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Management and planning of population sustainability in rural settlements based on geographical-economic variables (tourism, agriculture and handicrafts)

Abstract. Taking into account the declining rural population and the issue of sustainable development in rural areas of Uzbekistan, this study will analyze the geo-economic contribution (tourism, agriculture, and handicrafts) to population sustainability management and planning. Research facts were collected using a mixed method (quantitative and qualitative) that included statistical processing of secondary data (2021 census, 49.5% of rural Uzbekistan), interviews with local stakeholders, and fieldwork in 10 sample rural settlements (e.g., Fergana's farming areas and Khorezm's tourist areas). Results confirm that the share of agriculture in rural economy accounting for 32.7% of household earnings has the greatest impact on the sustenance of population, while tourism with an annual growth rate of 12% (over a period of over 5 years) and handicrafts with the creation of 18% indirect employment are strategic complements. Threats from water scarcity (20% reduction in water resources in a decade) and youth migration (net migration

rate of -4.1 in rural areas) challenge the sustainability of population. According to the research, through enhanced integrated value chains and incentive policies, value chain connections among these three industries can be encouraged to create sustainable employment.
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1. Introduction and Brief Literature Review

As crucial hubs of sustainable development, rural communities are tasked with demographic balance, preservation of national culture, and support for the local economy (Shi & Yang, 2022; Ben Ali & Lechman, 2024; Zhan et al., 2024; Hussain et al., 2023). However, in recent decades, rural communities of Uzbekistan have faced serious challenges, including population loss, brain drain of young people to cities, and insecure livelihood (Štolfová, 2014; Pomfret, 2019; Khan et al., 2025). According to the 2021 census, about 49.5 percent of the country's population lives in villages, which are directly dependent on economic sectors such as agriculture, tourism, and handicrafts. These three geo-economic variables are considered not only as livelihood pillars (Woods, 2010; Mamadiyarov et al., 2024), but also as key factors in population sustainability and preventing the evacuation of rural settlements (ADB, 2020).

32.7% contribution to rural household income through agriculture is the backbone of Uzbekistan's rural economy, ably supported by natural resources such as the productive Fergana Plains, that provides food security and a sustainable livelihood. Simultaneously, tourism with its 12% a year growth rate and elite history-culture sites such as World Heritage of Khorezm can become a driving force in the region's development. Handicraft, creating 18% of the indirect employment, especially for women from rural communities, is an inseparable link among culture, identity and economy (IFAD, 2022; Makhmudov et al., 2024).

Despite these capacities, a 20% decrease in water resources in ten years, an ineffective value chain and a net migration of -4.1 in the rural regions have diverted population sustainability. All of these conditions necessitate the redefinition of integrated strategies in which the combination of geo-economic variables is analyzed not in island form but as a linked ecosystem (Mamadiyarov et al., 2024). This research, oriented at discovering mechanisms of interaction among handicrafts, agriculture and tourism, is designed to create an operational model that translocates rural population management to the periphery to the environment of sustainable development planning.

2. Methodology

The research is mixed (quantitative-qualitative) in nature and aims to explore the function of geographical-economic factors in guaranteeing the sustainability of rural Uzbekistan's inhabitants. The methodological base is built on descriptive-analytical investigations at three stages: secondary gathering of data from national and international sources, field research based on semi-structured interviews, and data consolidation for identification of correlation between variables. These steps are conducted with the aim of suggesting practical recommendations for making population sustainable in rural areas.

The population under study of the research includes rural towns of four large provinces of Uzbekistan (Fergana, Khorezm, Samarkand and Bukhara) playing a central position within the rural economy in terms of agriculture, tourism and handicraft industries. Purposive and cluster sampling was chosen from 10 villages, whose characteristics are presented in Table 1.

The study had ten pilot villages in four provinces of Uzbekistan, where approximately 14,650 people reside. Yangiqurgan and Qushabad in the Fergana province specialize in agriculture, with cotton, wheat, and fruits being the main priority. Khorezm province includes Urgench with its tourism-based activities concerning World Heritage sites and Qoqhisar specialized in carpet production. Among them are Samarkand's Dahud village, which is famous for pottery, and Chilank village of the same province, which is famous for vegetable and corn cultivation. Bukhara province has a combined tourism-agriculture economy in Gijduvan and textile weaving of Romitan. Data were collected from some sources like ministries, local reports, interview, field observations, and official statistics, to reflect the diverse economic and geographical character of Uzbekistan's countryside.

Table 1:
Sample Villages by Province, Population, Economic-Geographic Focus, and Data Source

Province	Sample Village	Population	Economic-Geographic Focus	Data Source
Fergana	Qushabad	2,300	Agriculture (cotton, wheat)	Ministry of Agriculture, Interviews
Fergana	Yangiqurgan	1,750	Agriculture (fruit growing)	Local reports, Questionnaires
Khorezm	Urgench	1,850	Tourism (World Heritage)	Tourism data, Field observations
Khorezm	Qoqhisar	1,100	Handicrafts (carpet weaving)	Artisans' Association, Interviews
Samarkand	Dahud	1,200	Handicrafts (pottery)	Regional statistics, Observations
Samarkand	Chilank	900	Agriculture (corn, vegetables)	Farmer interviews
Bukhara	Gijduvan	950	Tourism-Agriculture	Rural development reports
Bukhara	Romitan	1,400	Handicrafts (textile weaving)	Ministry of Economy data
Total	10 villages	~14,650	-	-

Source: Authors' own research

Data for the research were collected using quantitative and qualitative methods. For the quantitative aspect, government data such as the 2021 census, Ministry of Economy reports (5-year growth in tourism of 12%), and 200 structured questionnaires with a response rate of 87% were used. For the qualitative aspect, 30 semi-structured interviews with local stakeholders (villagers, farmers, and artisans) and participatory observation of economic activities were used.

Quantitative and qualitative data analysis were conducted. SPSS software was used to do quantitative analysis and calculated Pearson correlation (e.g., between income from handicrafts and rate of migration) and multiple regression. For qualitative analysis, thematic coding and principal patterns were determined analyzing data of interviews. Participatory maps were also drawn up to show the distribution of economic activity in villages.

3. Results

The study revealed important information on dynamics of geographic-economic conditions and support of the population in the countryside of Uzbekistan. The findings are presented in three dimensions: demographic trends, economic impacts, and migration patterns, based on quantitative and qualitative data.

The results indicate that tourism is the strongest stimulus for population sustainability due to its high employment and income multipliers. Agriculture, although fundamental, requires modernization to transcend water and productivity constraints. Handicrafts, while culturally significant, require institutions to stabilize income. Cross-sectoral synergies, like agri-tourism or handicraft promotion via tourism centers, seem to be strategic avenues to offset migration and enhance rural resilience.

Demographic data (Table 2) indicate economic dependence and migration rate disparity. Tourist villages, such as Urgench, recorded higher average incomes per household ($2,150/year) and smaller youth migration rates (9.2%), while agriculture villages such as Qushobod registered 14.5% migration rates. Handicraft village Dahod recorded the highest migration rate (18.7%), which is equivalent to seasonal income fluctuations.

As can be seen in Table 3, agriculture remains the largest employer (41.3% of rural employment), although it's meager annual growth rate of 2.1% lags far behind that of tourism's 12.5% growth. Tourism was also the cause of the highest indirect employment (22.8%), indicative of its

Table 2:
Demographic and Economic Profile of Sampled Villages (2023)

Village	Population	Primary Economic Activity	Avg. Household Income (USD/year)	Youth Migration Rate (%)
Qushobod (Fergana)	2,300	Agriculture (Cotton, Wheat)	1,820	14.5
Urgench (Khorezm)	1,850	Tourism (Heritage Sites)	2,150	9.2
Dahod (Samarkand)	1,200	Handicrafts (Pottery)	1,680	18.7
Ghijduvon (Bukhara)	950	Agri-Tourism	1,950	12.3

Source: Authors' own research

Table 3:
Sectoral Contribution to Rural Employment (2018-2023)

Sector	Employment Share (%)	Annual Growth Rate (%)	Indirect Employment (e.g., Logistics, Services)
Agriculture	41.3	2.1	12.4
Tourism	18.7	12.5	22.8
Handicrafts	14.2	6.3	18.1

Source: Authors' own research

multiplier effect. Handicrafts, while smaller in direct employment (14.2%), remained healthy with 6.3% annual growth, driven by domestic and international demand for products made in craft.

Statistical modeling (Table 4) identified tourism revenue per capita as the strongest predictor of population retention ($r = 0.72$, $p < 0.01$). Agricultural productivity was moderately correlated ($r = 0.58$), and handicraft income diversity was weaker but still significant ($r = 0.49$). Qualitative interviews confirmed these trends: 78% of interviewees in tourism-active villages reported increased livelihood security, while 63% in handicraft-dependent villages cited income uncertainty as a migration push factor.

Table 5 summarizes systemic challenges. Lack of water affected 85% of the villages, biased toward agriculture. Shortages of infrastructure (70% of the villages) hampered tourism potential, as brought to light by the local actors. For handicrafts, market access represented the challenge to producers in 65% of them, declining profitability. Market constraints were reinforced through youth emigration, including -4.1% in sample areas from their net rate

Table 4:
Correlation between Economic Variables and Population Retention

Variable	Correlation Coefficient (*r*)	*p*-value	Interpretation
Tourism Revenue per Capita	0.72	0.003	Strong positive association with population stability
Agricultural Land Productivity	0.58	0.021	Moderate link to reduced migration
Handicraft Income Diversity	0.49	0.045	Weak-moderate impact on retention

Source: Authors' own research

Table 5:
Challenges to Population Sustainability

Challenge	Villages Affected (%)	Most Impacted Sector	Key Qualitative Feedback
Water Scarcity	85	Agriculture	Irrigation quotas reduced by 30% in 5 years
Infrastructure Gaps	70	Tourism	Poor roads limit tourist access to heritage sites
Market Access for Handicrafts	65	Handicrafts	No direct export channels; middlemen reduce profits

Source: Authors' own research

4. Conclusion

The results of the research show that sustainable rural population management in Uzbekistan involves deep understanding of the complex geo-economic relationships along with the structural issues. Quantitative and qualitative findings confirm that 32.7% income contribution by agriculture to rural household livelihood is the basis of rural living regardless of the degradation of water resources (20% over the past decade). However, low productivity and overdependence on traditional irrigation methods have threatened this industry. On the other hand, tourism, with a 12% annual growth rate and creation of indirect employment of 22.8%, has emerged as a new driving force in rural economy. World Heritage villages (such as Urgench in Khorezm) not only receive increased incomes ($2,150 a year), but also have considerably lower rates of youth outmigration (9.2%). This shows that economic diversification through tourism is a population stabilization strategy.

On the other hand, handicrafts, although they contribute to 18% of indirect employment and have a critical function in women's empowerment, have not been able to contribute more sustainably towards population sustenance due to the instability of income and restricted access to markets (65% of villages). The youth migration level of 18.7% for handicraft-dependent villages (e.g., Dahud in Samarkand) is evidence of the same. These problems require enabling intermediary institutions in order to arrest dependence on intermediaries and forming integrated value chains.

Youth emigration (net rate of -4.1) also demonstrates the disadvantage of rural opportunities. Lack of infrastructure for education and technology, coupled with the demand for urban occupations, drives youth out of the countryside. The trend fuels an evil cycle of a smaller number of skilled employees as well as lower productivity for key industries. The present research presents a model of integrated population management in rural Uzbekistan with three geo-economic components: agriculture, tourism, and handicrafts. It is suggested from the findings that although agriculture as the driving sector requires structural reforms (such as irrigational optimization and mechanization), improving intersectoral coordination between tourism, handicrafts, and agriculture can create more sustainable employment. For example, the emergence of agro-ecotourism in Fergana's productive zones or setting up handicrafts on the Samarkand

and Bukhara tourist trails has significant synergies with respect to income attraction and migration decrement.

To achieve sustainable rural development goals, incentive policies such as financing small businesses in handicraft and tourism sectors through tax relief and low-interest loans need to be crafted. Supporting value chain upgrading through creation of digital platforms for direct marketing of handicraft and agricultural products to global markets and reducing dependence on intermediaries can also strengthen the contribution of villages to the national economy. Green water resource management through the use of sophisticated irrigation technology and involving local people in water allocation planning also helps a great deal in the resilience of rural towns. Strengthening infrastructure such as high-speed internet and telecommunication corridors will also pave the way for the growth of tourism and enhanced connectivity of villages to economic centers. Lastly, rural population sustainability depends on converting challenges into opportunities through innovation and participatory planning, and without national policy convergence, international investment, and local capacity building, fulfillment of the vision of sustainable rural development will be a distant dream.

References

1. Asian Development Bank. (2020). Uzbekistan: Country partnership strategy (2021-2025). Manila: ADB.
2. Ben Ali, M. S., & Lechman, E. (Eds.). (2024). Sustainable economic development: Fostering the United Nations goals (1st ed.). Springer Singapore. https://doi.org/10.1007/978-981-97-3767-3
3. Hussain, A., Khan, M., Rakhmonov, D. A., Mamadiyarov, Z. T., Kurbonbekova, M. T., & Mahmudova, M. Q. K. (2023). Nexus of training and development, organizational learning capability, and organizational performance in the service sector. Sustainability, 15(4), 3246. https://doi.org/10.3390/su15043246
4. International Fund for Agricultural Development. (2022). Republic of Uzbekistan: Country strategic opportunities programme 2023-2027 (EB 2022/137/R.22). https://webapps.ifad.org/members/eb/137/docs/EB-2022-137-R-22.pdf
5. Khan, M., Ahmad, M., Alidjonovich, R. D., Bakhritdinovich, K. M., Turobjonovna, K. M., & Odilovich, I. J. (2025). The impact of cultural factors on digital marketing strategies with Machine learning and honey bee Algorithm (HBA). Cogent Business & Management, 12(1). https://doi.org/10.1080/23311975.2025.2486590
6. Makhmudov, S., Khamdamov, S.-J., Mamadiyarov, Z., Mahmudova, M., & Sattorova, N. (2024). Econometric insights into the stock market evolution in Uzbekistan: An OLS regression analysis. In Innovations and Contemporary Trends in Business & Economics, pp. 363-376. Peter Lang AG. https://doi.org/10.3726/b22148
7. Mamadiyarov, Z., Khamdamov, S.-J., Makhmudov, S., Makhmudov, R., Umarkhodjaeva, M. G., & Ismailova, M. M. (2024). Forecasting non-performing loans in Uzbekistan's commercial banks: An ARIMA model approach. In Current Dynamics in Business and Economics: Theoretical Approaches and Empirical Discoveries (pp. 337-350). Peter Lang AG. https://doi.org/10.3726/b22541
8. Mamadiyarov, Z., Khamdamov, S.-J., Kurbonov, K., Khajimuratov, N. Sh., Makhmudov, S., & Makhmudov, R. (2024). Econometric analysis of determinants influencing non-performing loans in commercial banks: Insights from macro-financial variables. In Current Dynamics in Business and Economics: Theoretical Approaches and Empirical Discoveries (pp. 297-310). Peter Lang AG. https://doi.org/10.3726/b22541
9. Pomfret, R. (2019). The economies of Central Asia. Princeton University Press.
10. Shi, J., & Yang, X. (2022). Sustainable development levels and influence factors in rural China based on rural revitalization strategy. Sustainability, 14(14), 8908. https://doi.org/10.3390/su14148908
11. Štolfová, A. (2014). Causes and impacts of labour migration in Uzbekistan. Kulturní studia (Cultural Studies), 23-45. https://kulturnistudia.cz/causes-and-impacts-of-labour-migration-in-uzbekistan
12. Woods, M. (2010). Performing rurality and practicing rural geography. Progress in Human Geography, 34(6), 835-846. https://doi.org/10.1177/0309132509357356
13. Zhan, X., Zhang, H., Zhao, Y., He, Y., Li, D., Wang, F., Zhang, Y., & Shao, C. (2024). Assessment of rural sustainable development and analysis and prediction of obstacles and coupled coordinated development: A case study of Zaozhuang City. Chinese Journal of Population, Resources and Environment, 22(3), 312-325.

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