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Methods and Criteria for Assessing the Standard of Living of the Population of Surkhandarya Region

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Abstract: This study aims to develop a comprehensive methodological framework for assessing the standard of living of the population in Surkhandarya region based on a composite index approach integrating economic and social indicators.Methodology: The research applies economic–statistical and econometric methods to construct a multidimensional Living Standards Index (LSI). Six core components were selected: income per capita, unemployment rate, life expectancy, education level, healthcare accessibility, and housing and infrastructure conditions. Indicators were normalized relative to benchmark values and aggregated using a weighted model.Results: The calculated Living Standards Index for Surkhandarya region equals 0.630, indicating a moderate (developing) level of living standards. The strongest performance was observed in housing and infrastructure (0.840) and education (0.750), while income level (0.448) remains the weakest component. Income inequality and unemployment, particularly among youth and women, significantly affect overall welfare performance.Novelty: The study proposes a region-specific composite index model integrating innovative activity indicators into the assessment of living standards. Unlike traditional single-indicator approaches, this framework provides a multifactor evaluation combining economic and social dimensions. Practical Implications: The findings provide evidence-based policy recommendations for regional authorities, including income diversification, labor market expansion, healthcare strengthening, and infrastructure modernization to ensure sustainable socio-economic development.

Keywords: Standard of Living, Unemployment Rate, Life Expectancy, Education, Healthcare, Housing Infrastructure.

1. Introduction

All areas where the most active work has been carried out in recent years have been preserved, but the criteria and guidelines for them have been significantly expanded compared to the work already done and the previously set goals. It can be noted that the nominal standard of living of the population, calculated at the average exchange rate, is improving in the current period [1]. When implementing these measures, it is appropriate to pay special attention to the regions where the standard of living of the population has stabilized, to identify the living standards of the population, and to pay special attention to those regions with low development. Accordingly, during our study, we assessed the implementation of econometric evaluation processes of innovative activity indicators of the standard of living of the population in the regions through complex indices as a scientifically sound approach [2], [3].

Analysis of literature on the topic

In the economic scientific literature, the issues of identifying the development trends of the main indicators of the standard of living of the population and their assessment based on econometric methods have been widely studied by foreign and domestic scientists, and empirical analyses in this area have been scientifically substantiated using economic and statistical methods. As an example, the scientific works of M.K. Abdullayeva, O.S. Homidov, O.A. Abduganiyev, N.M. Mahmudov, V.Abhijit, Banerjee, Esther Duflo, Y.A. Roslyakova, N.Varshney, D.Jain, Dr.Pracheta and J.Sachs analyzing the main indicators of the standard of living of the population can be cited [4], [5]. In the above scientific works, scientists analyzed these issues based on economic and statistical methods and tried to scientifically illuminate the specific content and main characteristics of the indicators of industrial development. For example, one of the leading economists of our country, M.K. Abdullayeva, in her works pays special attention to the implementation of a number of important reforms in the social economy, social protection of the population and improving their living standards [6].

O.S. Khomidov in his work deeply analyzed the scientific and theoretical foundations of research and modeling of sustainable economic development of the living standards of the population in the regions [7].

O.A. Abdug'aniyev also touched upon the development of the living standards of the population in his research work entitled "Econometric models of increasing the efficiency of production of agricultural products included in the consumer basket [8]".

2. Methodology

The main goal of the study is to develop scientific and practical proposals and recommendations for improving the living standards of the population in the regions. Economic and statistical methods were widely used in the research process.

3. Results and Discussion

The Strategy for Increasing the Welfare of the Population and Ensuring Sustainable Economic Growth in the Republic of Uzbekistan for 2020–2030 has been adopted. According to this strategy, in order to achieve positive outcomes, systemic transformations will continue to enhance the role of the private sector in the economy, thereby providing greater flexibility and dynamism. As a result, Uzbekistan is expected to be included in the group of "upper-middle-income countries." By ensuring balance in the goods and services market, the annual inflation rate will not exceed 5–6%, and the share of the non-governmental sector in the economy will be increased to up to 85%, as emphasized by experts. The strategy also envisages qualitative improvement of the existing social protection system. By 2026, measures will be taken to reduce poverty by half, and by 2030, to sharply decrease it to 5%. In this regard, employment objectives have been defined through the development of family businesses in order to facilitate the transition from simple manual labor to industrial production [9]. Thus, in the new seven-year strategy covering five priority areas and 100 goals, 17 of them are directly related to the country's economic development. All sectors in which active reforms have been carried out in recent years have been retained; however, the criteria and benchmarks for these sectors have been significantly expanded compared to previously achieved results and earlier set objectives. At present, it can be noted that the nominal standard of living of the population, calculated based on the average exchange rate, is gradually improving. In implementing these measures, it is important to consider the stabilization of living standards across regions and to pay special attention to areas with relatively low levels of development [10], [11]. Accordingly, in our research, we consider the econometric assessment of regional living

standards through innovative activity indicators and composite indices to be a scientifically grounded approach. The "Living Standards Index" proposed by us is based on a systematic and multifactor assessment and helps determine the level of regional population welfare development.

At the first stage, normalized values of the indicators were calculated through the proposed system of indicators, and their overall average values were determined. In our study, using the example of Surxondaryo region, we developed the Living Standards Index based on six main components: Income level (per capita) **(D);** Unemployment rate **(I);** Life expectancy **(U);** Education (literacy coverage) **(T);** Healthcare (access to services) **(S);** Housing conditions and infrastructure **(H).**

Income Level (per capita) is one of the key indicators determining the innovative development of the population's standard of living. This is because any innovative initiatives or income-generating mechanisms are created as a result of scientific research aimed at improving individuals' long-term quality of life and purchasing power [12]. These processes include identifying new sources of income, studying their characteristics in relation to household welfare, and evaluating their safety and efficiency.

Typically, three out of the five priority areas of the Development Strategy of the Republic of Uzbekistan for 2020–2030 are directly related to income growth [3]. Based on the above, it can be concluded that the per capita income indicator plays a crucial role in ensuring the sustainable and innovative development of the standard of living in Surxondaryo region [13].

Table 1 below provides an opportunity to conduct a comparative analysis of Surxondaryo region with the best-performing region in this area, based on key indicators assessing income performance: total income per capita (UID), income inequality measured by the Gini coefficient (DTG), and the poverty rate (QD).

The best-performing region is considered the benchmark (reference region), where the maximum achievable level of per capita income is assumed. The benchmark values are adopted for the purpose of evaluating and normalizing the indicators of Surxondaryo region and represent not an actual administrative territory, but an optimal target state.

Table 1. Indicators and Values for the Assessment of Per Capita Income Level [1].

Indicators	Total income per capita	Income inequality (Gini coefficient)	Poverty rate
Notation	UID	YI	AI
Classification	Per capita income (in thousand UZS)	Gini coefficient (range: 0–1)	Poverty rate (percent)
Indicator values for the benchmark region	25123	0.25	5
Indicator values for Surxondaryo region	17880	0.31	12
Normalized values	0.125	0.806	0.417

The total income per capita indicator presented in Table 1 reflects the share of funds allocated to income within the overall expenditure structure of the studied region. The analysis revealed that in the best-performing region, this indicator amounts to 25,123 thousand UZS, demonstrating that per capita income is a priority area in that region.

In Surxondaryo region, however, the total income per capita is only 17,880 thousand UZS, with a normalized value of 0.125. This situation indicates that income per capita in the region is not sufficiently developed and highlights the need to strengthen additional financial incentive measures aimed at increasing income potential per capita.

The income inequality (Gini) coefficient serves as an important complementary indicator. When the Gini coefficient approaches zero, income distribution among different population groups is relatively equal [14]. As the value increases, income disparities widen, meaning the gap between wealthy and poor segments of society grows. Extremely high values indicate a sharp intensification of social inequality.

When applied together with per capita income, the Gini coefficient provides a more comprehensive characterization of living standards. This is because average income may be relatively high; however, if income distribution is uneven, a significant portion of the population may not benefit proportionally. In the best-performing region, the Gini coefficient equals 0.25, whereas in Surxondaryo region it amounts to 0.31. As a result, the normalized value is 0.806, representing the weakest performance among the considered indicators [15]. This indicates a higher level of income disparity in the region and reflects growing socio-economic stratification.

The poverty rate indicator integrates several aspects, including consumption levels, sources of income, employment status, and the level of social protection. A high poverty rate implies that a significant portion of the population does not have sufficient income to meet the minimum consumption basket. In the best-performing region, this indicator equals 5%, while in Surxondaryo region it reaches 12%. The normalized value is 0.417, which indicates a relatively better position compared to some other indicators.

Therefore, it can be concluded that the region requires diversification of employment, expansion of income-generating opportunities, and strengthening of social assistance mechanisms. However, these processes must be closely linked with improvements in per capita income and reductions in income inequality (Gini coefficient).

Based on the above analytical results, the average value of research activity for Surxondaryo region was calculated using the following formula:

$$D = \frac{TIC + IIG + PR}{3}$$

Here:

D – coefficient of the region's income level;

AJU – total income per capita;

DTG – income inequality (Gini coefficient);

QD – poverty rate index.

Using the formula presented above, the per capita income level coefficient for Surxondaryo region was calculated in the assessment of the population's standard of living.

$$D = \frac{0,125 + 0,806 + 0,414}{3} = 0,448$$

This result indicates that the income level of Surxondaryo region is at a moderate–low level. Considering that the maximum value of the index can reach 1, the current result suggests that approximately 44.8% of the region's innovative income potential is being utilized in practice.

An analysis of the structural components of the income level indicator shows that the relatively low index value is mainly influenced by total income per capita (TIC = 0.125). This suggests that the average per capita income in the region remains insufficient. The income inequality (Gini coefficient) indicator (IIG = 0.806) shows that although average income levels may appear acceptable, unequal income distribution prevents a significant portion of the population from benefiting proportionally. The poverty rate index (PR = 0.414) demonstrates a relatively better position, confirming that a considerable share of the population earns enough to cover the minimum consumption basket.

In conclusion, the calculated income coefficient (D = 0.448) substantiates the need for systematic measures aimed at accelerating innovative processes in order to improve per capita income levels in Surxondaryo region. In particular, it is necessary not only to increase average income but also to reduce income inequality and lower the poverty rate through comprehensive policy measures [5]. Sustainable economic growth can be achieved by creating new jobs and strengthening social protection mechanisms.

Unemployment Rate (I)

The unemployment rate is a critical indicator, as a significant portion of the unemployed population lacks a stable source of income [6]. This leads to rising poverty levels, widening income inequality, and overall deterioration of living standards. The number of socially vulnerable groups increases, weakening the region's socio-economic environment.

Currently, the unemployment rate in Surxondaryo region remains unsatisfactory. Youth unemployment deserves particular attention, as insufficient labor market participation of young people may negatively affect long-term economic growth. Female unemployment contributes to reduced household income levels and undermines gender equality. These factors justify the importance of analyzing the unemployment indicator in detail.

Table 2. Indicators Required for Assessing the Unemployment Rate [2].

Indicators	Overall Unemployment Rate	Youth Unemployment (15–30)	Female Unemployment
Notation	UID	YI	AI
Classification	Overall unemployment (%)	Youth unemployment (%)	Female unemployment (%)
Highest value	5.1%	10%	8%
Indicator value for Surxondaryo region	8.2%	14.3%	10.8%
Normalized values	0.622	0.699	0.741

Table 2 includes three main indicators assessing unemployment conditions in Surxondaryo region.

The overall unemployment rate (UID) shows that, given the benchmark of 5.1%, the regional value of 8.2% results in a normalized score of 0.622. This indicates that while modern employment opportunities exist, their scale remains insufficient, and deeper modernization of production infrastructure is required.

The youth unemployment rate (YI) equals 14.3%, with a normalized value of 0.699, representing the weakest result among the unemployment indicators. This highlights the urgent need to expand employment opportunities for young people.

The female unemployment rate (AI) equals 10.8%, with a normalized value of 0.741, reflecting gender-related disparities in labor market participation.

During the study, the average unemployment coefficient was calculated using the following formula:

$$I = \frac{OUI + YU + FU}{3}$$

Where:

I – coefficient evaluating the unemployment rate condition of the region;

UID – overall unemployment indicator;

YI – youth unemployment rate;

AI – female unemployment rate.

$$I = \frac{0,622 + 0,699 + 0,741}{3} = 0,687$$

Based on the above-mentioned formula, the unemployment rate coefficient for Surxondaryo region was determined.

In general, the analysis of the average normalized value (**I = 0.687**) indicates that employment-related issues exist in Surxondaryo region within a moderate range; however, these challenges have not led to a critical deterioration of the regional situation. At the same time, the identification of youth and female employment levels within the index highlights the necessity of creating new job opportunities.

The life expectancy indicator (**U**) - is considered one of the key social innovation indicators influencing regional living conditions [7]. Life expectancy reflects not only the state of healthcare services, but also the overall living conditions of the population, including nutrition levels, sanitary conditions, and broader social environment factors.

Table 3 below examines and analyzes the main indicators used to assess life expectancy (U), specifically focusing on the average number of years lived, using Surxondaryo region as a case study.

Table 3. Indicators required for assessing life expectancy [3].

Indicators	Life Expectancy
Notation	U
Classification	Average years of life
Highest value	76
Indicator value for Surxondaryo region	74
Normalized value	0.5

Life expectancy generally reflects, in a comprehensive manner, the ecological environment, sanitary and hygienic conditions, and access to medical services. Therefore, life expectancy indicators are considered as part of the social dimension within the Living Standards Index.

If the maximum value is set at 76 years, in Surxondaryo region this indicator amounts to 74 years. As a result, the normalized value equals **0.50**, indicating a relatively lower level compared to other regions.

The life expectancy indicator (**U**) was calculated as follows:

$$U = \frac{S_i - U_{min}}{U_{max} - U_{min}}$$

Where:

U – life expectancy coefficient of the region;

S_{umr} – life expectancy in Surxondaryo region;

U_min – the minimum life expectancy in Uzbekistan;

U_max – the maximum life expectancy in Uzbekistan.

Based on the above-mentioned formula, the life expectancy coefficient for Surxondaryo region was determined.

$$U = \frac{74 - 72}{76 - 72} = 0,5$$

The calculated value (**U = 0.5**) indicates that the level of life expectancy in Surxondaryo region is relatively satisfactory [8]. This suggests that the achievement of near-maximum results in the region may be attributed to the wide promotion of a healthy lifestyle and the systematic implementation of preventive medical examinations.

The education level indicator (**T**) - is one of the most important factors determining the standard of living of the population. It reflects the literacy rate as well as the coverage of higher education within the population. As the level of education increases, the population's income-generating capacity expands, health outcomes improve, and employment levels change positively. Therefore, education indicators can be considered as part of the social dimension within the Living Standards Index.

In Table 4, the following indicators were identified as key in assessing the level of education: the literacy rate (**LR**) and the share of the population with higher education (**PHE**). Based on these indicators, the Education Level Index was formed, and the situation in Surxondaryo region was analyzed accordingly.

Table 4. Key indicators for evaluating education level [4].

Indicators	Literacy Rate	Population with Higher Education
Notation	SD	OMEA
Classification	Share of students enrolled in secondary schools (%)	Share of the population covered by higher education (%)
Highest value	100%	25%
Indicator value for Surxondaryo region	100%	20%
Normalized values	1	0.50

Table 4 presents the coverage of students enrolled in secondary schools, which reflects the literacy rate. The maximum value is set at 100%, and in Surxondaryo region this indicator also amounts to 100%. As a result, the normalized score equals 1, indicating that the literacy rate in the region has been fully achieved at the designated benchmark level.

The indicator measuring the share of the population covered by higher education reflects the expansion of higher education institutions in the region in recent years. In Surxondaryo region, this indicator equals 20%. Compared to the maximum value of 25%, the normalized score amounts to 0.50. This suggests that the higher education coverage system in the region is functioning relatively actively, although there is still room for improvement.

The education level indicator was calculated using the following formula:

$$T = \frac{SD + OMEA}{2}$$

Where:

T – education level coefficient of the region;

SD – share of specialists with academic qualifications active in the field;

OMEA – share of the population with higher education.

Based on the above formula, the coefficient representing the level of human resource capacity in Surxondaryo region was determined as follows:

$$T = \frac{1 + 0.50}{2} = 0.75$$

The calculated value (**T = 0.75**) indicates that the education level in Surxondaryo region is relatively high. It can be concluded that general education coverage in the region is well developed, and the secondary education system encompasses the majority of the population. A high literacy rate reflects social activity and the preparation of competitive human capital for the labor market [9]. However, to ensure innovative development and the creation of new job opportunities, it is necessary to increase the number of higher education institutions.

The healthcare (access to services) indicator (**S**) was assessed using two main measures: the number of physicians per 10,000 population and the number of hospital beds per 10,000 population. These indicators reflect the overall level of the healthcare system. As healthcare improves, the population's ability to receive education expands and life expectancy increases. Therefore, healthcare indicators should be considered as part of the social dimension within the standard of living assessment.

In Table 5, the following indicators were identified as key in evaluating healthcare (access to services): the number of physicians (**NP**) and the number of hospital beds (**HB**). Based on these indicators, the Healthcare Level Index was formed and analyzed by comparing Surxondaryo region with the highest-performing region.

Table 5. Key indicators for evaluating healthcare (access to services) [5].

Indicators	Number of Physicians	Number of Hospital Beds
Notation	ShS	KOS
Classification	Physicians per 10,000 population	Hospital beds per 10,000 population
Highest value	40	60
Indicator value for Surxondaryo region	29	45
Normalized values	0.710	0.755

Table 5 presents the number of physicians per 10,000 population. The highest target benchmark is set at 40 physicians. In practice, Surxondaryo region has 29 physicians per 10,000 population. This indicates that the region is approximately 28% below the target level in terms of physician availability, with a normalized value of **0.710**.

The second indicator is the number of hospital beds per 10,000 population. While the target level is set at 60 beds, the region currently provides 45 beds per 10,000 population. This represents approximately 75% of the benchmark value, suggesting that although progress has been made, there remains room for improvement. The normalized value for this indicator is **0.755**.

It can therefore be concluded that the region is experiencing growth in private clinics operating through public–private partnerships.

The healthcare (access to services) indicator (**S**) was calculated using the following formula:

$$S = \frac{ShS + KOS}{2}$$

Where:

S – healthcare (access to services) level coefficient;

ShS – number of physicians (per 10,000 population);

KOS – number of hospital beds (per 10,000 population).

Using this formula, the healthcare (access to services) coefficient for Surxondaryo region was calculated as follows:

$$S = \frac{0.710 + 0.755}{2} = 0.73$$

The calculated value (**S ≈ 0.73**) indicates that the region currently achieves an average score of 0.73 across both healthcare dimensions. However, there remains potential for further improvement through increasing the number of physicians and hospital beds.

The housing and infrastructure indicator (**H**) was assessed using three main measures to evaluate housing and infrastructure conditions in Surxondaryo region. Each indicator was normalized relative to its ideal or benchmark value, allowing for the calculation and comprehensive analysis of the region's overall housing and infrastructure index.

Table 6 below presents the key indicators used to evaluate housing and infrastructure conditions: housing space per capita (**HS**), access to drinking water (**DW**), and the share of sewerage-covered areas (**SC**). The situation in Surxondaryo region was analyzed in comparison with another region to assess its relative performance.

Table 6. Indicators required for assessing housing and infrastructure conditions [6].

Indicators	Housing space per capita	Access to drinking water	Sewerage coverage
Notation	BKU	ISQ	KQH
Classification	Housing space per capita (square meters)	Access to drinking water (%)	Sewerage-covered areas (%)
Highest value	25 m²	97%	85%
Indicator value for Surxondaryo region	18.5 m²	90%	74%
Normalized values	0.738	0.919	0.865

The ideal benchmark standard is 25 square meters of living space per capita. In practice, Surxondaryo region provides 18.5 square meters per person. This corresponds to approximately 74% of the benchmark level, with a normalized value of **0.738**.

Access to drinking water is defined as 97% of the population having continuous access to clean water. In Surxondaryo region, this indicator is approximately 90%, indicating a shortfall of around 7% relative to the target. The normalized value of **0.919** represents one of the strongest performances among the infrastructure indicators.

The benchmark for sewerage coverage is set at 85%. In the region, slightly more than 74% of the population has access to sewerage services, which is 11% below the target. The normalized value equals **0.865**.

The housing and infrastructure index was calculated using the following formula:

$$H = \frac{BKU + ISQ + KQH}{3}$$

Where:
- **H** – housing and infrastructure level coefficient of the region;
- **BKU** – housing space per capita (square meters);
- **ISQ** – access to drinking water (%);
- **KQH** – sewerage coverage (%).

$$H = \frac{0.738 + 0.919 + 0.865}{3} = 0.840$$

Thus, the housing and infrastructure coefficient for Surxondaryo region equals **0.840**, indicating a relatively high level compared to the ideal benchmark. However, there remains potential for expanding housing space and improving sewerage systems.

Table 7. Evaluation Indicators of the Living Standards Index for Surxondaryo Region [7].

№	Indicator name	Symbol	Value	Expert weight	Interpretation
1	Income level (per capita)	D	0.448	0.25	Largest share due to its role as the main economic indicator
2	Unemployment rate	I	0.687	0.20	Reflects labor market conditions
3	Life expectancy	U	0.500	0.15	Healthcare system effectiveness
4	Education (literacy, coverage)	T	0.750	0.15	Human capital development
5	Healthcare (access to services)	S	0.730	0.15	Quality of medical services
6	Housing and infrastructure	H	0.840	0.10	Improvement of living conditions

The Living Standards Index (LSI) was calculated using the following formula:

$$LSI = \sum_{i=1}^{6} X_i \cdot \omega_i$$
$$LSI = \omega_1 D + \omega_2 I + \omega_3 U + \omega_4 T + \omega_5 S + \omega_6 H$$

Where:

- $\omega_1, \omega_2, \omega_3, \omega_4, \omega_5, \omega_6$ represent the weights assigned to D, I, U, T, S, and H respectively,
- and the weights are normalized such that:

$$\sum_{i=1}^{6} \omega_i = 1$$

$$LSI = 0.25 \cdot 0.448 + 0.20 \cdot 0.687 + 0.15 \cdot 0.50 + 0.15 \cdot 0.75 + 0.15 \cdot 0.73 + 0.10 \cdot 0.84$$
$$= 0.630$$

Thus, the Living Standards Index for Surxondaryo region equals **0.630**.

Table 8. Integral coefficient scale of the Living Standards Index [8].

Level	Index range	Interpretation	Recommendations
Very High	$0.85 < LSI \leq 1.00$	High living standards; indicators optimal; strong social welfare	Alignment with global standards; development of innovative cities
Good	$0.70 < LSI \leq 0.85$	Living standards good; basic needs satisfied; developed infrastructure	Ensure quality growth; rural development; improve income equality
Moderate (Developing)	$0.55 < LSI \leq 0.70$	Average living standards; partial satisfaction of needs	Infrastructure modernization; job creation; improve education and healthcare
Low	$0.40 < LSI \leq 0.55$	Low living standards; widespread poverty; weak infrastructure	Support programs; stimulate economic growth; improve essential services
Very Low	$0.00 \leq LSI \leq 0.40$	Extremely low standards; unmet basic needs; systemic issues	Humanitarian assistance; infrastructure construction; basic services provision

Based on the weighted approach, the Living Standards Index for Surxondaryo region equals **0.630**, indicating a moderate (developing) level of living standards. Basic needs are partially satisfied; however, urban–rural disparities remain significant and certain sectors require improvement.

According to the research findings, priority areas for improvement include infrastructure development (roads, electricity, water systems), job creation, strengthening employment, renovation and equipment of schools and hospitals, and special attention to rural areas. Sustainable improvement requires coordinated efforts between regional authorities, the government, and the population, with particular emphasis on increasing household income and addressing structural socio-economic challenges.

4. Conclusion

A comprehensive methodological approach to the assessment of the standard of living in Surkhandarya region by a multidimensional integrated index is developed and implemented in this study. The computed Living Standards Index (0.630) which suggests that the X1 region is at a moderate level of socio-economic development.

The results expose the structural asymmetries of the regional economy. Housing stock, education, health care exhibit the stable performance in a relatively high level; However, income level and unemployment rate are still salient. The reduction of overall welfare growth by income inequality and insufficient diversity in employment are also large.

The suggested LSI-model serves as a powerful analytic instrument for regional social and economic monitoring. Its factorized architecture provides space for policy makers to surface priority areas and jump start focused reform. Sustainable progress demands a comprehensive approach to income generation, employment creation, inequality reduction, healthcare improvement and infrastructure development.

This model can be extended into further research for comparative interregional analysis and dynamic prediction of living standards in Uzbekistan.

REFERENCES

[1]   J. Sachs, The End of Poverty: Economic Possibilities for Our Time. New York, NY, USA: Penguin Press, 2005. ISBN 1-59420-045-9.

[2]   M. K. Abdullayeva, "The role of Islamic banking in the transformation of international corporations as a reflection of modern globalization and migration," Religación: Revista de Ciencias Sociales y Humanidades, vol. 4, no. 13, pp. 324–331, 2019. ISSN-e 2477-9083.

[3]   O. S. Khomidov, "Improving the methodology for modeling and forecasting the sustainable economic development of the pharmaceutical industry," Ph.D. dissertation, Tashkent, 2025.

[4]   O. A. Abduganiyev, "Econometric models for increasing the production efficiency of agricultural products included in the consumer basket," Ph.D. dissertation, Urgench, 2022.

[5]   N. M. Mahmudov, "Development of pharmaceutical industry of Uzbekistan," Journal of Confession, vol. 18, issue 01, pp. 1692–1695, 2025.

[6]   V. Abhijit, Good Economics for Hard Times: A Convenient and Thought-Provoking Way to Explore Current Economic Issues. 2023.

[7]   L. A. Vibornova and O. S. Malochova, "Study of the international market and construction of an economic model for forecasting the export of medical products and equipment in Russia," Bulletin of Samara University, Economics and Management, no. 1, pp. 65–75, 2019.

[8]   N. Varshney, D. Jain, P. Janmeda, and D. Mitra, "Role of medicinal plants in the pharmaceutical sector: An overview," published online, Sep. 18, 2021.

[9]   E. A. Roslyakova, "Econometric analysis of the factor forming environment," Vestnik Omskogo universiteta. Series "Economics", no. 4, pp. 235–241, 2015.

[10]   S. S. Gulyamov, "Problems of modeling the development of territorial-industrial complexes," Ph.D. dissertation, Moscow, 1974.

[11]   B. B. Berkinov, Modeling of Agricultural Management Systems. Tashkent, Uzbekistan: Fan, 1991.

[12]   N. M. Makhmudov, Modeling of Production and Economic Processes in the Cotton Processing Industries. Ph.D. dissertation, Tashkent State University of Economics, 1993.

[13]   E. Kudryashev, Prospects for Pharmaceuticals in the Regional Economy. St. Petersburg, Russia: Peter, 2019, pp. 246.

[14]   Q. Abdurakhmanov, Pharmaceutical Industry in the Innovation Economy. Tashkent, Uzbekistan: Science, 2020, pp. 288.

[15]   A. A. Gritsanov, Innovative Development of Pharmaceutical Industries in Emerging Markets. Moscow, Russia: Nauka, 2021, pp. 300.