

## **ON THE MATTERS OF THE INVESTMENT FACTOR OF INCREASING THE INCOME POTENTIAL OF THE REGION**

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**Abstract:** the article sets out the views of economists and the author's approach to the role of the socio-economic potential of the regions in the development of the country's economy and the investment climate in the regions. In addition to the traditional method of assessing the investment climate, the author presents a methodology for assessing the investment climate of the regions based on a generalized assessment, which is evaluated taking into account the specifics and characteristics of the regions of the Republic of Uzbekistan.

**Key words:** income potential of the region, investments, innovations, investment activity, attractiveness of the environment, budgetary and financial potential, general integrated indicator

### **ХУДУД ДАРОМАД САЛОҲИЯТИНИ ОШИРИШНИНГ ИНВЕСТИЦИОН ОМИЛИ МАСАЛАЛАРИ ХУСУСИДА**

**Аннотация:** мақолада ҳудудлар ижтимоий-иқтисодий салоҳиятининг мамлакат иқтисодиётини ривожлантиришдаги роли ва ҳудудлардаги инвестицион муҳит борасида иқтисодчиларнинг қарашлари ва муаллифлик ёндашуви келтирилган. Муаллиф инвестиция муҳитини баҳолашнинг анъанавий методологиясидан ташқари, Ўзбекистон Республикаси ҳудудларининг ўзига хос жиҳатлари ва хусусиятларини ҳисобга олган ҳолда баҳоланадиган умумлаштирилган баҳолаш асосида ҳудудларнинг инвестиция муҳитини баҳолаш методологияси ҳам таклиф этилган.

**Калит сўзлар:** ҳудуд даромад салоҳияти, инвестиция, инновация, инвестицион фаоллик, ташқи муҳит жозибадорлиги, бюджет ва молиявий салоҳият, умумий интеграл кўрсаткич.

### **Introduction**

To anticipate and develop scientifically based measures to eliminate the disparities in regional development, such as the unprofitability of investments in the world economy today, or the limitation of the full capacity of the production process due to undefined risks and dangers in the effective use of investments; ensuring their sustainable growth, achieving global competitiveness - an impact on investment efficiency vchi requires an in-depth and comprehensive analysis of the factors, to determine the quantitative relationships between them.

The degree of attractiveness of the environment in the regions depends on a system of many factors, which is determined by the influence of an infinite set of factors. Especially for the comparison of interregional investments, the investment environment in each of the regions can be characterized by a certain number of quantitative measures - synthetic or generalized. On the other hand, the investment climate of the region is quantitative cannot be expressed in any dimension - this type of attempt is misguided and can lead to the neglect of this complex phenomenon.

At the same time, in the context of the information explosion experienced by modern civilization, it has become an important issue today to understand that in the real materials of science, great attention should be paid to the methods of application in the way of its application. Therefore, in terms of practical application of the selected methodology, its efficiency, accuracy and reliability are required to match its characteristics as any other method.

### **Critical analysis of the literature on the subject**

O.B. Sheveleva, M.K. Nacheva substantiated [1] the need to assess the investment potential of the region and analyzed the existing approaches to its definition; identified the shortcomings of existing techniques; proposed directions for improving the factor method for assessing investment potential.

L.Sh. Yangulbaeva presented in her article [2] the opinions of leading scientists from Russia and foreign countries in the field of determining the essence and economic content of the investment attractiveness of the region, the main factors and conditions affecting the investment attractiveness of the region, the main participants in investment projects and types of investors.

In her article [3] L.M.Yusupova substantiated the essence of the investment potential of the region as the potential of its balanced development, in which all owners of capital resources are provided with a normal guaranteed level of economic income. As the main factors characterizing the competitive advantages of the region and taken into account when assessing its investment potential, the article defines: infrastructural development of the territory; intellectual and innovative potential of the population; natural features of the region, including geographical location and availability of natural resources.

L.V.Ulezlova and M.S.Ostapenko considered [4] different approaches to the definition of the term investment potential of a region, structure and factors influencing the investment potential of the region. We examined the content of the main methods used to assess the investment potential of the region, which allow us to identify the interdependence between the private factors of the investment potential, which ultimately affect not only the investment potential, but also the investment climate in the region.

A study by Abdul Abiad, Davide Furcheri and Petya Topalova [5] provides new evidence of the macroeconomic effects of public investment in advanced economies. Using public investment forecast errors to identify the causal effect of government investment as well as model simulations, the paper finds that increased

public investment raises output, both in the short term and in the long term, crowds in private investment, and reduces unemployment. Several factors shape the macroeconomic effects of public investment. When there is economic slack and monetary accommodation, demand effects are stronger, and the public-debt-to-GDP ratio may actually decline. Public investment is also more effective in boosting output in countries with higher public investment efficiency and when it is financed by issuing debt.

Using local forecasts and a panel structured vector autoregressive model, Pavle Petrović, Miloško Arsić, Aleksandra Nojković assessed the effectiveness of fiscal policy in the countries of Central and Eastern Europe of the EU [6]. They found that increased public investment has strong positive effects on output, employment, wages and consumption during periods of economic downturn. Deficit-financed public investment does not increase the debt-to-GDP ratio and is inherently self-financed. In contrast, an increase in government consumption has little effect on economic activity and increases the debt-to-GDP ratio. The observed short-term effects are consistent with the neo-Keynesian model, which suggests that increased public investment increases the demand for labor in the private sector, which leads to higher real wages and higher consumption. In the medium term, increased public investment increases private investment, causing a supply side effect. They concluded that public investment can be an important policy tool to combat recessions and stimulate long-term growth as monetary policy has exhausted itself.

B. Polish [7] and Vladimir Glontillar [8] assess the state of the regional budget with absolute and relative balance indicators for the effectiveness of public policy, budget deficit and public debt, theoretical aspects of investment flow management in individual sectors, including investment in industrial development who have worked on the problems of access.

In addition, throughout the development and formation of the economy, considerable attention was paid to investment potential, many definitions of this term were formulated, highlighting the characteristics that are most significant from their point of view.

According to R.A.Karmov. investment potential is the ability to cover the needs for investment resources at the expense of its own funds, the aggregate of available factors of production. [9]

R.N.Malyshev believes that “The investment potential should take into account the main macroeconomic indicators - the structure of investments in fixed assets, the index of the physical volume of investments in fixed assets, the share in the structure of the availability of fixed assets at the beginning of the period, the depreciation rate of fixed assets, the structure of foreign direct investment, profitability assets, concentration”. [10]

In determining the investment potential given by R.N.Malyshev, the main attention is paid primarily to the quantitative characteristics related to the investment potential.

In defining the term investment potential, many authors highlight regional characteristics inherent in investment potential.

Therefore, it is necessary to pay attention to the concept of the investment potential of the region, since there are completely different interpretations of the term investment potential of the region. In the definition given by M.N.Korsakov, K.V.Samonova, the investment potential of the region "acts as a set of investment resources of the region located within the localized territory, which makes it possible to achieve the desired economic effect when used in production, social and other spheres. [11]

O.G.Ulturgasheva and A.V.Lavrenko believe that the regional investment potential is not a simple, but in some way ordered set of investment resources located in a certain territory, which allows achieving the expected effect when using them. [12]

In these interpretations of the term, the investment potential of the region is considered as the ability to cover their needs for investment resources without using borrowed capital and other sources of attracted funds.

### **Research methodology**

Based on the results of the study, the following system was used to assess the investment climate of the regions based on the use of classification algorithms that are inefficient due to the size of the space or can be applied to only one of the measurement scales (quantitative or nominal).

1. Measurement of investment attractiveness - ( $Ia$ );
2. Measurement of the investment potential of the region - ( $Irp$ );
3. Investment Risk Scale - (IR);
4. Measurement of investment activity in the region - (Y);
5. Effective use of the region's investment potential ( $EIp = Y / Irp$ ), determined by the ratio of the level of investment activity in the region to the level of investment potential;
6. Effectiveness of the territory's investment attractiveness ( $EIa = Y / Ia$ ), which is determined by the ratio of the level of investment activity in the region to the level of investment attractiveness.

To determine the integral level of investment potential ( $Irp$ ) of the region, the characteristics of production and financial potential in the region (volume and rate of change in industrial output, level of small business development, share of profitable enterprises, total domestic investment resources, retail volume, export potential, enterprises and number of organizations), characteristics of social potential in the region (provision of the population with cars and telephones, provision of roads and railways, paid services to the population tooth size, standard of living), as well as descriptions of the natural and geographical potential of the area (mineral natural reserves of raw materials, as well as their geographical location relative to foreign trade routes).

Since all specific indicators of investment attractiveness have different dimensions and dimensions, it is necessary to make them unique for comparison, that is, according to the standardization procedure, they are done by determining the average value of each specific indicator of a particular region across the country:

$$I_{sita} = I_{sit} * I_{st} \quad (1)$$

where  $I_{sit}$  is the numerical value of the s chi private indicator for the i-th region in t (or other time period),

$I_{st}$  is the average of the numerical value of the private indicator s chi for the country in t,

$I_{sita}$  is the standardized value of the s s eigenvalue for i-region in t.

As a result, all regional indicators are converted to standardized regional indicators ( $I_{sita}$ ), i.e., dimensionless relative values that describe the ratio of the numerical values of each indicator to the numerical value in the country. Each standardized indicator across the country will have a value that is equally equal together.

The calculation of the integral index of investment attractiveness of the i-th region in t ( $I_{it}$ ) is carried out according to the two-stage multidimensional average formula.

In the first stage, a set of specific standardized regional indicators will be converted into two integral indicators - total investment potential ( $I_{itp}$ ) - specific indicators ( $I_{sitp}$ ) depending on the factors that make up the region's investment potential, and general investment risk ( $I_{itR}$ ) - regional non-commercial investment risk factors combining specific indicators ( $I_{sitR}$ ) [13].

The overall indicator of the risk level of the investment potential of the i-th region in t-year ( $I_{itR}$ ) is calculated according to the following formula:

$$I_{itp} = \sum_{s=1}^n I_{sitp} \cdot k_{stpns} = \sum_{s=1}^n I_{sitpns} = 1 \quad (2)$$

where  $I_{itp}$  is the numerical value of the standardized s-specific indicator of investment potential in the i-th region in t (or other time period);

$k_{stp}$  is the weighted coefficient of significance of the s-specific indicator of the investment potential in the th year;

n is the number of standardized specific indicators depending on the factors that shape the integral level of investment potential of the regions. The next step in determining the attractiveness of the investment environment of the region is to determine the innovative potential of the regions, which requires the calculation of relative values of aggregated indicators. In this regard, taking into account the variability of a number of factors, it can be determined using the following formula:

$$I_{n.q} = \frac{I_{abs}}{I_{base}} \quad (3)$$

Where:  $I_{n.q}$  - relative value of the indicator,%;  $I_{abs}$  - absolute value of the indicator;  $I_{base}$  is the base value of the indicator. In each case, different parameters (GRP - gross regional product, etc.) can be taken as the base ( $I_{base}$ ), which allows them to increase the absolute value of the indicators used in a comparable form. Thus, it is advisable to use the number of people we employ in the region. In

particular,  $I_1, I_2, I_3, \dots, I_n$  are the main indicators. For a comprehensive assessment of the innovative potential of the regions, it is appropriate to use a group of integrated indicators, in which all  $n$  key indicators are defined as the  $n$ -th root of the geometric average product.

$$N_1 = \sqrt[n]{I_{i1} + I_{i2} + \dots + I_{in}} \quad (4)$$

An integrated assessment of innovation potential allows us to bring different sets of indicators into a single generalized indicator and compare the innovative potential of regions and assess the innovative potential of a region not only by the sum of its components, but also their complex and multifaceted interdependence. The advantage of these proposed integrated indicators is that it covers all the key innovation potential and its components in a comparable form. In the proposed methodology, group integral indicators are considered equivalent. Therefore, the generalized integral indicator of the innovative potential of the region is determined by summing the values of  $N_i$  ( $m = 5$ ):

$$G_{i.i} = \sum N_{imi} = 1 \quad (5)$$

where:  $G_{i.i}$  - generalized integral index;  $i$  is the number of integral indicators of the group.

To determine the integral level of regional investment risk (IR), it is necessary to take into account the following indicators of low-income population, unemployment, environmental pollution, climate discomfort and political stability, which are difficult to take into account in the study. Therefore, in assessing the level of risk in the study, it is advisable to take into account the level of indebtedness for taxes and budget payments, which reflects the consumer price index and the level of financial risk in the region.

I. To assess the investment attractiveness of the region, it is necessary to determine another indicator, namely the budget and financial capacity, which will increase the return on investment and interest of investors in the region. Therefore, taking into account that the level of stability of the regional budget is determined by the amount of resources required to ensure a minimum budget stability, we cite four types of budget stability:

1. Absolutely stable state of the budget, which can be characterized by the following correlation:  $P_m < D_x + D_t$

where  $P_m$  is the minimum expenditure of the budget,  $D_x$  is the specific revenue of the budget,  $D_t$  is the regulatory revenue of the budget.

2. Normal condition:  $P_m = D_x + D_t$

3. Unstable state:  $P_m = D_x + D_t + I_d$ . (6)

where:  $I_d$  is additional resources to reduce budget stress (e.g., extra-budgetary funds, loans, etc.).

4. Crisis status:  $P_m > D_x + D_t + I_d$ .

It should be noted that the proposed method of assessing the stability of the regional budget is not universal, as it does not take into account significant differences in the revenues of regional governments. The same goes for minimal costs. Correlations can change under the influence of a country's economic situation,

legislation, fiscal policy, and other factors. Independent budget segments, such as current and investment budgets, imply different sources of funding. The presented method offers a rapid analysis of budget indices, which allows to assess its current stability.

We are convinced that a deeper and more detailed analysis of key budget indicators is necessary to assess the financial condition of regional governments and the sustainability of their budgets. The analysis of the regional budget process should include the following main index blocks.

The analysis of the factors of regional budget stability provides the following indicators for assessing the budget process:

- The ratio of private and regulatory budget revenues:

$$kb = DxDt \quad (7)$$

where:  $kb$  is the coefficient of budget stability;

$Dx$  - coefficient of private income;

$Dt$  is the regulatory revenue ratio.

This ratio shows which part of the budget expenditures falls in favor of the private revenue base.

The interrelationship between taxable and non-taxable sources is an additional index that assesses the revenue base of the regional budget:

$$Iq = DtDnT \quad (8)$$

where:  $Iq$  is an additional index that assesses the revenue base of the budget;

$Dt$ - taxable income;

$Dnt$  - non-taxable income.

This index will be more useful if we do not take into account income that does not represent the result of tax action by the relevant authority.

Therefore, the ratio of private sector income from taxable income to the value less official transfers is based on international standards of public financial statistics:

$$I = DxtDnt - N \quad (9)$$

here:

$Dxt$  - private taxable income;

$N$  - official transfers.

The indices  $kb$ ,  $Iq$  and  $I$  complement each other and describe both sides of the taxable part of the regional budget. Discussing the dynamics of these indices allows us to assess the government's performance in mobilizing regional financial potential.

To assess the degree of financial independence of the regional budget, we can use the coefficient of independence:

$$km = DxSDini = 1 \quad (10)$$

$Dx$  - private income;

$Di$  - budget revenues.

If the value of this index is high, the financial independence of the regional budget will also be high.

As a quantitative criterion [14], we can use the following scale for these coefficients (Table 1).

**Table 1.**

**Criteria for the status of the regional budget**

Indices	Stable condition	Normal condition	Moderate condition	Unstable condition	Severe condition
Dx:D	85-100 %	72-84 %	60-71 %	43-59 %	29-42 %
DT:D	20-30 %	40-50 %	60-70 %	80-90 %	90-100%
V:Xb	5-10 %	10 – 15%	20 - 25%	30 - 35%	40 - 50%

where: Dx - private budget revenues;

DT - regulatory revenues;

D - total income;

Xb - total budget expenditures;

V - total debt of the budget.

II. The effectiveness of public government fiscal policy is characterized by the budget deficit and the volume of public debt, so it is necessary to assess the state of the regional budget with absolute and relative balance indicators. The budget equilibrium ratio shows how budget expenditures are balanced with revenues:

$$km = DXb \cdot 100\% \quad (11)$$

If  $Mk \rightarrow 1$ , this means that the region can fully cover the mandatory costs with revenues from private sources. Using this, the coefficient of the above cost structure can be expressed as follows:

$$X_{tar} = K_{uqm} Br \quad (12)$$

$K_{uqm}$  - long-term and short-term loans;

Br- development budget.

If the value of this coefficient is multiple, it indicates a tendency of the budget to lose stability. The generalized level of budget and financial capacity can be determined by the following formula:

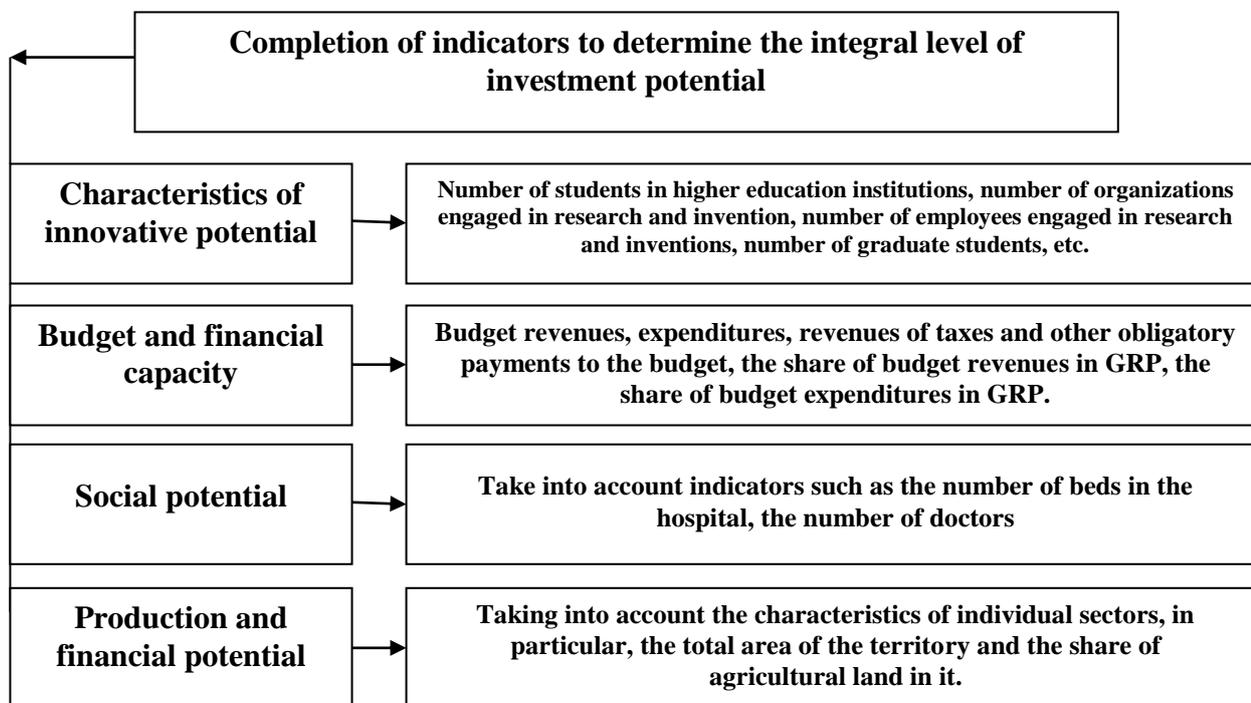
$$BU = Dx + DT + KXb \quad (13)$$

In this formula, K stands for long-term credit. We determine the investment climate in the regions of the Republic of Uzbekistan based on their specific capabilities and characteristics, using the above potential assessment formulas.

### **Analysis and results**

Investment activity plays a key role in the sustainable and progressive development of the region. Intensification of investment activity is a priority task for state and municipal authorities. Their work should be aimed at creating a favorable investment climate and reliable investment potential in the region. Ensuring sustainable development, they should attract external investment and activate the initiative of their own investors. The inflow of domestic and foreign direct investment contributes to the revitalization of investment processes in the region's economy.[15]

In this study, the natural-geographical potential of the region can be assessed on the basis of surveys, which we did not take into account in our calculations, as the relationship between them and the obtained statistical data does not allow the synthesis of tightly connected neural networks in hybrid networks. Based on the results of the study, it is necessary to further expand the scale of indicators to determine the integral level of investment potential of each region (Figure 1).



**Figure 1. Completed indicators to determine the integral level of investment potential of the region.**

In our opinion, in calculating the investment potential, first of all, it is necessary to take into account the innovative potential, as the region needs to improve new products, production, introduction of new equipment and technologies.

The ability to adapt quickly to changing market conditions will increase the competitiveness of the region and at the same time increase the level of investment in the region. It is then necessary to take into account the budget and financial capacity of the regions, which will determine the rational use and proper distribution of allocated financial resources.

Also, taking into account the budget and financial capacity, the regions characterize the degree of independence of a particular entity and its level of subsidies from the budget: the higher the degree of independence, the more opportunities to make decisions on financing high liquidity projects for faster movement of financial flows. The low level of independence of the region slows down the distribution of financial resources resulting from the implementation of inter-budgetary relations. Financial resources received by local budgets are redistributed in the State Budget of the Republic of Uzbekistan, and then, with the help of inter-budgetary transfers, they are "transferred" to the regional budgets. The

disadvantages of the subsidy process are the length of time it takes for financial resources to reach regional budgets and the limited funding available.

Of course, specific indicators were selected based on the results of logical and correlation-regression analysis of investment processes in the regions of the country. Given that the integral level of investment attractiveness depends on the size of the population and the size of the regions, indicators that can be quantified per capita, etc. on certain indicators were selected. The results of the calculation of the total level of production and financial potential of the region are given in Table 2.

**Table 2**

**An indicator of the generalized level of production and financial potential of the regions of the Republic of Uzbekistan**

Years	Republic of Uzbekistan	Republic of Karakalpakstan	Andijan	Bukhara	Jizzakh	Kashkadarya	Navoi	Namangan	Samarkand	Surkhandarya	Syrdarya	Tashkent	Fergana	Khorezm	Tashkent
2011	—	0,0332	0,0360	0,1349	0,0235	0,1102	0,1111	0,0352	0,0609	0,0371	0,0250	0,0985	0,0554	0,0233	0,2157
2012	—	0,0496	0,0453	0,1108	0,0261	0,1174	0,0762	0,0338	0,0638	0,0380	0,0315	0,1167	0,0642	0,0304	0,1962
2013	—	0,0513	0,0508	0,0999	0,0298	0,1262	0,0713	0,0333	0,0607	0,0371	0,0276	0,0821	0,0610	0,0307	0,2383
2014	—	0,0823	0,0449	0,1001	0,0353	0,1219	0,0565	0,0369	0,0667	0,0435	0,0282	0,1040	0,0662	0,0400	0,1735
2015	—	0,1112	0,0404	0,0967	0,0295	0,1272	0,0469	0,0459	0,0638	0,0380	0,0263	0,1062	0,0567	0,0416	0,1694
2016	—	0,1422	0,0399	0,0928	0,0264	0,1342	0,0404	0,0472	0,0685	0,0392	0,0240	0,0973	0,0512	0,0322	0,1645
2017	—	0,0747	0,0399	0,1157	0,0251	0,1416	0,0572	0,0516	0,0667	0,0403	0,0249	0,0796	0,0483	0,0290	0,2054
2018	—	0,0795	0,0359	0,1438	0,0360	0,1434	0,0501	0,0438	0,0591	0,0457	0,0273	0,0676	0,0463	0,0271	0,1943

2019	1	0,0563	0,0378	0,1011	0,0304	0,0775	0,0751	0,0664	0,0535	0,1084	0,0201	0,1055	0,0464	0,0278	0,1938
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According to the calculations, Bukhara (0.996), Kashkadarya (1.1), Navoi (0.59), Samarkand (0.56), Tashkent (0.86) regions and the city of Tashkent (1.75) were developed. output and financial potential are above average. According to the calculations, the city of Tashkent and Kashkadarya region have a high production and financial potential, which is due to the high level of industrial production in its territory.

Thus, all stages of the process of typology of regions in the field under consideration in this study have been carried out in sequence. First, a system of human potential indicators was formed, which led to the substantiation of a system of indicators consisting of 53 indicators for 14 objects and a correlation analysis of 18 indicators. This system includes 3 economic and 7 social indicators that characterize human potential.

Second, a cluster analysis was conducted, which divided all regions into 5 groups. The study was conducted in two ways: with and without economic indicators. As a result of the analysis of the data obtained for 10 years, a stable typology of the regions of the Republic of Uzbekistan on the basis of human potential indicators is built.

Third, a meaningful interpretation of the results is given. Systematization of regions by cluster allows us to see their main problems and achievements in terms of population quality (Table 3).

**Table 3**

**Generalized indicator of the social potential of the regions of the Republic of Uzbekistan**

Years	Republic of Uzbekistan	Republic of Karakalpakstan	Andijan	Bukhara	Jizzakh	Kashkadarya	Navoi	Namangan	Samarkand	Surkhandarya	Syrdarya	Tashkent	Fergana	Khorezm	Tashkent
2011	1	0,37	0,32	0,50	0,28	0,34	0,35	0,44	0,61	0,29	0,25	0,20	0,44	0,46	0,64
2012	1	0,43	0,37	0,56	0,32	0,36	0,98	0,49	0,57	0,37	0,36	0,35	0,46	0,48	0,67
2013	1	0,47	0,44	0,59	0,37	0,38	0,34	0,53	0,62	0,39	0,38	0,43	0,48	0,52	0,69
2014	1	0,50	0,49	0,67	0,45	0,43	0,38	0,57	0,67	0,43	0,41	0,46	0,52	0,56	0,72
2015	1	0,54	0,57	0,74	0,48	0,46	0,19	0,63	0,71	0,47	0,45	0,51	0,55	0,58	0,77
2016	1	0,58	0,64	0,78	0,50	0,51	0,46	0,67	0,74	0,49	0,48	0,53	0,59	0,62	0,79

2017	1	0,64	0,68	0,82	0,56	0,55	0,79	0,69	0,77	0,54	0,54	0,55	0,62	0,69	0,83
2018	1	0,72	0,72	0,85	0,58	0,57	0,63	0,72	0,79	0,59	0,59	0,57	0,65	0,72	0,87
2019	1	0,77	0,76	0,88	0,61	0,65	0,74	0,76	0,86	0,65	0,64	0,60	0,73	0,74	0,89

divided into clusters as follows:

Cluster 1: very high (0.800-1.00);

Cluster 2: high (0.700-0.799)

Cluster 3: medium (0.555-0.699);

Cluster 4: past (0.350-0.554)

Cluster 5: very low (0.200-0.349).

According to the results of the calculation, the Republic of Uzbekistan and its territories Tashkent (0.763), Samarkand (0.704) and Bukhara (0.700) are included in the 2nd cluster, ie the highest level, the 3rd cluster is the Republic of Karakalpakstan (0.558), Andijan (0.556), Namangan (0.611). , Fergana (0.560) and Khorezm (0.597) regions and Jizzakh (0.461), Kashkadarya (0.477), Navoi (0.517), Surkhandarya (0.469), Syrdarya (0.456) and Tashkent (0.406) regions are included in the 4th cluster.

This phase of the work, in turn, can be seen as the beginning of a new scientific study that answers the question of ways and means of overcoming regional inequality in human potential indicators. Apparently, these methods can be linked to clusters, which significantly reduces and simplifies the system of measures to help reduce the regional stratification of human potential indicators.

Now, the innovation potential of the regions can be further determined by assessing the importance of the group indicators on the results of the index (3) - (5) using expert assessments based on the above method social tools (Table 4).

**Table 4**

**An indicator of the generalized level of innovation potential of the regions**

Clusters	Criteria Boundaries	Regions
1- cluster	3-3,5	Tashkent city
2- cluster	2,50-2,99	Andijan, Samarkand, Khorezm
3- cluster	2,0-2,49	Republic of Karakalpakstan, Bukhara, Namangan, Tashkent
4- cluster	1,50-1,99	Jizzakh, Kashkadarya, Navoi,
5- cluster	1,0-1,49	Surkhandarya, Syrdarya, Fergana

The innovative potential of the city of Tashkent took 1st place, which was due to many different educational institutions, research institutions and many students in

the region. The innovative potential of Surkhandarya, Syrdarya and Fergana regions is in the last place and corresponds to the 5th cluster, ie at a very low level. The overall level of innovation potential of these regions is much lower than in Tashkent, which is mainly due to the large rural population, low level of creation and production of new products. In general, it can be seen that the dynamics of innovation potential is growing in the regions of the Republic of Uzbekistan.

On the basis of the indicators of the assessment of innovative potential, it was possible to identify the problems of growth and reserves of the regional economy. In fact, in the context of the formation of new economic relations, it is necessary to develop an innovative environment, rational use of resources, taking into account the specifics of development, the direction of state policy in the field of innovative development for each region.

### **Discussion of research results**

According to the calculations on the use of investment attractiveness of the regions, the city of Tashkent, Samarkand and Andijan regions are effectively using their investment potential and investment attractiveness. It should be noted that the rest of the country does not fully use the investment potential and their use is lower than the national average. As for Jizzakh, Syrdarya and Surkhandarya regions, the investment potential and investment attractiveness of the region are being used inefficiently. Therefore, it is necessary for the regional government to organize effective investment activity management, taking into account the existing opportunities to attract investors and, first of all, to create a favorable investment climate to attract investment to the region.

At the same time, it is necessary to know the composition of the proposed system for measuring the investment climate, the correct choice of factors and the correct use of tools to determine the investment attractiveness of the regions.

### **Conclusions and suggestions**

In short, the methodological basis for the analysis of regional development is that the region is not a strictly autonomous object, but the world economic relations it is expedient to consider it as a multifunctional region developing on the basis of vertical (center-region) and horizontal (interregional) interdependence included in the system. It should be noted that the analysis and forecasting of the distribution of investments in the economic development of the regions should be created as interconnected backbone structures, which should become a common strategy of socio-economic development of the country.

Based on the above-mentioned results, it is very important to know the criteria and indicators of socio-economic growth in order to increase the efficiency of investment in the production process, to have a clear idea of what factors and how they depend. It is advisable to resort directly to mathematical tools to analyze the above data in general. This, of course, requires the study of modeling processes, understanding and conclusions about mathematical formulas, as well as the interrelationships, interrelationships and connections of the given statistical data.

It should be noted that the large number of selected factors requires their study into specific classes and generalized conclusions. In this case, the method of dividing the sample into groups of objects that do not intersect based on the fact that the objects are connected, based on the definition of subset of classes boundary objects. In this case, it is expedient to cover the sample with reference objects from grouping.

In summary, the application of neural models in practice to the implementation of regional distribution of investments, as in other sectors, allows to make clear decisions for this process, as well as to identify hidden patterns in the process, to make clear decisions in conditions of uncertainty. However, neural networks are not the only method, and in many cases the use of traditional statistical methods is more effective. However, in many areas of risk management, neural networks find a more sensible solution and require further research in this area.

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