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DEVELOPMENT OF PERFORMANCE INDICATORS OF ENTERPRISES PROVIDING FAST INTERNET SERVICES TO THE POPULATION

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Abstract This paper examines the development of key performance indicators (KPIs) for enterprises providing high-speed internet services to the population in Uzbekistan. A review of relevant literature and analysis of industry data was conducted to identify critical success factors and metrics for assessing internet service provider (ISP) performance in the Uzbek market. The study found that the most important KPIs for Uzbek ISPs include network coverage and reliability, connection speed, customer service, and pricing.

Keywords: internet service providers, Uzbekistan, key performance indicators, network reliability, connection speed, digital development

INTRODUCTION

Access to fast, reliable internet is increasingly vital for sustainable socioeconomic development in the modern digital economy. Uzbekistan has prioritized expanding broadband internet access for its population of over 35 million as part of its national development strategy [1]. Internet penetration in Uzbekistan reached 76.6% in 2023, up from just 9% a decade ago, but fixed broadband subscriptions remain low at 4 per 100 people compared to the world average of 17 [2,3]. The speed, quality and affordability of internet services vary considerably across Uzbekistan's regions. Improving the performance of enterprises providing retail internet access is crucial to achieving Uzbekistan's digitalization goals.

Measuring internet service provider (ISP) performance requires defining appropriate metrics and benchmarks. Effective key performance indicators (KPIs) can help ISPs identify strengths, weaknesses and areas for improvement, inform investment decisions, and provide accountability to customers and regulators [4]. While various KPIs for ISPs are used globally, a context-specific approach is needed to reflect Uzbekistan's level of development, policy objectives, and market conditions [5]. This paper aims to fill a gap in the literature by developing a framework of KPIs relevant to ISPs in Uzbekistan. The results can support evidence-based management practices in the industry and guide digital development policies.

METHODS AND LITERATURE REVIEW

To develop ISP performance indicators for Uzbekistan, an extensive review of literature on the topic was conducted. Keyword searches in Google Scholar, ScienceDirect, Springer, JSTOR, ResearchGate and Wiley Online Library identified articles related to internet service provider performance, evaluation metrics, benchmarking, and Uzbekistan's internet/telecom sector. English language, and relevant to the research question.

Key data sources consulted include industry reports from the International Telecommunication Union (ITU), GSM Association, Opensignal, Speedtest.net, and TeleGeography; Uzbek government statistics and policy documents; annual reports of Uzbekistan's major ISPs; and market research by BMI Research, BuddeComm, and Paul Budde Communication Pty Ltd. Quantitative data on metrics like internet penetration rates, connection speeds, network coverage, revenues, investment, and subscribership by technology were tabulated. Qualitative information on the regulatory environment, competitive landscape, infrastructure development, and consumer issues was synthesized.

The literature shows four main categories of KPIs used to evaluate ISP performance globally: 1) network deployment and technical quality of service; 2) commercial and financial indicators; 3) customer service and satisfaction; and 4) social and economic impact [6,7,8,9]. Network performance metrics assess coverage, speed, latency, packet loss, availability and reliability. Financial KPIs include revenue, profitability, ARPU, and market share. Customer-focused indicators measure sign-ups, churn, net promoter scores, problem resolution rates and consumer ratings. Developmental impact can be gauged through metrics on internet adoption, usage, affordability, and how connectivity enables e-commerce, distance learning, telemedicine and other digital applications [10,11].

RESULTS

Based on the literature review and Uzbekistan's context, the following KPIs are proposed for evaluating the performance of ISPs:

Network Coverage and Reliability

- Percentage of population covered by 3G/4G/5G mobile networks
- Percentage of households passed by fixed broadband networks
- Average uptime/availability of network (%)
- Frequency and duration of outages/faults per 1000 subscribers

Connection Speed and Quality

- Average download/upload speeds for fixed and mobile internet (Mbps)

- Latency/round-trip delay (ms)
- Packet loss rate (%)
- Jitter (ms)

Pricing and Affordability

- Monthly price of fixed and mobile broadband services
- Price of 1GB of mobile data as % of GNI per capita
- Availability of prepaid, postpaid and bundled offers

Customer Acquisition and Retention

- Number of new subscribers acquired per month
- Market share (%)
- Churn/customer attrition rate (%)
- Net promoter score

Service and Support

- Average call center wait time (mins)
- First-contact resolution rate (%)
- Customer satisfaction ratings
- Billing accuracy and timeliness

For each KPI, appropriate baselines, benchmarks and targets should be determined based on Uzbekistan's development level, regulatory requirements, industry data, and international comparisons. ISPs can track these metrics over time to gauge progress. Composite indices can be constructed to compare performance across providers.

ANALYSIS AND DISCUSSION

The proposed KPIs address the key dimensions of ISP performance in Uzbekistan based on a review of the global literature and local industry context. Measuring network reach and reliability is critical given Uzbekistan's connectivity gaps. Tracking speeds and other technical quality metrics will help drive improvements to meet rising demand for bandwidth-hungry services. Pricing KPIs are crucial to assess affordability, which remains a barrier to wider internet adoption. Customer acquisition and churn metrics shed light on competitiveness in a market with high growth potential but also retention challenges. Monitoring customer service quality is important to address user experience issues that affect uptake.

The suggested KPIs provide a starting point but have limitations. The metrics are high-level and would need to be further specified and adapted by individual ISPs. Data availability and consistency may be issues for some indicators. The KPIs focus on conventional measures of

ISP performance but could be expanded to include indicators on innovation, environmental sustainability, and digital inclusion. Composite indices are useful for benchmarking but may not capture nuances. KPIs are not ends in themselves but tools to support data-driven decisions.

Implications of the findings for ISPs in Uzbekistan include the need to invest in network upgrades and expansion, especially for fixed broadband; optimize traffic routing and bandwidth management; offer more flexible and affordable data packages; streamline customer onboarding and support processes; and leverage analytics to predict and prevent churn. Policymakers should incentivize infrastructure sharing, update quality-of-service standards, promote transparency in pricing and performance disclosure, strengthen consumer protection, and enact regulations for 5G and IoT. Adopting KPIs can help align ISP and policy decisions with Uzbekistan's connectivity goals.

Further research could include in-depth case studies of individual ISPs, consumer surveys to validate the KPIs, and impact evaluations of how ISP performance affects socioeconomic outcomes. The framework could be extended to mobile network operators which are major ISPs in Uzbekistan. Comparative studies with other developing countries could yield insights on adapting KPIs to different contexts.

CONCLUSION

This article developed a set of key performance indicators for enterprises providing internet services to the population in Uzbekistan. Drawing on a review of industry literature and analysis of the local market context, it proposed KPIs spanning network coverage and reliability, connection speed and quality, pricing and affordability, customer acquisition and retention, and service and support. The KPIs aim to provide an evidence-based tool for ISPs to benchmark and optimize their performance, and for policymakers to inform sector planning and regulations in line with national digital development goals.

While the proposed metrics have limitations, they can help drive data-driven decisions to enhance internet infrastructure and service delivery in Uzbekistan. The approach can be strengthened through further validation, customization and comparative research. Ultimately, tracking and improving ISP performance is crucial to expand access to fast, reliable and affordable internet for all and unlock the socioeconomic benefits of connectivity.

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