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Article

Methodology for Assessing Service Sector Competitiveness and Multi-Level Institutional-Economic Modeling

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Abstract: This article develops a methodology for assessing the competitiveness of the service sector and for constructing a multi-level institutional-economic model. The study integrates official statistics, composite index methods, normalization procedures, expert weighting and scenario analysis. Special attention is paid to Qashqadaryo Region as an empirical case because the region combines urban service centers, rural districts, tourism potential and a high share of small business in services. The proposed Service Sector Competitiveness Index includes market scale, growth dynamics, diversification, SME participation, digital readiness, human capital, territorial accessibility and institutional support. The novelty of the article is the combination of statistical measurement and institutional modeling into a practical algorithm for regional policy. The results show that competitiveness cannot be evaluated only by the volume of services; it must be assessed through quality, accessibility, innovation, governance and feedback indicators. The article proposes a monitoring matrix and policy scenarios for improving regional competitiveness.

Keywords: service sector, competitiveness assessment, institutional economics, multi-level modeling, composite index, Qashqadaryo Region, digital services, regional development.

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1. Introduction

The competitiveness of the service sector has become one of the central indicators of regional economic modernization. In contemporary development, services determine employment quality, consumer welfare, the speed of business transactions, the attractiveness of territories for investors, and the possibility of integrating local firms into national and international value chains. Services also play an essential role in supporting agriculture and industry through logistics, finance, repair, information technology, consulting, education and health services. For this reason, the competitiveness of services should be considered not as a separate sectoral issue, but as a systemic factor of economic development.

The topic is especially relevant for Uzbekistan because official data show the rapid expansion of market services. In January-December 2025, the volume of market services in the republic amounted to 1,050,292.5 billion soums and increased by 14.7 percent compared with the previous year [1], [2]. The service market also grew consistently in nominal terms from 389.4 trillion soums in 2021 to 1,050.3 trillion soums in 2025 [3], [4]. Such dynamics create a need for scientifically grounded assessment tools that can distinguish simple quantitative expansion from genuine competitiveness.

Qashqadaryo Region provides a useful empirical case for methodological analysis. In January-October 2025, the volume of market services in the region reached 41,670.7 billion soums, the growth rate was 112.7 percent, per capita services reached 11,359.0 thousand soums, and small business accounted for 73.8 percent of the total volume . These

indicators demonstrate both growth potential and structural questions: how to measure service quality, how to compare districts, how to evaluate digital maturity, and how to design institutional mechanisms that improve competition and inclusion.

The object of the research is the service sector as a territorial economic system. The subject is the methodology for assessing competitiveness and modeling institutional-economic mechanisms at several levels. The purpose of the article is to develop an integrated methodology that combines statistical indicators, composite index construction, multi-level institutional modeling and scenario-based policy evaluation. The research tasks are: to clarify theoretical foundations of service competitiveness; to identify the necessary indicator system; to propose an index calculation algorithm; to design a multi-level institutional-economic model; and to formulate practical recommendations for Qashqadaryo Region [5], [6], [7].

Figure 1. Market services in Uzbekistan, 2021-2025

Source: prepared by the author based on National Statistics Committee data.

Literature review

The theoretical foundations of competitiveness are connected with productivity, innovation, market openness, quality of institutions and the ability of firms or territories to create superior value. Porter's competitive advantage approach stresses the importance of factor conditions, demand conditions, related industries, firm strategy and rivalry. In the service sector, these elements operate through intangible assets, customer experience, time efficiency, trust, standardization and the ability to adapt service delivery to changing consumer needs [8].

Institutional economics expands this understanding by emphasizing formal rules, informal norms, transaction costs and enforcement mechanisms. North argued that institutions structure incentives and reduce uncertainty in economic exchange. In regional services, institutional quality is expressed through licensing, tax administration, access to finance, consumer protection, digital infrastructure, property rights and the predictability of local policy. Weak institutions increase transaction costs and reduce incentives for small firms to formalize, invest and innovate.

International research confirms that the service sector can become a driver of development. The World Bank stresses that services increasingly support economic transformation and productivity growth in developing economies [6]. The OECD Services Trade Restrictiveness Index shows that regulatory barriers influence services trade and that comparable index-based measurement is necessary for policy analysis [7]. UNCTAD emphasizes that digitalization transforms services but also requires inclusive and sustainable governance [8]. WTO data show that commercial services have become a growing component of global trade, increasing the importance of digital, transport, financial and professional services for competitiveness [9].

Existing approaches usually measure competitiveness through productivity, export capacity, market access, innovation and institutional quality. However, regional service-sector assessment needs a more practical methodology. It must combine official statistical indicators with local institutional variables, district-level accessibility, consumer feedback and qualitative indicators of service quality. The methodological gap addressed in this article is the absence of a unified regional model that links measurement, governance and policy correction in one cycle [9], [10], [11], [12].

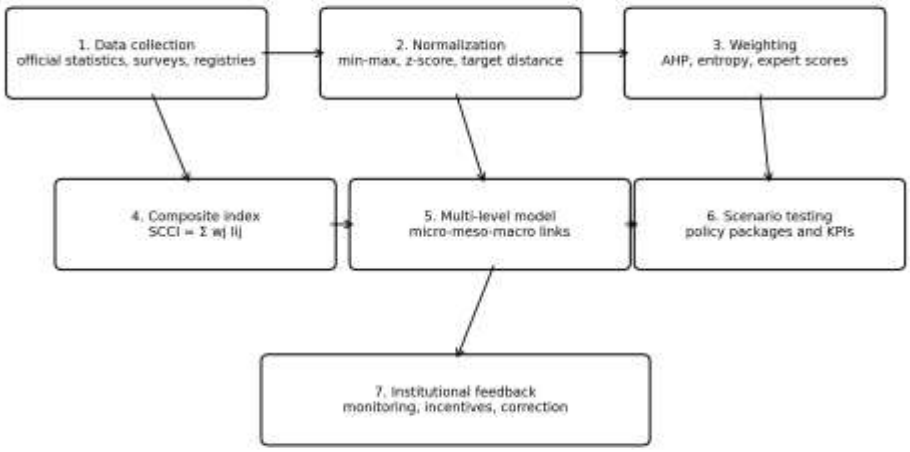
2. Materials and Methods

The research uses a mixed methodological framework. The first block is statistical analysis, based on official indicators of service volume, growth rate, per capita services, small-business participation, service-type structure and territorial distribution. The second block is composite index construction, which allows various indicators with different units of measurement to be combined into one analytical index. The third block is multi-level institutional-economic modeling, where competitiveness is interpreted as the result of interaction among national policy, regional governance, district infrastructure, enterprise behavior and consumer demand.

The proposed methodology is based on the following principles: measurability, comparability, institutional relevance, territorial sensitivity, transparency and policy usability. Measurability means that each indicator must have a data source or a clear survey procedure. Comparability means that indicators are normalized to a common scale from 0 to 1. Institutional relevance means that the index includes variables influenced by policy, not only market outcomes. Territorial sensitivity means that the model can reveal differences among districts. Transparency means that formulas, weights and data sources are presented openly. Policy usability means that the output can guide concrete institutional-economic mechanisms.

The empirical base includes the official 2025 service-sector statistics for Uzbekistan and Qashqadaryo Region, the policy framework of Presidential Resolution No. PP-78 dated 27 February 2025, and international methodological literature. PP-78 established targets for sustainable development of the service sector, including a 15 percent increase in the volume of services, employment generation and the creation of service facilities [4]. Therefore, the proposed methodology is designed not only for academic analysis but also for monitoring regional policy implementation.

Figure 4. Methodological algorithm for assessing service-sector competitiveness



Source: developed by the author.

Indicator system and composite index methodology

For regional assessment, the Service Sector Competitiveness Index (SCCI) is proposed. The index combines eight blocks: market scale, growth dynamics, structural diversification, SME participation, digital readiness, human capital and service quality, territorial accessibility, and institutional support. Each block can include several indicators. For example, digital readiness can include the share of ICT services, digital payments, online presence of service firms and platform usage. Human capital can include the share of qualified workers, training coverage and service-quality certification. Territorial accessibility can include per capita services by district and distance to key service points.

$SCCI_i = \Sigma(w_j \times I_{ij})$, where $\Sigma w_j = 1$ and $0 \le I_{ij} \le 1$

Here, $SCCI_i$ is the competitiveness index for region or district i, w_j is the weight of indicator j, and I_{ij} is the normalized value of indicator j. If a higher raw value is better, min-max normalization is calculated as $I_{ij} = (X_{ij} - X_{min})/(X_{max} - X_{min})$. If a lower raw value is better, such as service complaint rate or administrative processing time, reverse normalization is used. The weights may be determined through expert assessment, the analytic hierarchy process, entropy method or a mixed method. For practical regional monitoring, a mixed approach is preferable because it combines expert policy relevance with data-driven variation.

Table 1. Proposed indicator blocks for SCCI

Block	Main indicators	Data source	Policy relevance
Market scale	Total service volume; per capita services; service density	Official statistics	Shows size and market capacity
Growth dynamics	Growth rate; contribution to regional output; new service firms	Official statistics and tax data	Shows speed of development
Structural diversification	Share of high-value services; concentration index	Official statistics	Reduces dependence on low-productivity services
SME participation	Small-business volume and share; formalization rate	Official statistics and registries	Reflects entrepreneurship base
Digital readiness	ICT services; e-payments; platform use; online booking	Statistics, surveys, payment data	Supports modernization and market reach
Human capital and quality	Training, certification, consumer satisfaction, complaints	Surveys and administrative data	Improves productivity and trust
Territorial accessibility	District per capita services; rural service points; transport access	District statistics and GIS	Ensures inclusive service development
Institutional support	Permits, subsidies, credit, local programs, PPP activity	Administrative data	Links assessment with governance mechanisms

Source: developed by the author based on competitiveness and institutional-economics approaches.

Table 2. Normalization and weighting procedures

Procedure	Formula or method	When to use	Advantages
Positive min-max	(X - Xmin) / (Xmax - Xmin)	Higher values are better	Simple and transparent
Reverse min-max	(Xmax - X) / (Xmax - Xmin)	Lower values are better	Useful for risk and complaint indicators
Z-score	(X - mean) / standard deviation	Large comparable datasets	Shows deviation from average
Target-distance	1 - |X - Target| / Target	Policy target monitoring	Links index to government goals
Expert weighting	Weights assigned by specialists	When policy relevance matters	Reflects strategic priorities
Entropy weighting	Weights based on variation	When many observations exist	Reduces subjectivity
Mixed weighting	Average of expert and entropy weights	Regional monitoring	Balances judgment and data

Source: author's methodological systematization.

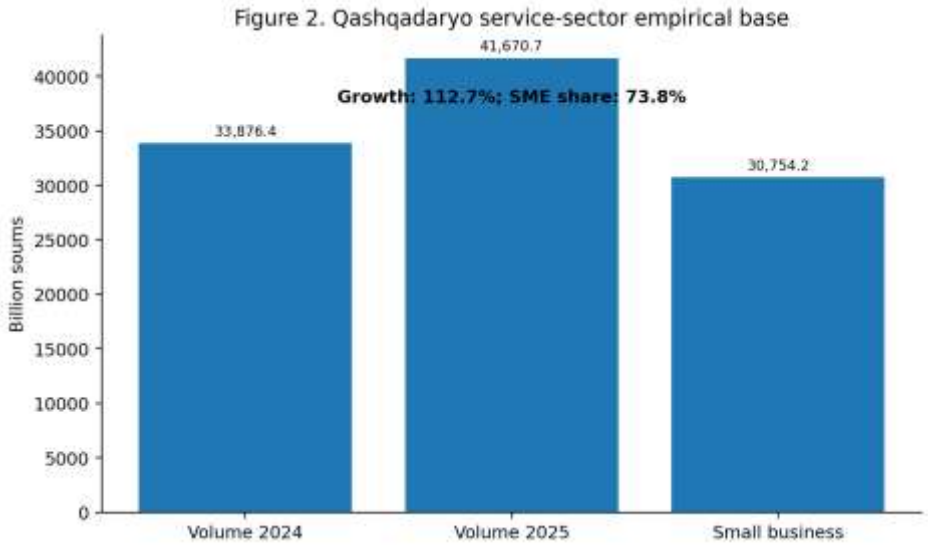
3. Results and Discussion

The empirical part of the article illustrates how the proposed methodology can be applied to Qashqadaryo Region. Official regional data show that the volume of services increased from 33,876.4 billion soums in January-October 2024 to 41,670.7 billion soums in January-October 2025. The reported growth rate was 112.7 percent, while small businesses provided 30,754.2 billion soums, or 73.8 percent of the regional service market. These figures are important for the competitiveness index because they indicate a strong entrepreneurial base but also imply that support mechanisms must be adapted to small firms.

Table 3. Empirical indicators for Qashqadaryo Region used in the methodology

Indicator	Value	Interpretation
Market services volume, Jan-Oct 2024	33,876.4 billion soums	Base period for dynamic assessment
Market services volume, Jan-Oct 2025	41,670.7 billion soums	Current service-market scale
Growth rate	112.7%	Positive expansion of regional services
Per capita market services	11,359.0 thousand soums	Accessibility and demand indicator
Increase in per capita services	1,921.4 thousand soums	Improvement compared with previous year
Small-business service volume	30,754.2 billion soums	Entrepreneurial contribution
Small-business share	73.8%	High SME dependence and SME policy importance

Source: compiled by the author based on Qashqadaryo Regional Statistics Department data [3].



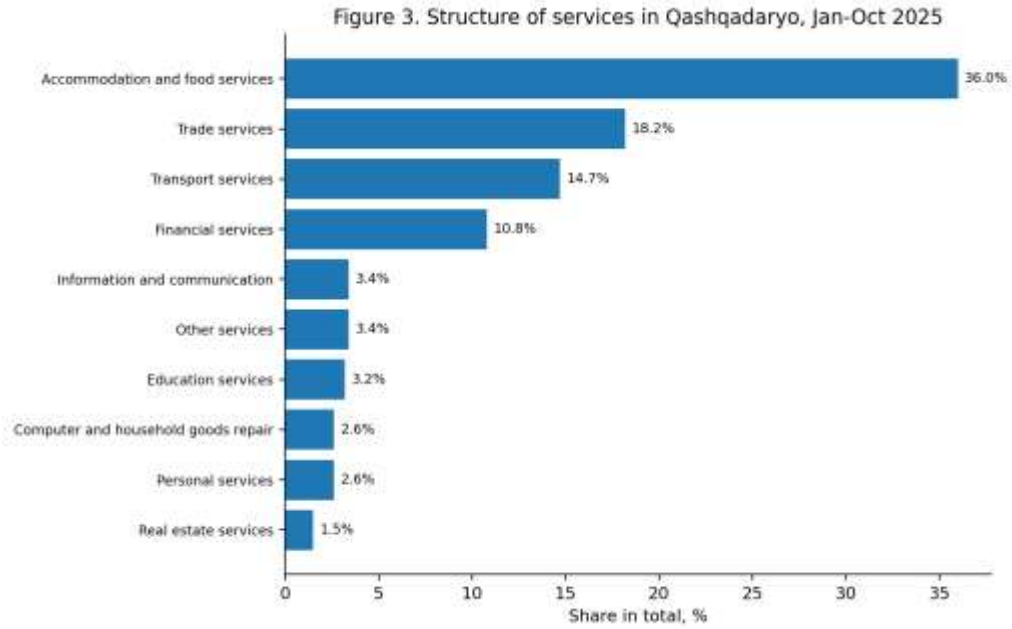
Source: prepared by the author using Qashqadaryo Regional Statistics Department data.

The structure of services is concentrated in several major activities. Accommodation and food services account for 36.0 percent of the regional total, trade services for 18.2 percent, transport services for 14.7 percent, and financial services for 10.8 percent. This structure reflects a strong consumer-service orientation. At the same time, information and communication services, engineering services, health services and professional services remain relatively small. From the standpoint of competitiveness, this means that future growth should not only increase the total volume but also raise the share of knowledge-intensive and digitally supported services.

Table 4. Major service types in Qashqadaryo Region, Jan-Oct 2025

Service type	Volume, billion soums	Growth, %	Share, %
Accommodation and food services	15,002.0	108.8	36.0
Trade services	7,576.3	110.8	18.2
Transport services	6,137.2	113.2	14.7
Financial services	4,489.6	128.0	10.8
Information and communication	1,438.0	116.3	3.4
Other services	1,436.1	113.8	3.4
Education services	1,337.9	117.7	3.2
Computer and household goods repair	1,098.9	111.0	2.6
Personal services	1,072.7	109.0	2.6
Real estate services	607.8	106.4	1.5
Health services	612.8	117.3	1.5
Rental services	578.8	118.2	1.4
Architecture, engineering and technical testing	282.7	101.2	0.7

Source: compiled by the author based on Qashqadaryo Regional Statistics Department data [3].



Source: prepared by the author based on official regional statistics.

Territorial differences also matter. The leading position of Qarshi city reflects the agglomeration effect: administrative concentration, higher income, transport connectivity and business density. Districts with lower shares require mechanisms for service-point expansion, rural digital platforms, mobile services and district-level benchmarking. Therefore, the proposed methodology does not recommend evaluating the region only as an average; it requires district-level dashboards.

Table 5. District-level indicators for territorial benchmarking

City/district	Service volume, billion soums	Share, %	Growth, %
Qarshi city	7,307.4	17.5	118.3
Shahrisabz city	1,262.3	3.0	110.5
Guzor district	921.0	2.2	112.2
Dehqonobod district	780.4	1.9	113.5
Qamashi district	1,430.1	3.4	112.1
Qarshi district	1,480.8	3.6	115.8
Koson district	1,490.4	3.6	112.9
Kitob district	1,787.1	4.3	112.6
Mirishkor district	1,099.6	2.6	111.7
Muborak district	1,265.6	3.0	113.1
Nishon district	1,080.8	2.6	112.8
Kasbi district	1,278.2	3.1	113.0
Kokdala district	410.4	1.0	112.0
Chiroqchi district	672.0	1.6	112.9
Shahrisabz district	1,240.7	3.0	111.8
Yakkabog district	1,129.1	2.7	112.5

Source: compiled by the author based on official district statistics [3].

Illustrative SCCI calculation

To demonstrate the practical use of the methodology, an illustrative SCCI calculation is presented. The scores below are not official statistical rankings; they represent author's methodological calculation using normalized interpretation of available indicators and policy-relevant assumptions. The purpose is to show how the model can be

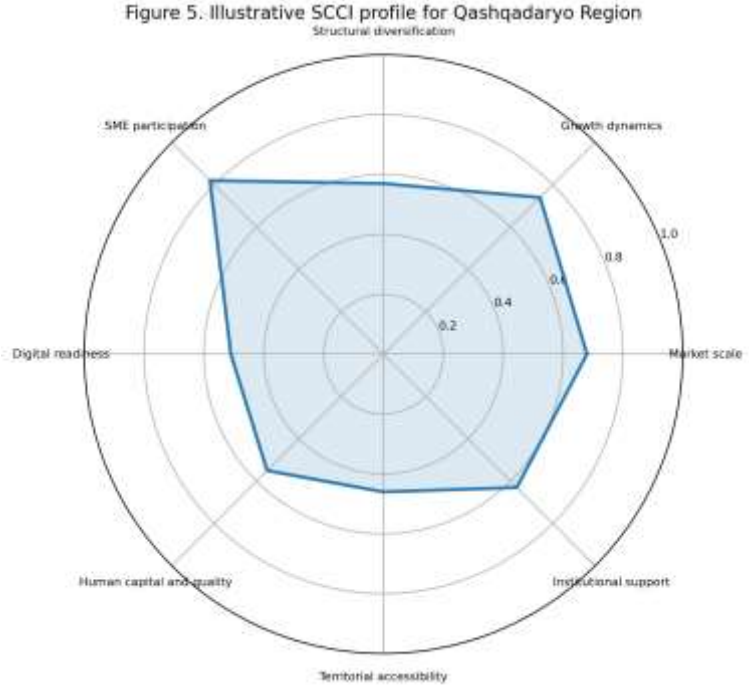
operationalized for monitoring, comparison and scenario evaluation. In real implementation, each score should be recalculated annually using a verified database.

Table 6. Illustrative SCCI calculation for Qashqadaryo Region

Indicator block	Normalized score	Weight	Weighted score	Meaning
Market scale	0.68	0.15	0.102	Volume, density and per capita services
Growth dynamics	0.74	0.12	0.089	Growth rate and contribution to GRP
Structural diversification	0.57	0.13	0.074	Balance among service activities
SME participation	0.82	0.13	0.107	Small-business share and formalization
Digital readiness	0.51	0.12	0.061	ICT services, e-payments, platforms
Human capital and quality	0.55	0.12	0.066	Skills, standards, consumer trust
Territorial accessibility	0.46	0.12	0.055	District balance and rural access
Institutional support	0.63	0.11	0.069	Policy coordination and incentives
TOTAL SCCI	0.623	1.00	0.623	Moderate competitiveness with strong SME base and digital-territorial gaps

Source: author's methodological calculation for demonstration purposes.

Figure 5. Illustrative SCCI profile for Qashqadaryo Region



Source: author's illustrative calculation.

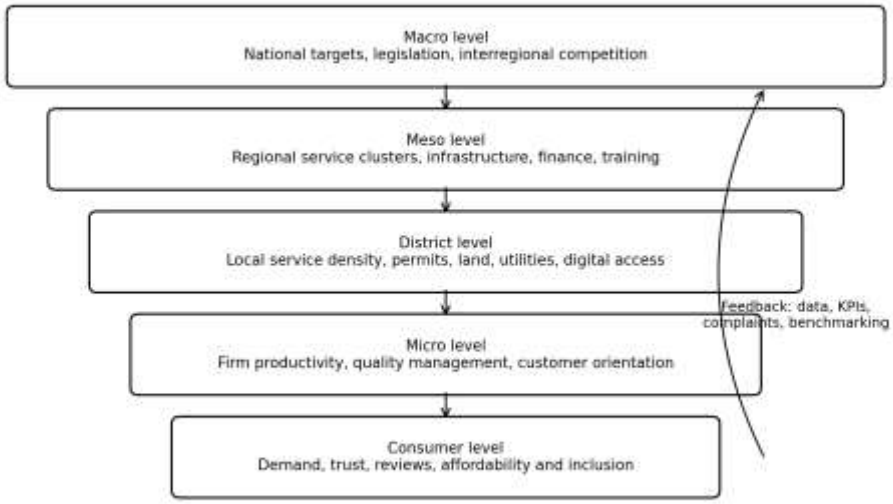
The illustrative result is 0.621 on a 0-1 scale. This may be interpreted as moderate competitiveness. The strongest component is SME participation, reflecting the 73.8 percent contribution of small businesses to the regional service market. Relatively weaker blocks are territorial accessibility and digital readiness. This interpretation is consistent with the observed concentration of services in urban centers and the comparatively small

share of information and communication services. The model therefore identifies priority areas rather than merely describing existing growth.

Multi-level institutional-economic modeling

The proposed multi-level model connects five levels. The macro level includes national legislation, strategic targets, tax policy, competition policy and national digital infrastructure. The meso level includes regional service clusters, investment programs, transport and tourism policy, vocational training and financial instruments. The district level includes permits, land allocation, utility connections, local roads, service-point density and district-level support centers. The micro level includes firm productivity, quality standards, customer relationship management and digital adoption. The consumer level includes affordability, trust, complaints, reviews and feedback. Competitiveness improves when all levels operate as a coordinated system.

Figure 6. Multi-level institutional-economic modeling framework



Source: developed by the author.

Table 7. Institutional-economic mechanisms by level

Level	Mechanism	Main instruments	Expected result
Macro	Regulatory and strategic mechanism	PP-78 targets, competition rules, digital-government standards	Stable rules and measurable national targets
Regional	Cluster and investment mechanism	Tourism-service clusters, logistics nodes, SME finance, training centers	Specialization and economies of scale
District	Accessibility mechanism	Service maps, local permits, rural service points, utilities, digital kiosks	Reduced territorial inequality
Enterprise	Productivity mechanism	Digital accounting, online sales, quality certification, staff training	Higher quality and lower transaction costs
Consumer	Feedback mechanism	Complaint platforms, ratings, consumer protection, service standards	Trust and quality correction

Source: developed by the author.

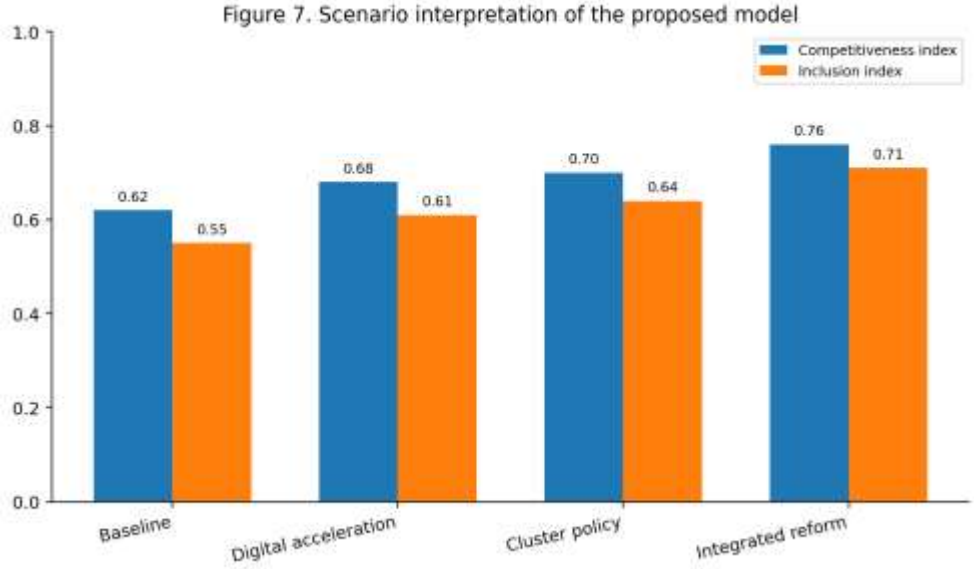
This model is consistent with the logic of PP-78 because it translates national targets into territorial and enterprise-level mechanisms. However, the article argues that target

fulfillment should not be measured only by the volume of services or the number of objects created. A competitive services sector also requires productivity, quality, innovation, accessibility and institutional responsiveness. Therefore, the model introduces a feedback loop: data are collected, indicators are normalized, index values are calculated, weak blocks are identified, policy instruments are applied, and the next monitoring cycle evaluates the results.

Scenario modeling and policy interpretation

Scenario modeling helps transform the index into a policy tool. The baseline scenario assumes that current growth trends continue without major structural reforms. The digital acceleration scenario emphasizes online platforms, e-payments, digital maps, digital accounting and e-commerce integration. The cluster policy scenario emphasizes tourism, logistics, trade and business-service clusters. The integrated reform scenario combines digitalization, cluster policy, human capital programs, SME finance, consumer feedback and district benchmarking. The illustrative results show that integrated reform produces the strongest improvement in both competitiveness and inclusion.

Figure 7. Scenario interpretation of the proposed model



Source: author's scenario interpretation.

Table 8. Proposed monitoring indicators for 2026-2030

Direction	Indicator	Target logic	Responsible actors
Market expansion	Annual growth of market services	Maintain growth above national strategic target where feasible	Regional hokimiyat, statistics bodies
Diversification	Share of ICT, finance, professional and health services	Increase high-value services in total volume	Regional departments, business associations
SME upgrading	Share of SMEs using digital accounting and online sales	Move from informal survival to formal productivity	Tax bodies, chambers, banks
Territorial balance	Ratio of district per capita services to regional average	Reduce gaps between urban and rural areas	District hokimiyats
Quality	Number of certified service providers and complaint resolution rate	Increase trust and consumer protection	Consumer protection bodies

Human capital	Training coverage in priority service activities	Improve skills and productivity	Universities, vocational centers
Investment	Credit and leasing for service SMEs	Expand modernization capacity	Banks, microfinance institutions
Digital inclusion	Number of rural digital service points	Improve access to public and private services	IT departments, local authorities

Source: developed by the author.

Discussion

The proposed methodology has several advantages. First, it integrates quantitative and qualitative dimensions of competitiveness. Second, it is suitable for regional and district-level comparison. Third, it links assessment with institutional-economic mechanisms, meaning that the index is not only descriptive but also managerial. Fourth, it helps identify whether growth is based on extensive expansion or on productivity, digitalization and quality improvement. Fifth, it supports transparent monitoring of government programs and creates a basis for evidence-based decision-making.

The methodology also has limitations. Some indicators, especially digital readiness, consumer satisfaction and quality certification, require surveys or administrative data that may not yet be systematically available. Weighting procedures may contain subjectivity if based only on expert opinion. In addition, service-sector data may be affected by informal activity and changes in statistical methodology. To reduce these limitations, the article recommends establishing a regional service-sector dashboard, conducting annual surveys of service firms and consumers, and using mixed weights that combine expert judgment with data-based methods.

For Qashqadaryo Region, the most important methodological implication is that competitiveness should be treated as a multi-dimensional and multi-level phenomenon. The region has growth, a strong SME base and several potential clusters, but long-term competitiveness requires digital transformation, quality standards, professional services, territorial inclusion and institutional coordination. The proposed SCCI can become an annual diagnostic instrument for regional development programs [13], [14], [15], [16].

4. Conclusion

The article developed a methodology for assessing service-sector competitiveness and constructing a multi-level institutional-economic model. The analysis confirms that the service sector in Uzbekistan and Qashqadaryo Region is expanding rapidly, but competitiveness cannot be assessed only by nominal growth. A broader methodology is required, including structural diversification, SME participation, digital readiness, human capital, quality, territorial accessibility and institutional support.

The proposed SCCI provides a practical tool for measuring competitiveness on a 0-1 scale. It can be applied at regional and district levels and can be updated annually. The illustrative calculation for Qashqadaryo Region indicates moderate competitiveness, with strong SME participation and growth dynamics but weaker digital and territorial-accessibility dimensions. This means that regional policy should move from simple expansion to qualitative modernization.

The multi-level institutional-economic model shows that competitiveness is formed through the interaction of macro, regional, district, enterprise and consumer levels. Each level requires specific instruments: national targets and regulation; regional clusters and investment programs; district infrastructure and service access; enterprise productivity and quality management; and consumer feedback and protection.

Based on the results, the following proposals are offered: create a Qashqadaryo Service Sector Competitiveness Dashboard; introduce district-level SCCI monitoring; support digitalization of small service firms; develop service clusters in tourism, logistics, trade and professional services; expand rural service access through digital points and

mobile service formats; introduce quality certification and consumer-rating mechanisms; and connect regional financing programs with measurable competitiveness indicators.

The scientific novelty of the article is the integration of statistical assessment, composite-index methodology and institutional-economic modeling into one regional policy framework. The practical significance lies in the possibility of using the proposed methodology for annual monitoring, policy design and evaluation of service-sector competitiveness in Qashqadaryo Region and other regions of Uzbekistan.

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