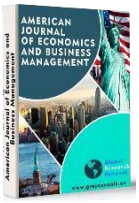

American Journal of Economics and Business Management

Vol. 8 Issue 3 | **pp.** 1221-1226 | **ISSN:** 2576-5973
Available online @ https://www.globalresearchnetwork.us/index.php/ajebm

Article

Multidimensional Analysis of Poverty: an Integrated Approach to Addressing Poverty in The Digital Economy

Amirdjanova Sitora*[1], Shayusupova Nargiza[2], Berkinov Bazarbay[3], Viqorjon Bahriddinov[4]

1. Department of Macroeconomic Policy and Forecasting, Tashkent State University of Economics, Uzbekistan
2. Secretary of the Academic Council, Tashkent State University of Economics, Uzbekistan
3. Department of Macroeconomic Policy and Forecasting, Tashkent State University of Economics, Uzbekistan
4. Department of Macroeconomic Policy and Forecasting, Tashkent State University of Economics, Uzbekistan

* Correspondence: s.amirjanova@tsue.uz

Abstract: Poverty remains a significant global challenge, affecting billions of people and undermining economic development and social stability. This paper provides a comprehensive analysis of the multidimensional nature of poverty, examining its causes, effects, and potential solutions. Using an integrated approach that combines economic, social, political perspectives, this study offers a detailed understanding of poverty and proposes targeted interventions to mitigate its impacts. The findings suggest that a holistic strategy, incorporating sustainable development and inclusive policies, is essential for effective poverty alleviation.

Keywords: Digital Economy, Poverty, Economic Development, Social Inequality, Sustainable Development, Inclusive Policies, Technology, Industry

1. Introduction

Poverty is a complex and multifaceted phenomenon that requires immediate solutions in many countries. It includes the lack of use of basic resources and opportunities that significantly impact people's lives. This paper aims to provide a comprehensive analysis of poverty, exploring its causes, consequences, and potential solutions through an integrated approach. By understanding the multifaceted nature of poverty, policymakers and stakeholders can develop more effective strategies to combat this persistent issue [1]. As the President of the Republic of Uzbekistan noted, “In Uzbekistan, the poverty level was 14% in 2022, and already in 2023 this figure dropped to 11% and about 1 million citizens were displaced due to poverty. In achieving such results, one of the decisive factors is the implementation of a systematic policy aimed at training in demand modern professions, creating decent green jobs, as well as comprehensive support for entrepreneurship. An important step is also that the social protection system in the country’s mahallas has fully covered more than 2 million 500 thousand low-income families, persons with disabilities, women and single people [2].

As a result of the reforms carried out in Uzbekistan to support self-employment, by the end of 2023 the share of private entrepreneurship and small businesses in the GDP structure amounted to 65.9%, in the volume of industrial products 40.6%, in the volume of agricultural products 98.4% [3].

This paper consists of five sections. Section 2 covers investigations conducted on this subject till this time. Data used in our research as well as explanation of methodology are

Citation: Sitora, A., Nargiza, S., Bazarbay, B., Bahriddinov, V. Multidimensional Analysis of Poverty: an Integrated Approach to Addressing Poverty in The Digital Economy. American Journal of Economics and Business Management 2025, 8(3), 1221-1226.

Received: 8th Mar 2025
Revised: 11th Mar 2025
Accepted: 18th Mar 2025
Published: 22th Mar 2025

given in Section 3. Results of our analysis are presented in Section 4. Conclusion from our investigation is provided in the last Section 5.

Literature Review

A substantial body of literature explores the various dimensions of poverty. Studies have highlighted the role of economic factors, such as unemployment and low wages, in perpetuating poverty [4]. Environmental factors play a critical role in influencing poverty levels .

Also, the works of the following national scientists, , are devoted to the current state of macroeconomic stability, economic growth and solutions of poverty, and others authors such as investigate explanation of the complexity and diversity of macroeconomic reality and understanding of what is happening with the economy of Uzbekistan [5].

In the domestic scientific literature, the problem of employment in digital economy is also the object of close attention of many scientists. Among the significant scientists who contributed how artificial intelligence influence of increase in employment of the population, one can name such scientists [6]. An analysis of the scientific works of these authors allowed us to conclude that it is necessary to develop theory and practice in the field of employment, where the issues of increasing the employment of youth and women in the context of using the potential of human capital will find their solution [7]. This issue requires the development of appropriate mechanisms for planning and forecasting demand and supply in the labor market for young personnel, increasing their competencies through content education and professional training, which will increase their mobility and employment, and reduce unemployment.

2. Materials and Methods

In our research data of Uzbekistan between 2017 and 2023 is analyzed. The data for our analysis is used from Government Survey that is conducted by Statistics agency every year. With the help of this survey, it can be identified at what development level are countries are showed of poverty line.

This study employs a mixed-methods approach, combining qualitative and quantitative data to provide a comprehensive analysis of poverty reduction. Data sources include national and international economic reports, social surveys, and case studies from various regions. For forecasting, correlation-regression and variation analyzes were used. In this regard, we carried out an analysis and carried out the analytical part of the macroeconomic features of employment and directly quantitative aspects, in particular, its condition, level, nature of dynamics, structure, differentiation by groups. When econometric modeling of macroeconomic processes, methods are used, including multivariate econometric methods, exponential smoothing, correlation-regression, moving average, as well as ARIMA, VAR, etc. Among these methods, the trend method is used in most cases. Trends in shape can be linear, parabolic (polynomial), exponential, logarithmic, hyperbolic, power and other forms:

$y = a_0 + a_1 t$ - linear trend (1);

$y = a_0 + a_1 t + a_2 t^2$ - parabolic (polynomial) trend, % (2);

$y = a_0 + a_1 \ln t$ - logarithmic trend (3);

$y = a_0 + \frac{a_1}{t}$ - hyperbolic trend (4);

$y = a_0 \cdot a_1^t$ - exponential trend (5);

$y = a_0 \cdot t^{a_1}$ - power trend (6);

where: y – indicator levels free from fluctuations, directed in a straight line; a0 – initial trend level taken before or before the start of time calculation; a1 is the average change per unit of time, that is, the rate of trend change is a constant value. This can be the average daily, average monthly or average annual growth of any indicator. In the trend, all factors are "on behalf of", the only accumulative factor is the performer's time.

Modeling and forecasting of macroeconomic and other indicators as factors shaping demand in the labor market, which influence employment growth, thereby reducing poverty. The dynamics of indicators for 2017-2023, taken for the forecast, are shown in Table 1.

As part of the implementation of tasks for this block, we selected 5 types of trend models for the macroeconomic indicators of the republic - factors and carried out appropriate analyzes on them: the number of operating small businesses; number of private enterprises; number of family businesses; number of workplaces. The calculation showed that almost all models adequately represent the factors, but the polynomial (parabolic) model is considered the most representative among them, since the coefficient of determination (R2) is the maximum and is closer to 1.

Table 1. Dynamics of growth of macroeconomic indexes Republic of Uzbekistan.

Year	Number of small businesses, units*	Number of private enterprises, units*	Number of family businesses, units*	Number of jobs, thousand places*
2017	210594	70839	9235	315,9
2018	229666	70058	11679	336,1
2019	262930	72424	15507	372,1
2020	334767	83558	27512	391,7
2021	411203	90721	43122	382,2
2022	462834	89148	52495	501,6
2023	551048	97080	80698	497,0
2023/2017, times	**2,6**	**1,4**	**8,7**	**1,6**

In the constructed model, if the coefficient of determination is closer to 1, the higher the quality of the constructed equation. The decision to choose a particular model is made on the basis of analysis, based on statistical indicators of the quality (adequacy) of the model, also including the relative error of approximation and the value of the standard error of regression.

Of all the models for predicting factors, we chose a polynomial (parabolic) model, where:

for the number of small enterprises $R^2 = 0.988$;

for the number of private enterprises $R^2 = 0.867$;

for the number of family businesses $R^2 = 0.984$;

for number of jobs $R^2 = 0.860$.

A factor considered as part of the implementation of tasks is the number of small businesses; with their increase, the number of jobs created and, accordingly, employed in the republic increases, and thereby the poverty level decreases. We have made a forecast of the number of such subjects for the coming years using a polynomial (parabolic) model.

3. Results and Discussion

Economic Factors. High unemployment rates are closely linked to poverty levels. According to the International Labour Organization (ILO) [8], the global unemployment rate reached 6.5% in 2023, with over 200 million people unemployed.

The main solution to reducing poverty is to ensure employment of the population and forecast its future prospects, such as small, private and family enterprises are fundamental in modern Uzbekistan.

As we see from the resulting equation, the indicator will increase on average by 787.3 thousand units per year. Substituting the values of forecast years instead of x, we find that in 2024 this figure will be 609.3 thousand units, and 1021.8 thousand units by 2028 (Table 2) [9].

Of the five trend models, we have chosen the model that most adequately and representatively characterizes the process of further development of private enterprises as a factor ensuring increased employment of the population of the republic. This is a polynomial (parabolic) model, where the coefficient of determination (R2) is 0.867 and is closest to 1.

Table 2. Forecast of factors using a polynomial (parabolic) model for 2024-2028.

Year	Factors	
	Number of small businesses, units*	**Number of private enterprises, units***
	$\hat{y} = 18681 + 11712 \cdot x + 5990 \cdot x^2$	$\hat{y} = 65529 + 2801 \cdot x + 271.9 \cdot x^2$,
	$R^2 = 0{,}988$	$R^2 = 0{,}867$
2024	609281	105344
2025	698235	112767
2026	734806	120734
2027	872308	129245
2028	1021790	138305
2030/2023, times	**1,7**	**1,3**

The forecast for a polynomial model of private enterprises can be described by the equation, where y is the number of private enterprises, x is the year. Using this formula, we calculate this indicator for the period from 2023 to 2027 (Table 3) [10]. The forecast showed that during this period the number of private enterprises in the country should increase by 1.3 times. In 2024 this figure will be 105.3 thousand enterprises, in 2028 138.3 thousand enterprises. Every year on average the number of private enterprises will increase by 121.3 thousand people. Another significant factor in ensuring employment, along with those mentioned earlier, the number of family businesses will increase. The dynamics of the number of such enterprises for 2017-2023, shows that their number increased by 8.7 times during this period. In this regard, it is likely that in the next five years the number of family businesses will increase at the same geometric progression [11].

As part of the study of this indicator, we will carry out its forecast according to the types of trend models. However, the projected data has a very significant discrepancy in the growth of family businesses. Thus, according to the exponential model, this indicator in 2028 compared to 2024 should increase by 4.5 times, in the logarithmic trend model only by 1.2 times, when in the polynomial (parabolic) model - 2.2 times, and according to the power and linear models - by 1.5 times in each. Based on the results obtained from the models, we selected the one suitable for further analysis - these are the numerical indicators obtained from the polynomial (parabolic) model [12].

Table 3. Forecast of factors using a polynomial (parabolic) model for 2024-2028 (continue).

Year	Factors	
	Number of family businesses, units*	**Number of jobs, thousand places**
	$\hat{y} = 7957 - 1003 \cdot x + 1460 \cdot x^2$, $R^2 = 0{,}984$	$\hat{y} = 326.9 - 8.21 \cdot x + 5.607 \cdot x^2$, $R^2 = 0{,}860$
2024	93378	525,5
2025	117195	612,5
2026	143935	711,7
2027	173589	810,5
2028	206166	955,3
2030/2023, times	**2,2**	**1,8**

We describe the forecast of the number of family enterprises using this model with the equation, where y is the number of family enterprises, x is the year. Using this formula, we calculate this indicator for the period 2024 to 2028. According to the forecast, in 2024 this figure will be 93.4 thousand enterprises, and 206.2 thousand units in 2028, that is, it will increase by 2.2 times (Table 3).

The growth in the number of enterprises projected for the future helps to increase the number of jobs created to ensure employment and reduce poverty in the country. Therefore, forecasting this indicator for the medium term is a very important step. It was revealed that not all models showed adequate values, and they are not fully suitable for the forecast due to the fact that the coefficient of determination (R2) is less than 0.9. In this regard, the coefficient from the given models with the largest number was selected. This includes a polynomial (parabolic) model with a value of R2 = 0.860.

Analysis of actual and predicted indicators allows us to draw the following conclusion: the number of labor resources will increase annually (by an average of 83,518 thousand people), as well as the number of employed people (by 14,480.3 thousand people), the situation on the labor market in the country will improve. If the trend continues, problems such as unemployment and poverty levels will arise in the near future [13].

Based on the results of modeling the above indicators, in the near future we should expect an increase in the supply of employment in the labor market, which is possible through the further implementation of competent state policies for the management and effective use of the working population of the republic. This suggests the following opportunities in the labor market.

In this study, we embarked the findings of this study highlight the need for a multifaceted approach to poverty alleviation. Economic policies focused on job creation and wage equity are essential for reducing unemployment and wage disparities [14]. Access to education and healthcare must be prioritized to address social inequalities. Effective governance and anti-corruption measures are critical for ensuring the proper allocation of resources . Additionally, sustainable development practices are vital for protecting vulnerable communities from environmental shocks [15].

4. Conclusion

Poverty is a complex issue that requires an integrated and holistic approach to address effectively. This study underscores the importance of combining economic, social, political strategies to combat poverty. By implementing comprehensive and inclusive policies, stakeholders can make significant strides in reducing poverty and improving the

quality of life for millions worldwide. Proactive measures and coordinated global efforts are crucial to reversing the projected negative trends and achieving sustainable development goals .

Active programs implemented in the labor market of Uzbekistan are a relatively new tool. For socially vulnerable groups of the population, there are specially designed programs to provide work, and legal mechanisms have also been developed to protect the poor. In Uzbekistan, special attention is paid to reducing poverty in the country, and the country demonstrates its commitment to achieving the First UN Sustainable Development Goal - eliminating poverty in all its forms by 2030. In this regard, measuring monetary child poverty represents a significant step towards realizing this mission. It is also important to create conditions for women. Time spent on unpaid domestic work is higher in poor households due to the need to replace unavailable services, products and goods. Consequently, this phenomenon not only perpetuates the vicious cycle of poverty but also negatively impacts economically disadvantaged households as the absence of women in the labor force deprives these households of additional income.

REFERENCES

[1] M. Fayzieva, "A Methodology for Assessing the Effectiveness of the Introduction of Digital Technologies in Commercial Banks of Uzbekistan," *The 6th International Conference on Future Networks & Distributed Systems (ICFNDS '22)*, Tashkent, TAS, Uzbekistan, 2022. doi: 10.1145/3584202.3584217.

[2] K. Kh. Abdurakhmanov, "Artificial intelligence is the basis for sustainable economic development," Federal State Budgetary Educational Institution of Higher Education "REU im. G. Plekhanov," 2023.

[3] B. B. Berkinov and A. A. Anvarov, "Directions for deepening structural and institutional reforms in the economy of Uzbekistan," *J. Mark. Bus. Manag.*, vol. 1, no. 3, pp. 1-6, 2022.

[4] N. Ismaılova, "Explore how AI is driving sustainable economic growth and transforming business analysis worldwide," *J. Sustain. Dev. Green Technol.*, vol. 4, no. 2, 2024. doi: 10.54216/JSDGT.040201.

[5] G. Abdurakhmanova, "Financial development and renewable energy consumption," *Econ. Growth Wellbeing Evid. Belt Road Initiat. Ctries.*, pp. 35-53, 2022.

[6] A. Aziz et al., "Iterative selection and correction based adaptive greedy algorithm for compressive sensing reconstruction," *J. King Saud Univ.-Comput. Inf. Sci.*, vol. 34, no. 3, pp. 892-900, 2022.

[7] Sh. M. Mirziyoyev, "Participants of the II International Forum on Poverty Reduction," 2023. [Online]. Available: https://president.uz/ru/lists/view/6343

[8] World Bank, *Poverty and Shared Prosperity 2023: Correcting Course*, World Bank Publications, 2023.

[9] A. M. Kadirov, B. Kh. Mamurov, F. O. Bazarov, and A. T. Akhdieva, "Prospects for the development of the digital economy in the Republic of Uzbekistan," in *XIII Euro-Asian Scientific Forum*, St. Petersburg, Russia, 2021.

[10] S. S. Amirdjanova, "Solutions to poverty in Uzbekistan: A multifaceted approach," Zenodo, 2024. doi: 10.5281/zenodo.11241826.

[11] A. B. Irmatova, "The development of intellectual work affects the employment of women," *Iqtisodiyot Va Innov. Texnologiyalar Ilmiy Electron Mag.*, no. 1, pp. 93-100, 2020.

[12] N. Stern, *The Economics of Climate Change: The Stern Review*, Cambridge University Press, 2006.

[13] H. Hakimjon, V. Bakhriddinov, U. Kodirov, and N. Nabieva, "The Fusion of Inflation and Economic Growth: A Time Series Analysis," *J. Fusion Pract. Appl.*, vol. 15, no. 2, pp. 112-120, 2024. doi: 10.54216/FPA.150210.

[14] World Bank, *World Development Report 2020: Trading for Development in the Age of Global Value Chains*, World Bank Publications, 2020.

[15] International Labour Organization (ILO), *World Employment and Social Outlook 2023*, 2023.