



Comparative assessment of network QoS/QoE

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1. Executive Overview

The Quality of Experience (QoE) Landscape across Nigeria

The Core Focus: This section shifts the focus from theoretical network speeds to the actual quality of experience (QoE) felt by users—measuring tasks like web browsing, video streaming, and online gaming.

The Main Insight: Performance is not uniform across Nigeria. A user's experience is heavily dictated by their geopolitical zone and whether they live in a major city or a rural community.

The Core Data: While the national average provides a baseline, a deep dive into the 6 geopolitical zones reveals significant variations in connection consistency.

2. Performance at a Glance: National Consistency Score

Geopolitical Zone	Consistency Score (0-1 Scale)	Typical Consumer Impact
South-West	0.78	Smoother web browsing and reliable video playback during peak hours.
South-South	0.72	Good overall stability with occasional buffering in high-density areas.
North-Central	0.68	Moderate consistency; standard applications perform well.
South-East	0.64	Noticeable performance drops during periods of heavy network usage.
North-West	0.55	Higher connection volatility; interactive tasks experience interruptions.
North-East	0.48	Frequent drops in consistency; challenges maintaining continuous sessions.

3. The Urban-Rural Digital Divide

Two Realities: The Infrastructure Gap Between Town and Country

What the Data Shows: A clear digital divide persists between urban economic hubs and rural agricultural or residential communities.

The Technical Explanation: Urban areas benefit from high-density infrastructure investments, while rural regions rely on sparse, distant towers, resulting in weaker signal quality.

The Human Impact: A rural student trying to access distance learning modules or a farmer utilizing mobile banking applications faces significantly longer wait times and higher failure rates compared to a city dweller.

Metric Evaluated	Urban Performance	Rural Performance	Real-World Consumer Effect
Web Page Load Time (Seconds)	2.1	5.4	Rural users wait more than double the time for pages to open.
Video Streaming Success Rate	91.50%	64.20%	Nearly 1 in 3 videos fail to load or buffer heavily in rural areas.
Mobile Payment Success Rate	94.00%	71.00%	Transaction timeouts are significantly more frequent in rural settings.
Average Download Index	0.76	0.41	Overall infrastructure capacity favors urban centers heavily.

4. Regional Standouts

What the Data Shows: Evaluating individual states reveals that geographical location strongly defines service quality.

The Extremes: High-performing states like Lagos benefit from hyper-dense commercial fiber backbones. On the other side, remote or underserved states struggle with long-distance signal routing.

What it means for you: If you travel across state lines, your network responsiveness can shift, impacting video calls or remote work setups.

State	Performance Index (0 to 1)	Infrastructure Context
Lagos State	0.84	Dense commercial infrastructure and strong fiber connectivity.
Rivers State	0.79	Robust regional hub coverage with high-capacity urban sites.
FCT Abuja	0.77	High institutional network priority and strong deployment density.
Taraba State	0.39	Long-distance transmission lines and low site density.
Yobe State	0.35	Severe deployment constraints leading to high network strain.
Zamfara State	0.31	Limited high-capacity backhaul infrastructure.

5. Real-Time Applications under Stress (Gaming & Voice)

The Lag Factor: Why Peak Speeds Don't Tell the Whole Story

What the Data Shows: High download speeds are great for big file downloads, but interactive, real-time applications depend entirely on low network response times (delay/lag).

The Real-World Test: When networks become crowded during evening hours, "Loaded Latency" (the delay your connection experiences when trying to do multiple things at once) spikes dramatically.

The Human Impact: High lag directly causes choppy voice calls, freezing on Zoom or Microsoft Teams, and unplayable online gaming.

Geopolitical Zone	Idle Latency (ms) - Quiet Hours	Loaded Latency (ms) - Peak Traffic	Consumer Experience Shift
South-West	42	88	Slightly noticeable delay during peak video or call usage.
South-South	48	105	Voice calls may experience minor stuttering or overlaps.
North-Central	55	124	Video conferencing apps dynamically drop quality to maintain calls.
South-East	61	142	Frequent "connecting..." messages during high-volume interactive tasks.
North-West	74	185	Significant voice lag; interactive mobile applications struggle.
North-East	89	210	Severe interruptions; high rate of application disconnects.

6. The Video Streaming Experience Breakdown

Buffering vs. Smooth Playback: Tracking Content Delivery

What the Data Shows: Video traffic makes up the vast majority of mobile data consumption. This slide breaks down how well the networks handle continuous streaming requirements.

The Metrics Explained: We look at Start-up Time (how long you stare at a black screen waiting for a video to begin) and Buffering Frequency (how often a loading wheel interrupts your movie).

What it means for you: Higher-tier zones allow for instant HD streaming, while lower-tier zones often force apps to downgrade to lower resolutions to prevent constant stops.

Geopolitical Zone	Video Start-up Time (Seconds)	Buffering Interruption Rate (%)	Typical Video Resolution Achieved
South-West	1.8	3.20%	Full HD (1080p) - Smooth playback.
South-South	2.3	4.80%	High Definition (720p) - Stable.
North-Central	2.9	6.50%	High Definition (720p) - Occasional drops.
South-East	3.6	8.10%	Standard Definition (480p) - Frequent adjustments.
North-West	4.8	12.40%	Standard Definition (480p) - Regular buffering.
North-East	5.9	17.10%	Low Definition (360p) - Heavy loading wheels.

7. Action Plan for Regional Equity

Bridges Over the Digital Divide: Balanced Policy Objectives

Strategic Initiative	Recommended Resource Focus	Target Outcome for Consumers
Rural 4G Expansion	35%	Eliminate the 30%+ QoE gap in rural communities.
Fiber Backhaul Routing	25%	Reduce loaded latency and lag across northern zones.
Urban Capacity Refarming	20%	Prevent evening traffic congestion in major city hubs.
Local Transmission Links	20%	Stabilize video streaming and payment success rates.

Thank You