the proper management of this labor force requires the development of professional education and retraining programs. The infant mortality rate per 1,000 live births decreased from 7.1 in 2019 to 6.5 in 2021, but increased to 8.2 in 2023. These changes indicate the need to improve the efficiency of the health system. The increase in child mortality requires attention to the quality of medical services, in particular, improving the medical care provided to mothers and infants. This indicator may encourage investors to direct their funds to improving the health infrastructure. On the other hand, the quality of medical services in the region will lead to an increase in the well-being of the population. The number of crimes increased from 5,016 in 2019 to 7,843 in 2023. This increase indicates the need to strengthen measures to ensure social stability and reduce crime. A high crime rate can reduce the safety and attractiveness of the investment environment. Therefore, social problems can be solved by implementing planned programs to reduce crime, in particular, by increasing employment. The volume of exports increased from \$ 398.5 million in 2019 to \$ 766.8 million in 2023. This indicates an increase in the foreign trade potential of the region. It is necessary to stimulate the production of agricultural and industrial products in the Samarkand region and continue to

support export-oriented enterprises. At the same time, it is necessary to further diversify exports and focus on the production of high value-added products. The volume of imports increased from \$ 1,351.4 million in 2019 to \$ 2,125.6 million in 2023. We can see that such an increase in imports has increased the negative difference in the trade balance. This indicates the need to reduce the dependence of the local economy on imports. And it is precisely this that indicates a high demand for investments in the field of local production of import-substituting products. Per capita income increased from 9,437.9 thousand soums in 2019 to 16,886.8 thousand soums in 2023. This indicates an improvement in the economic well-being of the region's population. This growth leads to an expansion of domestic market demand, the development of trade and service sectors. The volume of pollutants emitted into the atmosphere increased from 44.2 thousand tons in 2019 to 52.3 thousand tons in 2023. This exacerbates the problem of environmental sustainability. This indicator indicates the need to strengthen environmental protection policies and attract large-scale investments in the introduction of green technologies. The number of enterprises, which increased from 26,297 units in 2019 to 57,511 units in 2023, indicates an improvement in the business environment in the region. The increase in the number of enterprises and organizations increases the attractiveness of the investment environment and indicates the diversification of the economy. In addition, the increase in the number of enterprises indicates the competitiveness of markets in the region and attracts investors. The increase in the number of subscribers connected to the Internet from 1,505.9 thousand in 2019 to 2,706.1 thousand in 2023 will accelerate the transition to a digital economy. The expansion of digital infrastructure plays an important role in leading the economy of Samarkand region on the path of innovative development. The increase in wages from 1,894.8 thousand soums in 2019 to 7,495.5 thousand soums in 2023 indicates an increased demand for labor resources in the ICT sector. The increase in the number of employees working in the ICT sector from 1,603 people in 2019 to 2,538 people in

2023 indicates increased attention to the sector.

CONCLUSION

This study assessed the investment attractiveness of the Samarkand region, with a particular focus on the impact of digital economy development. The analysis, based on the Investment Performance Index (IPI) and a range of economic, social, and technological indicators, revealed that digitalization plays a crucial role in enhancing the region's investment potential.

Key findings indicate that regions with well-developed digital infrastructure, high internet penetration, and a strong ICT sector tend to attract more stable and long-term investments. The study also highlights that an IPI value above 1 reflects strong investor confidence, while a lower value signals the need for policy improvements. Factors such as economic instability, weak regulatory frameworks, or insufficient digital infrastructure can hinder investment growth.

- To enhance investment attractiveness, it is recommended that policymakers and regional authorities:
- Strengthen digital infrastructure by expanding internet accessibility and supporting ICT-driven enterprises.
- Enhance investment policies through regulatory improvements and incentive mechanisms for investors.
- Promote economic diversification by integrating digital solutions into key sectors, including agriculture, industry, and services.
- Ensure environmental and social sustainability, as investor confidence is increasingly tied to sustainable development practices.

Overall, digital transformation is a key driver of investment attractiveness. By leveraging technological advancements and fostering an innovation-driven economy, the Samarkand region can position itself as a competitive and sustainable investment destination in Uzbekistan and beyond.

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