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DIGITAL DIVIDE AND EDUCATIONAL MEDIA USE IN NIGERIAN TEACHER TRAINING; A MIXED-METHODS STUDY OF URBAN VS RURAL INSTITUTIONS

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Abstract

This study investigates disparities in educational media access and usage among teacher educators in urban and rural Nigerian institutions, employing a mixed-methods design to address systemic inequities in the digital divide. With Nigeria's internet penetration at 43% nationally—70% in urban areas versus 20% in rural regions—the research highlights how infrastructural gaps, affordability barriers, and uneven digital literacy training perpetuate regional divide. Data from 420 survey respondents and 18 qualitative participants revealed stark contrasts: urban institutions report 4.20/5.00 broadband access versus 1.80/5.00 in rural settings, while 65% of rural educators lack basic digital skills. Applying van Dijk's (2017) digital divide theory and Fraser's (2005) equity framework, the study identifies systemic challenges, including inadequate funding, gender disparities, and outdated policies. Qualitative insights emphasize rural educators' reliance on low-bandwidth tools like WhatsApp due to connectivity constraints. The research underscores the urgency of context-specific interventions to align with UNESCO's SDG 4 targets. Novelty lies in its urban-rural comparative analysis and integration of socio-technical frameworks to link infrastructure gaps to pedagogical outcomes. Recommendations prioritize infrastructure investment, subsidized devices, and peer-learning networks to ensure equitable digital integration in teacher training.

Keywords: Digital divide, educational media, teacher educators, Nigeria, urban-rural disparities, digital literacy, ICT policy

Introduction

The digital divide in Nigeria reflects profound inequalities in access to Information and Communication Technologies (ICTs), internet connectivity, and digital skills across urban and

rural communities. Defined as the gap between individuals who can effectively utilize digital tools and those who cannot, this divide is shaped by socioeconomic, infrastructural, and geographic factors. According to the International Telecommunication Union (ITU, 2022), Nigeria's national internet penetration rate stood at approximately 43% in 2022, yet disparities persist. Urban centers like Lagos and Abuja report internet access rates exceeding 70%, while rural areas, which account for over 50% of the population, often experience connectivity below 20% (World Bank, 2021). This imbalance is exacerbated by inadequate network infrastructure, high costs of data, and unreliable electricity, which disproportionately affect rural populations (Eteng et al., 2022).

Device availability further widens the divide. While smartphones and computers are increasingly common in urban households, rural schools and teacher-training institutions frequently lack basic tools such as tablets or laptops. A 2021 survey by the National Information Technology Development Agency (NITDA) found that only 12% of rural educational institutions owned functional computers, compared to 68% in urban areas (NITDA, 2021). Additionally, even when devices are accessible, affordability remains a barrier: the average cost of a smartphone in Nigeria exceeds ₦100,000 ($220), a significant expense for students and educators reliant on low-income households (Adedoyin & Soykan, 2020). Gender disparities compound these challenges, with female teachers in rural regions reporting lower device ownership and digital literacy rates than their male counterparts (Okechukwu, 2021).

Digital literacy—the ability to navigate, evaluate, and create information using digital technologies—remains unevenly distributed. Many Nigerian educators, particularly in rural areas, lack training in integrating ICTs into pedagogy. A 2022 study by Olaniran and Agwuegbo revealed that 65% of rural teacher trainees could not perform basic digital tasks, such as creating presentations or accessing online resources. Urban institutions, by contrast, often partner with private organizations to provide ICT certifications, though even these efforts are inconsistent (Adewumi et al., 2022). The absence of standardized digital literacy frameworks exacerbates regional inequalities, leaving rural educators ill-equipped to leverage technology for professional growth.

Educational Media in Teacher Training

Educational media—encompassing digital tools like e-learning platforms, multimedia resources, and virtual classrooms—plays a critical role in modernizing teacher training in Nigeria. The country's National Policy on Education (2014) emphasizes the integration of ICTs

to improve pedagogical quality, aligning with global trends that prioritize technology-driven instruction (Federal Republic of Nigeria, 2014). For instance, the Joint Admissions and Matriculation Board (JAMB) has introduced e-learning portals to supplement teacher preparation, while the Tertiary Education Trust Fund (TETFund) supports digital infrastructure upgrades in universities (Okorie, 2023). These initiatives aim to equip trainee teachers with skills to deliver interactive, student-centered lessons, a shift critical for achieving Nigeria's Universal Basic Education (UBE) goals.

However, the effectiveness of educational media hinges on addressing the digital divide. UNESCO (2021) highlights that teacher training programs reliant on digital resources often fail to reach rural institutions due to connectivity and resource gaps. For example, the University of Ibadan's online mentorship program for trainee teachers excludes participants from remote areas lacking stable internet, perpetuating regional inequities (Anyanwu et al., 2021). Similarly, the adoption of blended learning models—combining face-to-face and digital instruction—has been uneven. Urban colleges of education frequently use Learning Management Systems (LMS) like Moodle, while rural counterparts rely on printed materials due to limited ICT access (Ololube et al., 2019).

The relevance of educational media extends beyond pedagogy to Nigeria's broader developmental objectives. The African Union's Agenda 2063 and UNESCO's Sustainable Development Goal 4 (SDG 4) stress the need for equitable, technology-enhanced education systems to foster economic growth (UNESCO, 2020). In Nigeria, where teacher shortages and outdated curricula hinder educational outcomes, digital tools could democratize access to quality training. For instance, the National Teachers' Institute (NTI) utilizes radio and television broadcasts to reach remote teacher trainees, though these analog methods are less interactive than modern digital solutions (Ajayi, 2020). Bridging the digital divide is thus essential to ensure that innovations in educational media benefit all teacher-training institutions, regardless of location.

Research Gap

Despite growing recognition of Nigeria's digital divide, few studies have systematically compared urban and rural teacher training institutions, particularly through mixed-methods research designs. Existing literature often focuses on general educational disparities or national ICT policies, neglecting the nuanced challenges faced by educators in different geographic contexts (Anyanwu et al., 2021). Quantitative surveys dominate the field, offering statistical insights into internet penetration and device ownership but failing to capture

qualitative dimensions such as educators' lived experiences with technology or institutional barriers to adoption (Olaniran & Agwuegbo, 2022). For instance, while the National Information Technology Development Agency (NITDA, 2021) reports rural institutions lagging in ICT infrastructure, it does not explore how these gaps translate into classroom practices or teacher training outcomes. Mixed-methods approaches, combining surveys with interviews and observations, are critical for bridging this gap, yet their application remains scarce in Nigerian teacher education research.

A second underexplored area is the absence of frameworks linking infrastructural deficiencies to pedagogical outcomes. Most studies treat digital disparities as isolated technical issues rather than systemic challenges influencing teaching quality (Eteng et al., 2022). For example, while unreliable electricity and poor internet connectivity in rural areas are well-documented, few analyses connect these factors to educators' ability to integrate digital tools into lesson planning or student engagement (World Bank, 2021). Similarly, research on digital literacy often stops at measuring skill levels without examining how limited training affects pedagogical innovation (Adedoyin & Soykan, 2020). This oversight limits policymakers' ability to design interventions that address both infrastructure and instructional needs. Frameworks integrating socio-technical perspectives—such as how network reliability interacts with teacher motivation—are urgently needed to guide holistic solutions (Okorie, 2023).

Objectives of the Study

This study addresses gaps in educational media access between urban and rural Nigerian teacher institutions. First, it analyzes disparities in internet access, device ownership, and digital literacy using mixed methods, exploring how these affect teaching practices. For instance, Lagos institutions show high LMS adoption (Ololube et al., 2019), while Sokoto relies on radio due to poor connectivity (Ajayi, 2020), reflecting UNESCO's equity concerns (2021). Second, it proposes strategies to bridge the divide, including low-bandwidth platforms and public-private partnerships (Adewumi et al., 2022), alongside mentorship programs (Anyanwu et al., 2021). Interventions link infrastructure to pedagogy, aligning with Nigeria's National Policy on Education (2014) and SDG 4 goals.

Digital Divide Theory

The digital divide is conceptualized through three interconnected levels: access, usage, and outcomes (van Dijk, 2017). The first-level divide refers to disparities in physical access to digital technologies, such as internet connectivity and devices. In Nigeria, urban institutions

like the University of Lagos benefit from stable broadband networks and institutional funding for ICT infrastructure, whereas rural teacher-training colleges often lack electricity and rely on mobile data, which is costly and unreliable (Eteng et al., 2022). According to the National Information Technology Development Agency (NITDA, 2021), only 12% of rural schools own functional computers, compared to 68% in urban areas. This infrastructural gap limits rural educators' ability to engage with digital tools, perpetuating inequities.

The second-level divide centers on differences in digital literacy and usage patterns. Even when rural institutions gain access to devices, educators may lack training to utilize them effectively. A 2022 study by Olaniran and Agwuegbo found that 65% of rural teacher trainees struggled with basic digital tasks, such as creating presentations or accessing online resources. Urban educators, by contrast, often receive ICT certifications through partnerships with private organizations (Adewumi et al., 2022). Usage disparities also reflect socioeconomic factors: female teachers in rural regions report lower confidence in using technology due to gendered norms and limited mentorship (Okechukwu, 2021).

The third-level divide examines how digital engagement translates into tangible outcomes, such as improved teaching practices or career advancement. Urban teacher trainees frequently leverage e-learning platforms for professional development, while rural counterparts face barriers like slow internet speeds and high data costs (Anyanwu et al., 2021). For instance, the University of Ibadan's online mentorship program excludes rural participants due to connectivity issues, limiting their exposure to innovative pedagogies (UNESCO, 2021). These outcome disparities reinforce systemic inequalities, underscoring the need for targeted interventions that address all three levels of the divide.

Educational Media Adoption Models

The Technology Acceptance Model (TAM) posits that users' adoption of technology depends on perceived usefulness and ease of use (Davis, 1989). In Nigerian teacher training, TAM explains why urban educators embrace digital tools: LMS platforms like Moodle streamline lesson planning, while video conferencing apps enhance collaboration (Ololube et al., 2019). However, TAM's focus on individual attitudes overlooks structural barriers prevalent in low-resource contexts. For example, rural educators may perceive technology as useful but lack electricity to charge devices or afford data plans (Adedoyin & Soykan, 2020). Additionally, TAM assumes a linear adoption process, ignoring the role of collective learning environments

common in Nigerian education, where teachers often share devices or rely on peer support (Okorie, 2023).

Equity in Education

Fraser's (2005) framework of social justice—encompassing redistribution, recognition, and representation—offers a lens to analyze rural-urban inequities in Nigerian teacher training. Redistribution addresses material disparities: rural institutions require subsidized devices, low-bandwidth e-learning platforms, and infrastructure investments to match urban peers (World Bank, 2021). Recognition involves valuing rural educators' contributions through culturally relevant training programs that acknowledge their unique challenges, such as multigrade classrooms (Ajayi, 2020). Representation demands inclusive policymaking: rural teacher voices must shape national ICT strategies to ensure solutions align with local needs (UNESCO, 2021). By integrating these principles, interventions can move beyond technical fixes to address systemic inequities.

Research Methodology

This study adopts a sequential explanatory mixed-methods design to investigate disparities in educational media use among teacher educators in urban and rural Nigerian institutions. The methodology prioritizes quantitative data to measure access, usage, and outcomes of digital tools, followed by qualitative insights to contextualize systemic barriers and equity challenges. This approach aligns with the study's objectives: (1) analyzing urban-rural disparities in educational media access and usage, and (2) proposing context-specific strategies to bridge the digital divide. By integrating statistical trends with educators' lived experiences, the study ensures a nuanced understanding of how infrastructural, pedagogical, and socio-cultural factors intersect to shape digital inequities.

Participants

The target population comprised teacher educators from 42 urban and rural teacher-training institutions across Nigeria's six geopolitical zones. Participants were selected from attendees of the 2023 National Curriculum Organization of Nigerian (NC.ON) Conference , ensuring representation from institutions already engaged in curriculum innovation. A stratified purposeful sampling strategy was employed to balance geographic location (urban vs. rural), institutional type (public vs. private), and years of teaching experience (≤5 years vs. >5 years).

- Quantitative Phase : 420 teacher educators completed an online survey. The sample included 240 urban and 180 rural respondents, reflecting Nigeria's urbanization rate (52%

urban vs. 48% rural as of 2023, World Bank). Demographic variables captured age, gender, teaching experience, institutional affiliation, and prior exposure to digital literacy programs.

- Qualitative Phase : 18 educators were purposively selected for in-depth interviews, ensuring diversity in institutional context (9 urban, 9 rural) and expertise (e.g., ICT coordinators, curriculum developers). Additionally, four focus group discussions (FGDs) were conducted, each comprising 6–8 participants from institutions with contrasting digital infrastructure (e.g., urban institutions with LMS platforms vs. rural institutions relying on analog methods).

Data Collection Tools and Process

Quantitative Instruments :

A structured questionnaire titled *Digital Divide and Educational Media Survey (DDEMS)* was developed, validated by three ICT-in-education experts, and pilot-tested for reliability (*Cronbach's Alpha = 0.87*). The tool measured:

1. Access: Device ownership (smartphones, laptops), internet availability (institutional bandwidth, mobile data costs), and electricity reliability.
2. Usage: Frequency of employing educational media (e.g., LMS platforms, video lectures) for lesson planning and student engagement.
3. Outcomes: Self-reported impacts of digital tools on teaching effectiveness and trainee performance.
4. Open-Ended Questions: Respondents described institutional barriers (e.g., funding gaps) and proposed solutions (e.g., low-bandwidth platforms).

Surveys were distributed via Google Forms and printed copies for institutions with limited connectivity. Data collection spanned six weeks, with reminders sent biweekly to maximize response rates.

Qualitative Instruments:

- Semi-Structured Interviews: Conducted via Zoom or phone in English, Yoruba, or Hausa, based on participant preference. Questions explored educators' experiences with digital tools, institutional constraints (e.g., electricity shortages), and strategies for adapting pedagogy.
- Focus Group Discussions (FGDs): Facilitated in person or via WhatsApp video calls, FGDs centered on collaborative problem-solving, such as designing low-resource digital training modules or advocating for infrastructure investments.

Ethical protocols included informed consent, anonymization of responses, and secure data storage via encrypted cloud platforms.

Data Analysis

Quantitative analysis

Descriptive statistics (frequencies, means) summarized access, usage, and outcome metrics. Inferential statistics (independent samples t-tests, ANOVA) compared urban-rural differences, while regression analysis identified predictors of educational media adoption (e.g., institutional funding, gender). SPSS version 28 was used, with significance set at $p < 0.05$.

Qualitative Analysis

Thematic analysis followed Braun and Clarke's (2006) six-phase framework. NVivo 12 organized interview and FGD transcripts, with coding progressing from open coding (initial themes like "infrastructure gaps") to axial coding (linking subthemes such as "device sharing" and "pedagogical adaptation"). Member checking validated interpretations, while peer debriefing ensured rigor.

Triangulation :

Quantitative trends (e.g., lower LMS usage in rural institutions) were juxtaposed with qualitative narratives (e.g., educators describing reliance on WhatsApp due to low-bandwidth requirements). This integration highlighted systemic issues, such as how unreliable electricity undermines digital literacy training despite policy mandates.

Results

Table 1: Disparities in Educational Media Access

S/N	ITEM STATEMENT	URBAN INSTITUTIONS (MEAN ± SD)	RURAL INSTITUTIONS (MEAN ± SD)	ANALYSIS
1	Institutional broadband internet access	4.20 (0.50)	1.80 (0.60)	Urban institutions report significantly higher connectivity ($p < 0.001$), aligning with ITU (2022) data showing 70% urban internet

S/N	ITEM STATEMENT	URBAN INSTITUTIONS (MEAN ± SD)	RURAL INSTITUTIONS (MEAN ± SD)	ANALYSIS
				penetration versus 20% in rural areas.
2	Availability of functional computers	4.00 (0.45)	1.90 (0.55)	Urban institutions outperform rural counterparts ($p < 0.001$), reflecting NITDA (2021) findings of 68% vs. 12% computer ownership.
3	Electricity reliability (>12 hours/day)	3.50 (0.60)	1.20 (0.40)	Rural institutions face severe power shortages ($p < 0.001$), exacerbating digital exclusion as noted by Eteng et al. (2022).
4	Subsidized device ownership (laptops/smartphones)	3.80 (0.55)	1.60 (0.50)	Urban educators benefit from institutional subsidies, while rural peers cite affordability as a barrier (Adedoyin & Soykan, 2020).

In Table 1, urban institutions exhibit superior access to infrastructure, confirming the first-level digital divide (van Dijk, 2017). Rural institutions lag due to systemic underinvestment, limiting educators' ability to engage with digital tools.

Table 2: Frequency of Educational Media Usage

S/N	ITEM STATEMENT	URBAN INSTITUTIONS (MEAN ± SD)	RURAL INSTITUTIONS (MEAN ± SD)	ANALYSIS
1	Use of Learning Management Systems (e.g., Moodle)	4.10 (0.40)	1.50 (0.50)	Urban educators frequently use LMS platforms ($p < 0.001$), whereas rural peers rely on analog methods (Ololube et al., 2019).
2	Creation of digital lesson plans	3.90 (0.45)	1.70 (0.60)	Urban educators integrate digital tools into pedagogy more often ($p < 0.001$), highlighting the second-level divide (Olaniran & Agwuegbo, 2022).
3	Participation in online mentorship programs	3.70 (0.50)	1.30 (0.45)	Rural educators face exclusion due to connectivity gaps (UNESCO, 2021).
4	Use of WhatsApp for student engagement	2.80 (0.65)	3.50 (0.55)	Rural educators adapt to low-bandwidth solutions, underscoring resilience despite resource constraints (Ajayi, 2020).

In Table 2, usage disparities reflect digital literacy and infrastructure gaps. While urban educators leverage advanced tools, rural peers adopt pragmatic, low-tech strategies, emphasizing the need for context-specific training.

Table 3: Challenges in Bridging the Digital Divide

S/N	BARRIER	MEAN	SD	RANK
1	Lack of institutional funding for ICT upgrades	4.50	0.45	1
2	High cost of data/electricity for rural institutions	4.30	0.50	2
3	Insufficient digital literacy training for rural educators	4.20	0.55	3
4	Gender disparities in device ownership	3.90	0.60	4
5	Outdated national policies on ICT integration	3.70	0.50	5

In Table 3 Funding and affordability dominate as barriers (M > 4.20), echoing World Bank (2021) reports on Nigeria's rural-urban infrastructure gap. Gender disparities and policy inertia further compound inequities, necessitating multi-level reforms.

Table 4: Regression Analysis of Predictors of Educational Media Adoption

PREDICTOR	B	SE	T	P	ANALYSIS
Institutional funding for ICT	0.65	0.03	21.67	<0.001	Strongest predictor of adoption, underscoring the need for targeted investments in rural institutions (NITDA, 2021).
Digital literacy training programs	0.60	0.04	15.00	<0.001	Capacity-building initiatives significantly enhance educators' confidence (Adewumi et al., 2022).
Low-bandwidth platform availability	0.55	0.05	11.00	<0.001	Contextualized tools mitigate rural connectivity challenges (Anyanwu et al., 2021).
Policy mandates for equity	0.45	0.03	15.00	<0.001	Top-down reforms are critical for institutional accountability (Okorie, 2023).

In Table, an Institutional funding (β = 0.65) and training (β = 0.60) are pivotal for adoption. The model explains 85% of variance (R^2 = 0.85), emphasizing structural over individual factors.

Table 5: Qualitative Themes on Barriers and Solutions

THEME	FREQUENCY (%)	REPRESENTATIVE QUOTE	IMPLICATION
Infrastructure inadequacy	92%	"Our internet dies hourly—how do we use Moodle?"	Prioritize rural electrification and broadband expansion (Eteng et al., 2022).
Need for low-bandwidth tools	88%	"WhatsApp works because it needs less data."	Develop adaptive platforms aligned with rural realities (Ajayi, 2020).
Gender-specific mentorship programs	75%	"Female educators need safe spaces to learn without stigma."	Address cultural norms limiting women's digital participation (Okechukwu, 2021).
Urban-rural peer collaboration	68%	"Pairing us with urban colleges boosts skills."	Foster partnerships for knowledge exchange (Anyanwu et al., 2021).

In Table 5, qualitative insights reveal actionable pathways, including gender-sensitive mentorship and urban-rural collaborations. Participants emphasize that infrastructure investment must precede tool adoption to ensure equity.

Discussion of Results

The data in Table 1 confirm the first-level digital divide (van Dijk, 2017), where physical access to infrastructure determines technological engagement. Urban institutions report significantly higher broadband internet access (M = 4.20) compared to rural counterparts (M = 1.80), aligning with ITU (2022) findings that urban internet penetration exceeds 70% versus 20% in rural areas. This disparity reflects systemic underinvestment in rural infrastructure, as noted by Eteng et al. (2022), who attribute connectivity gaps to inadequate network expansion and unreliable electricity. Similarly, the stark difference in computer availability (urban M = 4.00 vs. rural M = 1.90) corroborates NITDA (2021) statistics showing 68% of

urban schools own functional devices versus 12% in rural regions. Adedoyin and Soykan (2020) emphasize affordability as a barrier, citing the ₦100,000 ($220) average smartphone cost—a prohibitive expense for low-income rural educators. These findings underscore the urgency of redistributive policies (Fraser, 2005) to subsidize devices and expand rural broadband, as recommended by the World Bank (2021).

The usage disparities in Table 2 illustrate the second-level digital divide (van Dijk, 2017), where access alone does not guarantee effective integration. Urban educators frequently use Learning Management Systems (LMS) like Moodle (M = 4.10), while rural peers rely on low-bandwidth tools such as WhatsApp (M = 3.50). This aligns with Ololube et al. (2019), who note LMS adoption in urban colleges, and Ajayi (2020), who highlights analog alternatives like radio in rural areas. Olaniran and Agwuegbo (2022) attribute rural educators' limited digital literacy—65% of trainees struggle with basic tasks—to insufficient training programs. Meanwhile, urban educators' higher participation in online mentorship (M = 3.70 vs. rural M = 1.30) reflects UNESCO (2021) concerns about exclusion from digital professional development. These patterns suggest that social recognition (Fraser, 2005)—valuing rural educators' adaptive strategies—is critical, alongside targeted digital literacy training.

The top barriers in Table 3—funding (M = 4.50), affordability (M = 4.30), and digital literacy gaps (M = 4.20)—echo Eteng et al. (2022), who identify underfunded rural institutions as a core issue. High data costs and electricity shortages compound these challenges, as Adedoyin and Soykan (2020) highlight affordability constraints. Gender disparities in device ownership (M = 3.90) align with Okechukwu (2021), who documents lower digital confidence among rural female teachers. Outdated policies (M = 3.70) reflect Okorie's (2023) critique of Nigeria's fragmented ICT integration framework. These findings call for representational equity (Fraser, 2005), ensuring rural educators shape policy reforms, as advocated by UNESCO (2021).

In Table 4, Regression Analysis of Predictors of Educational Media Adoption, institutional funding (β = 0.65) and digital literacy training (β = 0.60) emerge as the strongest predictors of adoption, validating Adewumi et al. (2022), who stress institutional support for ICT capacity-building. Low-bandwidth tools (β = 0.55) mitigate rural exclusion, supporting Anyanwu et al. (2021), who recommend context-specific solutions. Policy mandates (β = 0.45) align with Okorie (2023), emphasizing top-down reforms. These results align with TAM limitations (Davis, 1989) in low-resource contexts, where structural barriers—like unreliable

electricity—override perceived usefulness. The model's 85% explanatory power underscores the need for multi-level interventions (Fraser, 2005), combining funding, training, and policy coherence.

In Table 5, qualitative insights reinforce the third-level digital divide (van Dijk, 2017), where access and usage gaps translate into outcome disparities. Infrastructure inadequacy (92%) mirrors Eteng et al. (2022), who link power shortages to educational exclusion. The demand for low-bandwidth tools (88%) aligns with Ajayi (2020), who advocates analog-digital hybrid models. Gender-specific mentorship (75%) addresses Okechukwu's (2021) findings on female educators' marginalization. Urban-rural collaboration (68%) reflects Anyanwu et al. (2021), who propose peer-learning networks. These themes highlight the necessity of participatory policymaking (Fraser, 2005), ensuring rural voices inform resource allocation and curriculum design.

Conclusion

This study demonstrates that Nigeria's digital divide profoundly affects teacher training, with rural institutions facing compounded barriers across access, usage, and outcomes (van Dijk, 2017). Quantitative data confirm urban institutions' superior connectivity (M = 4.20) and device availability (M = 4.00), while qualitative findings reveal rural educators' adaptive use of low-bandwidth platforms (e.g., WhatsApp) amid systemic neglect (Eteng et al., 2022). Regression analysis identifies institutional funding (β = 0.65) and digital literacy training (β = 0.60) as critical predictors of adoption, aligning with TAM's emphasis on usability (Davis, 1989). However, structural challenges—such as unreliable electricity (M = 1.20 rural) and gender disparities (Okechukwu, 2021)—underscore the limitations of individual-focused models in low-resource contexts. Fraser's (2005) equity framework further highlights the need for redistributive policies to address material gaps, recognition of rural educators' resilience, and inclusive policymaking.

Recommendations

1. Nigerian Government should prioritize electrification and subsidized broadband through public-private partnerships, mirroring Rwanda's national fiber-optic expansion (World Bank, 2021).
2. University authorities in Nigeria should implement low-bandwidth training modules and peer mentorship between urban and rural educators.

3. Nigerian government through the relevant authorities should provide female educators with device loans and safe digital skill-building spaces to address gendered participation gaps.
4. There should be policy reform from Nigerian government that should enforce mandates requiring 30% of ICT funding for rural institutions, aligned with Nigeria's National Policy on Education (2014).
5. Nigerian Government through Her Ministry of Education should develop offline-compatible LMS platforms and radio-TV hybrids, building on NTI's analog outreach.

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