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FORECAST AND SCENARIOS FOR THE DEVELOPMENT OF THE ECONOMIC POTENTIAL OF THE SERVICES SECTOR IN SAMARKAND REGION TO 2030

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Abstract

The article develops a forecast for the development of the services sector in Samarkand region to 2030. The forecast is based on official statistical data for 2010-2025 and comprises four scenarios: inertial (15.0% per year), baseline (18.5%), target (22.0%) and optimistic (26.0%). The scenarios are linked to the identified territorial reserve: services per capita in the region amount to 63.7% of the national average. Under the target scenario, the per-capita indicator reaches the 2025 national average by 2030. Sensitivity analysis identifies employment and skill levels in the sector as the strongest constraint. Three additional target indicators are proposed for regional programmes.

Keywords: Forecasting, scenario analysis, economic potential, services market, sensitivity analysis, services per capita, Samarkand region, 2030.

INTRODUCTION

The practical value of a forecast is measured not by perfect accuracy but by the information it provides for decision-making. Long-term forecasts rarely materialise exactly as predicted; their purpose is to show the likely consequences



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of continuing current trends and to identify the conditions required to achieve a desired objective.

In this study, the second function is given priority. Previous analysis identified an unused territorial reserve: services per capita in Samarkand region amount to 63.7% of the national average. The main forecasting question is therefore what growth rate would be required to realise this reserve.

A third issue is the need to link the forecast to resource constraints. Target values are often announced without separately testing their resource requirements. Because qualified labour is a principal resource in the services sector, the forecast is linked to employment and skills indicators.

The purpose of the study is to develop a forecast for the services sector of Samarkand region to 2030, connect alternative scenarios with the territorial reserve and resource constraints, and substantiate a system of target indicators.

LITERATURE REVIEW

Forecasting methods are commonly divided into extrapolation, econometric modelling and scenario approaches. Extrapolation assumes continuation of past trends and is most suitable for short-term forecasting. Scenario analysis is designed for conditions of high uncertainty and presents several alternative trajectories instead of a single point forecast.

W. Baumol substantiated a structural constraint on productivity growth in services. Labour input is often more difficult to reduce in services than in manufacturing because many services require direct participation by the provider. Consequently, sectoral growth may depend heavily on the expansion and quality of employment.



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At the same time, digital technologies partially modify this constraint. E. Brynjolfsson and A. McAfee show that digital tools can substantially increase productivity in some service segments.

Regional forecasts must also take demographic factors into account because demand for services is directly related to population size and income. Population projections are therefore used as an initial parameter in the per-capita calculations.

RESEARCH METHODOLOGY

The information base consists of official open data from the National Statistics Committee. The average annual growth rate is calculated as a geometric mean:

$$g = (V(t) / V(0))^{(1/n)} - 1$$

The average annual rate for Samarkand region was 29.6% in 2015-2025 and 31.2% in 2020-2025. These are nominal rates and a substantial part of the increase reflects the price factor.

Forecast rates are deliberately lower than historical nominal rates for two reasons. First, a gradual reduction in inflation would mechanically reduce nominal growth. Second, as the base becomes larger, the same absolute increase generates a lower relative growth rate.

Four scenarios are specified: an inertial scenario of 15.0% per year, a baseline scenario of 18.5%, a target scenario of 22.0%, and an optimistic scenario of 26.0%.

For per-capita calculations, annual population growth of 1.8% is assumed, corresponding approximately to the recent regional average.

The limitations are stated explicitly. The scenarios are nominal and require an inflation forecast to be converted into real terms. The projection assumes a



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smooth exponential path although actual dynamics may be uneven. Sensitivity estimates partly rely on expert judgement.

ANALYSIS AND RESULTS

Table 1. Growth rates and justification of forecast scenarios

Period/scenario	Initial value, bn UZS	Final value, bn UZS	Growth, times	Average annual rate, %
2010-2015 (actual)	1,799.3	5,832.9	3.24	26.5
2015-2020 (actual)	5,832.9	20,083.8	3.44	28.1
2020-2025 (actual)	20,083.8	78,163.0	3.89	31.2
2015-2025 (actual)	5,832.9	78,163.0	13.40	29.6
Inertial scenario	78,163.0	157,213.0	2.01	15.0
Baseline scenario	78,163.0	182,610.0	2.34	18.5
Target scenario	78,163.0	211,244.0	2.70	22.0
Optimistic scenario	78,163.0	248,173.0	3.18	26.0

Historical nominal growth accelerated from 26.5% to 31.2%. At first glance this could justify similarly high forecast rates, but direct extrapolation would be methodologically incorrect. The acceleration was significantly influenced by inflation, and the 2017 data also contain a one-off jump associated with broader accounting for informal economic activity.

Accordingly, all forecast scenarios use lower rates. Even the optimistic scenario of 26.0% equals the lowest average rate observed in the historical subperiods. This conservative treatment increases the credibility of the forecast.



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The difference between scenarios is substantial. By 2030 the gap between the inertial and optimistic trajectories reaches UZS 90,960 billion, equal to about 58% of the inertial scenario value. This wide range illustrates the potential influence of management and policy decisions.

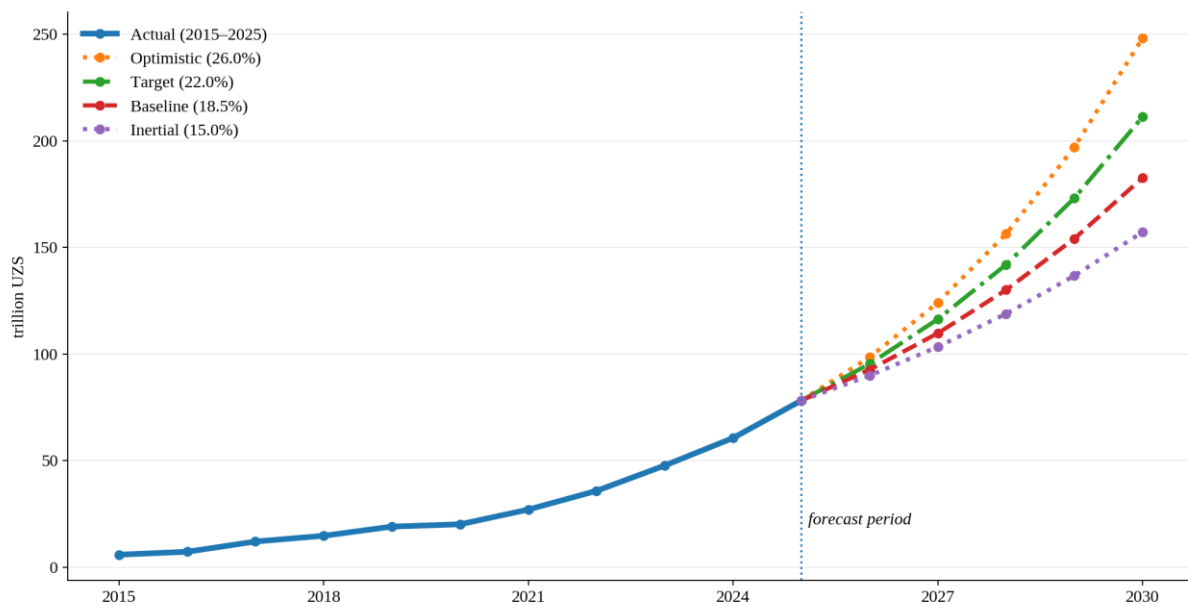


Figure 1. Actual dynamics of service volume and scenarios to 2030.

The actual series has an exponential nominal shape: the line is relatively flat in 2010-2016 and becomes steeper thereafter. The divergence of forecast trajectories also widens over time, demonstrating that uncertainty increases with the forecasting horizon. This supports recalculating the forecast at least every two years.



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Table 2. Services per capita and the degree of closing the territorial reserve by scenario

Scenario	2030 volume, bn UZS	2030 population, thousand	Per capita, UZS million	Relative to 2025 national level, %
Inertial (15.0%)	157,213.0	4,788.0	32.83	117.2
Baseline (18.5%)	182,610.0	4,788.0	38.14	136.2
Target (22.0%)	211,244.0	4,788.0	44.12	157.5
Optimistic (26.0%)	248,173.0	4,788.0	51.83	185.0
Reference: 2025	78,163.0	4,379.8	17.85	63.7

All scenarios exceed the fixed 2025 national per-capita benchmark by 2030. This is expected because the comparison base is held constant while the national indicator itself will continue to grow.

If the national average also grows by about 20% annually, the national per-capita level could reach roughly UZS 64 million by 2030. Under that assumption, only the optimistic scenario would substantially improve Samarkand region's relative position.

This calculation leads to an important conclusion: reducing the territorial gap requires the region to grow persistently faster than the national average. Over the previous decade Samarkand grew almost exactly at the national average rate, which left its relative position virtually unchanged.



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Table 3. Sensitivity of the forecast to major factors

Factor	Change assumption	Effect on annual rate, percentage points	Manageability
Employment and skill level in the sector	Insufficient supply of qualified labour	-6.5	Partly manageable
Real household income	Slower income growth	-4.5	Not directly manageable
Tourist flow	Growth in international tourist arrivals	+4.0	Partly manageable
Share of digital services	Expansion of digital solutions	+3.5	Manageable
Infrastructure condition	Expansion of transport and accommodation capacity	+3.0	Manageable
Price dynamics	Lower inflation	-3.0	Not directly manageable

Sensitivity analysis identifies employment and skills as the strongest constraint. The result provides practical support for Baumol's proposition that the growth of many services remains directly constrained by labour resources.

Three positive factors - tourism, digital services and infrastructure - together contribute 10.5 percentage points in the expert sensitivity assessment. Two of these are largely manageable through regional policy, providing a clear direction for intervention.



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Tourism is particularly important for Samarkand because it brings demand from outside the region and therefore partially relaxes the constraint imposed by local household income.

The negative sign for lower inflation should not be interpreted as an adverse real effect. Lower inflation reduces nominal growth but does not necessarily reduce real growth; it may improve the quality of growth.

Table 4. Recommended target indicators for regional programmes

Indicator	2025	2030 target	Rationale
Services per capita relative to the national average, %	63.7	80.0	Directly measures the objective of reducing the territorial gap
Share of employment in the sector, %	current level	+5 p.p.	Reflects the labour-resource constraint and the extensive growth base
Share of employees completing professional development, %	current level	40.0	Supports quality growth and provides an alternative to purely extensive expansion
Service volume, bn UZS	78,163.0	211,244.0	Traditional volume target; useful but insufficient on its own

The first target directly measures the regional gap and therefore provides information that absolute service volume cannot. The second and third indicators link the output target to its resource base. Employment represents an extensive source of growth, while skills development represents an intensive source.

The 80% target for the first indicator is deliberately cautious. Full convergence within five years would require an unrealistically large and persistent growth



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advantage over the national average. An increase from 63.7% to 80.0% is demanding but more plausible.

CONCLUSIONS AND RECOMMENDATIONS

First, historical nominal growth accelerated from 26.5% to 31.2%, but transferring this trend directly into the forecast would be methodologically incorrect because the acceleration reflects inflation and a one-off methodological shift in 2017.

Second, four scenarios are constructed using conservative assumptions. By 2030 the difference between the inertial and optimistic scenarios equals 58% of the inertial value, illustrating the high sensitivity of long-term results to the chosen growth path.

Third, narrowing the territorial gap requires Samarkand region to grow significantly faster than the national average. Growth at the national average rate preserves the existing relative position.

Fourth, sensitivity analysis identifies employment and skills as the strongest constraint, with an estimated effect of -6.5 percentage points on the annual growth rate when qualified labour supply is insufficient.

Fifth, manageable positive factors - digital services and infrastructure - jointly contribute 6.5 percentage points, and together with tourism the positive effect reaches 10.5 percentage points.

Sixth, regional programmes should supplement the traditional service-volume target with the ratio of services per capita to the national average, the employment share of the sector and the share of employees completing professional development.

Seventh, the forecast should be recalculated every two years because uncertainty and the distance between scenarios increase rapidly over time.



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