UGANDA COMMUNICATIONS COMMISSION

UGANDA COMMUNICATIONS UNIVERSAL SERVICE & ACCESS FUND

BASIC COMMUNICATION SERVICES ACCESS AND USAGE GAP

ANALYSIS REPORT

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Submitted to

UGANDA COMMUNICATIONS COMMISSION

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Acronyms

Acronym	Definition
ACHPR	African Charter on Human and People's Rights
ATU	African Telecommunications Union
BCR	Call Block rate
CSSR	Call Setup Rate
DCR	Call Drop Rate
DL	Download
DUV	Digital Uganda Vision
EACO	East African Communications Organization
FTP	File Transfer Protocol
HTTP	Hypertext Transfer Protocol
ICT	Information and Communication Technology
IMF	International Monetary Fund
ITU	International Telecommunication Union
Kbps	Kilobits per second
KICD	Kenya Institute of Curriculum Development
KNLS	Kenya National Library Service
KPIs	Key Performance Indicators
LTE	Long-Term Evolution
MDAs	Ministries Departments and Agencies
MSIT	Ministry of Science and ICT (South Korea)
NDPIII	Third National Development Plan
NITA-U	National Information Technology Authority, Uganda
OECD	Organisation for Economic Co-operation and Development
PWDs	Persons with Disabilities
QoS	Quality of Service
RCDF	Rural Communications Development Fund
SSR	Success Rate
TBA	Telecommunications Business Act
ToR	Terms of Reference
UAF	Universal Access Fund
UCC	Uganda Communications Commission
UDCHR	Universal Declaration of Human Rights
UNCRPD	United Nations Convention on the Rights of Persons with Disabilities
UNICITRAL	The United Nations Commission on International Trade Law
UL	Upload
USF	Universal Service Fund
VATS	Value-Added Telecommunications Services

Executive Summary

In line with the current Uganda Communication Commission (UCC) approach of evidence-based mandate implementation, UCC commissioned a study to establish the extent of universal access and usage gap of basic communication services focusing on telephony and broadband services. The purpose of this study was to establish the extent of the universal access gap of basic communication services in the country and establish the emerging trends as far as access and usage of digital services is concerned so as to inform the Fund's operational pillars and strategic interventions.

Key objectives of the study included;

1. Conducting a comparative analysis of Uganda's universal access policies, infrastructure, and service delivery against regional and international best practices to identify lessons and opportunities for improvement.
2. Establish the extent to which the existing legal and regulatory frameworks are promoting or inhibiiting universal access to basic communication services as defined in the universal access policy of the country.
3. Establish the extent to which universality of telephony and broadband infrastructure coverage in the country.
4. Establish profile and extent of un-serviced and underserved demographics within the country.
5. Establish the level of universal access and usage of digital devices and services.
6. Evaluate the delivery of affordable basic communication services to persons with disabilities and other under serviced communities like refugees.
7. Evaluate the social economic impact of the universal access gap.

To achieve these objectives, the team employed a Diagnostic Appreciative Inquiry a hybrid methodology that blends traditional diagnostic analysis with the strengths-based approach of Appreciative Inquiry. This allowed the researchers to identify current trends in access and usage of telephony and broadband services, while also formulating key recommendations to bridge existing gaps. Both quantitative and qualitative methods were utilized throughout the research process.

To ensure a comprehensive understanding of universal access and ICT adoption, the study engaged a diverse group of stakeholders through surveys, key informant interviews (KIIs), focus group discussions (FGDs), and case studies. These stakeholders included representatives from government ministries, agencies, and local governments, offering critical insights into policy frameworks, regulatory conditions, and infrastructure-related challenges. The assessment was conducted at a national scale, covering all five regions of the country: Central, Eastern, Northern, Western, and West Nile. A stratified, multi-stage purposive random sampling technique was applied at various levels to identify participants. In total, data was gathered from approximately 2,621 respondents, more than 50 documents were reviewed, and international benchmarking was conducted across five countries: Kenya, South Africa, Mauritius, Estonia, and South Korea.

From analysis, some of the key findings realized were;

Uganda has made notable progress in expanding telephony and broadband infrastructure across the country. As of July 2024, 2G network coverage reaches 75.2% of the population, while 4G covers 48.3%. Despite these improvements, significant gaps in access and usage remain, especially in rural, remote, and underserved sub-regions such as Karamoja, Acholi, Teso, and West Nile. Approximately 44% of Uganda's land area remains without any form of mobile network coverage, indicating deep-rooted geographical disparities. Affordability challenges remain high, with 1GB of data costing about 6% of the average monthly income, against the UN recommended threshold of 2%.

Access and usage of digital devices and services also present major challenges. Although smartphone penetration is increasing, device affordability remains a critical barrier, especially for low-income populations, persons with disabilities (PWDs), and refugees. Only a small fraction of the population relies on 4G as the highest network available, and 5G access remains extremely limited. Usage of digital services, including mobile money and internet-based services, has grown but remains uneven, constrained by affordability of data, device maintenance challenges, and limited relevant digital content.

In regards to development of ICT Applications and Services, there has been notable progress, particularly through the establishment of innovation hubs, public access centers, and digital skilling programs. The National ICT Innovation Hub in Nakawa has seen a dramatic increase in youth engagement, with over 6,500 individuals directly benefiting. However, the overall reach remains low only about 407,500 individuals have accessed ICT innovation services out of a target population of over 23 million, revealing a significant innovation access gap. Most services are still concentrated in urban areas or limited to pilot projects, leaving rural and underserved communities largely unreached.

UCUSAF's interventions have measurable impact, with approximately 1.24 million direct beneficiaries and an estimated 5 million indirect beneficiaries reached through projects like device distribution, ICT skilling programs, and rural connectivity initiatives. However, this still represents a small fraction of Uganda's total population (46.5 million), signaling the need for scaled-up efforts.

In regards to closing Uganda's digital access gap, this requires a total investment of UGX 3,852.4 billion, allocated across Infrastructure Access (UGX 997.2 billion; 25.9%), Affordability of Digital Services (UGX 1,297.6 billion; 33.7%), and Digital Skills (UGX 1,557.6 billion; 40.4%). For a fiscally pragmatic start, a three-year programme at 60 percent of the total would mobilize UGX 2,311.5 billion with the same proportional split by pillar.

- Infrastructure Access focuses on last-mile mobile and wireless coverage, backbone fibre extensions, and two additional regional IXPs to improve reach, resilience, and local traffic exchange.
- Affordability of Digital Services applies the two percent of income benchmark to reduce the effective price of mobile and fixed services for low-income users and priority institutions, and supports device acquisition through targeted smartphone and feature-phone schemes.
- Digital Skills targets the working-age population (15-64 years) using an hours-based method that funds trainer time and a learner stipend, lifting basic and above-basic competencies needed for meaningful use and employability.

Critically, the universal access gap has substantial socio-economic costs. Uganda loses an estimated $3.473 billion annually in potential GDP due to the broadband gap, misses the creation of 2.53 million jobs, and forfeits approximately UGX 5.06 trillion in potential tax revenues annually. Productivity losses in key sectors such as agriculture, education, and healthcare amount to an additional $2.25 billion annually. Bridging the access gap could increase Uganda's GDP by 3-5% annually, creating 400,000-500,000 new jobs through ICT expansion.

Multi-sector collaboration under UCUSAF has supported ICT access across sectors like education, agriculture, and health, but engagement in other key sectors remains limited. High-impact areas such as tourism, justice, and social protection are underrepresented in digital transformation initiatives. The major finding is that while existing partnerships have enabled foundational infrastructure and services, a lack of formal frameworks and sector-wide coordination is slowing inclusive digital growth. Expanding strategic partnerships and integrating underserved sectors is critical to unlocking broader national impact.

Policy, legal, and regulatory frameworks are in place but face issues of fragmentation, slow enforcement, and limited responsiveness to emerging technologies such as AI, IoT, and 5G. Affordability remains a cross-cutting barrier affecting both device ownership and internet usage. Finally, gaps in digital literacy, localized digital content, and value creation from internet access limit the full realization of connectivity benefits.

Benchmarking from countries such as Kenya, South Africa, Mauritius, Estonia, and South Korea revealed that effective universal access strategies rely on strong regulatory frameworks, public-private partnerships, and inclusive digital policies. Kenya's use of a Universal Service Fund and targeted ICT projects has enhanced rural connectivity, while South Africa demonstrates the importance of affordability and a unified national framework for digital inclusion. Mauritius shows how alignment with international standards attracts investment, Estonia highlights the impact of transparent e-governance and extensive public internet access, and South Korea exemplifies high-speed infrastructure and targeted support for vulnerable groups. These practices offer actionable insights for Uganda to strengthen its digital ecosystem, close service gaps, and accelerate socio-economic development through ICT.

Therefore, for the main issues identified, several recommendations emerged which included;

i. **To address weak enforcement of universal service obligations**, the Uganda Communications Commission (UCC), in collaboration with the Ministry of ICT and National Guidance (MoICT), should establish a robust enforcement framework that sets clear rural connectivity targets and introduces penalties for non-compliance.
ii. **To resolve contradictions between ICT taxation policies and access goals,** the Ministry of ICT, the Ministry of Finance, Planning and Economic Development (MoFPED), and the Uganda Revenue Authority (URA) must align fiscal policies with digital inclusion objectives by reducing taxes on ICT devices and services and introducing targeted subsidies for underserved populations.
iii. **To keep pace with emerging technologies such as AI, IoT, and 5G,** the National Information Technology Authority (NITA-U) and MoICT should update existing ICT policies and regulations to ensure these innovations are accessible and support universal service coverage.
iv. **To reduce the rural-urban broadband coverage disparity,** UCC, NITA-U, MoICT, and telecom operators should expand last-mile fiber and broadband infrastructure through public-private partnerships and enforce infrastructure-sharing among providers.
v. **To overcome persistent device affordability barriers,** UCC, MoICT, UCUSAF, and telecom operators need to introduce device financing schemes, offer targeted subsidies, and incentivize the distribution of low-cost smartphones and assistive technologies.
vi. **To tackle low digital literacy among marginalized groups,** MoICT, UCUSAF, the Ministry of Education and Sports (MoES), NGOs, and civil society organizations (CSOs) must scale up localized, livelihood-linked digital literacy programs, with a focus on persons with disabilities (PWDs) and the elderly.
vii. **To improve access and usage among PWDs and refugees,** the Ministry of ICT, UCC, Ministry of Gender, Labour and Social Development (MoGLSD), and NGOs should design tailored digital inclusion initiatives that integrate assistive technologies and provide subsidized access to services.
viii. **To address affordability and structural barriers limiting rural digital adoption,** UCC, the Rural Electrification Agency (REA), MoICT, local governments, and NGOs should establish rural device lending hubs, link digital literacy with energy access initiatives, and promote off-grid telecom solutions.
ix. **To enhance the sustainability of digital inclusion projects**, UCUSAF, MoICT, development partners, and local governments must foster community ownership models, build strategic partnerships, and integrate ICT interventions with income-generating activities.
x. **To increase the utilization of emergency and customer service channels,** UCC, telecom operators, and MoICT should enhance public education campaigns and adapt service delivery to meet the needs of vulnerable and marginalized users.
xi. **To mitigate loss of economic productivity caused by ICT access gaps,** MoICT, the Ministry of Finance, UCC, and the National Planning Authority (NPA) should prioritize broadband acceleration through a National Broadband Plan that is aligned with key sectoral development goals.
xii. **To improve data-driven policy and planning,** UBOS, MoICT, UCC, and NITA-U must establish a national digital access monitoring framework that is fully integrated into the national survey system.
xiii. **To reduce fragmentation in digital inclusion efforts**, the Ministry of ICT, UCC, MoGLSD, and CSOs should consolidate initiatives under a unified National Digital Inclusion Framework that encourages cross-sector collaboration and community involvement.

This report provides a roadmap for Uganda to accelerate toward achieving meaningful universal access and usage of basic communication services.

Chapter one

INTRODUCTION

In line with the current Uganda Communication Commission (UCC) approach of evidence-based mandate implementation, UCC commissioned a study to establish the extent of the universal access and usage gap of basic communication services, focusing on telephony and broadband services. In the context of Uganda's university access policy, **Universal Access** refers to the goal of ensuring that all residents, regardless of geographical, economic, or social barriers, have access to basic communication services at internationally acceptable standards[1]. On the other hand, **Universal Service** is a situation where every individual or household can have service, using it privately, either at home or increasingly carried with the individual through wireless devices.[2]

1.1 Background

Uganda Communications Commission is a Statutory Agency under the Ministry of ICT and National Guidance (MoICT & NG), established by an Act of Parliament (the Uganda Communications Act, 2013) as the regulator of the communication Sector. According to Section 3 (g) of the Uganda Communications Act, 2013, UCC is mandated to establish and manage a Fund **(Uganda Communications Universal Service and Access Fund (UCUSAF))** dedicated to supporting the development of segments of the sector that are underserved or unserved within the country, hence ensuring universality of access and usage of basic communication services. The Fund was set up to contribute to the realization of universal access and use of communications services in Uganda through the implementation of strategic communications interventions in areas that are non-commercially viable, i.e., left unserved or underserved by the market operators. The Uganda Communications Universal Service and Access Fund (UCUSAF), formerly the Rural Communications Development Fund (RCDF), was established in 2001 by the Uganda Communications Commission (UCC) to operationalize the provisions of the Law.

Uganda Communications Universal Service and Access Fund is a semi-autonomous entity but operates as a functional Department within UCC.[3] UCUSAF, formerly RCDF over three cycles RCDF I (2003 – 2009), II (2010 – 2016), and III (2017 – 2023), has evolved to cover a broader mission of achieving digital inclusivity beyond rural and urban demographics as originally envisioned under RCDF. UCUSAF is currently implementing its 4th strategic cycle, which seeks to achieve "**Digital Inclusivity through sustainable interventions and impactful collaborations**". The new strategic direction is anchored on four strategic pillars: **Access, Adoption and Usage, Value Creation, and Cooperation**. These pillars are supported by five strategic objectives, resulting in: a) Increased Broadband Access, b) Enhanced Usage of Digital Devices and Services, c) Promotion of ICT Applications and Services, d) Facilitating Knowledge Informative Decision-Making and e) Enhanced Multi-Sector Collaboration. [4]

Within this context, the key goal of Uganda's universal service access policy is to develop the infrastructure and regulatory tools necessary to enable residents of Uganda to access secure, affordable and reliable communication services essential for their social and economic progression.

Thus Uganda's Universal Access Policy is focused on; (1) Ensuring universal availability of telephone and broadband connectivity to by every person or individual households in the country, (2) Lowering barrier of accessibility and usage of digital infrastructure and services (3) Full country geographical coverage of broadband infrastructure, (4) ability of consumers of communication services to access emergency and free services, operator assistance and directory inquiry services, (5) delivery of affordable basic communication services persons with disabilities and other under service communities like refugees, (6) providing customers with disabilities with the same or equivalent services as all other customers to have access to the same level of universal.[5]

Historically, universal service policies have evolved to accommodate the changing landscape of communication technology. In many countries, including Uganda, these policies initially focused on voice telephony. Only in recent years have data services been integrated into the universal service mandate,

1 International Telecommunication Union (ITU). (2014). Trends in Telecommunication Reform: Enabling Tomorrow's Digital World. ITU Publications.

2 ITU, 2012

3 Project ToR

4 Project ToR

5 Project ToR

reflecting the growing importance of internet access in daily life. Despite these policy advances, the digital divide remains a persistent issue, particularly for rural and underserved communities. This study seeks to highlight these gaps and offer insights into how policies can be reformed to better address them. Implementing UA and US policies is fraught with challenges. Regulatory shortcomings, technological barriers, and socio-economic constraints are among the key obstacles to achieving universal service. For instance, limited infrastructure in rural areas and low population density make it difficult to deploy communication networks, while socio-economic factors such as low income and digital illiteracy hinder equitable access to services. Addressing these challenges requires targeted interventions that are both sustainable and inclusive.

Moreover, digital inclusion plays a vital role in fostering economic growth and business opportunities. Studies have shown that increased access to communication services can drive innovation and promote economic development, particularly for marginalized groups such as persons with disabilities. By closing the digital gap, these populations can better participate in the knowledge based digital economy, access education, and improve their quality of life. It is against this backdrop that the UCC contracted 8Tech to undertake an assessment of universal communication services access and usage gap aimed at identifying any ecosystem trends in uptake and usage of communication services, and establishing dimensions of unserved and under-served demographics especially with the emergence of the 4IR and artificial intelligence technologies which are widening the digital divide gap mainly in developing countries like Uganda.

1.2 Rationale

The purpose of the study was to establish the extent of the universal access gap of basic communication services in the country and establish the emerging trends as far as access and usage of digital services are concerned, to inform the Fund's operational pillars and strategic interventions.

A study by the World Bank indicated that a 10% increase in fixed broadband penetration would contribute to a 1.21% increase in GDP[6]. This underscores the immense economic growth potential that lies within Uganda's unserved and underserved demographics. Addressing barriers to equitable access and usage of communication and digital services in these demographics could unlock significant opportunities for national development as the country seeks to expand its economy from 50 billion USD to 500 billion USD in the next couple of years.

In alignment with the UCUSAF implementation framework, which emphasizes evidence-based program design and execution, this study is particularly timely. The digital ecosystem has undergone significant changes since the last universal access and usage gap analysis was conducted in 2016.[7] The emergence of Fourth Industrial Revolution (4IR) technologies and artificial intelligence (AI) has further widened the digital divide, especially in developing nations like Uganda. This study seeks to provide a comprehensive understanding of the state of universal communication services access and usage, examining trends in uptake and usage while identifying dimensions of unserved and underserved demographics.

Universal Access aims to ensure that all residents, regardless of geographical, economic, or social barriers, have access to essential communication services[8]. Universal Service focuses on providing a minimum set of communication services, such as telephony and broadband, at affordable prices, guided by principles of fairness and non-discrimination. These frameworks are critical to bridging the digital divide and fostering equality, particularly among underserved and marginalized communities. The digital divide is a multifaceted issue that encompasses various factors related to technology access and usage. At its core, it represents the gap between those with internet access and those without. However, this divide extends beyond mere connectivity and includes dimensions such as affordability, quality, and relevance.

6 World Development Report 2016: Digital Dividends

7 A Study into Communication Services and Infrastructure across the Country, 2016

8 International Telecommunication Union (ITU). (2014). *Trends in Telecommunication Reform: Enabling Tomorrow's Digital World*. ITU Publications

1.3 Objectives and Scope

The specific objectives included;

01 Conduct a comparative analysis of Uganda's universal access policies, infrastructure, and service delivery against regional and international bestpractices to identify lessons and opportunities for improvement.

02 Establish the extent to which the existing legal and regulatory frameworks are promoting or inhibiting universal access to basic communication services as defined in the universal access policy of the country.

03 Establish the extent to which universality of telephony and broadband infrastructure coverage in the country.

04 Establish profile and extent of un-serviced and underserved demographics within the country

05 Establish the level of universal access and usage of digital devices and services

06 Evaluate the delivery of affordable basic communication services to persons with disabilities and other under serviced communities like refugees.

07 Evaluate the social economic impact of the universal access gap.

Figure 1: Objectives of the study

The scope of the assessment was limited to;

i. Evaluating the effectiveness of the existing policy, legal, and regulatory environment in promoting universal access and usage of basic communication services as defined in the universal access policy of Uganda.

ii. Establishing the level of access and usage of basic communication services among the various demographics to establish any gaps that might exist. The scope covered assessment of current telephony and broadband universal coverage, accessibility, and affordability of telephony and broadband services, particularly among marginalized groups as persons with disabilities.

iii. Additionally, the research incorporates case studies of beneficiaries who have been part of the UCUSAF programmes, identifying best practices that can inform policy reforms and improve service provision in Uganda.

1.4 Structure of the Report

The entire report is structured as illustrated in Figure 1 below

2.0 APPROACH AND METHODOLOGY

2.1Research Approach
2.2Methodology
2.3Research Design and Sampling
2.4Respondent Characteristics

3.0 FINDINGS

3.1Telephony and Broadband Infrastructure Coverage
3.2Access and Usage of Digital Devices and Services
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4.2 Recommendations

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Figure 2: Structure of the Report

Chapter two

APPROACH AND METHODOLOGY

This section details the Research Approach, Design, and Methodology used.

2.1 Research Approach

In terms of a research approach, a **Diagnostic Appreciative Inquiry was adopted given the nature of the phenomenon under investigation.**

A Diagnostic Appreciative Inquiry (DAI) Approach

The Diagnostic Appreciative Inquiry (DAI) approach is a hybrid approach that combines the traditional diagnostic analysis methods with the positive, strengths-based focus of Appreciative Inquiry[9].

In the context of this study, the DAI approach allowed the researchers to discover the current trends in access and usage of telephone and broad services and also establish key recommendations for bridging the existing gaps. The approach was ideal for the study as to combines problem identification (diagnostic component) with a positive and opportunity-focused lens (appreciative inquiry). This method helps researchers not only understand barriers but also leverage existing strengths to drive meaningful solutions. The DAI approach was implemented through the following key steps:

Element	Purpose	Outcome
Discovery	To uncover and appreciate the current trends in telephony and broadband services availability across the country.	Understanding of the current state of access to basic communication services and the factors promoting or inhibiting access
Diagnosis	To establish patterns of unserved and underserved dimensions	Established the access and usage gaps of basic communication services (telephony and broadband). But also establish the opportunity cost of the existing gap.
Dream	To collaboratively envision the future of universal access to basic communication services.	Gather basic key recommendations on how to improve universal access and usage of basic communication services.
Design & Destiny	To develop actionable recommendations to address the gaps.	Actionable recommendations, including policy changes, infrastructure projects, and targeted training programs tailored to Uganda's digital inclusion needs.

2.2 Methodology

The research was implemented using a mixed-methods approach to ensure comprehensive data collection, analysis, triangulation, and interpretation. This approach integrated both qualitative and quantitative research methods to capture the breadth and depth of insights necessary for a robust analysis and establish sound recommendations.

01 **Quantitative Methods:** Provided statistical evidence of gaps and measured the extent of challenges. Survey Questionnaires were mainly used under quantitative methods

02 **Qualitative Methods:** Delivered contextual and in-depth understanding of the reasons behind observed gaps. Key Informant Interviews KIIs, desk reviews, and Focus Group Discussions (FGDs) were mainly used.

The study was conducted in three phases: Inception, Execution, and Reporting phase, as detailed in Table 1 below.

Table 1: Step-by-step methodology

9 What is Appreciative Inquiry (AI)? - The Center For Appreciative Inquiry

Phase	Key Activities conducted
Inception Phase	i. Conducted entry meetings with the client to gain a deeper understanding of the assignment ii. Held several co-creation sessions with the client to refine objectives, approach, and methodology, tools, and templates for deliverables. iii. Developed research approach, methodology, and data collection tools through participatory FGDs, KIIs, literature review, benchmarking, data mining, and stakeholder validation meetings. iv. Mobilized and oriented the researcher team v. Prepared, validated, and delivered an acceptable inception to the client, which acted as the service level agreement for the execution of the assignment.
Execution Phase	i. Conducted tool digitization using the KOBO toolbox. ii. Trained research assistants in tool use, ethical considerations, and field protocols. iii. Using a database of Coordinators and Research Assistants in Districts, Data collection via KIIs, FGDs, surveys, geospatial mapping, and appreciative inquiry was done. iv. Executed impact case studies with beneficiaries through semi-structured in-depth interviews. v. Conducted data cleaning and analysis using SPSS, Excel, thematic content analysis, and GIS analysis. ArcGIS Pro and QGIS were used concurrently to analyze the data and to generate spatial-visual outputs. Microsoft Excel 365 was used to tabulate and generate some graphs. vi. Performed comprehensive gap analysis comparing current access and usage levels to international benchmarks. vii. Drafted universal access and usage gap report and conducted stakeholder validation workshops
Reporting phase	i. Submitted draft report detailing findings, recommendations, and stakeholder consultation outcomes. ii. Compiled stakeholder validation engagement report with compliance matrix. iii. Delivered end-of-project report summarizing activities, challenges, lessons learned, and recommendations. iv. Held an exit meeting to officially close the project and present key insights and recommendations.

2.3 Research Design and Sampling

A comprehensive research design, which includes: stakeholder mapping and sampling, design of data collection tools, data collection, data cleaning, analysis, and report writing, is provided in this section.

2.3.1 Stakeholder and Data Source Mapping

A Stakeholder Mapping

To ensure a comprehensive understanding of universal access and ICT adoption, this study engaged a diverse range of stakeholders through Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), and case studies. The stakeholders included government ministries, agencies, and local government officials, providing insights into policies, regulatory frameworks, and infrastructure challenges.

Telecom operators and Internet Service Providers (ISPs) contributed perspectives on infrastructure coverage, pricing models, and barriers to expanding services in underserved areas. NGOs and community-level stakeholders, such as ICT hubs and small business owners, shared experiences on digital literacy, affordability, and community adoption of ICT services. FGDs were conducted with women and PWDs, capturing their perspectives on accessibility and usage of ICT services. Additionally, case studies documented individual and institutional experiences, highlighting the impact of UCUSAF programs on digital inclusion and socio-economic transformation.

B Sampling Method

The assessment was designed nationally, covering all five regions of the country, i.e., Central, Eastern, Northern, Western, and West Nile. Stratified, multi-stage purposive random sampling was performed at several steps to identify respondents.[10] The multi-stage approach involved multiple stages of stratification, first by region, then by district, and finally by demographic characteristics, i.e., gender, age, and persons with disabilities (PWDs).

To gather quantifiable data from respondents on key indicators, survey interviews were undertaken. Using the Census 2024 data, i.e., the total population of Uganda stands at 45,904,417 people, with females taking a big share of 24,338,681 and males 21,566,736 persons.[11] Using the Cochran formulae, at a 95% confidence level and a 3% margin of error, the calculated sample was **1067,** which was further stratified per sub-region with reference to the UBOS Census statistics.

2.3.2 Development and Digitization of Data Collection Tools

The design of the data collection tools was a consultative process between the consultant and the UCC PIT team. Key tools developed included: a survey questionnaire, a Key Informant Interview (KII) guide, a Focus Group Discussion (FGD) guide, and a Literature review guide, ensuring that the tools were aligned with the study objectives and effectively captured relevant data from diverse stakeholders. The data collection tools were digitized using the Kobo Collect software for real-time and efficient data collection.

2.3.3 Data Collection, Cleaning, Analysis, and Report Writing

a Data Collection

Using an existing database of coordinators and research assistants in every district, 2 research assistants and one coordinator were identified for each of the selected districts. Coordinators were responsible for conducting Key informant interviews at the district level while supervising survey interviews being undertaken by the research assistants. Explorative Key Informant Interviews included MDAs, Telecoms, SMEs, and NGOs. The table below summarizes the data collected

Table 3: Data Collected

Category	Sub-Categories	Sample size Target	Data collected
Survey Questionnaire		1067	2480
Key Informant Interviews (KIIs)	MDAs (MoED, OPM, UCC-UCUSAF)	9	5
	Telecom Operators & ISPs	10	5
	NGOs (Local and National)	15	12
SMEs	ICT Centers, Mobile money agents, electronic shops	20	71
Focus Group Discussions	FGDs	15	27
Case studies	Beneficiaries of the UCUSAF project	2 cases for each selected project	21

10 Multistage Sampling | Introductory Guide & Examples

11 NPHC 2024 – Preliminary Results (ubos.org)

Category	Sub-Categories	Sample size Target	Data collected
Literature Review	An extensive review of literature in line with the Universal access and usage gap.		Over 50 documents reviewed
Benchmarking	Benchmarking from countries with a high ICT index, i.e., Kenya, South Africa, Mauritius, Estonia, and South Korea, to pick key lessons for Uganda	5	5

b Ethical considerations and Quality Management

In conducting this study, ethical considerations and quality management protocols were strictly observed to ensure the integrity of the research process and the well-being of all participants. Key ethical principles such as informed consent, confidentiality, respect for participants, and adherence to health and safety standards guided the study's interactions and data collection methods as explained

i. **Informed Consent:** This involved providing respondents with clear information before the interview about the purpose, scope, and intended outcomes of the study and their right to withdraw at any time without penalty, as well as how their data would be managed.

ii. **Anti-Sexual Harassment and Complaint Management Protocols:** A zero-tolerance approach to harassment of any form was encouraged throughout the data collection process. Eight Tech Consults considers Sexual Exploitation, Abuse, and Harassment to be serious violations that directly contravene the core values of the organization and the values of all our clients, including the government of Uganda and its development partners

iii. **Quality** Management**:** A Quality Management Framework was employed to ensure the accuracy, reliability, and credibility of the data collected. This framework includes:
   - Training of Field Staff: All field researchers and enumerators underwent comprehensive training to standardize data collection methods, ensure cultural sensitivity, and reinforce ethical protocols.
   - Data Verification and Validation: Data was collected with digitized online data collection tools for real-time Quality control and provision of feedback to field teams as necessary.
   - Supervision and Monitoring: Continuous oversight of field activities was conducted by a team of supervisors to address any issues in real-time and ensure compliance with data quality standards.

c Data Cleaning and Analysis

Following data collection, a comprehensive data cleaning process was conducted to ensure accuracy, completeness, and consistency. This involved identifying and rectifying errors, handling missing values, and standardizing responses where necessary. The cleaned data were then coded systematically to facilitate analysis.

For quantitative data, SPSS and MS Excel were utilized to conduct descriptive and inferential analyses. This included generating frequency distributions, cross-tabulations, and identifying key trends relevant to the study objectives. For qualitative data, thematic content analysis was employed. Responses from Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) were systematically categorized based on emerging themes. In order to map and analyze telephony and broadband infrastructure coverage across the country, Arch GIS tool was used to overlay coverage maps.

d Report Writing

The report writing process involved synthesizing findings from the desk review, benchmarking, service mapping, stakeholder consultations, and gap analysis. A draft report on universal access and usage gaps was developed, detailing key findings and recommendations. Three Stakeholder validation engagements were conducted to refine the report, and feedback was systematically documented in a compliance matrix. A final report incorporating validated insights was produced to guide policy recommendations. The reports were structured to ensure clarity, coherence, and alignment with the study objectives.

2.4 Respondent Characteristics

The study utilized both primary and secondary data collection mechanisms to achieve its objectives:

A Survey Questionnaires

The survey had a total of 2,480 respondents; of these, 50.9% (1,263) were Female, and 49.1% (1,217) were male.

i. **Regional Representation:** The data was collected from various sub-regions, with Buganda contributing the largest proportion at 20.5% (509), followed by Buganda at 9.9% (246), as further shown in the figure below;

ii. **Persons with Disabilities:** Respondents with disabilities comprised 15.5% (385) of the total sample. Of these, 54.0% were physically disabled, 17.9% had with mental disability, 15.1% Hearing Impairment, 6.2% had a speech impairment, 3.4% had Albinism, 2.1% were Little people, 2.9% had Cerebral palsy, and 0.8% had Autism & Mental disability.

iii. **Age Distribution:** The largest proportion of respondents fell in the **19-25 years** age group at 23.2% (576), followed by **26-30 years** at 17.7% (440), **36-40 years** at 14.0% (348) and **31-35 years** at 12.8%. Other age brackets constituted smaller proportions.

iv. **Occupation:** Majority 45.2% (1122) of the respondents were involved in the Informal sector, while 29.0% (719) were students, and 25.8% (639) were in the formal sector

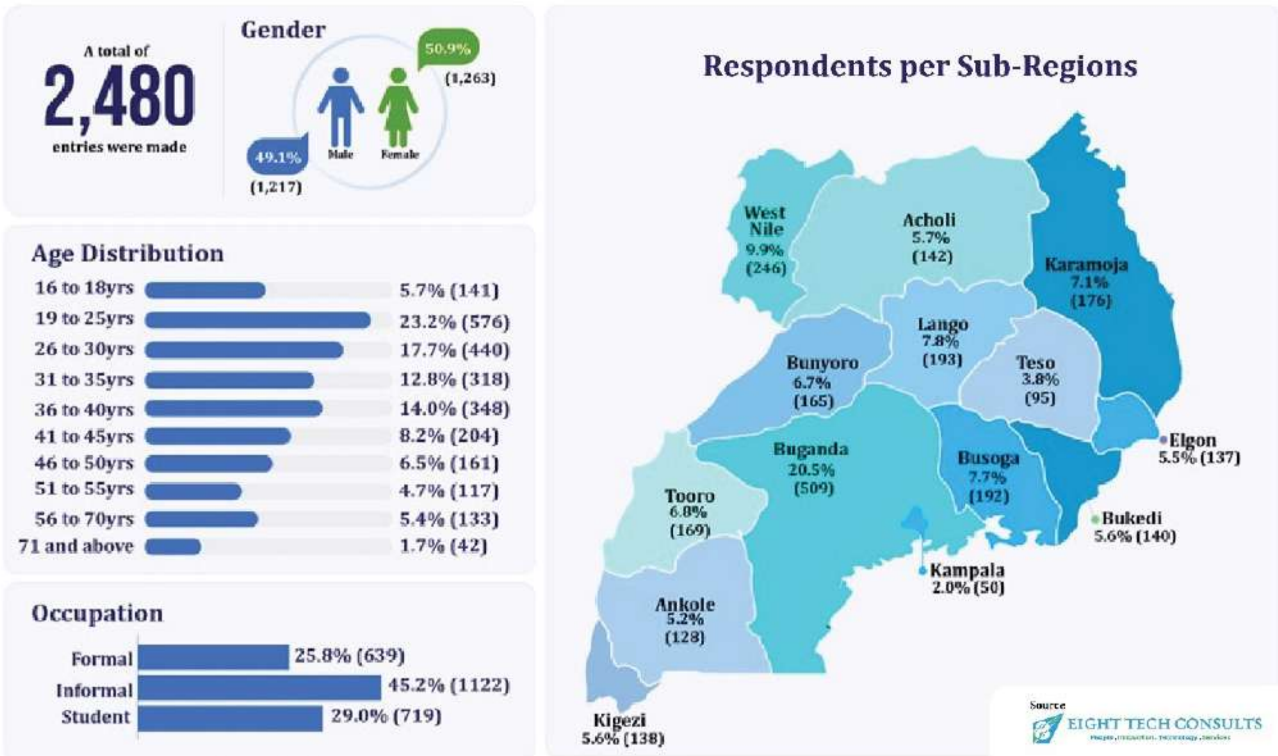


Figure 2: Survey data collected

Districts: Several districts participated in the research, these included Amuru, Gulu, Kitgum in Acholi, Bushenyi, Isingiro, Mbarara in Ankole, Mpigi, Mukono, Wakiso in Buganda, Budaka, Butaleja, Tororo in Bukedi, Hoima, Kiryandongo, Masindi in Bunyoro, Iganga, Jinja, Kamuli in Busoga, Bududa, Kapchorwa, Mbale in Elgon, Kaabong, Karenga, Kotido, Moroto, Nabilatuk in Karamoja

Table 2: Breakdown of the Districts that Participated in the Research

Region	District	No. & %	%
Acholi	Amuru	51	2.1%
	Gulu	46	1.9%
	Kitgum	45	1.8%
Ankole	Bushenyi	61	2.5%
	Isingiro	6	0.2%
	Mbarara	60	2.4%
	Ntugamo	1	0
Buganda	Mpigi	140	5.6%
	Mukono	149	6.0%
	Wakiso	220	8.9%
Bukedi	Budaka	45	1.8%
	Butaleja	48	1.9%
	Tororo	47	1.9%
Bunyoro	Hoima	43	1.7%
	Kiryandongo	62	2.5%
	Masindi	60	2.4%
Busoga	Iganga	72	2.9%
	Jinja	77	3.1%
	Kamuli	43	1.7%
Elgon	Bududa	45	1.8%
	Kapchorwa	45	1.8%
	Mbale	47	1.9%
Kampala	Kampala	50	2.0%
Karamoja	Kaabong	30	1.2%
	Karenga	40	1.6%
	Kotido	31	1.3%
	Moroto	30	1.2%
	Nabilatuk	45	1.8%
Kigezi	Kabale	43	1.7%
	Kanungu	45	1.8%
	Kisoro	45	1.8%
	Rukiga	5	0.2%
Lango	Amolatar	53	2.1%
	Apac	44	1.8%
	Kwania	47	1.9%
	Lira	49	2.0%
Teso	Kumi	47	1.9%
	Soroti	48	1.9%
Tooro	Bundibugyo	40	1.6%
	FortPortal City	61	2.5%
	Kabarole	68	2.7%
West Nile	Arua	46	1.9%
	Koboko	32	1.3%
	Madi Okollo	37	1.5%
	Moyo	31	1.3%
	Obongi	31	1.3%
	Packwach	35	1.4%
	Yumbe	34	1.4%

B Key Informant Interviews (KIIs)

The study engaged a diverse number of key informants which were represented by a total of 119 respondents across all regions of Uganda. These included 70.6% (84) Local Government Officials i.e., CAOs, DAOs, DISOs, LCs among others which formed majority of the respondents, 12.6% (15) NGOs and Community-Based Organizations while others included Telecom Operators (5), MoED (2), OPM (1), UCC/UCUSAF (6) and Others (6) (I.e., cultural leaders and community leaders).

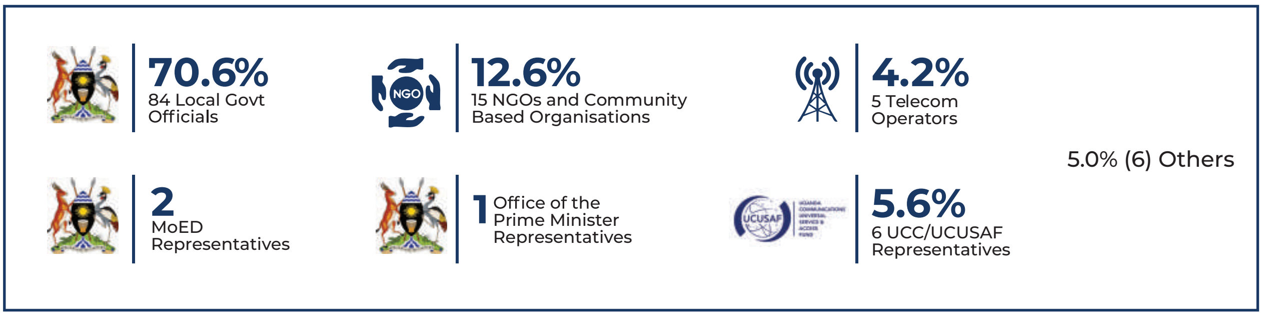


Figure 2: Profile of Key Informants

Among the 71 SMEs surveyed, the majority 62.0% (44) operated as **Mobile Money Agents**, being the most common form of digital enterprise in the area. **ICT-enabled SMEs** accounted for 25.4% (18) of the responses while **Digital Hubs or Innovation Centers** comprised 12.7% (9).

Figure 3: Number of SMEs considered in the study

C Focus Group Discussions (FGDs):

To explore community perspectives, especially from marginalized groups a total of 25 FGDs consisting of at least 4 respondents were conducted. These included 8 FGDs with Persons with Disabilities, 8 with Women and 11 FGDs with youths.

D Case Studies

The Uganda Communications Universal Service and Access Fund (UCUSAF) oversee about 10 programs, each comprising 3 to 6 distinct projects. As part of the study, a total of 21 case studies were conducted across various districts, including Pakwach, Lamwo, Kitgum, Pallisa, Mbale, Iganga, Kabale, Isingiro, Sheema, Ngora, Kyenjojo, Luwero, Kiboga, Buvuma, Kasese, and Kanungu. Beneficiaries from UCUSAF programs in these districts were selected, and their individual stories of impact were documented through video recordings. These are summarized in the table below.

Table 3: Case studies conducted per district

District	Gender	Subcounty-Village	Program Name/Type	Name of Partner/s that provided the service
Pakwach	Female	Jukutumu	ICT & Multimedia for Youth	Medea Vision & Gretek
	Male	pakwach town council	ICT & Multimedia for Youth	Medea Vision & Gretek
Lamwo	Male	padibe	Digital Literacy for Farmers	Makerere University CAES
	Female	Laguru	Digital Literacy for Farmers	Makerere University CAES
Kitgum	Female	Upland cell	digital literacy for women	Penda Capital
Pallisa	Male	Pallisa	ICT & Multimedia for Youth	Prime Time Communications
Mbale	Male	makhai	ICT Labs	Access IT
Iganga	Female	Boya	E-Booster Program	Suzzie Water
	Male	mowoya	E-Booster	Suzzie Water
Kabale	Male	Kabale sub county	Internet Connectivity	RENU
Isingiro	Male	N/A	Digital skilling program for farmers	Eight Tech consults ltd
Sheema	Female	Nyangasi village	Digital skilling program for farmers	Eight Tech consults ltd

Ngora	Female	Kobwin subcounty	Digital skilling program for farmers	Eight Tech consults ltd
Kyenjojo	Male	Butiti	Digital skilling for farmers	Eight Tech consults ltd
Luwero	Female	Zirwobwe	E-booster	Feast Consultants
Kiboga	Male	kiboga	Digital Literacy for Farmers	Eight Tech Consults
Buvuma	Female	bukayo	Digital Literacy for Rural Communities	Nkumba University
Kasese	Female	namwamba	Digital skills program	NUDIPU
Kanungu	Male	Mpungu	Digital Literacy for Rural Communities	Makerere University COCIS
Kanungu	Female	mpungu	Digital Literacy for Rural Communities	Makerere University COCIS
Pallisa	Female	Kisimu	Digital Skilling Program	Prime Time

Chapter three

FINDINGS

This section details the findings of the gap analysis as aligned to the study objectives i.e., Policy, Legal and Regulatory Environment Analysis, Telephony and Broadband Infrastructure coverage, Access and Usage of Digital Devices and Services, Access and Usage of Basic Communication Services by Refugees and PWDs, Socio Economic Impact of the Universal Access Gap and Finally Benchmarking Findings.

The findings are derived from a combination of primary data collection and secondary literature review, providing insights into the current state of policy and regulatory frameworks, infrastructure coverage, digital access, and the socio-economic implications of existing gaps.

3.1 Telephony and Broadband Infrastructure Coverage

According to the broadband baseline study report of 2022, conducted by UCC, a 10% increase in broadband adoption would mean higher gross domestic product (GDP) and more tax revenues for Uganda[12]. Uganda continues to report significant progress in expanding telecommunication coverage, access, and usage as evidenced by the various UCC quarterly market survey reports. As of July 2024, telecom service availability covered 56.5% (115,587 km²) of Uganda's total land area of 204,540 km², serving approximately 76% of the population through 7,296 telecom masts nationwide.

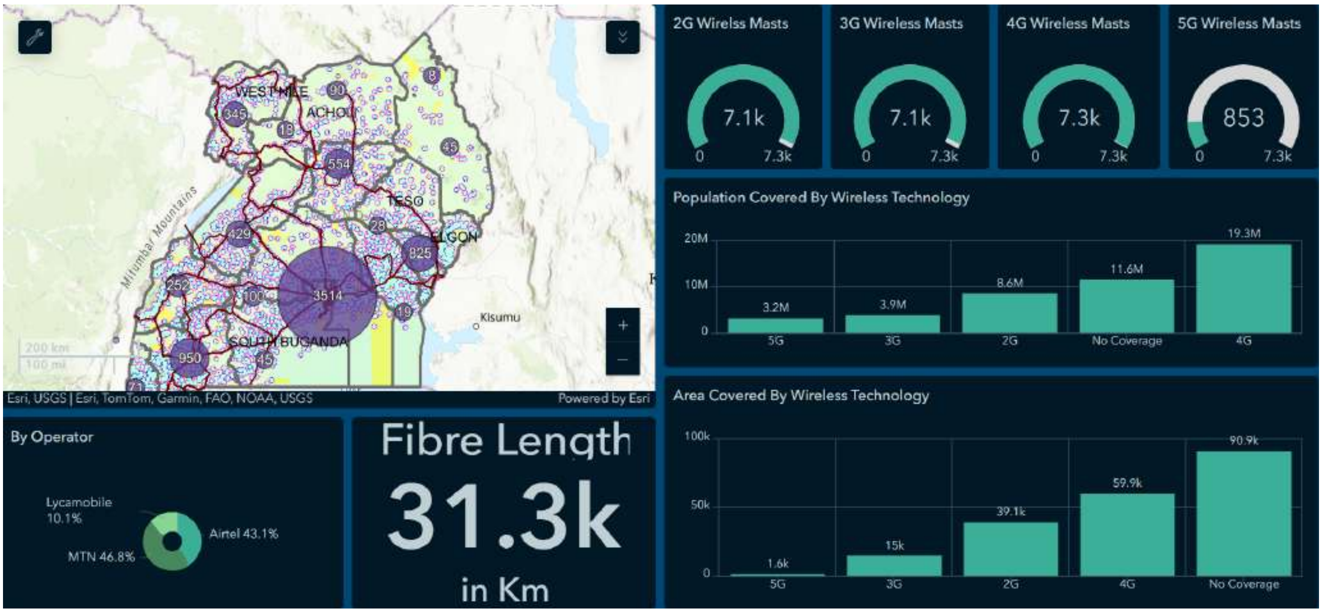


Figure 4: Summary of Telephony, Broadband, and Fiber coverage statistics as of July 2024 (Source: UCC Data)

The availability and accessibility of telecommunication infrastructure are critical for achieving universal access to ICT services. This section examines the current state of infrastructure coverage in Uganda, focusing on telephony and broadband services, regional disparities in access, and the key challenges inhibiting equitable distribution.

> "Data costs are high, especially for underserved communities, and it is not the only hindrance to access. Necessity also drives access. Some people in rural areas do not need broadband access. There is a necessity that doesn't drive services. There is also an issue of infrastructure, for example, Amudat has weak signal issues of 5G,4G, and 3 G. Infrastructure is based on a place, based on the need. In 2020, there was a levy tax on all data services. Can the demographic pay for the service, and to what extent shall they be able to pay for a return on investment for the companies?" **(Respondent MoES)**

12 National Broadband Baseline Survey & Infrastructure Blueprint, April 2022

3.1.1 Geographical and Population Coverage of Telephony and Broadband

The most extensively available network is 2G, accessible to 75.2% of the population, followed by 3G at 56.7%, 4G at 48.3%, and 5G at only 6.97%. These figures represent substantial growth and improvement compared to previous years.

Regarding fiber optic infrastructure, Uganda had a total network length of 31,336 km as of July 2024. By December 2024, the fiber optic coverage had significantly expanded to 47,771 km[13], representing a 41.9% increase from the previous year. Therefore, this section provides details on the telecom infrastructure coverage, fibre coverage, connectivity in schools and health facilities, and finally, survey results on internet usage.

It should, however, be noted that by press time, UBOS had not shared population statistics below district granularity for the national housing and population census of 2024 (NHCP 2024). The population estimates provided in this report were therefore computed from district population densities and the respective sub-county areas to arrive at sub-county population statistics. Population density is the number of persons residing in a square kilometer.

A Telecom Infrastructure Coverage for Telephony and Wireless Broadband

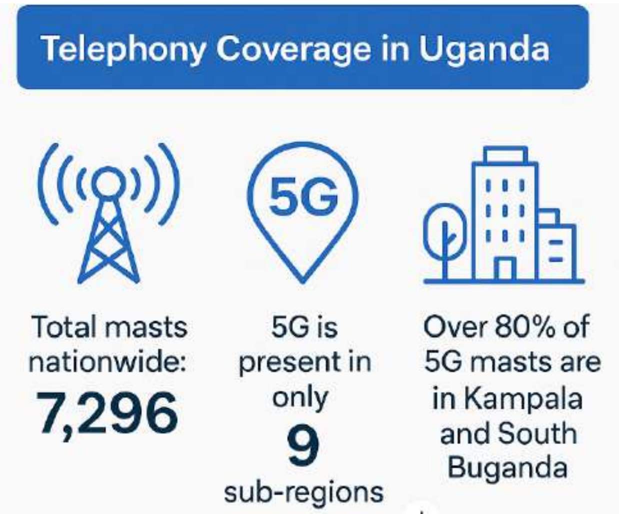
Uganda's telephony and wireless/Mobile broadband coverage is not evenly distributed, with urban centers such as Kampala, Entebbe, and Jinja enjoying extensive network coverage, while rural areas, especially in the Northern and Eastern regions of the country, still experience coverage gaps.

National Coverage in Summary: As of July 2024, telecom networks covered **56.5% of Uganda's land area** and **76% of the population** through **7,296 masts**. **2G** is the most widespread (75.2% population coverage), followed by **3G (56.7%)**, **4G (48.3%)**, and **5G (6.97%)**. **MTN leads** in coverage with **46.8%** coverage, followed by **Airtel at 43.1%**,

Detailed below are findings based on infrastructure data shared by UCC as of July 2024 on Masts and Network Coverage,

i. Masts Coverage

Telephony and broadband services are largely delivered by 7,296 masts. The 5 G deployment is still nascent, with only 854 masts operational, of which the majority (60%) are located in the Kampala and South Buganda sub-region



Kampala and South Buganda are the most connected regions with strong urban concentration of advanced connectivity, hosting the highest number of masts across all generations of wireless technology, including 526 and 227 5G sites, respectively. In contrast, Karamoja has the lowest coverage with only 75 masts, and no current deployment of 5G, reinforcing the region's persistent infrastructure gap

13 Market Performance Report Q4 2024 (Oct-Dec 2024)

Other sub-regions such as **Teso**, **Bukedi**, and **Elgon** also report relatively low mast counts, suggesting underserved populations and limited capacity for high-speed mobile internet. Detailed distribution of Masts is further broken down in the graph below;

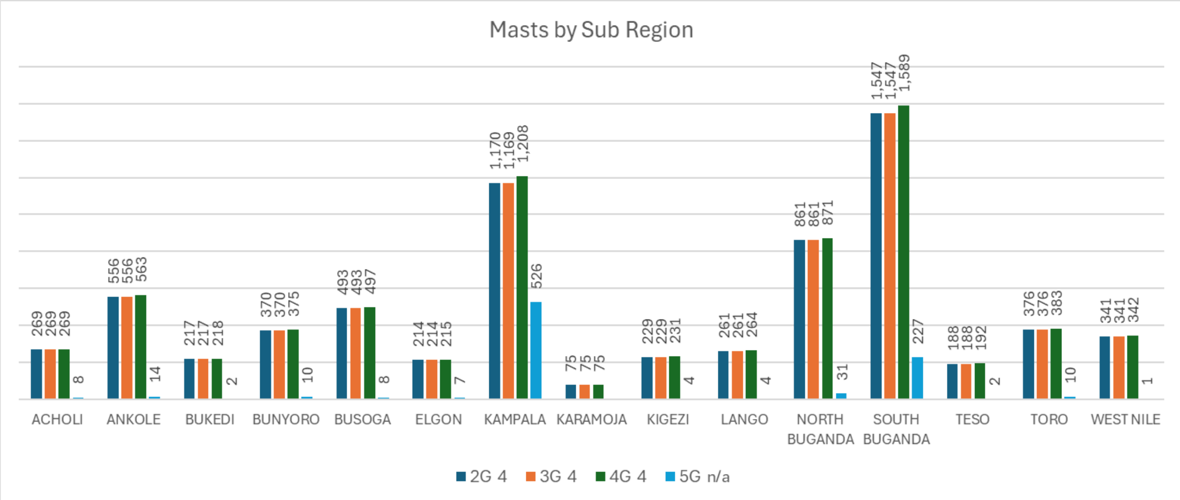


Figure 5: Masts by sub-region with different telecom technologies (Source: UCC Monitoring Data)

Findings also revealed **tower-sharing and technology upgrades on existing infrastructure**, which is a cost-effective deployment strategy. However, without equitable expansion of 4G and 5G in rural and remote areas, disparities in access to high-speed services will continue to widen. The data also highlights the need for targeted investments in regions such as **Karamoja, Teso, Bukedi and West Nile**, where telephony infrastructure is not yet sufficient to support inclusive digital development.

ii. Telephony and Broadband Coverage by Population

Overall, the most widespread network is 2G, accessible to 75.2% of the population, followed by 3 G coverage at 56.7%, 4G at 48.3%, and 5G at only 6.97%. The table below provides detailed information on the percentage area and population access of the different wireless networks

Table 4: Population Access to Mobile Network Technologies by Area and Coverage in Uganda

	Population with Access			
Technology Access	**Rural**	**Urban**	**Total**	**% Population**
Access to None	10,546,666	994,549	11,553,462	24.81%
Access to 5G	143,871	3,102,312	3,246,241	6.97%
Access to 4G	11,837,696	7,305,159	19,262,518	48.3%
Access to 3G	2,947,660	938,486	3,905,614	56.7%
Access to 2G	7,001,412	1,572,598	8,608,142	75.2%
Grand Total	**32,477,305**	**13,913,104**	**46,575,977**	

iii. Telephony and Broadband Coverage by Population

The analysis shows that 2G technology covers the largest proportion of Uganda's land area at 56%, followed by 3G at 37.1% and 4G at 29.8%. Access to 5G remains very limited, covering just 0.78% of the country. Notably, 44% of Uganda's area has no telecommunication network coverage at all, underlining significant access gaps that require urgent attention for universal service expansion. On further analysis per sub-region, **Karamoja** has the highest unserved population at **84.7%**. **Acholi** follows with **59.3%** unserved. Sub-regions like **Bukedi**, **Busoga**, and **Buganda** have lower unserved percentages below **15%**. **Kampala** is fully served (0% unserved). This further demonstrated in the figure below

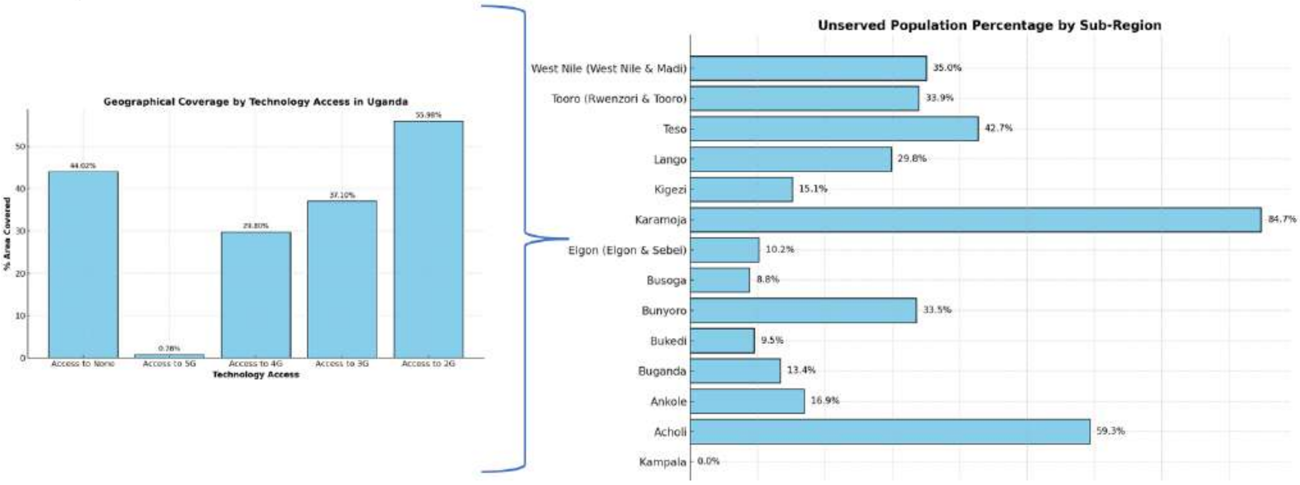


Figure 6: Geographical Coverage by Technology Access in Uganda (Source: UCC Data)

Figure 6 below further demonstrates the wireless technology coverage in Uganda – 2G, 3G, 4G and 5G by sub-regions within Uganda.

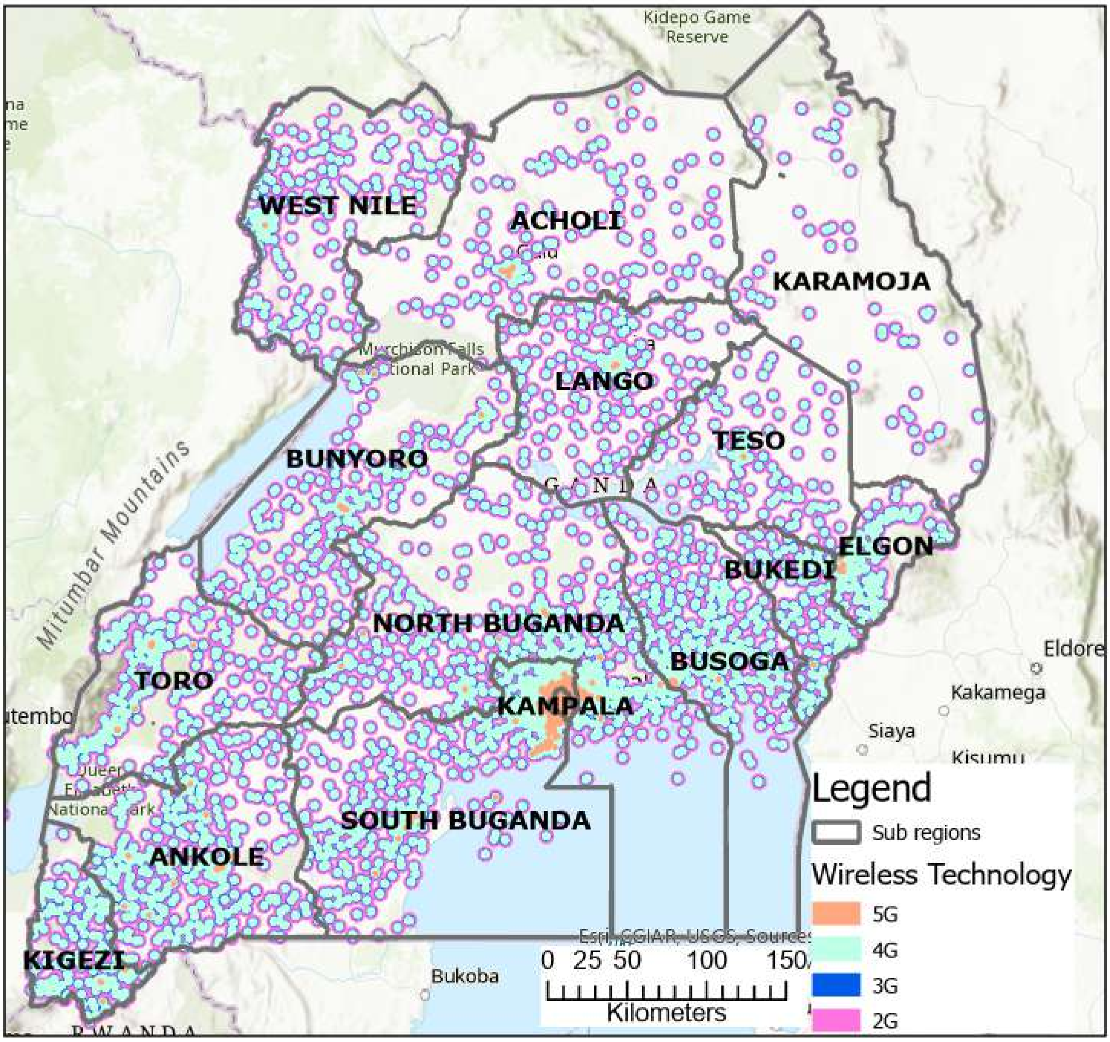


Figure 7: Network coverage in Uganda across all sub-regions within Uganda (Source: UCC data as of July 2024)

i. 2G Telephony and Wireless Broadband/Internet Coverage

The 2G mobile network in Uganda is supported by 7,171 telecom masts, covering approximately 55.98% of the country's geographical area and 75.2% of the population. While 2G coverage reaches 75.2% of the population, 18.48% of Ugandans rely solely on 2G services that support basic telephony, leaving them underserved without access to networks capable of wireless broadband. Similarly, although 2G spans a broad geographic footprint, 18.93% of the covered area is served exclusively by 2G, with no access to higher-speed networks.

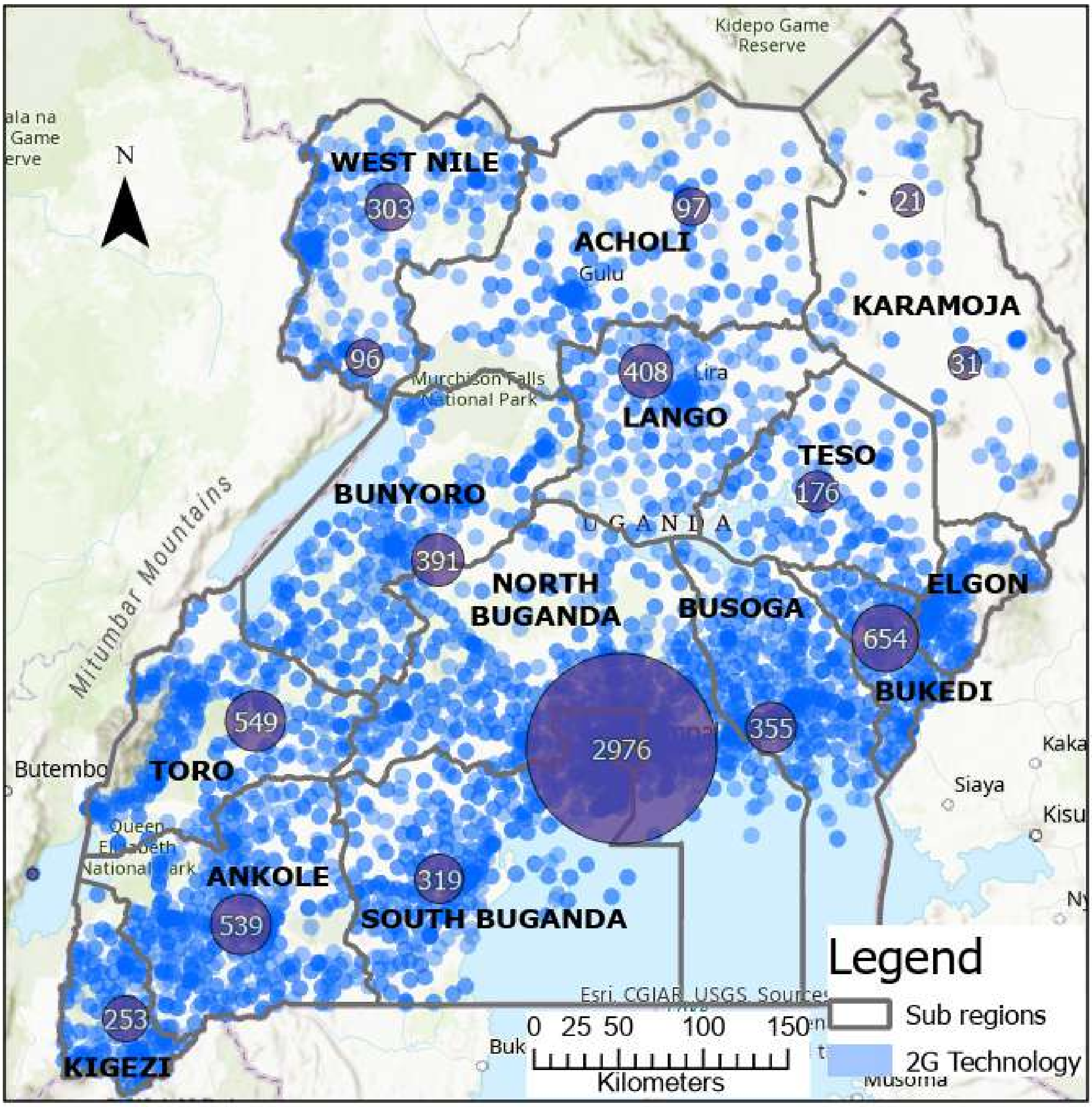


Figure 8. 2G technology coverage by sub-region; number of masts (Source: UCC Data as of July 2024)

By area, access to 2G seems to cover more area than all other technologies, as seen in the maps within figures 9 – 12. However, the fact that the same mast infrastructure holds technologies from to 2G to 5G, and all services are radiating from the same mast, in addition to 2G being phased out, it effectively remains actively used by only 8.6 million Ugandans Details of coverage by sub region are provided in table 4 below

Table 5: Analysis of 2G Network Coverage, Usage, and Unserved Population by Sub-region in Uganda

Sub region	Brief description	No. of Masts	% of Area coverage (2G)	% of Popn with access to 2G	% of Popn with access to only 2G
Kampala	The capital city has one district with a population of 1,797,722 people	1,170			
Acholi	8 districts and 1 city with 2,044,355 people	269	14.4	40.7	15.2
Ankole	12 districts and 1 city with 3,608,968 people	556	20.8	83.2	22.1
Buganda	26 districts, 11,171,924 people	2,408	21.0	86.6	14.3
Bukedi	7 districts, 2,372,489	217	22.3	90.5	22.1
Bunyoro	8 districts and 1 city, 2,792,732 people	370	21.5	66.5	23.7
Busoga	11 DLGs and 1 city, 4,363,295 people	493	22.4	91.2	20.3
Elgon (Elgon and Sebei)	9 DLGs and 1 city, 2,205,051 people	214	14.5	89.8	12.3
Karamoja	9 DLGs with 1,496,117 people	75	6.6	15.3	7.3
Kigezi	6 DLGs with 1,787,231 people	229	18.7	84.9	18.5
Lango	9 DLGs and 1 city, 2,546,118 people	261	25.9	70.2	25.1
Teso	10 DLGs plus 1 city and 2,462,387 people	188	21.7	57.3	22.45
Tooro (Rwenzori and Tooro)	9 DLGs plus 1city,3,387,628 people	376	20.6	66.2	19.9
West Nile (West Nile and Madi)	12 DLGs and 1 city 3,869,400 people	341	22.4	65	22.1

ii. 3G Telephony and Wireless Broadband/Internet Coverage

Uganda's 3G mobile network infrastructure is supported by 7,170 telecom masts, covering approximately 37.1% of the country's geographical area. The network reaches about 56.7% of the population, offering both 2G and 3G services. However, 8.39% of Ugandans rely on 3G as the highest available network, without access to more advanced technologies such as 4G or 5G. Similarly, only 7.26% of the country's total geographic area is exclusively served by 3G as the highest network standard.

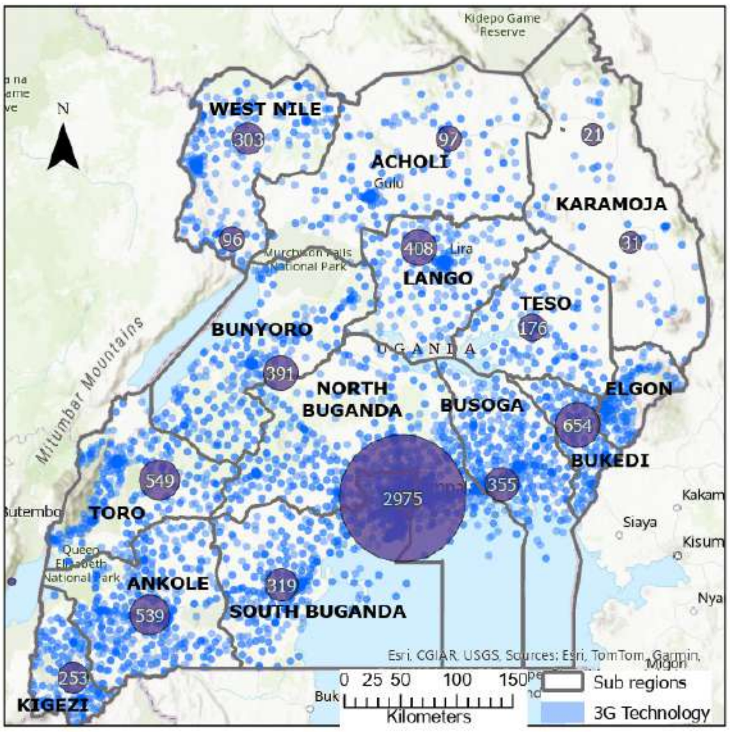


Figure 9 3G technology coverage by sub region; number of masts

Although the existing mast infrastructure simultaneously supports multiple network technologies including 3G, actual usage remains limited. Currently, only about 3.9 million Ugandans actively use 3G services of the population. Detailed regional coverage statistics are outlined in the table below.

Table 6: Analysis of 3G Network Coverage, Usage, and Unserved Population by Sub-region in Uganda

Sub region	Brief description	No. of Masts	% of Area coverage (3G)	% of Popn with access to 3G	% of Popn with 3G as the highest available network
Kampala	The capital city has one district with a population of 1,797,722 people	1,170		1	
Acholi	8 districts and 1 city with 2,044,355 people	269	4.06	25.51	4.77
Ankole	12 districts and 1 city with 3,608,968 people	556	10.72	61.04	11.07
Buganda	26 districts, 11,171,924 people	2,408	8.82	72.27	7.12
Bukedi	7 districts, 2,372,489	217	12.21	68.38	12.37
Bunyoro	8 districts and 1 city, 2,792,732 people	370	7.74	42.85	8.84
Busoga	11 DLGs and 1 city, 4,363,295 people	493	11.38	70.86	11.41
Elgon (Elgon and Sebei)	9 DLGs and 1 city, 2,205,051 people	214	7.06	66.42	6.94
Karamoja	9 DLGs with 1,496,117 people	75	1.8	8.01	1.99
Kigezi	6 DLGs with 1,787,231 people	229	10.57	66.47	10.57
Lango	9 DLGs and 1 city, 2,546,118 people	261	8.82	45.13	9.01
Teso	10 DLGs plus 1 city and 2,462,387 people	188	6.95	34.83	7.59
Tooro (Rwenzori and Tooro)	9 DLGs plus 1city,3,387,628 people	376	8.03	46.21	7.89
West Nile (West Nile and Madi)	12 DLGs and 1 city 3,869,400 people	341	7.83	42.95	8.29

iii. 4G Telephony and Wireless Broadband/Internet Coverage

Uganda's 4G network infrastructure is supported by 7,296 telecom masts, covering approximately 29.8% of the country's geographical area. This network reaches about 48.3% of the population, who also have access to 2G and 3G services since all technologies radiate from the same masts. Notably, only 41.36% of the covered population rely on 4G as the highest available network. Additionally, 29.0% of the total geographic area is served with 4G as the highest network standard, indicating a substantial improvement in broadband capacity compared to earlier technologies.

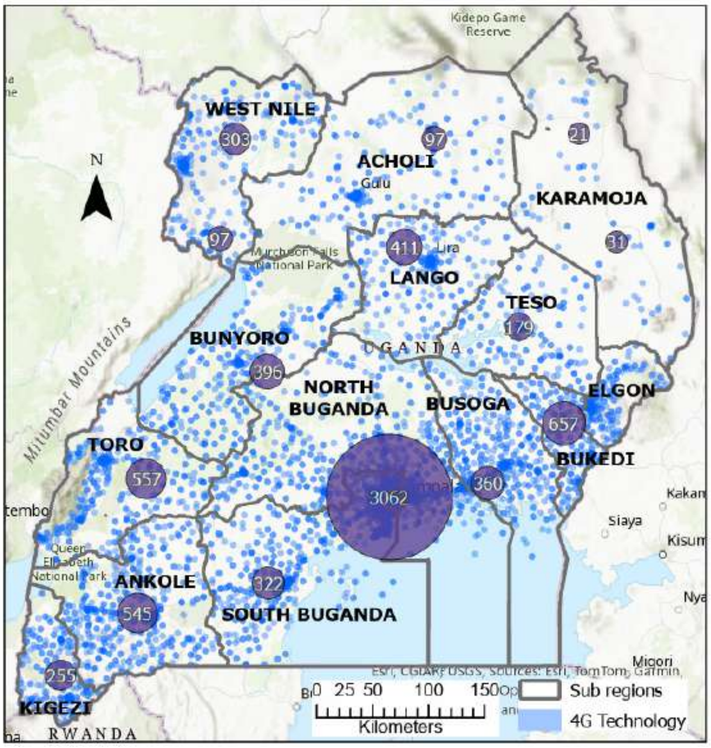


Figure 10 4G technology coverage by sub region; number of masts

4G coverage reaches about **19.3 million individuals**. Detailed regional coverage statistics are outlined in the table below.

Table 7: Analysis of 4G Network Coverage, Usage, and Unserved Population by Sub-region in Uganda

Sub region	Brief description	No. of Masts	% of Area coverage (4G)	% of Popn with access to 4G	% of Popn having 4G as the highest network
Kampala	The capital city has one district with a population of 1,797,722 people	1,170			
Acholi	8 districts and 1 city with 2,044,355 people	269	12.51	20.74	18.05
Ankole	12 districts and 1 city with 3,608,968 people	556	53.34	49.97	48.56
Buganda	26 districts, 11,171,924 people	2,408	38.65	65.15	42.98
Bukedi	7 districts, 2,372,489	217	54.46	56.01	55.47
Bunyoro	8 districts and 1 city, 2,792,732 people	370	28.45	34.01	33.12
Busoga	11 DLGs and 1 city, 4,363,295 people	493	54.31	59.45	58.01
Elgon (Elgon and Sebei)	9 DLGs and 1 city, 2,205,051 people	214	45.26	59.48	55..86
Karamoja	9 DLGs with 1,496,117 people	75	5.45	6.02	6.02
Kigezi	6 DLGs with 1,787,231 people	229	53.36	55.9	54.89
Lango	9 DLGs and 1 city, 2,546,118 people	261	29.35	36.12	35.37
Teso	10 DLGs plus 1 city and 2,462,387 people	188	22.97	27.24	26.91
Tooro (Rwenzori and Tooro)	9 DLGs plus 1city,3,387,628 people	376	34.14	38.32	37.26
West Nile (West Nile and Madi)	12 DLGs and 1 city 3,869,400 people	341	29.06	34.66	34.35

iv. 5G Coverage

The 5G network in Uganda is supported by 854 telecom masts, covering only 0.78% of the country's geographical area. Consequently, coverage is concentrated primarily in urban areas, with 3.1 million urban residents having potential access compared to just 143,871 rural residents. Overall, the 5G network reaches roughly 7% of Uganda's population.

Figure 11 5G technology coverage by sub region; number of masts

Further as shown in the table below detailed regional coverage statistics are outlined

Table 8: Analysis of 5G Network Coverage, Usage, and Unserved Population by Sub-region in UgandaSub

Region	Brief description	No. of Masts	% of Area coverage (5G)	% of Popn with access to 5G
Kampala	The capital city has one district with a population of 1,797,722 people	1,170		
Acholi	8 districts and 1 city with 2,044,355 people	269	0.21	2.69
Ankole	12 districts and 1 city with 3,608,968 people	556	2.51	1.41
Buganda	26 districts, 11,171,924 people	2,408	2.61	22.17
Bukedi	7 districts, 2,372,489	217	0.51	054
Bunyoro	8 districts and 1 city, 2,792,732 people	370	0.5	0.89
Busoga	11 DLGs and 1 city, 4,363,295 people	493	0.58	1.44
Elgon (Elgon and Sebei)	9 DLGs and 1 city, 2,205,051 people	214	1.09	3.62
Karamoja	9 DLGs with 1,496,117 people	75	0	0
Kigezi	6 DLGs with 1,787,231 people	229	0.8	1.01
Lango	9 DLGs and 1 city, 2,546,118 people	261	0.17	0.75
Teso	10 DLGs plus 1 city and 2,462,387 people	188	0.11	0.33
Tooro (Rwenzori and Tooro)	9 DLGs plus 1city,3,387,628 people	376	0.52	1.06
West Nile (West Nile and Madi)	12 DLGs and 1 city 3,869,400 people	341	0.09	0.31

In summary,

i. **Karamoja** has the largest connectivity gap, with **92%** of its population either underserved or unserved driven largely by limited infrastructure investment and challenging terrain.
ii. **Acholi, Teso, West Nile, and Bunyoro** sub-regions also face substantial access gaps, with over **50%** of their populations falling in the underserved or unserved categories.
iii. **Buganda and Elgon** (Bugisu and Sebei) have the smallest connectivity gaps at **27.7%** and **22.5%**, respectively, benefitting from higher infrastructure concentration and urban proximity.
iv. **Lango, Tooro, and Bukedi** sub-regions fall in the mid-range, with existing gaps ranging between **31% and 55%**, indicating partial coverage but still significant access barriers for many communities.
v. **Urban centers like Kampala** show negligible access gaps due to their small size and dense network coverage, but rapid urbanization may present emerging challenges if infrastructure doesn't scale proportionally.

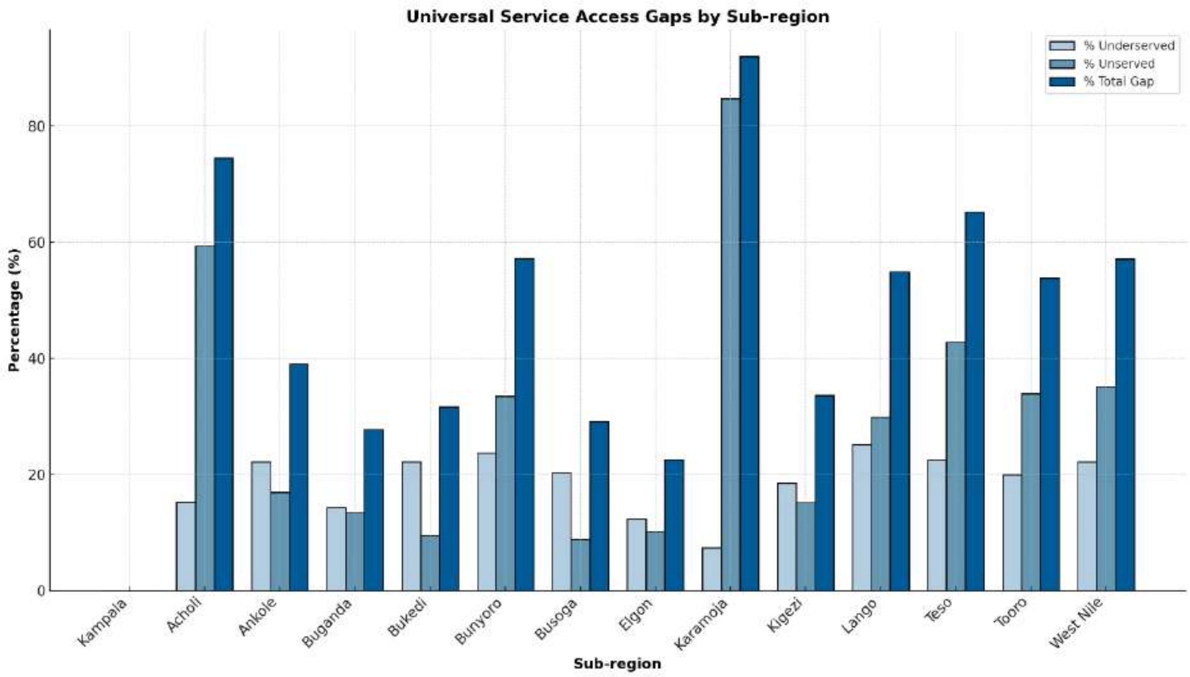


Figure 12: Percentage of unserved and underserved population per sub-region

B Quality of Service

The Quality of Service (QoS) was assessed for both voice and data networks in regards to

- CSSR - Call Setup Success Rate,
- BCR - Call Block Rate,
- DCR - Call Drop Rate, and finally
- Data KPIs - Key Performance Indicators for data services (e.g., internet speeds)

1. Call Setup Success Rate (CSSR)

While some urban centers meet the minimum quality standards, several districts and regions across Uganda exhibit critical gaps in voice call connectivity, with multiple operators falling below the UCC's 95% CSSR threshold. CSSR represents the percentage of call attempts that successfully connect to the called party. A high CSSR is a strong indicator of good network availability and setup quality.

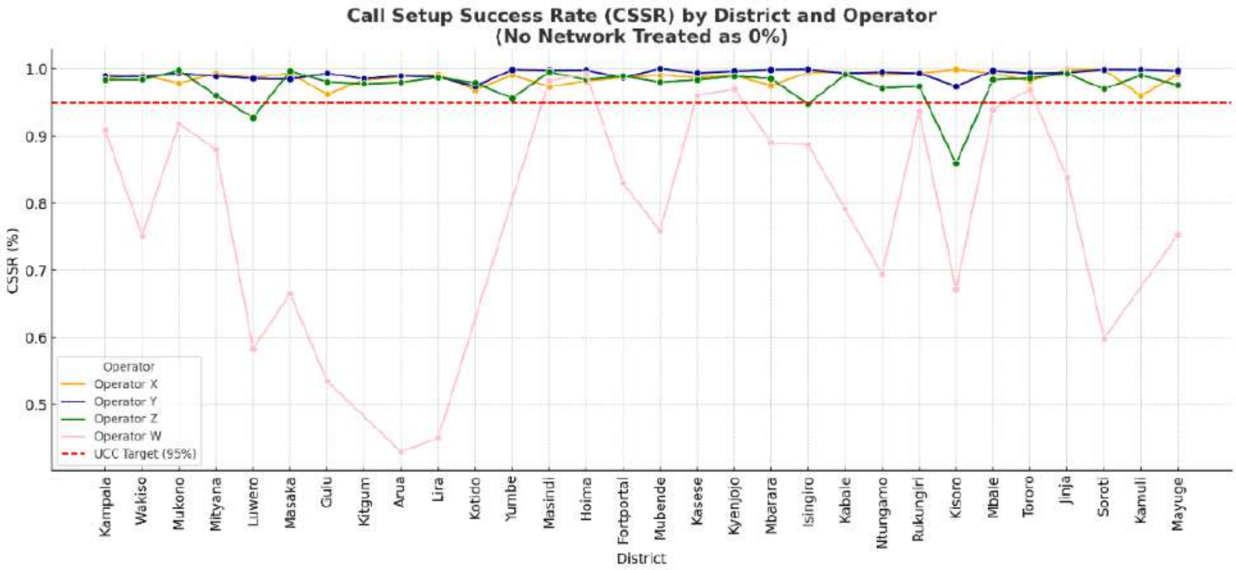


Figure 13: Call Setup Success rate (CSSR) by District and Operator (Source- UCC Sept, 2024)

The chart above reveals mixed performance across districts not all districts have good network quality. Districts like Kampala, Wakiso, and Mukono show consistently high CSSR (Greater or equal to 95%) across all or most operators. These are generally urban areas with better infrastructure and operator investment. While districts such as Luwero, Mityana, and others show one or more operators dipping well below 95%, sometimes even hitting 0% (No Network). This indicates either infrastructure gaps, coverage limitations, or network congestion in those areas.

2. **BCR - Call Block Rate**

BCR indicates the proportion of call attempts that fail due to network congestion or setup failure before ringing. Lower BCR signifies better quality of service. UCC's performance target is less than 2% (<0.02). **The Call Block Rate (BCR) chart reveals that numerous districts experience Low blocked call rates exceeding the UCC target of 2%, however Operator Z & W are consistently above the target. This indicates persistent network congestion or access limitations in certain areas.** Districts like Luwero, Kisoro, and Gulu show repeated spikes above 2%, with some hitting very high block rates suggesting capacity or congestion issues.

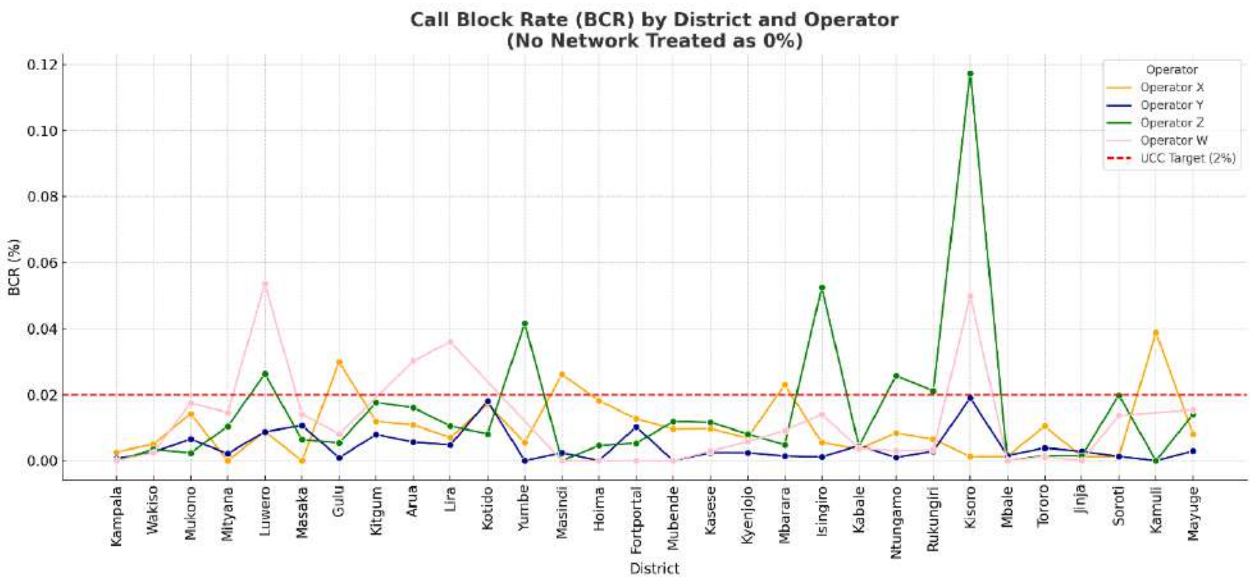


Figure 14: Call Block Rate (BCR) by District (Source – UCC Sept 2024)

3. **DCR - Call Drop Rate**

DCR measures the percentage of calls that are unintentionally terminated due to technical faults after being successfully connected. Lower values indicate better reliability. UCC's target for DCR is less than 2%. Almost all d**istricts fall below the UCC target provided, with only operator Z having challenges with high call drop rates.**

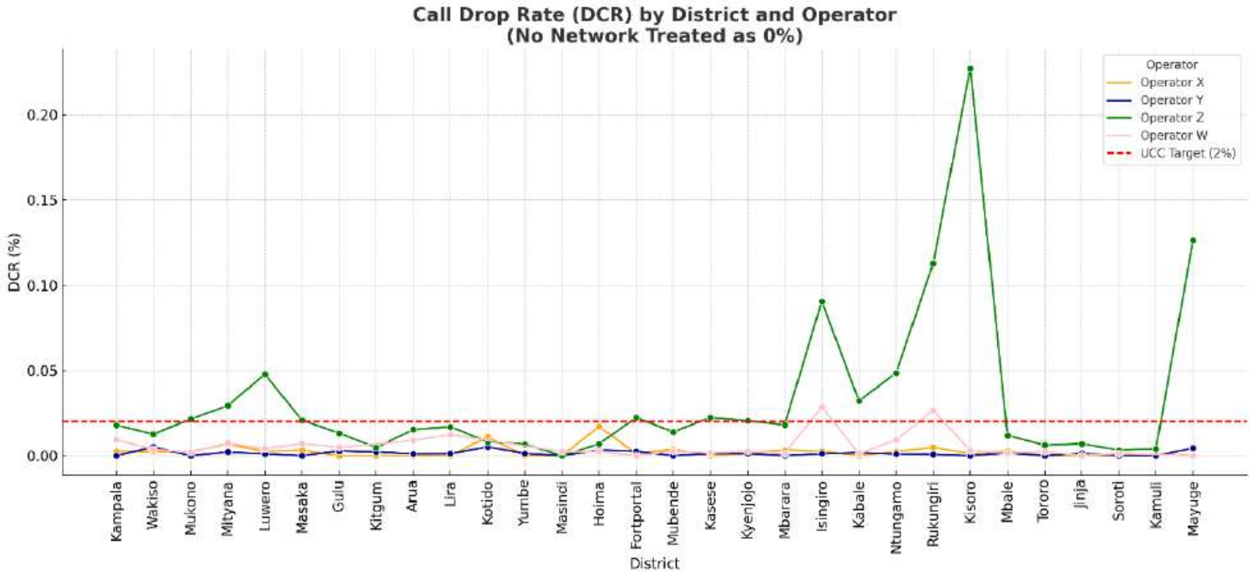


Figure 15: Call Drop Rate across districts (Source – UCC Sept 2024)

4. Data KPIs - Internet Quality

Main areas of analysis included the 1. speed performance i.e., the HTTP download and upload speeds, the FTP download and upload speeds and, 2. Success Rates i.e., the HTTP download and upload success rates, 3. Latency and finally Data Loss & Reliability.

i. Speed Performance

HTTP Download and Upload Speeds Across Towns

Out of the 30 towns assessed, 0 towns had all three operators falling below the 10 Mbps benchmark for both download and upload speeds via HTTP. This means each town had at least one operator offering compliant or near-compliant performance a positive sign of baseline broadband availability.

According to the ITU Broadband Commission and supported by the World Bank's DE4A framework, a minimum speed of 10 Mbps per user is increasingly seen as the baseline for meaningful broadband access.[14] The figure 15 below illustrates the average HTTP download (DL) and upload (UL) speeds in kbps across various towns, measured for Operators X, Y, and Z. Despite some towns achieving high speeds, many districts in Uganda still fall below the 10 Mbps benchmark, particularly for download speeds signaling that consistent broadband access remains a challenge.

14 The State of Broadband 2021: People-Centred Approaches for Universal Broadband ITU/UNESCO Broadband Commission for Sustainable Development

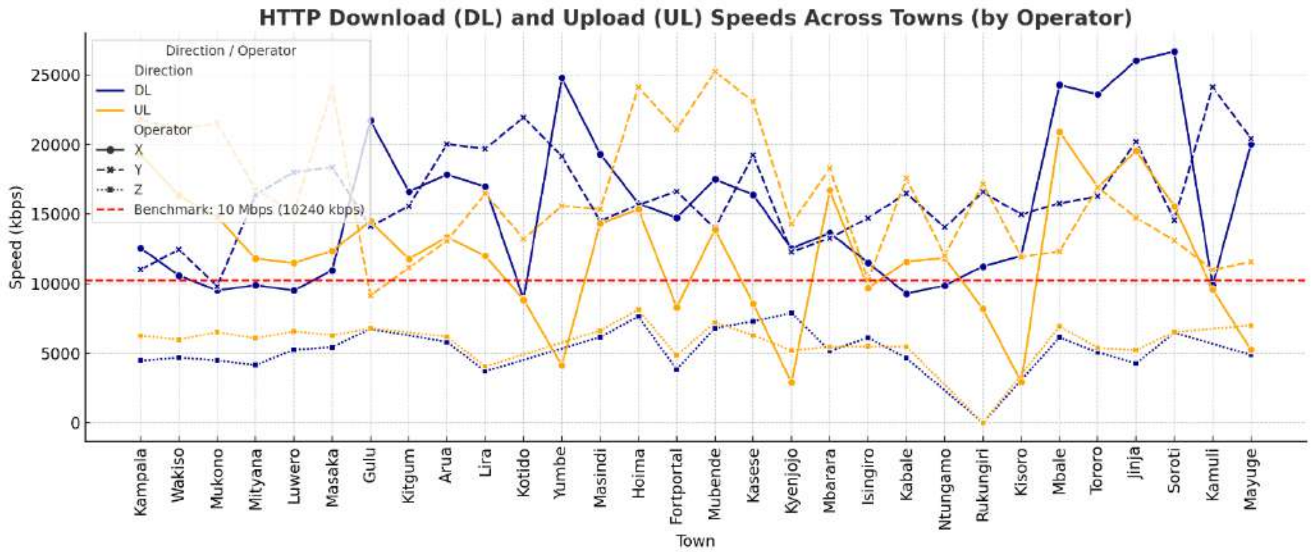


Figure 16: HTTP Download and Upload Speeds Across Towns (by Operator) (Source – UCC Sept 2024)

Download (DL) speeds are generally better than Upload (UL) across all operators. There's operator underperformance especially in towns like Kyenjojo, Kisoro, Rukungiri, and Luwero, where both DL and UL fall well below 10 Mbps. Kampala, Wakiso, and Mbarara generally showed DL speeds above 10 Mbps on at least one or two operators, making them relatively better served. No town achieved consistent UL speeds ⩾ 10 Mbps across all operators.

Towns with operators that fail to meet the 10Mbps may struggle with Reliable web access, Video conferencing and Cloud-based services. There's therefore a need for Balanced infrastructure expansion, Stronger upstream network capacity and Performance-based regulation and benchmarking

FTP Download and Upload Speeds Across Towns

FTP speeds which simulate larger file transfers show even wider disparities, with more towns falling below the 10 Mbps benchmark, especially for upload speeds. Download speeds are stronger than upload speeds for all operators. Towns like Lira, Rukungiri, Kisoro, Mayuge, and Kyenjojo are consistently under the benchmark across all operators which reflects infrastructure gaps or limited backhaul capacity. However, towns such as Masaka, Kampala, Arua, and Soroti show FTP DL/UL speeds above 10 Mbps, supporting efficient digital transactions and bulk uploads. This is further demonstrated in the figure below

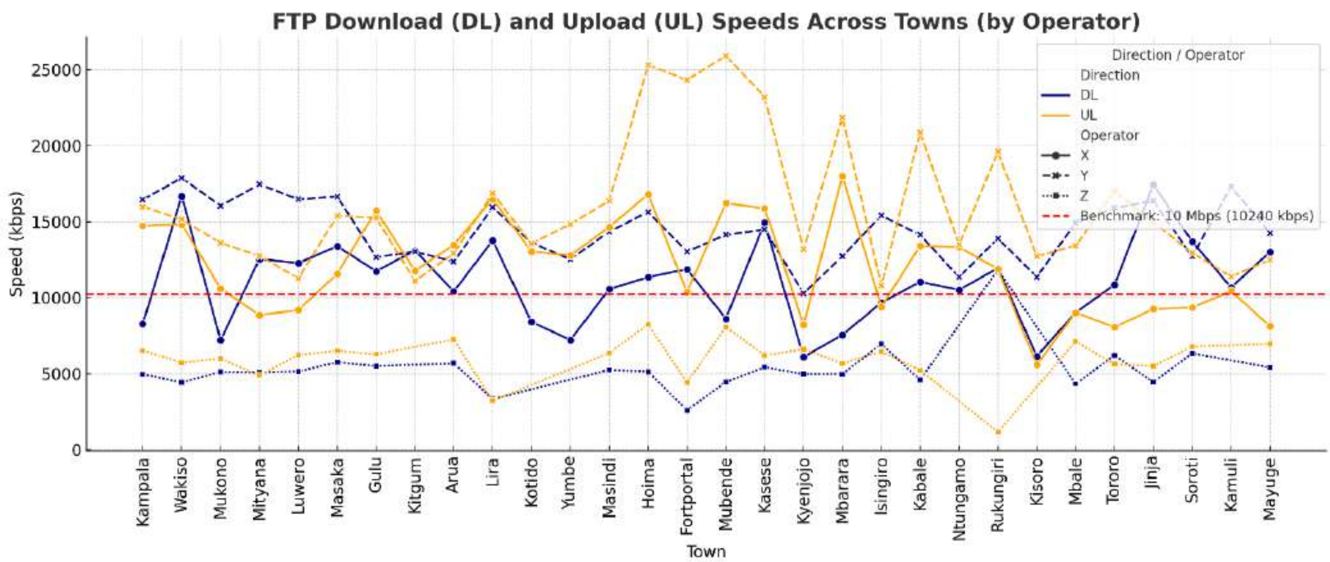


Figure 17: FTP Download (DL) and Upload (UL) Speeds Across Towns (Source UCC-Sept 2024)

ii. HTTP DL and UL Success Rates

Out of 30 towns assessed, 7 towns had all three operators failing to meet the 95% success rate benchmark for both HTTP Download and Upload i.e., Mityana, Luwero, Masaka, Kisoro, Kamuli, Yumbe and Isingiro. This points to a critical gap in basic accessibility, where users frequently fail to establish or complete data requests. However, several towns still show success rates below the 95% threshold, suggesting unreliable service setup and delivery, especially on download requests. Therefore, posing a high likelihood of Frequent web/app access failures, Interrupted sessions and Poor user satisfaction

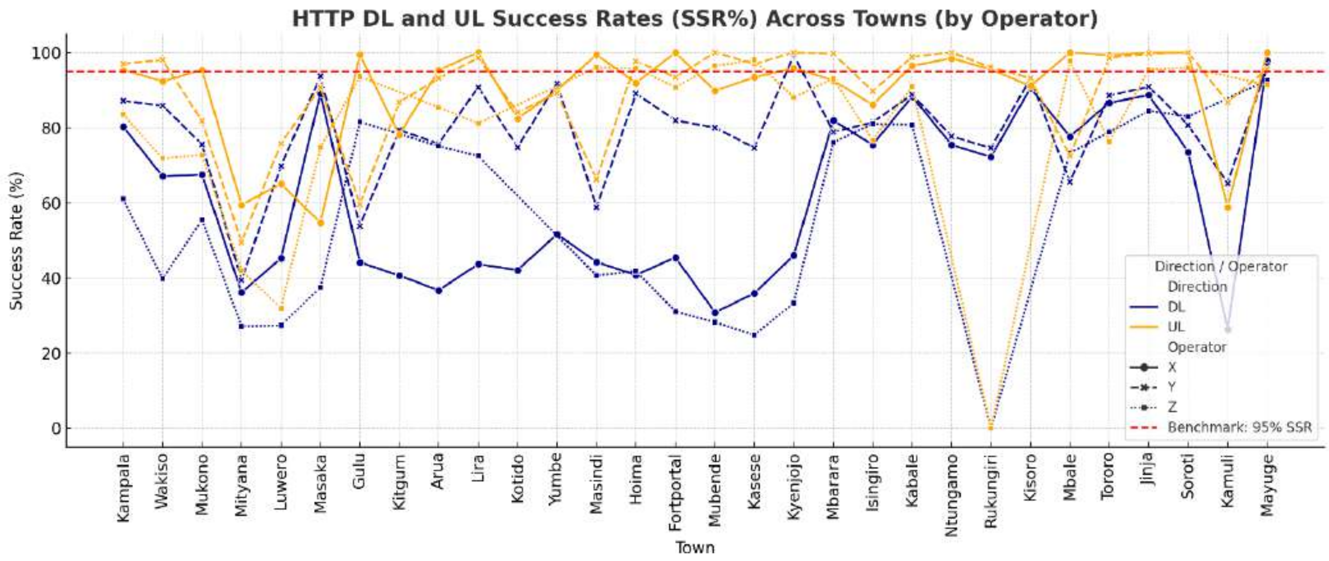


Figure 18: HTTP DL and UL Success Rates across different towns (Source – UCC Sept 2024)

iii. Latency and Responsiveness

According to ITU Recommendations, For high-interactivity services, a stricter 70 ms RTT is used in practice for good QoE.[15] Therefore using this as the benchmark for good QoE, **out of the 30 towns assessed, only 1 town Isingiro had all three operators recording latency above 70 ms, exceeding the recommended benchmark for real-time applications.** Most towns maintain latency below or near 70 ms, which is suitable for activities like browsing, video calls, and streaming.

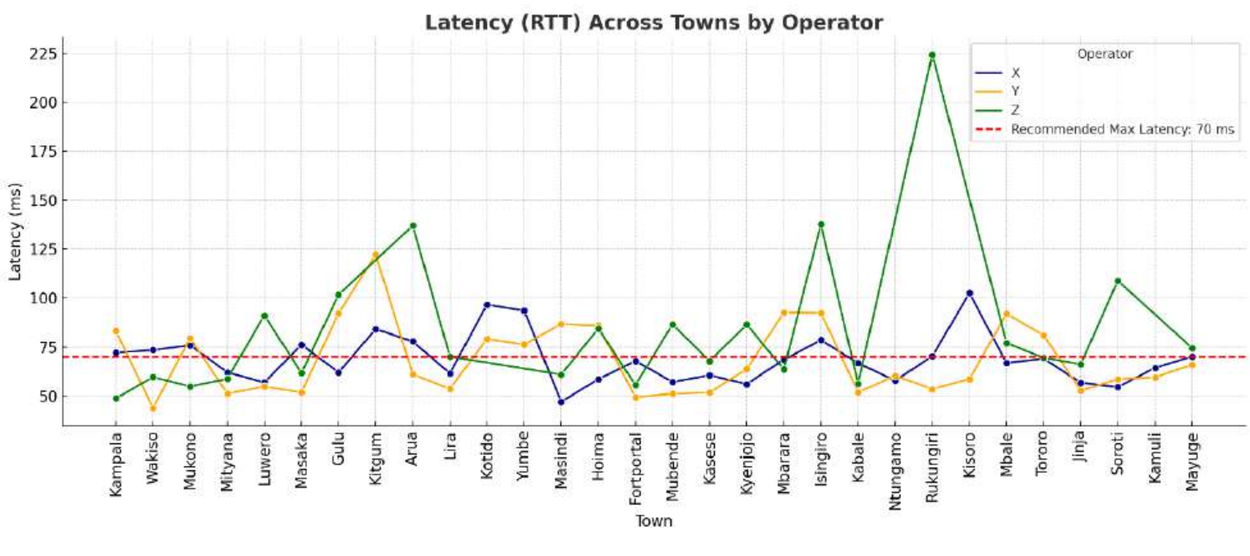


Figure 19: Latency across towns by operator

15 T-REC-Y.1541-200402-S!Amd2!PDF-E.pdf

High latency can severely degrade real-time communication, making **education, health, and business applications less usable** in the area therefore attention should be paid to towns with high latency

iv. Data Loss & Reliability

Using the **2%** which reflects the maximum acceptable threshold (per ITU-T Y.1541 and general QoE standards)[16]. **Out of 30 towns assessed, 10 towns had all three operators recording packet loss above the 2% benchmark, indicating systemic reliability issues that can significantly degrade user experience as demonstrated in the figure below**

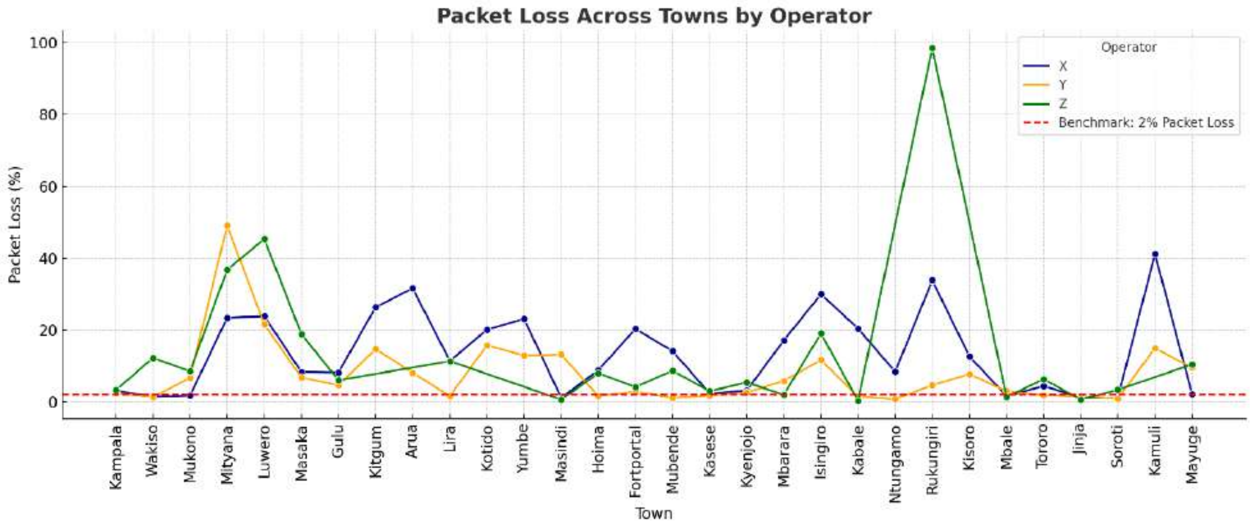


Figure 20: Packet Loss Across Towns by operator

In summary, Towns with issues in more than one thematic area include:

- Isingiro - Fails in SSR%, Latency, and Packet Loss
- Luwero, Mityana, Masaka - Fail in SSR% and Packet Loss
- Rukungiri, Mayuge - Fail in Packet Loss and show high latency

C Fibre Coverage

Fibre coverage is currently at 31,336 km (July 2024). However, according to the UCC Market Performance report of 2024 Q4[17], the coverage was estimated at 47,771km. This indicates an increase of 41.9%. By 2023, **176 schools** had ICT labs, **183 ICT clubs**, and **57 public libraries** had internet access points.

According to the metadata availed from the UCC engineering unit as of July 2024, analysis revealed a total coverage of up to 31,336 Km across the country passing through 648 sub counties out of 2,252 as further demonstrated in the map and table below. The distribution is highly uneven across sub-regions with **South Buganda** (5,751 km) and **Kampala** (4,534 km) leading in connectivity, reflecting higher urbanization and economic activity. Regions like **West Nile**, **North Buganda**, **Ankole**, **Acholi**, and **Bunyoro** also show strong investment, supporting both urban centers and strategic industries. In contrast, sub-regions such as **Kigezi**, **Bukedi**, **Teso**, and **Elgon** have significantly less fiber infrastructure, while **Karamoja** remains completely unconnected with **0 km**, highlighting a critical digital divide. This pattern underscores a persistent rural-urban gap in digital infrastructure, with underserved regions requiring urgent, targeted investment to promote inclusive digital transformation across the country.

16 Y.1541 : New Appendix XI - Concatenating QoS values
17 UCC-Market-Report-for-Q4-2024-December-2024.pdf

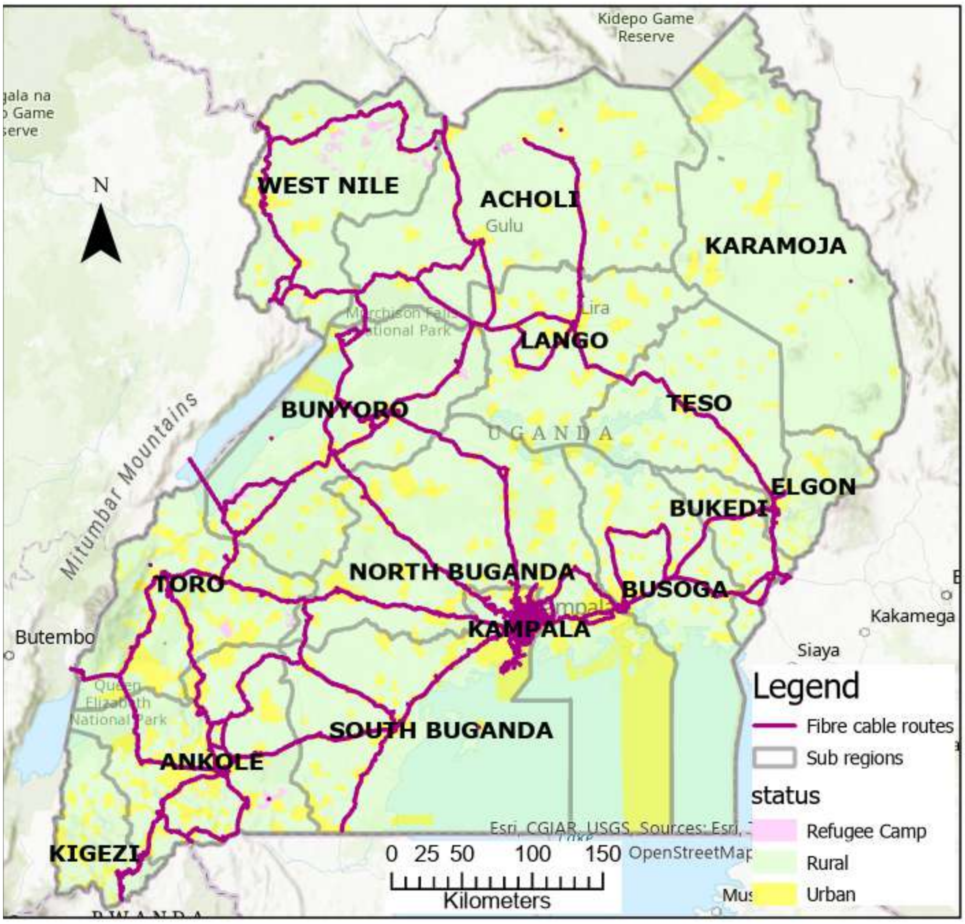


Figure 21: Fibre Cable routes in Uganda, source UCC July, 2024

Detailed fibre length per sub-region

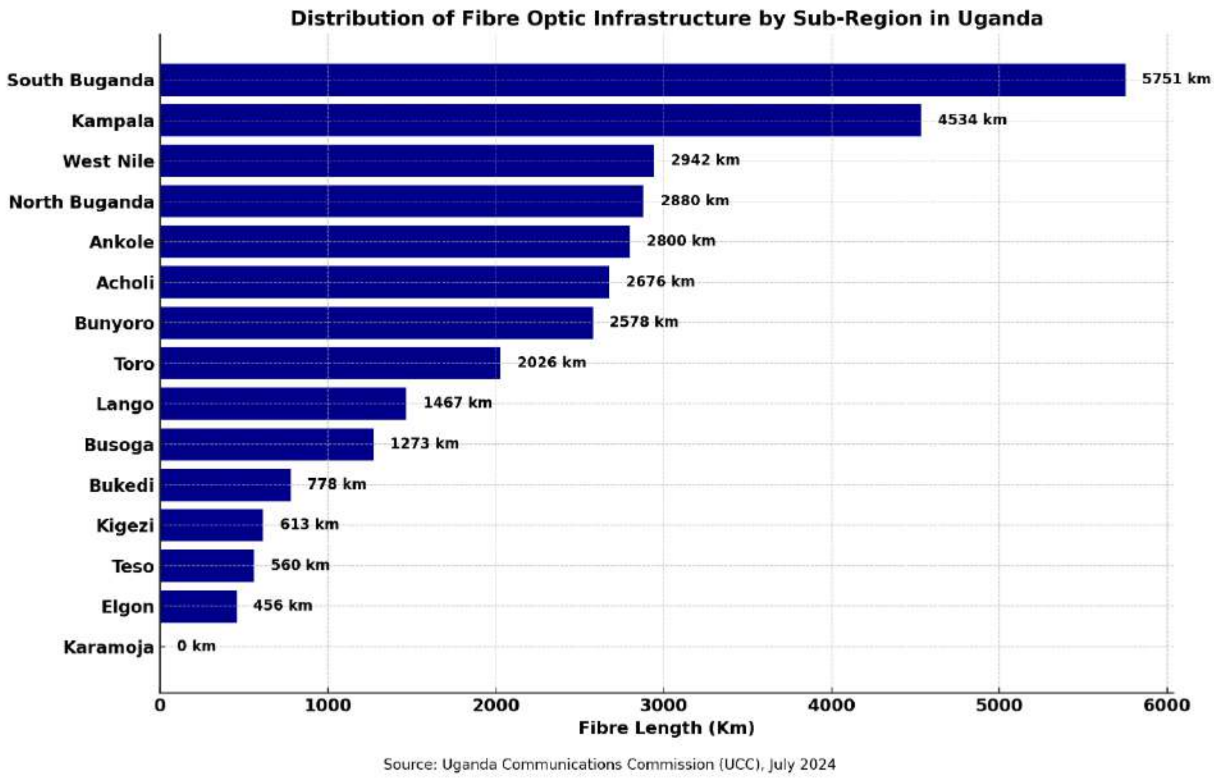


Figure 22: Distribution of Fibre Optic Infrastructure by Sub-Region in Uganda

Meanwhile, as shared by UCC, the **planned fiber extensions** aim to bridge gaps in underserved and unconnected regions most notably **Karamoja, Elgon, and parts of northern Uganda** supporting the goal of achieving equitable nationwide connectivity.

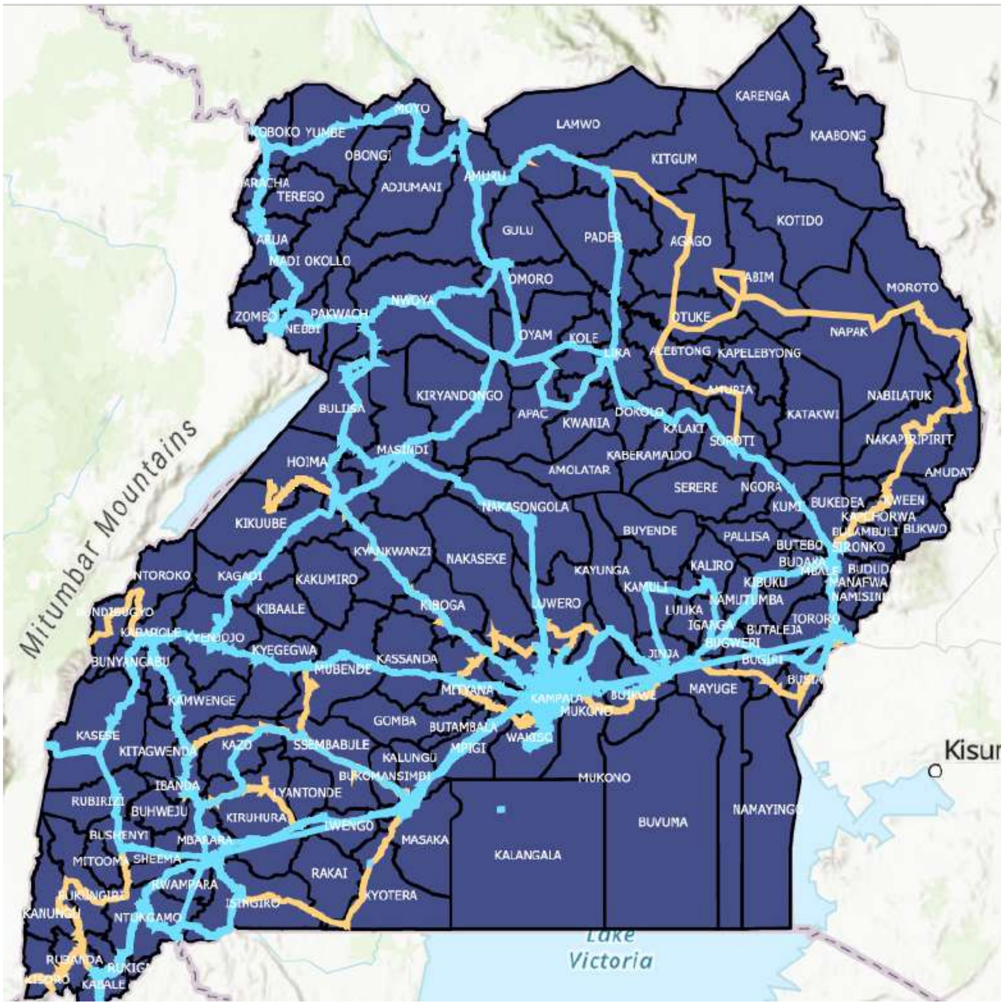


Figure 23: Map showing Current Fibre Footprint vs Planned (Source UCC)

According to NITA-U National Backbone Infrastructure Project, Uganda's fiber optic network has expanded significantly, with the launch of Phase V of the National Backbone Infrastructure (NBI) in December 2024 by the The National Information Technology Authority-Uganda (NITA-U) has played a key role in expanding the National Backbone Infrastructure (NBI) with 57% finished[18].

Currently, the NBI is connected to 60 towns in Uganda. Phase I of the NBI connected 27 MDAs with Kampala, Mukono, Jinja, Entebbe, and Bombo using 168 Km of Optical Fibre Cable (OFC). Phase II added Busia, 2 Tororo, Mbale, Malaba, Kumi, Soroti, Lira, Gulu, Elegu border, Nakasongola, Masindi, Luwero, Fort Portal, Kasese, Bushenyi, and Kyenjojo on the NBI with the laying of an extra 1,368.39 Km of OFC. Phase III of the NBI added 407.8 Km of OFC onto the network to connecting Masaka, Mbarara, Kabale, and Katuna border. Phase IV of the NBI connected the entire West Nile, Moroto and Mpondwe border and added 848 Km. The last mile project extended the NBI to Wakiso, Mityana, Mubende, Kyegegwa, Kamwenge, Ibanda and Mirama Hills adding 732 Km into the network and scaling the number of sites by 764[19].

D Connectivity in Public Institutions

Efforts to enhance connectivity in Uganda's public institutions have been ongoing. By 2023, the Uganda Communications Commission (UCC) through the Uganda Communications Universal Service and Access Fund (UCUSAF) had implemented initiatives such as; 176 schools were equipped with ICT labs, and 183 schools had established ICT clubs. Additionally, public internet access points were set up in 57 libraries and

18 57% Of the National Backbone Infrastructure Project Is Finished, According To NITA-U - infrastructure.go.ug

19 Terms Of Reference For The Study Of Mobile Broadband Deployment In Rural Areas, 2024

other centres, as well as 12 border posts, to facilitate broader access to digital resources.[20]

In regards to Primary and Secondary schools within 100 meters of fibre access, out of 20,479 schools based on 2016 data, 12.1% (2,470 schools) potentially have access to fibre by 2025 based on analysis. Their breakdown is as follows from analysis

Table 9: Number of Primary and Secondary schools with access to fibre

	Schools with access to Fibre					
Type/Owner	**Community**	**Government**	**Other**	**Private**	**Unknown**	**Total**
Primary	90	630	3	1072	9	**1804**
Secondary	49	112		503	2	**666**
Grand Total	**139**	**742**	**3**	**1575**	**11**	**2470**

In regard to connectivity in public offices and Health centers the Phase V of the NBI Project Launched in December 2024 are one of the initiatives that are currently targeted to add 5,845 kilometers of fiber optic cable to the existing infrastructure.[21] The expansion focuses on connecting all major towns and government institutions, including health facilities, to the optical fiber network.

Based on Uganda's 2019 statistics, the country had approximately 3,714 health facilities across various levels and ownership types. However, as of July 2024, only about 14.3% of these facilities had access to fiber optic connectivity, underscoring a substantial digital divide in the healthcare sector..

The table below has details on the analysis done.

Table 10: Health Facilities with access to fibre optic amongst different categories

Health facility/level	Facilities with access to fibre optic amongst different categories					
	Gov't	**NGO**	**Private For Profit**	**Private Not For Profit**	**Other**	**Total**
Clinic	3	5	18	4	54	84
General Hospital	15		4	19		38
HC II	80	6	37	54	41	218
HC III	88	4	7	39	3	141
HC IV	32			7		39
NR Hospital	2					2
RR Hospital	9					9
Grand Total	229	15	66	123	98	531

From the analysis of access of fibre in Primary and secondary schools within 100 metres of fibre access, out of 20,479 schools by 2016, 2,470 potentially have access to fibre by 2025. Their breakdown is as follows:

Table 11: Primary and Secondary schools within the reach of fibre

Type/Owner	Community	Government	Other	Private	Unknown	Total
Primary	90	630	3	1072	9	1804
Secondary	49	112		503	2	666
Grand Total	139	742	3	1575	11	2470

These findings underscore the urgent need for targeted initiatives to extend reliable connectivity to schools and health facilities, ensuring that these critical public institutions are not left behind in the country's digital transformation agenda.

20 Internet Connectivity
21 President Museveni Launches Phase V of National Backbone Infrastructure to Boost Uganda's Digital Connectivity and Development - Uganda Broadcasting Corporation

Subscriber Statistics

The number of active subscribers has grown notably as extracted from the UCC market performance report (2020-2024)

i. **Active Mobile Subscriptions**: Increased from 27.7 million in 2020 to 40.0 million in 2024.

ii. **Active mobile Internet Subscriptions**: Declined from 21.4 million in 2020 to 17.2 million in 2024.

iii. **Mobile Money Subscriptions**: Expanded from 28.0 million in 2013 to 30.4 million in 2024.

These findings are further detailed in the figure below

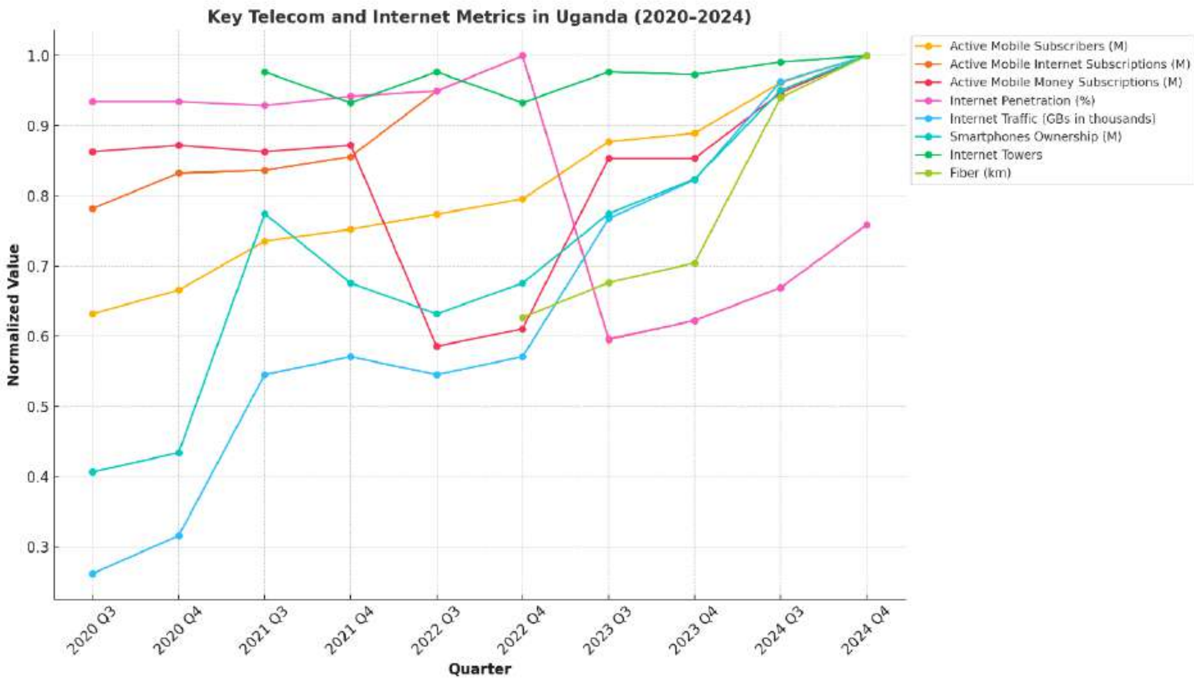


Figure 24: Key telecom and Internet Metrics (trends) in Uganda (2020-2024) Source UCC Market Performance Reports

Below is a detailed table with detailed statistics over the years,

Details	2020		2021		2022		2023		2024	
Service Type	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4	Q3	Q4
Active Mobile Subscribers (millions)	26.3	27.7	30.6	31.3	32.2	33.1	36.5	37.0	40.0	41.6
Active Mobile Internet Subscriptions (millions)	20.1	21.4	21.5	22.0	24.4	25.7	15.3	16.0	17.2	19.5
Active Mobile Money Subscriptions (millions)	27.7	28.0	27.7	28.0	18.8	19.6	27.4	27.4	30.4	32.1

Percent-age Internet penetration (Active Mobile Internet Users / % population)	50	50	49.7	50.4	50.8	53.5	31.9	33.3	35.8	40.6
Internet traffic (GBs downloaded)	59300	71,500	123.5	129.3	123.5	129.3	173.9	186.4	218.1	226.5
Details	**2020**		**2021**		**2022**		**2023**		**2024**	
Service Type	**Q3**	**Q4**	**Q3**	**Q4**	**Q3**	**Q4**	**Q3**	**Q4**	**Q3**	**Q4**
Smartphones ownership (millions)	7.4	7.9	14.1	12.3	11.5	12.3	14.1	15.0	17.3	18.2
Internet towers (telecom sites)	-	-	5,084	4,855	5,084	4,855	5,084	5,064	5,158	5,204
Fiber (kilometers)	-	-	-	-	10 Mbps – 1 Gbps	29,947	32,320	33,653	44,910	47,771

These figures reflect a positive trend in digital adoption; however, disparities remain across different districts, with rural areas lagging behind in subscription rates.

F Access and Usage of Internet

Results from the Survey displayed the same patterns as seen in those on telecom infrastructure coverage i.e., 43.4% had access to internet, and Buganda had the highest (67.1%) number of respondents indicating to have access to the internet. Over **56% of rural respondents** report challenges accessing mobile networks, especially in **Teso, Acholi, and Karamoja**. **Barriers include high costs, lack of digital devices, poor infrastructure, limited power, and low digital literacy**

From the survey findings, respondents were asked for their opinions on the availability of internet across their regions of residence.

a) Internet Access

According to the baseline broadband study 2022, It is noted that a 10% increase in broadband adoption would mean higher gross domestic product (GDP) and more tax revenues for the state[22]. From the 2024 National Census, 8.9% of the individuals aged 10yrs and above use the internet. As of March 2023, there 27 million Internet subscriptions which accounts for 60% of the national population[23]. From the survey, respondents were asked to indicate whether they have access to the internet. Of the 2480 that participated in the survey 43.4% (1076) indicated to have no access to internet and 56.6% (1404) had access.

Figure 25: Results on access to the internet

22 National Broadband Baseline Survey & Infrastructure Blueprint, April 2022

23 Market Performance Report 3Q FY 2022/23 (Jan-March 2023)

i. Internet Access by Occupation

Respondents who are formally employed reported the highest level of internet access at 71.2% (455), followed by students at 68.1% (490), and informally employed respondents at 40.9% (459). These findings correlate with other studies which indicate that formal employment and education are positively associated with internet accessibility. While the low access among the informally employed respondents can largely be attributed to low digital literacy skills, high cost of devices and unaffordability of internet bundles among other barriers.[24]

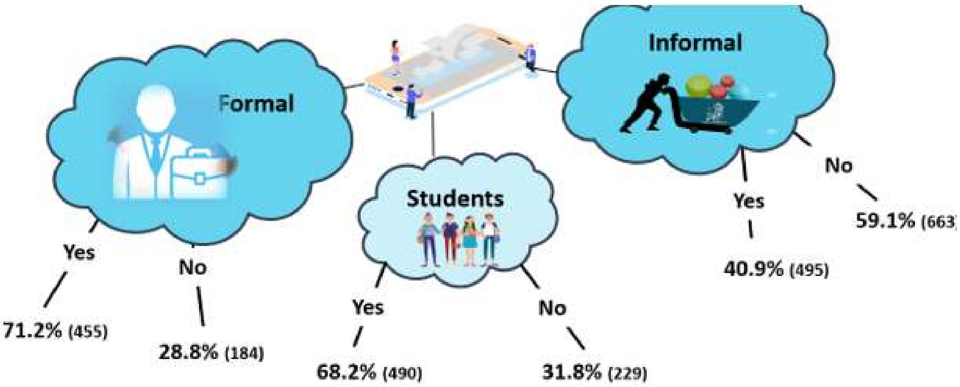


Figure 26: Internet Access by Occupation

b) Internet Access by Region

Buganda exhibits the highest internet accessibility, with 67.2% (342) of respondents having access, followed by Ankole at 78.9% (101). Majority of the respondents in Kampala, also reported to have access internet access with 88.0% (44) of the respondents indicating to be connected. Regions such as Teso and West Nile demonstrate lower internet accessibility, with only 33.7% (32) and 43.9% (108) having access, respectively. Acholi, Busoga, and Lango show balanced access rates, with approximately half of the respondents connected. Overall, internet access tends to be higher in urbanized or economically developed regions compared to rural areas. This is further demonstrated in the figure 10 below

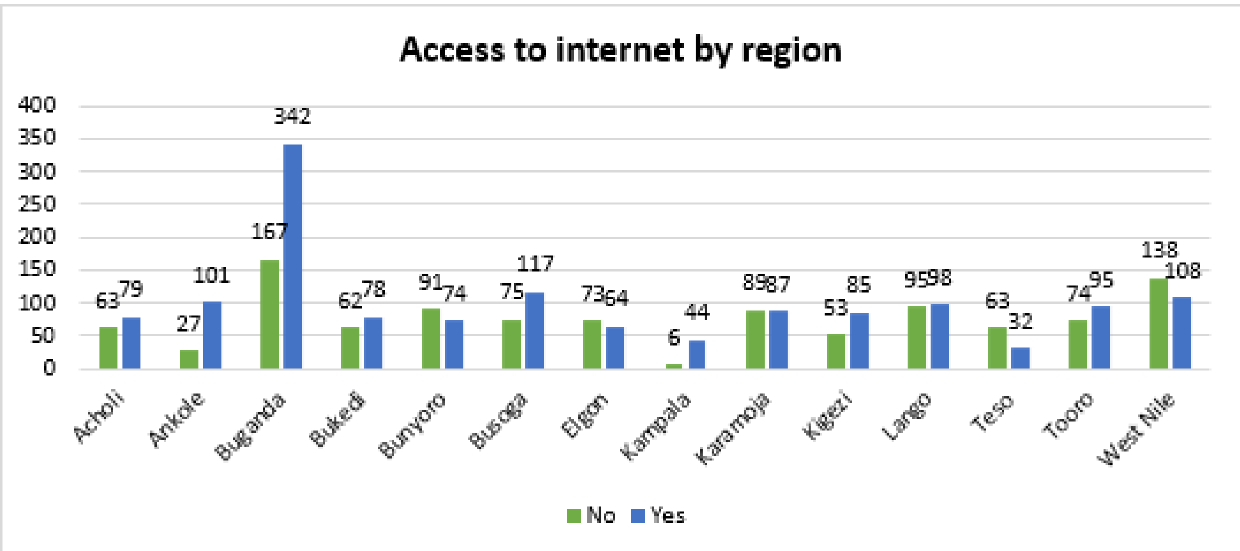


Figure 27: Internet Access by Region

c) Devices used to access internet

Overall, from the 1404 that indicated access to internet, these were further asked to mention the devices they use to access the internet and **majority 83.5% (1173) use smartphone, 13.6% (191) use MiFis, 10.7% (150) use Routers, and others indicated center points 5.0% (70).** Results from the National IT Survey 2022 Report by NITA-U also highlighted similar results noting that 95.5% that access internet via mobile

24 GSMA – The Mobile Gender Gap Report 2023

phone.[25]

Figure 28: Device used to access the internet (n=1404)

i. Devices used to access internet by region

Kampala leads in both internet access (88.0%) and the use of advanced devices like routers (27.3%), reflecting better infrastructure and higher income levels. Regions such as Teso and Karamoja show lower internet access rates (33.7% and 49.4%, respectively) and limited use of devices beyond smartphones, indicating infrastructural and economic challenges. Smartphones are the primary means of internet access nationwide. However, the reliance on community center points in regions like Ankole suggests communal approaches to connectivity where personal device ownership may be lower.

Table 12: Devices used to Access Internet by Region

	%ge that have access to internet in the region	Devices used to access internet			
		Smart phone	Community Center Point	MiFi	Router
Acholi (n=142)	55.6% (79)	75.9%	5.1%	8.9%	3.8%
Ankole (n=128)	78.9% (101)	97.0%	19.8%	16.8%	9.9%
Buganda (n=509)	67.2% (342)	90.1%	2.6%	19.9%	12.6%
Bukedi (n=140)	55.7% (78)	83.3%	3.8%	14.1%	21.8%
Bunyoro (n=165)	44.8% (74)	75.7%	2.7%	2.7%	1.4%
Busoga (n=192)	60.9% (117)	88.9%	4.3%	27.4%	20.5%
Elgon (n=137)	46.7% (64)	85.9%	17.2%	7.8%	15.6%
Kampala (n=50)	88.0% (44)	93.2%	0.0%	15.9%	27.3%
Karamoja (n=176)	49.4% (87)	73.6%	0.0%	5.7%	1.1%
Kigezi (n=138)	61.6% (85)	76.5%	1.2%	23.5%	18.8%
Lango (n=193)	50.8% (98)	96.9%	3.1%	1.0%	2.0%
Teso (n=95)	33.7% (32)	78.1%	3.1%	3.1%	0.0%
Tooro (n=169)	56.2% (95)	69.5%	6.3%	6.3%	8.4%
West Nile (n=246)	43.9% (108)	65.7%	4.6%	8.3%	2.8%

ii. Frequency of Internet Access

Out of the 1,404 respondents that indicated to have access to the internet, more than half 58.2% (817) indicated to use the internet on a daily basis. 20.2% (283) indicated to use the internet rarely, 17.9% (251) use it weekly, 3.8% (53) use it monthly.

25 National IT Survey 2022 Report

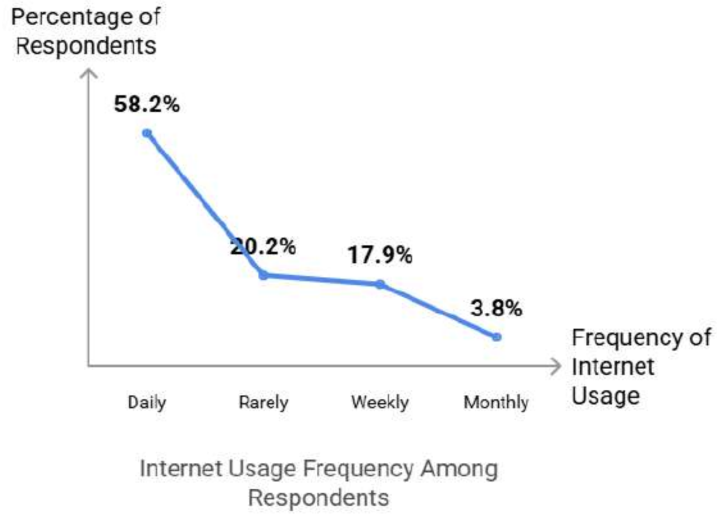


Figure 29: Frequency of internet access

iii. Frequency of Internet Access by Region

In regards to frequency of internet access by region analysis revealed significant regional disparities in internet usage frequency across districts. **Kampala stood out with the highest daily usage at 88.6% (39), far surpassing other regions,** followed by Teso at 81.3% (26), Ankole 77.2% (78) Kampala and Buganda 64.6% (221). However, Lango, Busoga, Elgon and Bunyoro demonstrated low daily engagement at 28.6%, 41.0%, 50.0%, 51.4% respectively as further showed in the table below;

Table 13: Internet Usage by Region

Daily		6. How often do you use the internet?			
		Monthly	Rarely	Weekly	
1. Region	Acholi (n=79)	44.3%	2.5%	32.9%	20.3%
	Ankole (n=101)	77.2%	0.0%	10.9%	11.9%
	Buganda (n=342)	64.6%	3.8%	13.2%	18.4%
	Bukedi (n=78)	60.3%	5.1%	16.7%	17.9%
	Bunyoro (n=74)	51.4%	6.8%	36.5%	5.4%
	Busoga (n=117)	41.0%	2.6%	35.0%	21.4%
	Elgon (n=64)	50.0%	0.0%	31.3%	18.8%
	Kampala (n=44)	88.6%	0.0%	2.3%	9.1%
	Karamoja (n=87)	57.5%	3.4%	21.8%	17.2%
	Kigezi (n=85)	61.2%	8.2%	18.8%	11.8%
	Lango (n=98)	28.6%	1.0%	24.5%	45.9%
	Teso (n= 32)	81.3%	3.1%	15.6%	0.0%
	Tooro (n=95)	63.2%	8.4%	17.9%	10.5%
	West Nile (n=108)	58.3%	5.6%	16.7%	19.4%

d) Internet availability in Areas of Residence

When respondents were asked “Is internet available in the whole of your area of residence/village?” Kampala had 62.0% (31) of the 50 respondents indicating internet availability in the whole area, Busoga had 48.4% (93) from the 192, and Buganda had 41.1% (209) from the 509, indicating stronger internet coverage in these areas according to the internet usage perspective of respondents.

Additionally, Elgon at 17.5% (24) from the 137 respondents, Teso at 17.9% (17) from the 169, and Ankole at 19.5% (25) from the 128 had the lowest reported availability, suggesting significant connectivity gaps. A large proportion of respondents indicated non internet availability in their areas of residence, particularly in Bukedi at 40.7% (57), Bunyoro at 39.4% (65), and Busoga at 37.5% (72), indicating possible digital literacy gaps or unclear access points. Regions reporting the highest lack of internet coverage include Acholi at 54.9% (78), Ankole at 52.3% (67), and Teso at 52.6% (50), highlighting infrastructural limitations that may hinder access

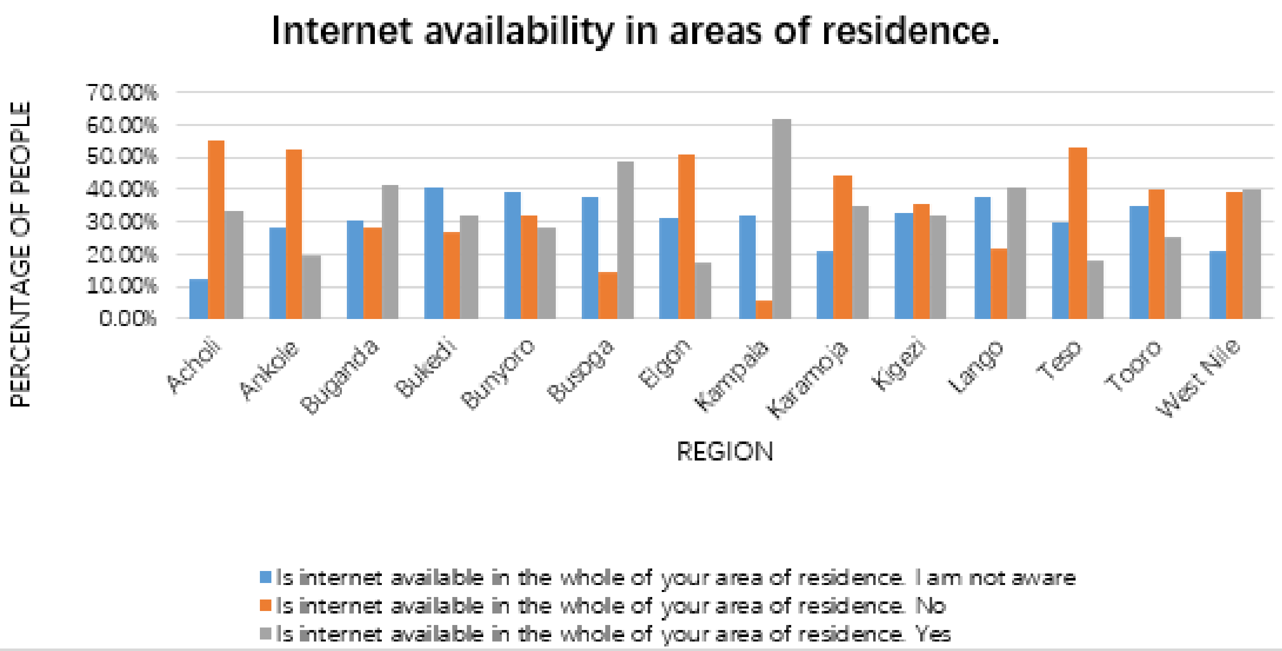


Figure 30: Availability of internet within areas of Residence

From the Focus Group Discussions. When asked to give their opinion on if they feel that communication services (e.g. mobile phones, internet) are available to everyone in the community and several challenges were highlighted from the FGDs i.e., Affordability issues: All responses centered around phones, airtime and data being expensive were put under this category, Limited Digital Literacy: Responses centered usage i.e. people who don't know how to use smart phones fall under this category, Disability and Inclusivity Issues: Disabled, elderly or any gender differences mentioned were placed under this category. Limited access to airtime and data: Responses centered around mobile money shops being far in town from where people stay were put under this category.

> "Only Basic phones are readily available. We really have the desire for these services but availability is a big challenge." (FGD Women, Kitgum)

e) Internet and Mobile network Service provider

In regards to the main service provider of digital infrastructure, from discussions with SMEs Overall, from the 68 that responded findings indicated MTN as the leading service provider of digital infrastructure with 45.6% (31) mentioning this and Airtel followed with 27.9% (19). Other mentioned telecom operators included NGO Centers, Lyca Mobile.

According to regions, MTN is the leading service provider across the surveyed regions, with higher frequencies in Lango 14% (7), Karamoja 10% (5), and Elgon 8% (4). Airtel also has strong representation in Karamoja 10% (5), Elgon 8% (4), and Bukedi 6% (3). However, Airtel is absent in Tooro and Kigezi with each having 0%, whereas MTN is present in all regions. This suggests that MTN has broader coverage and is the dominant digital service provider, while Airtel maintains a significant presence in some areas.

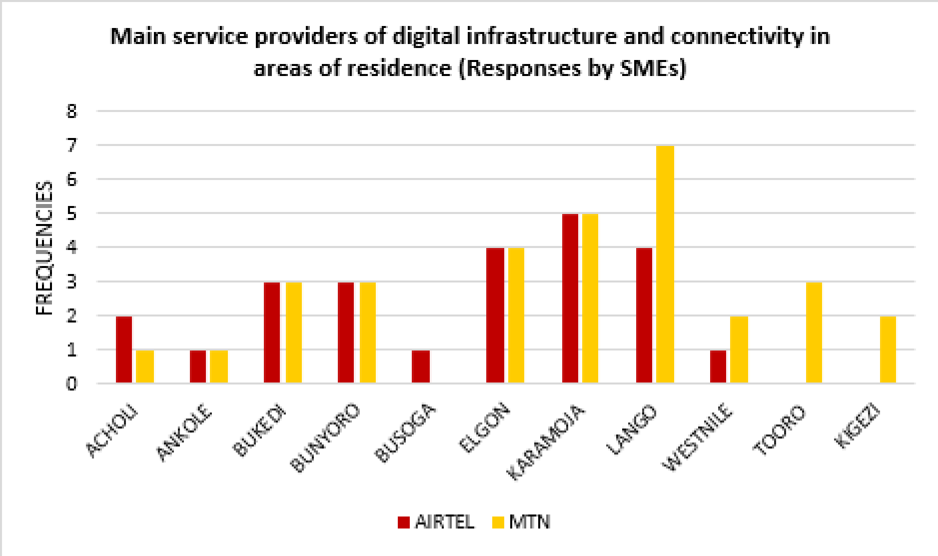


Figure 31 A bar graph showing the major service providers for digital infrastructure per region.

These findings align with industry reports. According to GSMA, MTN Uganda had a 53.9% market share, equating to 16.3 million subscribers as of Q2 2022, while Airtel Uganda held a 45.1% market share with 13.6 million subscribers.[26]Similarly, Statista reports that as of Q4 2022, MTN held approximately 54% of mobile subscriptions in Uganda, with Airtel's share increasing from 33% in 2016 to 42% in 2022.[27]

f) Barriers to Internet Usage

Out of the 43% (1,076) that indicated they did not have access to internet, majority of them accounting to 43.6% (469) respondents highlighted lack of digital devices as the main reason for not using internet, followed by the cost of the service with over 28.3% (305) respondents, furthermore, lack of digital devices followed closely with 26.9% (289) responses hence suggesting greater need for greater digital training mostly especially among the women since majority of the responses on this perspective came from their side.

Other notable barriers included network coverage issues, disability challenges and lastly fear of online threats.

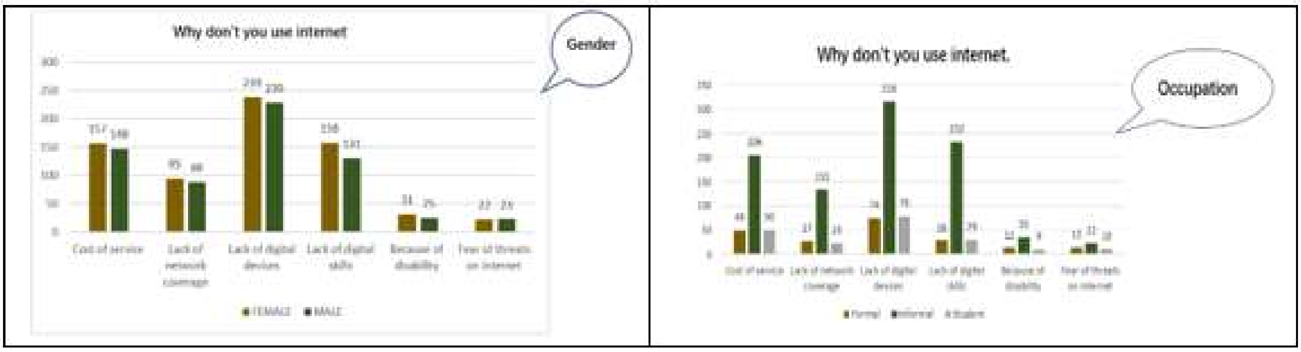


Figure 32: Barriers faced by respondents in regards to accessing internet usage

Examining different occupational differences in regards to digital access barriers, informal workers were seen to be the most affected, with over 19% (206) respondents citing cost of the service as their major issue, followed by 29% (316) facing struggles with access to digital devices. In contrast, formal workers report fewer challenges, with only 4% (49) citing cost of the service and 7% (74) highlighting lack of devices. According to the findings, Students were seen to be greatly faced by financial constraints and devices unavailability

26 https://www.gsma.com/get-involved/gsma-membership/gsma_resources/mtn-performed-best-among-operator-groups-in-sub-saharan-africa

27 https://www.statista.com/statistics/671666/mobile-subscription-share-in-uganda-by-operator

as their major challenges as reported by 4% (50) and (7%)79 respondents respectively hence emphasizing the need for affordable digital tools in learning institutions.

Among the challenges faced when using digital services or devices as raised by respondents during FGDs, poor internet connectivity was the most frequently mentioned, with over 56% (15) responses. This was followed by the high cost of digital services, cited by over 26% (7) respondents, while a slightly smaller number highlighted a lack of knowledge on how to use these devices.

> "Fonts are small on devices limiting use, depends on type of disability so mobility in some cases is limits, discrimination of pwds by companies and communities." PWDs in Terego district.
>
> "Most of our people don't know how to use smartphones, others don't have the money to own smartphones and use internet. Having a smartphone requires we sell a goat and loading internet data requires we sell a cock. There is no phone shop in our subcounty, people have to go to town and in town there are so many fake phones on the market and we have no genuine phone repair technicians. Smartphones need to constantly be charged yet we have a power issue. Sometimes the second-hand smartphones we buy have been stolen from somewhere and we end up falling in the trap." Youth in Terego district.
>
> "High costs digital, poverty among farmers, illiteracy levels are high, network and mindset issues especially parents limited their children and some husbands restricting their wives." Youth in Kwania district,

g) Challenges in Mobile Network Access

Mobile network challenges are most severe in remote districts, where over 60% of respondents in Teso, Acholi, Lango, Karamoja, and Elgon reported difficulties in making or receiving calls. Kampala had the lowest reported issues (only 8% of respondents), underscoring the urban-rural connectivity gap.

Out of 2480 respondents, 56.2% (1,394) of respondents reported challenges in accessing mobile networks, while 43.8% (1,086) had no issues, and 1.3% (32) did not respond. The highest challenges were reported in Teso 87.4% (83), Acholi 76.1% (108), and Lango 74.1% (143), indicating significant network accessibility issues in these regions. Similarly, Karamoja 68.8% (121) and Elgon 62.0% (85) also faced considerable difficulties. In contrast, Kampala had the least challenges at 8.0% (4), followed by Buganda 45.6% (232) and Kigezi 44.2% (61), suggesting better network availability in urban areas. These findings highlight a persistent urban-rural disparity in mobile network access, with rural regions experiencing the most difficulty in making and receiving calls.

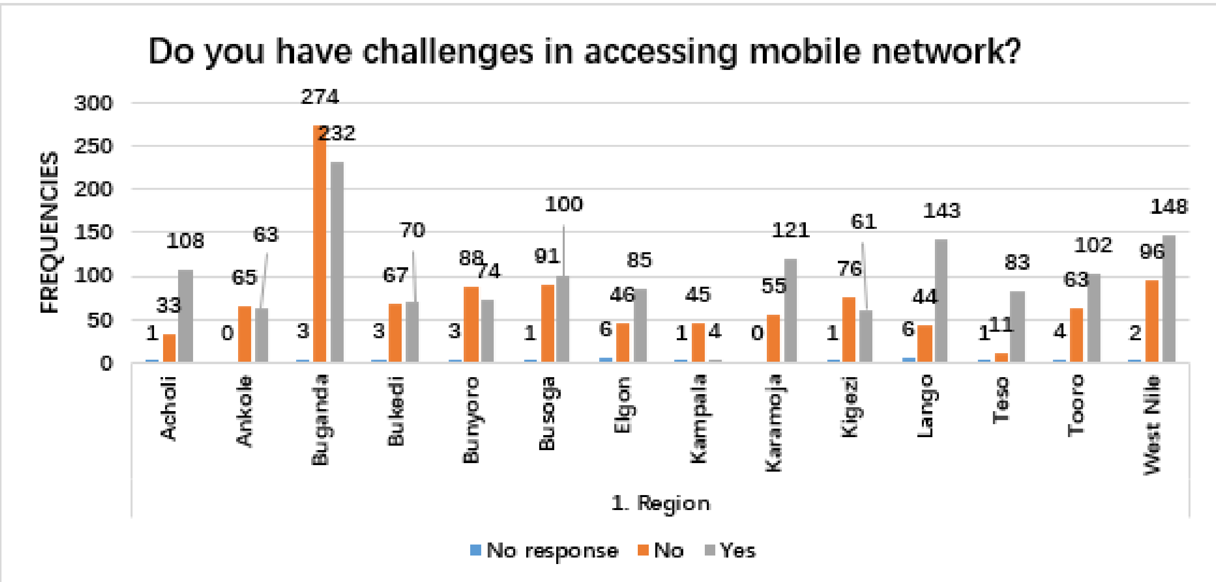


Figure 33 A bar graph showing perceptions of participants who have challenges accessing mobile networks across different regions.

Among the SMEs, when asked how they would describe the current state of mobile network in terms of reliability and accessibility. Most SMEs perceive mobile network reliability and accessibility as either good 45.1% (32) or fair 45.1% (32), with accessibility slightly better rated overall. While fewer SMEs rated these aspects as poor as observed in the figure below

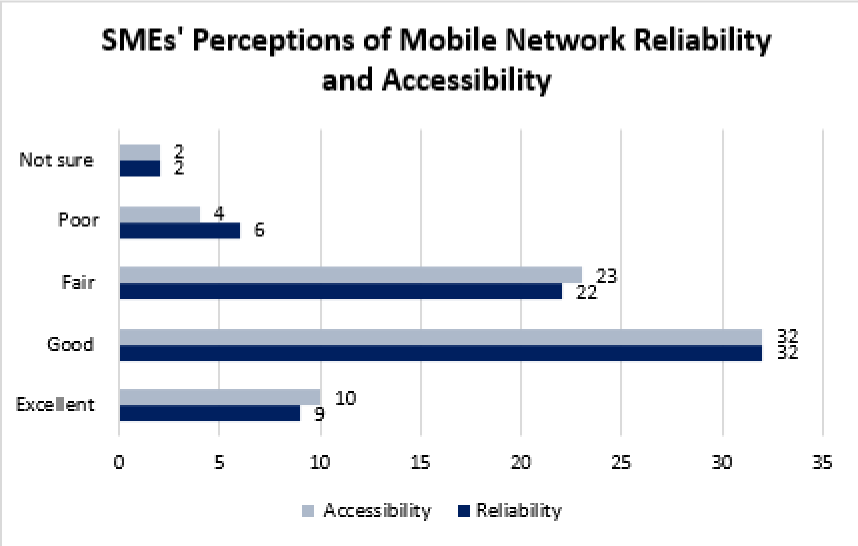


Figure 34: SMEs' Perception of Reliability and Accessibility of Mobile Network

h) Reasons for Lack of Internet Access among SMEs.

Opinions from the SMEs. Out of the 71 SMEs reached, majority accounting to 77% (55) respondents reported having access to internet while only 23% (16) indicated having no access to internet.

Among the reasons raised by SMEs why they don't have access to internet, out of the 16 institutions that reported not having internet connectivity, affordability was raised as the biggest challenge, with 31% (5) respondents stating that internet services were too expensive for them to afford. Similarly, 19% (3) respondents indicated that they did not see the need for internet.

Lastly, about 19% (3) respondents mentioned other unspecified reasons for the lack of internet access which included;

> "Internet coverage since we're in 4gb and it is payable were by other countries have Free internet. People in Uganda we are poor." Mobile Money Agent Masindi district.

Further analysis on the reasons why SMEs don't have access to internet by business type, the most significant barrier to internet access was affordability as also reported by 20% (9) mobile money agents citing high costs compared to 2 digital hubs and 2 ICT-enabled SMEs that reported facing the same challenges. Mobile money agents also reported the highest reliance on public internet accessibility and faced the most issues with slow internet speeds as compared to other MSMEs. Additionally, only (9%)4 mobile money agents indicated that they saw no need for internet possibly due to the fact that most of them use small button phones during their transactions.

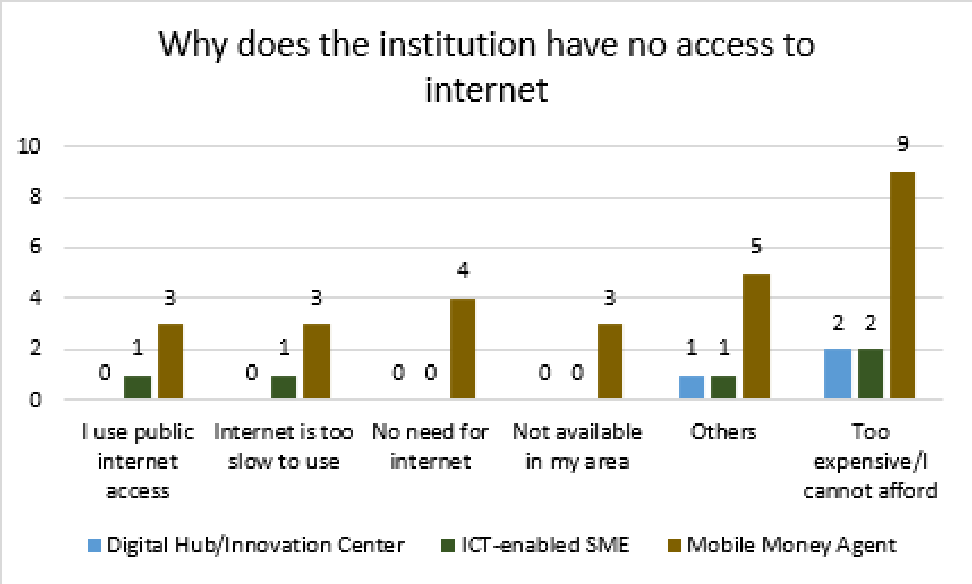


Figure 35: Reasons for no access to internet

i) Observed noticeable differences in infrastructure coverage

The study also sought opinions from SMEs on differences in infrastructure coverage, out of 71 respondents, 73.24% (52 individuals) mentioned to observe noticeable differences in infrastructure, such as internet and electricity, between rural and urban areas in their districts, while 26.76% (19 individuals) did not perceive any significant disparities. Among those who noted the differences, the main contributing factor was poor infrastructure, cited by 30.77% (16) of respondents. This was followed by inadequate internet and network coverage, identified by 28.85% (15) respondents. High costs and low accessibility were mentioned by 19.23% (10), while 17.31% (9) attributed the differences to insufficient electricity.

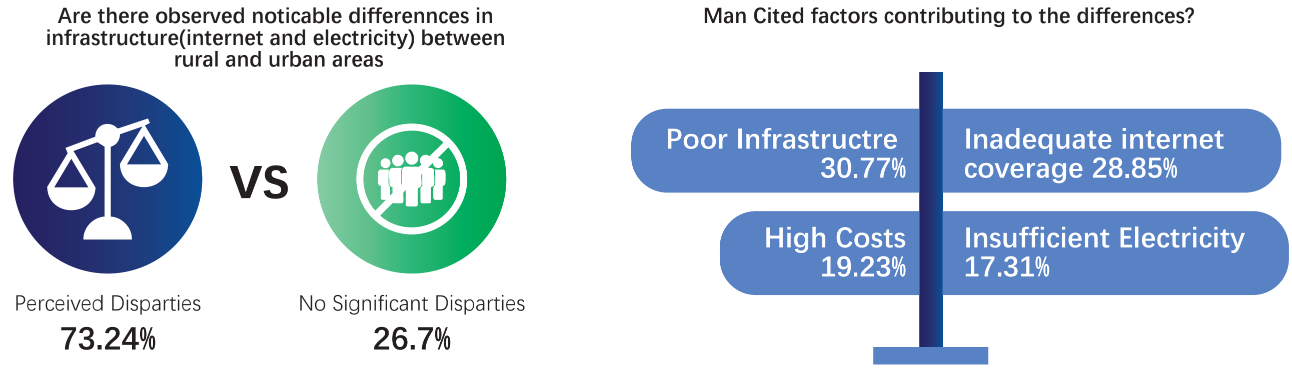


Figure 36: Observed disparities in Regions

"Private contractors neglect rural areas focusing on urban technology" (CEO, SME Mbarara)
"Broad band is used by big institutions and it expensive to be used in rural area than in urban area, it's easy to access them in urban areas than in rural area, they are reliable in urban areas than in rural areas, it's less costly to install then in urban areas than in rural areas" (Director, ICT center Bududa)

Furthermore, a World Bank report indicates that internet access rates are substantially higher in urban areas (47%) compared to rural areas (12%) across Sub-Saharan Africa, underscoring a pronounced digital divide[28]. Access to electricity remains limited in Uganda, especially in rural regions. The Uganda Bu-

28 World Bank Document https://documents1.worldbank.org/curated/en/099241003142325200/pdf/IDU0cb2e42f3050260484d0b8370b84eee303ecf.

reau of Statistics reported that the literacy rate for persons aged 10 years and above was estimated at 76 percent, with higher rates in urban areas compared to rural areas, suggesting disparities in infrastructure that support education and other services.[29] Additionally, the Uganda Rural-Urban Electrification Survey highlighted that a higher percentage of business establishments in Kampala use generator power (40.6%) compared to other regions, reflecting challenges in reliable electricity supply.[30]

These findings suggest that the majority of respondents (over 70%) recognize significant infrastructure challenges, indicating that rural areas often face disadvantages compared to urban areas in terms of connectivity and utilities. These emphasize the need for targeted efforts to improve energy access in rural districts.

j) Main challenges faced in expanding telephony and broadband infrastructure to unserved and underserved regions

In the same light, in regards to the question of the main challenges faced in expanding telephony and broadband infrastructure to unserved and underserved regions, Infrastructure Limitations emerged as the most cited challenge, with 22.8% respondents, High Costs and Economic Barriers followed with 20% responses, Limited Government and Stakeholder Support was identified by 15% (17) respondents. Other notable challenges included Terrain and Geographic Challenges, Regulatory Barriers, Power and Energy Challenges, Community Awareness and Knowledge Gaps. These are as shown in the figure below

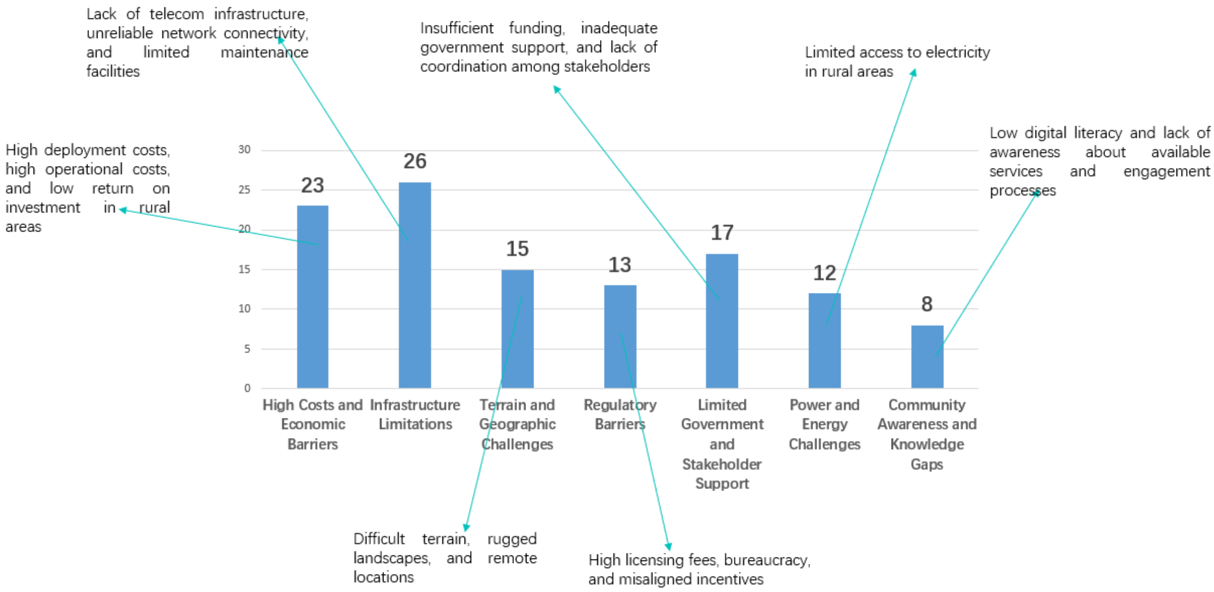


Figure 37:Challenges faced In Expanding Telephony and Broadband infrastructure.

> "Telecom providers face high costs to lay the necessary cables or towers in remote areas, which they often deem unprofitable. These regions also face geographical challenges, such as difficult terrain or the need for more investment in electricity and power infrastructure to support digital services." (NGOs and Community-Based Organizations)
> "Most of these areas don't have electricity, poor infrastructure, and the low demand in such region" (Telecom Operators)

These findings suggest that improving infrastructure, particularly in terms of network connectivity and power supply, is crucial for addressing the needs of unserved and underserved communities. Economic barriers and low levels of digital literacy also need attention, indicating that affordability and digital education programs should be prioritized. Furthermore, the emphasis on vulnerable groups calls for tailored solutions to ensure inclusivity, particularly for those facing additional challenges, such as PWDs, the elderly, and women.

pdf?utm_source=chatgpt.com

29 https://www.ubos.org/wp-content/uploads/publications/09_2021Uganda-National-Survey-Report-2019-2020.pdf?utm_source=chatgpt.com

30 https://www.ubos.org/wp-content/uploads/publications/03_2018ERT-2012.pdf?utm_source=chatgpt.com

The International Telecommunication Union (ITU) reports that, globally, 95% of the population lives within range of a mobile broadband network. However, significant connectivity gaps persist, particularly in rural and marginalized communities, due to limited infrastructure investment.[31] The ITU's Measuring Digital Development: Facts and Figures 2022 also indicate that digital literacy is a significant barrier to internet use, particularly in least developed countries, where only 27% of individuals are online.[32] The GSMA's Mobile Gender Gap Report 2023 highlights that affordability remains a primary barrier to mobile internet adoption, especially in low- and middle-income countries. The cost of devices and services continues to limit access for economically disadvantaged populations.[33] The GSMA's Mobile Gender Gap Report 2023 also reveals that women in low- and middle-income countries are 19% less likely than men to use mobile internet, highlighting the persistent gender gap in digital access.[34]

k) Evaluation of Stakeholder Collaboration in Achieving Universal Access: Opinions from KIIs

Stakeholder collaboration plays a critical role in advancing universal access to digital services, particularly in underserved and rural communities. Effective partnerships among government agencies, telecom companies, civil society organizations, and local communities can drive infrastructure development, policy implementation, and digital inclusion initiatives

The collaboration between government agencies, telecom companies, and community groups is recognized as a critical driver of universal access. However, persistent challenges such as limited funding, lack of coordination, and policy gaps hinder progress. Strengthening partnerships through structured policies, financial incentives, and enhanced stakeholder engagement will be essential in achieving greater digital inclusivity.

In discussions with Key Informants on how they would evaluate the collaboration between different stakeholders (e.g., government, telecom companies, community groups) in achieving the objectives of universal access, Stakeholders provided varied perspectives on the level of collaboration between government agencies, telecom companies, and community groups in advancing universal access to digital services. The findings highlight both successes and challenges in multi-sector coordination. The table below summarizes key themes emerging from the responses:

Collaboration Theme	Examples from KIIs	Challenges Identified	Recommendations	% of KIIs mentioning
Successful Collaborations	i. «UCC worked with telecoms and local governments to set up ICT hubs in some schools.» ii. «UCC partnered with NGOs to train PWDs in digital skills.»	Limited reach in rural areas.	i. Scale up successful models to more districts. ii. Increase funding for rural connectivity.	24 responses (21%)
Weak or Fragmented Efforts	i. «Government agencies operate in silos; telecoms don't always align with UCC's priorities.» ii. «Some projects stall due to lack of coordination between government and private sector.»	No structured coordination framework. Overlapping responsibilities among MDAs.	i. Establish a multi-stakeholder coordination body to align efforts. ii. Improve joint planning and funding strategies.	31 responses (27%)

31 https://www.itu.int/itu-d/reports/statistics/facts-figures-2022/?utm_source=chatgpt.com
32 https://www.itu.int/itu-d/reports/statistics/facts-figures-2022/?utm_source=chatgpt.com
33 https://www.gsma.com/r/wp-content/uploads/2023/07/The-Mobile-Gender-Gap-Report-2023.pdf?utm_source=chatgpt.com
34 https://www.gsma.com/r/wp-content/uploads/2023/07/The-Mobile-Gender-Gap-Report-2023.pdf?utm_source=chatgpt.com

Barriers to Effective Collaboration	i. "Telecoms prioritize profit, leaving rural areas underserved.» ii. «Government funding for universal access programs is inconsistent.»	i. Regulatory uncertainty ii. Lack of financial incentives for telecoms iii. Low public awareness of initiatives	i. Introduce **incentives for telecoms** to invest in rural networks. ii. Improve **funding transparency** for universal access programs.	**28 responses (24%)**
Opportunities for Improvement	i. «More PPPs needed for digital literacy and device affordability.» ii. «We need cross-sector partnerships to address both infrastructure and skills gaps.»	Need for more public-private engagement in project design and implementation.	Strengthen **PPP frameworks** for long-term sustainability. Reduce taxes on telecom services and mobile devices, making digital access more affordable, especially for low-income populations Strengthen corporate social responsibility (CSR) programs from telecom providers	**22 responses (19%)**

"Additionally, CSR engagements between the MTN Foundation and key stakeholders have contributed positively, but more cohesive efforts are required to address challenges in affordability and outreach for universal access. However, there's need to engage the government to reduce taxes on telecom services and mobile devices, making digital access more affordable, especially for low-income populations and Community Engagement" (ISP)

l) Innovations adopted by telecom operators to extend connectivity

Innovations that have been adopted to underserved areas as reported by telecom operators indicated: Network boosters and field trip services, which help improve signal strength in remote locations, **installation of solar-powered routers** providing internet access in regions without electricity. Also, discussions are ongoing for trials to deploy OPEN RAN equipment that reduces CAPEX. These innovations are currently being implemented by telecom operators/ISPs

m) Main challenges faced in expanding telephony and broadband infrastructure to unserved and underserved regions as reported by telecom operators and ISPs.

i. Escalating Rental Fees specifically in forest authorities have increased annual rental fees for infrastructure deployment, making site acquisition cost prohibitive
ii. Road Construction Challenges i.e., building access roads to remote sites necessitates tree removal, often exceeding 8 kilometers yet this is heavily resisted by environmental authorities due to its impact on wildlife habitat
iii. Limited Power Options e.g., remote locations lack access to commercial grid power. Solar installations are rejected by authorities due to land clearing requirements, while diesel generators raise pollution concerns.
iv. Geographical and Infrastructure Challenges e.g., rugged terrain in remote areas, natural disasters and conflicts can damage existing communication systems,
v. Costly licensing fees, and regulatory hurdles discourage investment in less profitable rural areas, widening the digital divide.
vi. Negative attitude of some communities towards development, restrictive government policies, and the issue of infrastructure theft, which increases operational costs.

vii. Limitations on tower heights imposed by CAA affect signal coverage and network efficiency in certain areas

viii. Delays or Denial of Building Permits at Local Government offices due to Lengthy approval processes and bureaucratic hurdles which slow down the deployment of telecom infrastructure.

"Most of these areas don't have electricity, poor infrastructure, and the low demand in such regions." **(Telecom Operator)**
"There is an issue of infrastructure theft. Need to protect infrastructure because it increases costs to replace" **(Telecom Operator)**
"Construction costs for access roads average $2 million USD, exceeding typical greenfield BTS site development by a factor of 16. Additionally, construction timelines can extend up to 8 **(Telecom Operator)**

n) Existing opportunities within the current regulatory framework that could be leveraged to promote infrastructure deployment in remote areas

However, in further discussions, on existing opportunities within the current regulatory framework that could be leveraged to promote infrastructure deployment in remote areas, from the 89 Key Informants that responded, Notably, 23% (20) of respondents highlighted the potential of the Universal Access Fund as a key financing mechanism, while 20% (18) underscored the role of public-private partnerships in leveraging shared investments and expertise. Infrastructure sharing was also promoted, capturing 17% (15) of the responses, as a means to reduce costs and optimize resources. Complementing these were tax incentives, technical support alongside digital skills initiatives, leveraging national policies and community engagement with 13% (12), 11% (10), 9% (8) and 7% (6) respondents respectively.

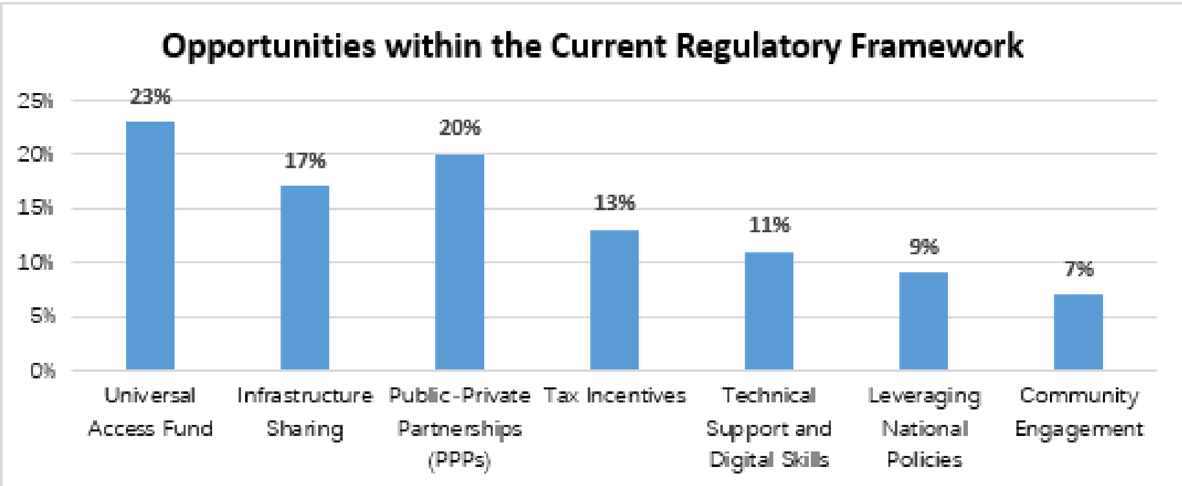


Figure 38: Opportunities within the current regulatory framework.

"UCUSAF, plays a critical role in expanding telecommunication and ICT services to underserved areas. However, its current mandate primarily covers capital expenditures (CAPEX) for infrastructure development. To further enhance its effectiveness in promoting universal access, it is proposed that the UCUSAF's mandate be expanded to include support for operational costs (OPEX). This would help telecom operators sustain services in rural areas where the commercial viability is low, and operational costs often outweigh revenue generation." (Telecom Operators and ISPs)
"The current regulatory framework could encourage collaborative models, where NGOs and community organizations partner with government bodies and telecom companies to bring affordable services to remote areas. We see this model working in some rural areas, where community engagement makes infrastructure deployment more sustainable." NGOs and Community-Based Organizations

o) Strategies to ensure that telecommunication and internet service providers maintain affordable pricing structures for low-income households:

In discussions with the different Key Informants several strategies were suggested with the most commonly mentioned approach being tax reduction and exemptions (33.3%), government subsidies and incentives (21.9%), and regulatory pricing controls (15.8%). Tax-related interventions were the most frequently cited, with many respondents calling for reductions on airtime, data, and digital devices to make services more affordable. Several respondents emphasized the need for infrastructure expansion, particularly in remote areas, alongside pricing regulations that ensure fair consumer rates. Additionally, public-private partnerships (8.8%) and digital literacy programs (6.1%) were highlighted as essential for making affordability efforts more effective and sustainable.

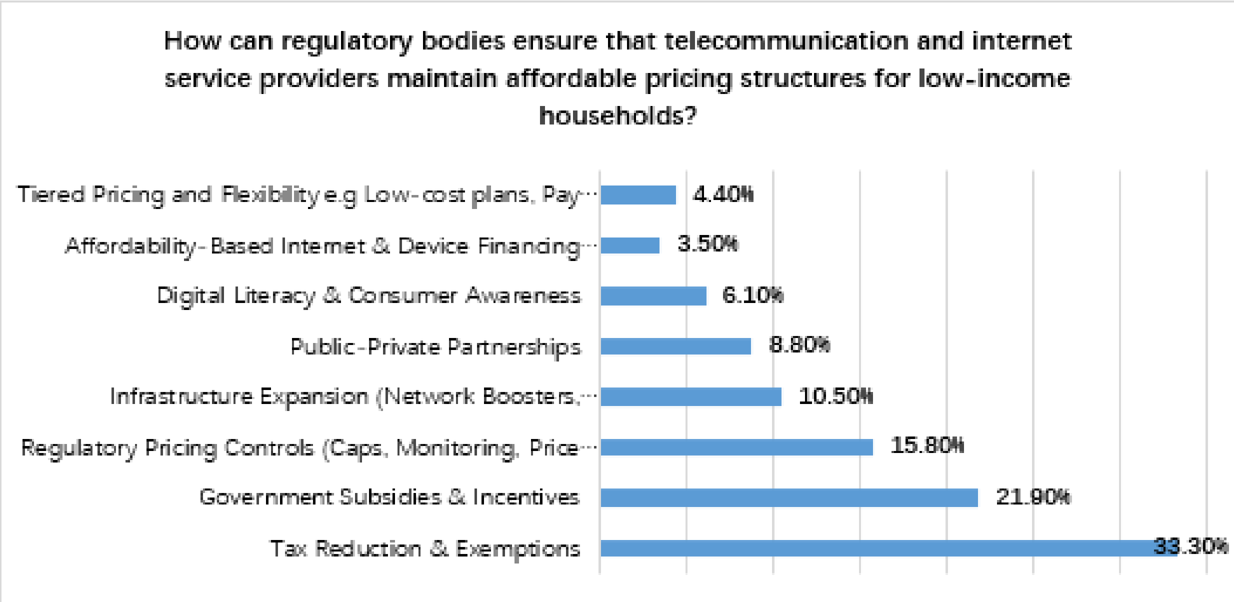


Figure 39: Strategies to ensure that telecommunication and internet service providers maintain affordable pricing structures for low-income households

Further planned sstrategies to integrate digital access into economic planning for underserved regions included establishing free internet zones and implementing initiatives like battery-operated systems for community outreach and the Uganda Digital Acceleration Project by NITA-U, all aimed at enhancing connectivity and inclusion.

> "There are ongoing projects such as Battery-operated systems for community outreach for refugee integration and Uganda Digital Acceleration project. These are all initiatives being carried out." (MDA, Kampala)

Despite these proposed strategies, **gaps in implementation persist**, with some respondents noting **a lack of visible regulatory interventions** or **ongoing affordability initiatives**despite existing policies

> "Through conducting thorough market analysis, implementing exemptions in sales tax for basic telecommunication services, and providing subsidies to ISPs" (District ICT Officer)
> "Encourage community-owned networks that can offer affordable services, especially where commercial service providers are not reaching." (Chairperson, NGO)
> "Government intervention should support market-driven affordability solutions rather than price caps." (Telecom)
> "Zero-rating broadband for educational and health services will improve accessibility without distorting market prices." (MDA)

3.1.2 Emerging Issues and Recommendations

Key emerging issues and recommendations are provided as below;

Theme	Sub-theme	Key Emerging Issue	Recommendation	Actor
Geographical and population coverage	National network coverage (2G, 3G, 4G, 5G)	While network coverage reaches 76% of the population, only 56.5% of the geographical area is covered, with 2G still dominant and 5G limited to a few urban areas. Despite varied infrastructure investments, towns such as Isingiro, Luwero, Mityana, and Masaka show persistent underperformance across multiple QoS parameters	Accelerate deployment of modern networks (4G and 5G) to under covered regions through strategic investment and infrastructure sharing. UCC should consider a district-level QoS scorecard, benchmarking operators not just nationally but locally, to ensure more granular accountability.	**UCC**, **UCUSAF**, **MoICT**, **Telecom Operators**,
	Fibre backbone coverage	Fibre optic coverage increased to 47,771 km (by Dec 2024) but remains limited to 648 out of 2,252 sub-counties.	Prioritize last-mile fibre extension programs in under connected sub-counties through targeted public-private partnerships.	**MoICT**, **UCC**, **NITA-U**, **Local Governments**, **Private Sector**, **UCUSAF**
	Institutional connectivity (schools, health facilities)	Only 14.3% of health facilities and 12.1% of schools have fibre access.	Expand fibre connectivity to key public institutions through universal service funding and alignment with e-health and e-education initiatives.	**MoICT**, **UCC**, **Ministry of Health**, **MoES** **NITA-U**, **UCUSAF**,
	Network utilization	Despite high 2G/3G coverage, actual usage remains low (only 18.5% and 18.4% respectively), while 4G has higher uptake (41.4%).	Address affordability of devices and improve digital literacy to increase active usage, especially in lower-tier networks.	**MoICT**, **UCC**, **NITA-U**, **MoES**, **UCUSAF**, **Telecom Operators**, **CSOs/NGOs**
	Infrastructure access in protected areas	Telecom operators face escalating rental fees from the National Forestry Authority (NFA), which has made infrastructure deployment in forested or protected areas cost-prohibitive. This presents a challenge, especially as coverage is expected even in these regions.	Facilitate a collaborative policy review between UCUSAF, UCC, and NFA to establish fair, transparent, and sustainable rental frameworks for mast installation in forest reserves and protected areas. Consider non-monetary incentives or tiered rental models for universal access infrastructure	**UCUSAF**, **UCC**, **National Forestry Authority (NFA)**, **Ministry of Lands**, **MoICT**, **Ministry of Justice and Constitutional Affairs**

Regional broadband infrastructure coverage disparities	Urban vs. Rural access	Urban regions like Kampala and South Buganda benefit from dense infrastructure, while rural regions such as Karamoja and Teso remain highly underserved.	Introduce rural network deployment incentives and enforce infrastructure-sharing policies to lower deployment costs in remote areas.	**UCC**, **MoICT**, **UCUSAF**, **Ministry of Finance**, **Telecom Operators**, **Private Tower Companies**
	Unserved and underserved population	Regions like Karamoja (92% underserved/unserved) and Acholi, Teso, West Nile show the largest access gaps.	Develop regional broadband action plans with targeted funding and community-driven connectivity models.	**MoICT**, **UCC**, **NPA**, **Local Governments**, **Development Partners**, **CSOs**, **UCUSAF**
	Equity in infrastructure rollout	Infrastructure investments continue to concentrate around economically vibrant or urban regions.	Implement equitable broadband investment strategies that prioritize high-need, low-infrastructure sub-regions.	**MoICT**, **UCC**, **NPA**, **UCUSAF**, **Local Governments**, **Ministry of Finance**
	Power and logistics limitations	Lack of electricity in rural/remote areas hampers telecom equipment deployment.	Integrate off-grid solutions (e.g., solar-powered masts) into telecom infrastructure planning, especially in energy-poor regions.	**MoICT**, **UCC**, **Ministry of Energy and Mineral Development**, **Private Sector**, **UCUSAF**, **Telecom Operators**

3.2 Access and Usage of Digital Devices and Services

Access and usage of digital devices and services in Uganda have significantly improved, however disparities still remain, particularly among underserved communities. While smartphone penetration has increased to nearly 50%, affordability remains a key barrier, with high device costs limiting ownership, especially for women, rural populations, and persons with disabilities. Government and private sector interventions, including subsidized devices, digital literacy programs, and infrastructure expansion, have facilitated broader access to ICT tools. However, gaps in digital skills, unreliable electricity, and limited internet connectivity continue to hinder widespread adoption. These findings align with reports from the Uganda Bureau of Statistics (UBOS, 2024) and global assessments on digital inclusivity which highlight disparities in digital access, particularly among underserved communities, and emphasizing affordability as a major barrier.

This section presents key highlights on UCUSAF's performance across its strategic objectives. It covers insights on device access, ownership, and usage among Uganda's population; barriers hindering device access and usage; awareness levels of emerging technologies such as the Fourth Industrial Revolution (4IR) and Artificial Intelligence (AI); access to and usage of free emergency communication services; user satisfaction with operator assistance and directory inquiry services; and the impact of digital literacy programs on the adoption of basic communication services. It also outlines emerging issues and provides actionable recommendations.

3.2.1 Device Access, Ownership and Usage

Device accessibility and ownership remain significant challenges across Uganda, particularly due to the high cost of acquisition, cited by 56% of respondents as the main barrier to owning a device. Urban regions, especially Central Uganda, reported higher ownership rates of digital devices, while areas like Karamoja and West Nile still lag behind.

This section presents an in-depth analysis of digital device access and ownership. It reveals significant disparities in the availability and usage of basic phones, smartphones, smart TVs, desktops, and laptops across different regions.

A. Digital Device Accessibility.

Basic phones were the most accessible device across gender, occupation, and region, with access rates exceeding 70% in all categories. Formal workers demonstrate the highest access to advanced devices, such as smart TVs (44.6%), desktops (11.3%), laptops (27.1%), and smartphones (65.9%), compared to informal workers and students, who show lower access levels. Regional trends indicated urbanized areas like Buganda and Kampala to have a better access to advanced devices, with Buganda showing 76.8% (391) access to basic phones and 43.4% (221) to smart TVs.

Figure 40: Access to digital devices

These findings are further supported by the National Information Technology Survey 2022, [35]which reported that 71.5% of Ugandans owned basic phones, only 15.8% of the population owned laptops, 4.2% owned desktops, and 50.0% owned smartphones, indicating a general lag in the adoption of advanced digital devices across the broader population.

A. Primary communication channels among SMEs

Findings revealed Phone and Face to Face interactions as the most primary communication channels across all SMEs with mobile money agents dominating across all communication channels. Notably, there was a relatively higher use of email among digital hubs and innovation centers, with 20% of respondents indicating its use likely attributed to the higher prevalence of computers in these settings, which facilitates email-based communication.

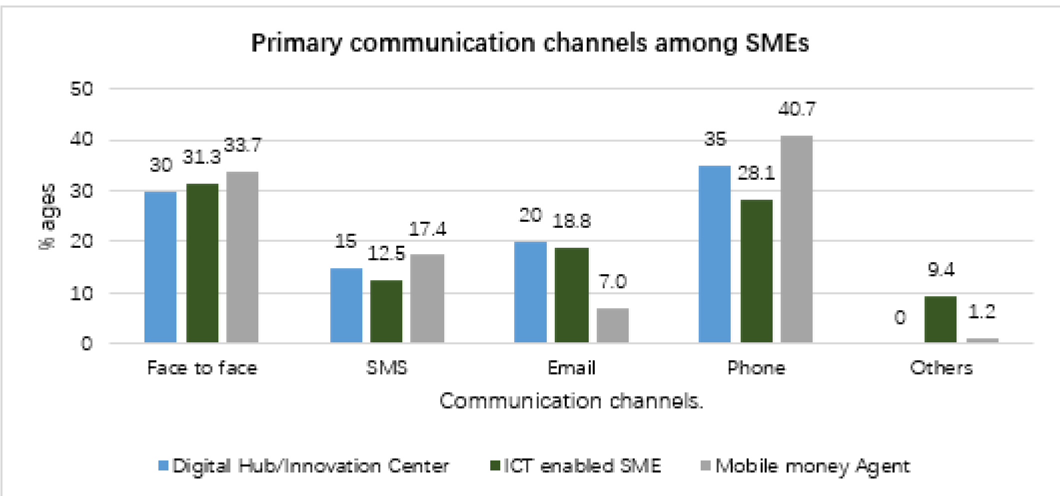


Figure 41: Main form of communication in Businesses

35 National Information Technology Survey 2022,

B. Digital Device Ownership

According to findings from the survey, basic phone ownership remains widespread across all regions of Uganda, while **smartphone penetration is slightly high approximately to 50%, reflecting the impact of improved internet connectivity nationwide.** These findings are supported by the National Population and Housing Census 2024[36], which reports that 43% of Ugandans aged 10 years and above own a mobile phone.

Figure 42: Ownership of digital devices.

i. Device ownership by Gender

Basic phone ownership is high among both females and males, with approximately 70% of respondents reporting ownership. Similarly, smartphone usage showed a steady trend across genders, with around 50% of both males and females owning smartphones. In contrast, ownership of advanced digital devices remains significantly lower, though evenly distributed with smart TVs at approximately 20%, desktops at 4%, and laptops at 16% hence demonstrating a balanced adoption of modern communication tools.

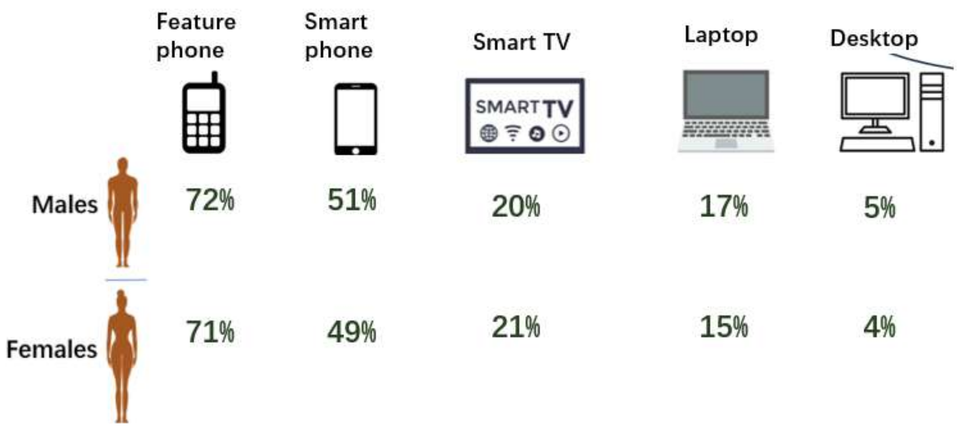


Figure 43: Digital Device Ownership by Gender

ii. Device ownership by occupation

Basic phone ownership is relatively high among both formal and informal workers standing at 75.6% and 73.8% respectively, while students reported a slightly lower rate at 64.1% as compared to other occupations. Analysis revealed that 75.6% (483) of formal workers own basic phones, 35.8% (229) have smart TVs, 9.7% (62) own desktops, 27.1% (173) own laptops, and 65.9% (421) own smartphones. For informal workers, ownership rates for basic phones are 73.8% (828), smart TVs 13.6% (152), desktops 1.5% (17), laptops 5.5% (62), and smartphones 34.8% (390). Students show lower ownership across most devices, with 64.1% (461) owning basic phones, 17.0% (122) smart TVs, 3.3% (24) desktops, 22.0% (158) laptops, and 59.5% (428) smartphones. Basic phone ownership dominates across all occupations, while desktop and smart TV ownership remains minimal, especially among informal workers and students

36 National-Population-and-Housing-Census-2024-Final-Report-Volume-1-Main.pdf

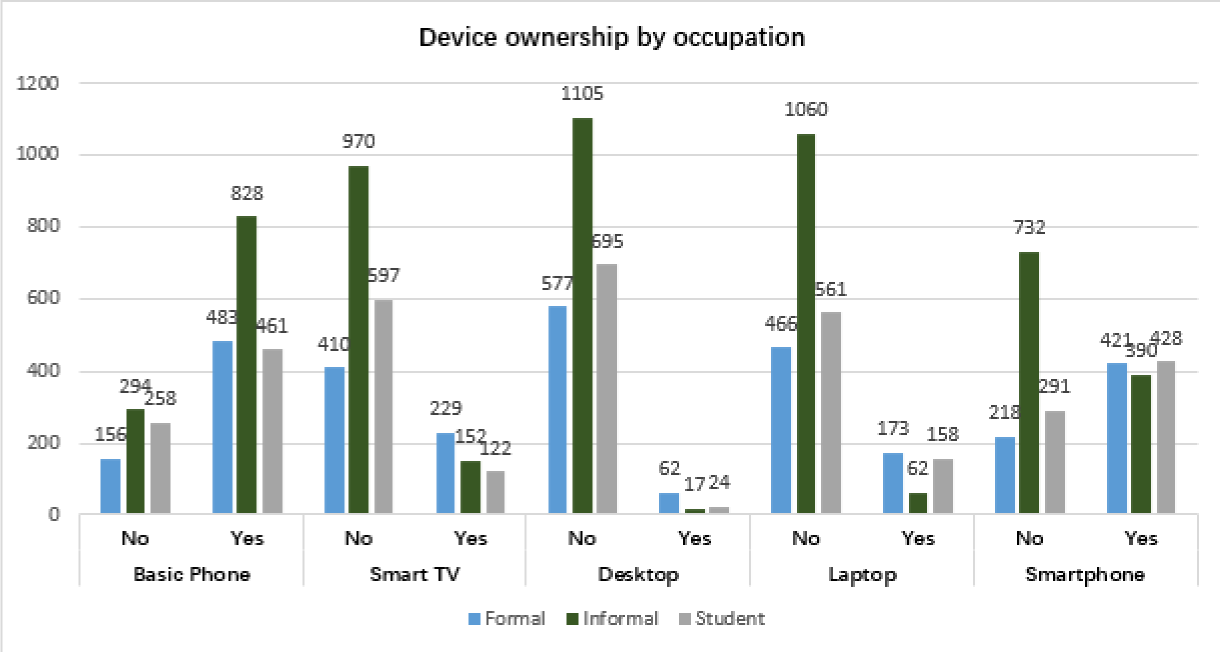


Figure 44: Digital Device Ownership by Occupation

iii. Device ownership by region.

The analysis revealed that basic phones are the most prevalent, owned by 71.5% (1,772) of the respondents, followed by smartphones at 50.0% (1,239). Smart TVs, laptops, and desktops show lower adoption at 20.3% (503), 15.8% (393), and 4.2% (103), respectively. In the Acholi region, 71.8% (102) of respondents own basic phones, while only 5.5% (8) possess smart TVs. Ankole shows a similar trend, with 80.5% (103) owning basic phones and 37.2% (64) having smart TVs. Buganda stands out with higher ownership rates: 70.9% (361) for basic phones and 29.2% (149) for smart TVs. In contrast, regions like Karamoja and Lango exhibit lower ownership of smart devices, with only 8.5% (15) and 10.4% (20) owning smart TVs, respectively. Overall, basic phone ownership remains prevalent across all regions, while the adoption of more advanced devices like smart TVs, desktops, laptops, and smartphones varies, with urbanized regions such as Buganda and Kampala showing higher percentages

Table 14: Digital Device Ownership by Region

	Basic Phone (%)	Smart TV (%)	Desktop (%)	Laptop (%)	Smart Phone (%)
Acholi	71.8	5.6	2.8	8.5	45.1
Ankole	80.5	50.0	11.7	44.5	77.3
Buganda	70.9	29.3	6.3	21.6	66.8
Bukedi	65.7	19.3	2.9	16.4	42.1
Bunyoro	66.1	8.5	1.2	5.5	30.3
Busoga	78.1	21.4	5.2	24.0	56.3
Elgon	58.4	5.1	0.7	6.6	40.9
Kampala	44.0	32.0	8.0	52.0	82.0
Karamoja	72.7	8.5	1.7	10.8	33.5
Kigezi	71.7	39.9	8.0	23.2	56.5
Lango	91.2	10.4	0.5	1.0	43.0
Teso	84.2	21.1	1.1	4.2	28.4
Tooro	71.0	29.0	6.5	17.8	50.3
West Nile	61.0	7.3	1.6	5.7	36.6

C. Regional Disparities in Community Device Ownership among SMEs.

SMEs in Karamoja and Kigezi reported the highest ownership of devices during their operations with 62.5% (5) and 75% (3) respondents respectively highlighting ownership, while Teso region showed universal lack of ownership with all respondents reporting there is total lack of smartphones, computers and tablets in their operations. Lango and West Nile exhibit mixed trends, with A few responses dominating 54.5% (6) and 46.2% (6) alongside notable No rates, 27.3% (3) and 30.8% (4).

> "The level of digital literacy in this district varies significantly depending on geographic, economic and social factors. in urban areas, with access to technology and educational resources, people own these devices while in rural and underserved areas, many face barriers such as poor infrastructure, limited training and low incomes". SME Tororo district.

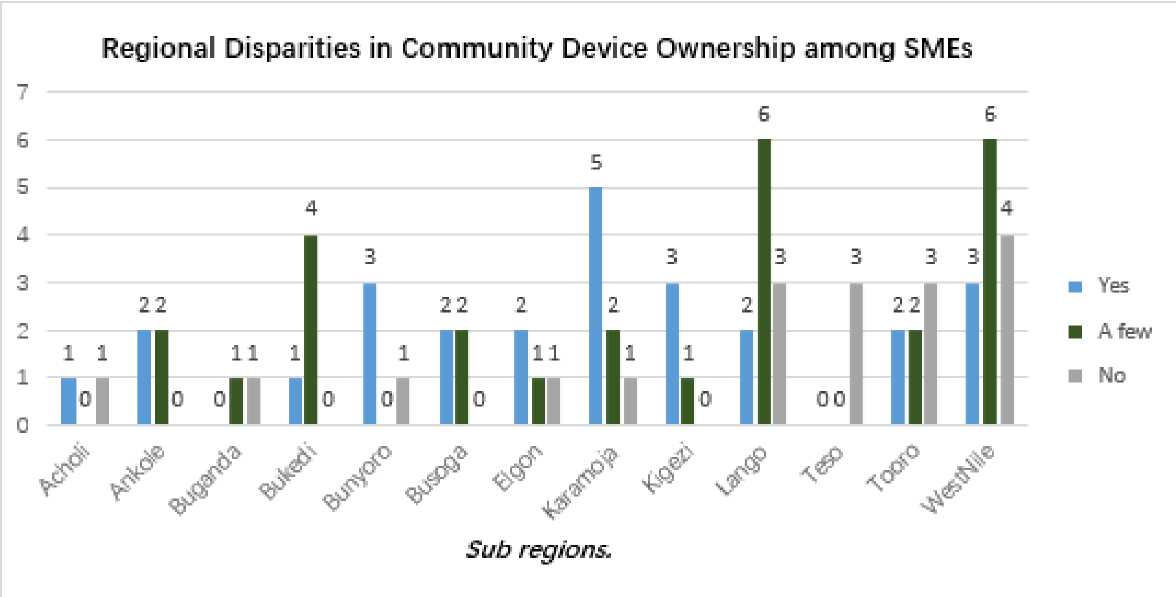


Figure 45: Regional Disparity in community device ownership

D. Barriers to computer ownership according SMEs.

In general, the most frequently cited barrier to computer ownership among SMEs was the high cost of computers, reported by 47% (27), indicating affordability as a significant constraint. Additionally, 7% (4) attributed their lack of computer use to unreliable electricity in their areas of operation. A notable 21% (12) indicated they did not see the need for computers in their operations, reflecting a gap in digital awareness or perceived relevance. Other reported challenges included limited availability (10%), malfunctioning or broken devices (12%), and theft (12%). A further 14% (8) SMEs cited various other reasons with some pointing out that it's the boss to decide if they are to use computers.

> "The internet connection is not stable and data costs are very high, while power shortages make it difficult to charge our devices." Woman Pakwach District.

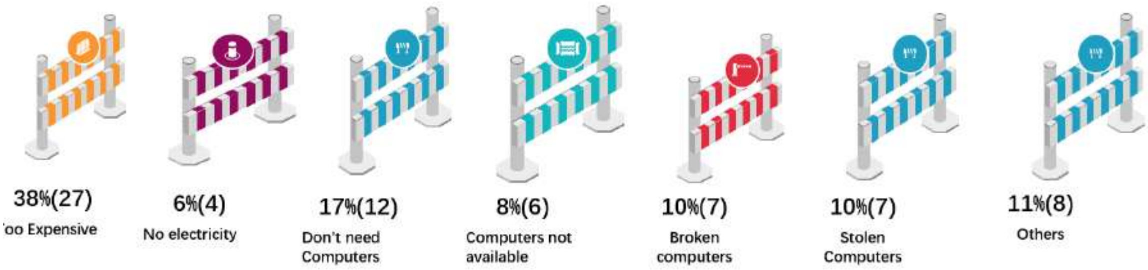
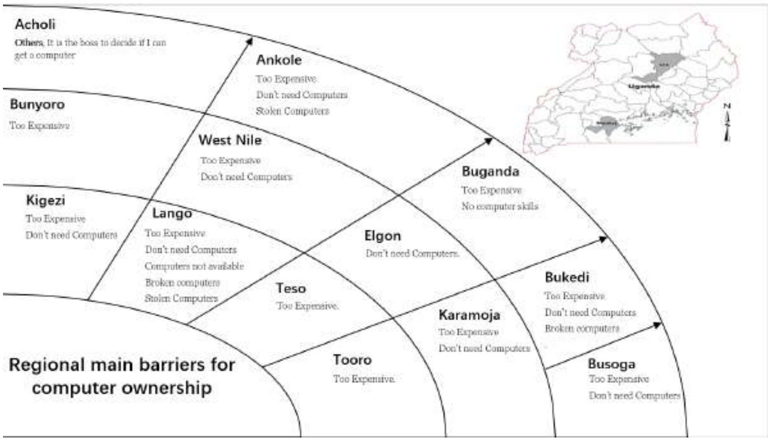


Figure 46: Barriers to computer ownership (SMEs)

On further breakdown according to region, the most common reasons for lacking computers varied by region as shown in the figure below.



i. **Barriers to computer ownership among different SME categories.**

The findings identified cost as the primary barrier to computer ownership across all SME categories. Notably, a significant number of mobile money agents cited a lack of need for computers in their operations a perception which wasn't observed in other SME groups highlighting the need for targeted sensitization on the value and relevance of digital tools in their business processes.

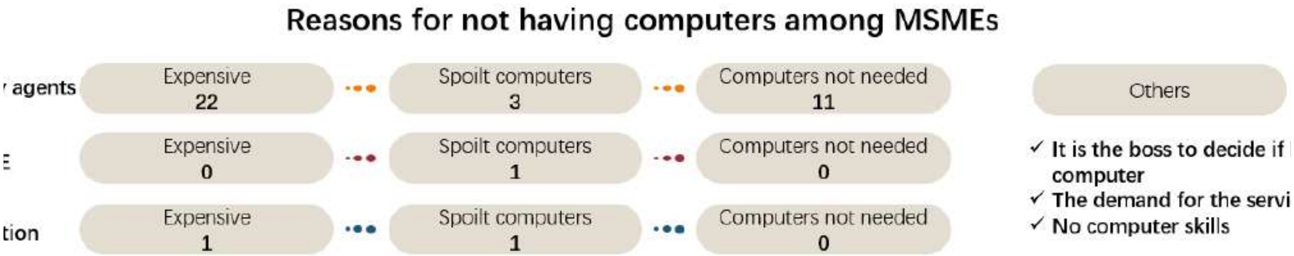


Figure 47: Barriers to computer ownership among SMEs categories

E. Access to digital infrastructure among the SMEs.

Findings from the study revealed the following across all SMEs that participated in the survey.

Digital Hubs/Innovation Centers: 78% of the digital hubs reported ownership of computers and internet accessibility. However, gaps remain in their online presence and communication, with only 22% having institutional websites and 67% providing employee emails.

ICT-enabled SMEs: A significant majority (89%) of ICT-enabled SMEs reported owning computers, and 83% indicated having internet access. However, their online visibility remains limited, with only 22% having institutional websites and 39% reporting employee email usage, pointing to gaps in formal communication and digital presence.

Mobile Money Agents: In contrast, mobile money agents showed a significantly higher reliance on internet access, with 33 (75%) having internet connectivity. However, only 11 (25%) have computers, and even fewer have institutional websites (5, 11%) or employee emails (9, 20%). This suggests that mobile money agents are more focused on mobile-based operations, with limited use of traditional digital infrastructure, such as computers or formal communication systems.

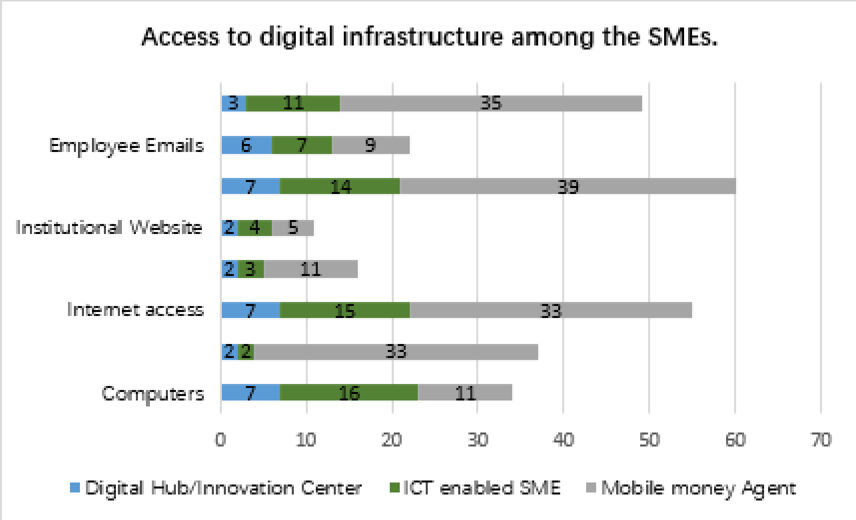


Figure 48: Access to Digital Infrastructure among SMEs

F. Institutional Digital Resource Ownership

According to findings from the SMEs, majority of the respondents from West Nile accounting to 77% (10) SMEs reported access to internet in their region while only 3 SMEs reported its absence. Furthermore, access to institutional website and institution phone was poor across all regions with a few SMEs citing its presence while there was a fair ownership of computers among all regions as compared to other services. This is further summarized in the table below.

Table 15: Institutional Digital Resource ownership among SMEs

	Institutional Phone		Own Computers		Internet Access		Institutional Website	
	Yes	No	Yes	No	Yes	No	Yes	No
Acholi	0	2	1	1	1	1	1	1
Ankole	3	1	3	1	4	0	3	1
Buganda	0	2	1	1	1	1	0	2
Bukedi	1	4	2	3	2	3	0	5
Bunyoro	1	3	4	0	3	1	1	3
Busoga	1	3	2	2	3	1	0	4
Elgon	1	3	2	2	4	0	1	3
Karamoja	1	7	3	5	7	1	0	8
Kigezi	1	3	2	2	4	0	0	4
Lango	3	8	3	8	7	4	0	11
Teso	0	3	2	1	3	0	0	3
Tooro	1	6	6	1	6	1	2	5
WestNile	3	10	3	10	10	3	3	10

G. Sources of Energy

Among 2,480 respondents surveyed, 47.2% (1171) respondents reported solar energy as the most common power source. 34.3% (851) rely on the national grid though concentrated mainly in urban areas while only 3.8% (93) reported dependency on generators, primarily in regions with unreliable grid access. additionally, 14.7% (365) indicated use of alternative energy sources including biogas charcoal, firewood, candles among others. These findings are consistent with the National Population and Housing Census 2024, which similarly reported that 47.2% of households rely on solar energy, 34.3% are connected to the national grid, and 3.8% use generators, particularly in areas with limited grid infrastructure.

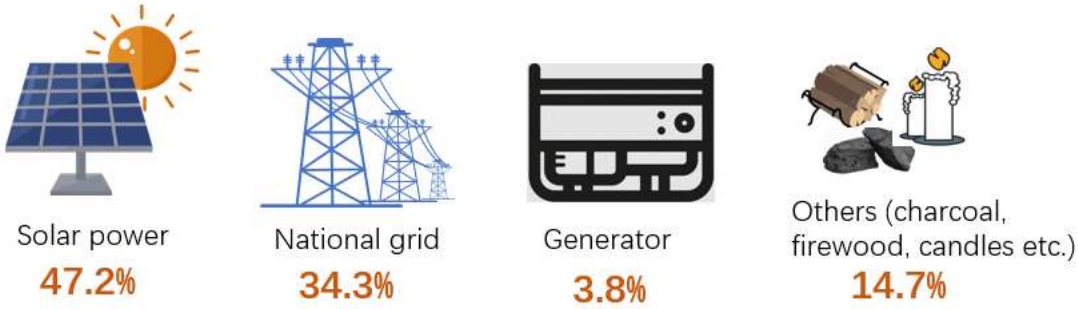


Figure 49: Sources of energy

Additionally, the regional analysis showed that solar energy is commonly used in Lango, West Nile, and Acholi regions, whereas the national electricity grid is the primary power source in Buganda, Kampala, and Busoga. In contrast, most SMEs in Karamoja rely on alternative energy sources such as firewood and charcoal, largely due to limited access to the national grid in the region.

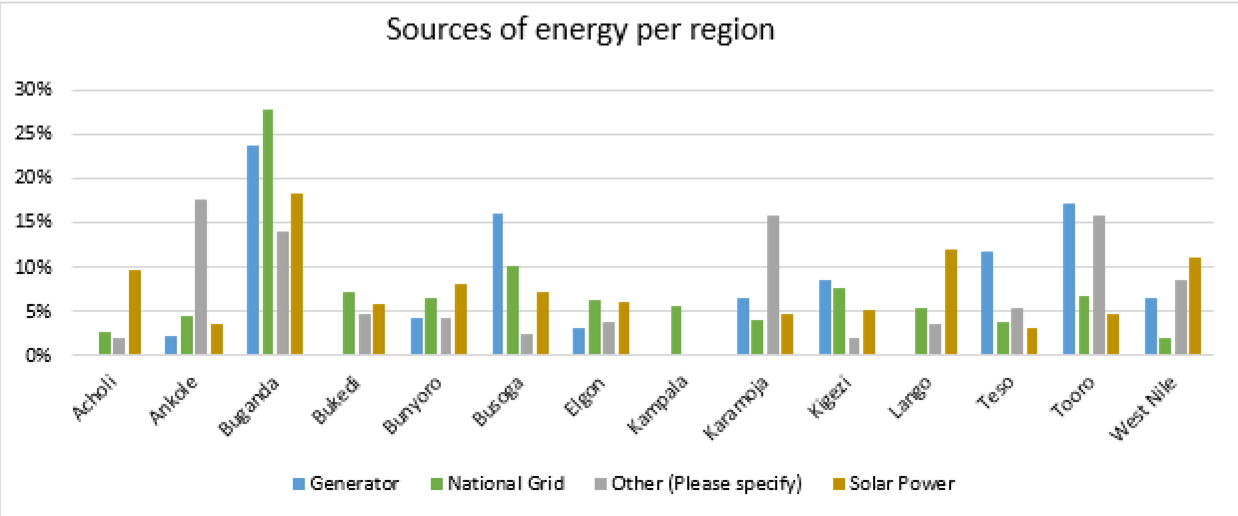


Figure 50: Sources of energy used across different regions

These disparities among the regions indicate that off-grid power solutions such as solar remain critical for improving ICT access in remote area where grid connectivity is weak most especially in Karamoja region.

3.2.2 Usage of Digital Devices

Overall, while 40.7% of FGD participants reported daily smartphone use, nearly a third (29%) of the FGD participants highlighted digital services' role in information and education.

To gain deeper insights into digital device usage, we engaged a broader regional representation by conducting focus group discussions, which provided valuable feedback on this aspect.

A. Findings from FGDs on device access and usage

Among the individuals who participated in the FGDs, Majority of them accounting to 40.7% (11) noted use digital devices mainly smartphones on a daily basis, 33.3% (9) noted rare use and 25.9% (8) noted use at least once in a week as summarized in the figure below.

Figure 51: Frequency of usage of digital devices according to FGDs held

"Most of our people don't know how to use smartphones and can't afford them; sometimes buying one means selling a goat and loading data means selling a cock." The youth, Koboko district.

Perceived Impact of Communication Services in the community

Insights from the focus group discussions held revealed that 29% (8) respondents recognized digital services as instrumental in accessing information and education. Meanwhile, 14% (4) cited improved avenues for economic opportunities and employment, and another 14% (4) noted enhancements in service delivery and convenience. Additionally, 18% (5) observed positive changes in mindset and lifestyle, while 25% (7) highlighted the role of communication services in strengthening social connections and networking.

Figure 52: Perceived Impact of Communication Services

"Digital communication services have helped us connect to potential customers." Youth, Maacha district.
"Our previous training opened our eyes to the possibility of interacting with the outside world. We never knew that there is such a thing as social media platforms and video conferencing apps." PWD, Koboko district.
"It's helping to expose the different products and services to the rest of the world. Good source of information, research and conferencing apps'' Youth, Karamoja.

B. Perceived Impact of internet accessibility among respondents.

Majority of the respondents indicated that access to internet has simplified access to information and news as cited by 14% (4) of the FGDs. Additionally, 11% (3) noted improved financial transactions as a key advantage, while 14% (4) FGDs emphasized the internet's role in enhancing agricultural and farming activities. Other ways mentioned included Internet's contribution to employment and skills development, improved communication and social media use, simplified education and learning, and enhanced marketing and advertising.

These findings align with Alliance for Affordable Internet's 2022 report that rural internet penetration in Uganda remains only 23%, and the World Bank's 2021 analysis pointing to poor electricity and low literacy as critical hurdles to egovernment and elearning uptake.

"I use the smartphone for online learning in my electrical engineering course. It gives me more information than what is taught in class." Youth, Obongi.
"Yes, one was able to get a customer through WhatsApp. This motivated the rest to also try it out." Women, Koboko.
"Farmers get market information, premium prices, and access to educational materials. PWDs, Amuru district.
"One tried to share her products on WhatsApp with a client, she managed to sell them off to this client. The client moved up to her home to purchase the products. She was happy that she didn't incur any transport costs." Women, Koboko.
"Farmers get market information, farmers call on radio and get contacts for potential buyers." Youths, Kwania.
"I was able to get a job because of my smartphone, online marketing of my products especially on social media." PWDS, Obongi.

Furthermore, we interacted with the SMEs to understand the level of availability, utilization, barriers, and unmet demand for digital services in each region. Findings are as summarized in the table below.

Table 16: showing the availability, utilization, barriers, and demands of digital service in across all sub-regions.

Region	Types of digital services available	Usage of digital services	Key Barriers preventing accessaing and usage of digital services	Demanded digital Services mentioned not to be available
West Nile	E-government, e-banking, social media, streaming	Business, education, information sharing	Poverty, low digital literacy, expensive services	Free internet, ICT training, free tele-centers.
Lango	E-government, e-banking, social media	Applying for TIN/ jobs, social media, marketing	Poor network, limited skills/ knowledge, high costs	E-learning, farmer ICT training, tele-centers.
Acholi	Mobile money, printing/cafe services	Social media	Expensive devices, poor network	ICT connectivity, mobile money agents
Karamoja	Social media, e-banking, e-government, e-learning	Fun (TikTok), education, business	Expensive devices, poor network/electricity	Free Wi-Fi, internet cafes, computers
Kigezi	Social media, e-learning	Business promotion, communication	High internet/ electricity costs, illiteracy	Online banking, e-learning in rural schools, Wi-Fi
Busoga	Social media	Education, business	Poverty, high costs, lack of devices	Non
Bunyoro	Social media, e-banking, e-government	Education, business	Poor internet, high costs, government restrictions	Free Wi-Fi, communication centers
Bukedi	Social media, e-government, e-learning.	Entertainment, marketing, data storage	Lack of electricity, high device/ data costs	E-banking, e-governance, cheaper internet

Ankole	Social media, e-learning, mobile banking	Healthcare, education	Language barriers, high device costs	Healthcare e-services, e-commerce training
Elgon	Mobile money, e-learning, e-government	Business, education, communication	Poverty, unreliable power, high data costs	E-government services, assistive devices for PWDs
Tooro	Social media, mobile money	Business, communication	Lack of computer knowledge, poor infrastructure	Robots, telephone masts, computers
Teso	Social media	Social media (WhatsApp)	Poor network, expensive devices	Computers
Buganda	Social media, e-gov't services, e-banking	Social media	Poverty, illiteracy	Internet café Computers, laptops and tablet

These finding are further supported by findings from the FGDs held were by they also raised the same concerns.

"E-government platforms exist but are rarely accessible in rural areas due to poor infrastructure." Youth, Lango district.
''Businesses rely on WhatsApp for marketing, yet formal e-commerce is absent." Youth, Bukedi district.
"Even when services exist, 60% of villagers can't read the instructions." Eldery, Kigezi district.
"We need telecentres to bridge the gap between cities and villages." Lango district.

According to Alliance for Affordable Internet 2022 [37]report, Uganda's rural internet penetration still lags behind at 23% most especially in regions like Karamoja. The World Bank 2021 also attributes to the findings from the survey since it also cited out almost similar barriers to digital services which included poor electricity and low literacy, which limit e-government and e-learning adoption dynamics starkly evident in this analysis.

'' Limited access to smartphones, laptops and computers by people more so in rural areas and data bundle high costs sustainability plans'' Mobile Money, Mbale district.
''Cost of internet and electricity is high. Many people are illiterate so they can't competently and efficiently use digital services. Rural areas have limited access to internet and electricity thereby limiting their access.'' Manager, Kabale district.

3.2.2 Barriers to device Access and Usage

Cost remains the primary barrier to digital inclusion in Uganda as 47% of the respondents found small button phones unaffordable and 73% of SMEs cite high computer costs while additional obstacles such as unreliable power and connectivity, low digital literacy, and security risks exacerbate regional, gender, occupational, and disability-based disparities, highlighting the urgent need for targeted subsidies, device-financing schemes, ICT training, and infrastructure investments.

37 2021 Affordability Report - Alliance for Affordable Internet

Under this section, various barriers to device access and internet usage, with focus on disparities related to gender, disability, occupation, and region is provided. Understanding these barriers sets a stage for understanding how these factors contribute to unequal access and usage, providing valuable insights for identifying areas where intervention is needed.

A. Perceived price range of small button phones

Basing on the findings from the study, the price range of small button phones varies significantly, with the majority (41.8%) falling within UGX 30,001 - 40,000. However, 23.3% of respondents reported prices between UGX 40,001 - 50,000, while a small percentage (0.9%) indicated availability below UGX 10,000. These prices corroborate with findings from Jumia prices were by a significant portion of small button phones falls within the UGX 30,001 - 40,000 range. Additionally, models like the Nokia 105 DS are priced at UGX 47,500, aligning with the 23.3% of respondents who reported prices between UGX 40,001 - 50,000.

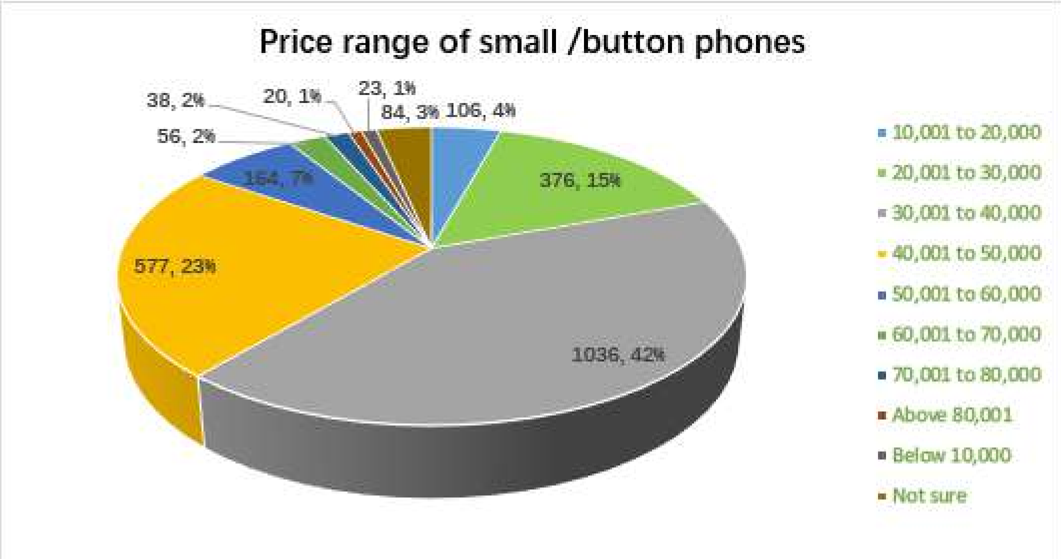


Figure 53: The price range of a small/feature phone

Examining small phone prices by region, Tororo and Karamoja regions higher price ranges, with Karamoja showing a significant number of small phones priced above UGX 70,000. Meanwhile, Teso and Acholi regions reported lower price ranges, making mobile phones slightly more affordable in those areas.

Table 17: Price of a small/feature phone- By region

Region	Below 10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-60,000	60,001-70,000	70,001-80,000	Above 80,001	Not Sure	Total
Acholi	0.0%	26.1%	43.7%	21.8%	2.1%	2.1%	1.4%	0.0%	0.0%	2.8%	142
Ankole	0.0%	17.2%	71.1%	8.6%	3.1%	0.0%	0.0%	0.0%	0.0%	0.0%	128
Buganda	7.1%	19.4%	43.0%	20.6%	4.1%	1.4%	0.6%	0.2%	0.4%	3.1%	509
Bukedi	0.0%	13.6%	47.1%	22.9%	10.0%	2.1%	0.0%	0.0%	0.0%	4.3%	140
Bunyoro	2.4%	15.8%	53.3%	17.0%	4.2%	3.6%	1.2%	0.6%	0.6%	1.2%	165
Busoga	13.0%	17.7%	42.7%	16.1%	5.2%	2.6%	0.0%	0.0%	0.5%	2.1%	192
Elgon	0.7%	23.4%	26.3%	29.9%	13.1%	1.5%	0.0%	0.0%	0.0%	5.1%	137
Kampala	0.0%	4.0%	8.0%	34.0%	30.0%	6.0%	2.0%	2.0%	2.0%	12.0%	50
Karamoja	1.7%	10.2%	24.4%	30.7%	11.9%	5.1%	9.1%	3.4%	1.1%	2.3%	176
Kigezi	3.6%	15.9%	30.4%	18.8%	13.0%	4.3%	2.2%	0.0%	0.0%	11.6%	138
Lango	0.5%	3.1%	60.1%	30.6%	2.1%	0.5%	1.0%	0.5%	0.0%	1.6%	193
Teso	17.9%	25.3%	43.2%	12.6%	0.0%	0.0%	0.0%	0.0%	1.1%	0.0%	95
Tooro	5.9%	11.2%	34.3%	23.7%	5.3%	0.6%	0.6%	0.6%	8.3%	9.5%	169
West Nile	1.6%	6.5%	35.8%	36.6%	8.1%	4.1%	3.3%	3.7%	0.4%	0.0%	246

B. Findings on the Affordability of Feature/small Phones

Findings revealed that majority of the survey respondents accounting to 47% (1157) individuals find small button phones unaffordable which is slightly a high response rate as compared to 28% (701) respondents who find the affordable. However, about approximately 25% (622) respondents were unsure in their opinions possibly maybe they had no small phones.

Figure 54: Opinion on affordability of a small phone

Slightly more males accounting to 48% (581) expressed unaffordability of the small button phones as compared to (46%)576 females while only 25% (317) females and 25% (302) males believed they are affordable. Findings showed a slightly equal distribution of responses, implying that maybe both males and females face similar financial challenges in affording small button phones hence affordability barriers are not significantly influenced by gender basing on the data provided by the respondents.

To better understand regional disparities in small phone accessibility, Analysis regarding affordability perceptions across different regions showed that Buganda and West Nile had the highest number of respondents reporting that small phone prices are unaffordable with 46% (233) and 63% (156) respondents respectively. In contrast, regions such as Teso, Tooro, and Kigezi showed a more balanced perception of affordability. However, generally, across all surveyed regions, the majority of respondents still consider mobile phones to be expensive.

C. Cost of smartphones Phones

Findings revealed that the most common price range for smartphones across all regions was UGX 300,001 - 400,000 accounting to 25% of the total respondents, this was followed by UGX 200,001 - 300,000 with 20.2% response rate. A smaller percentage of respondents approximating to 2.3% reported smartphone prices exceeding UGX 800,000, while only 0.2% found smartphones priced below UGX 100,000. According to the game changer for Uganda's Digital economy reports[38], the high cost of smartphones has been a major barrier to digital inclusion in Uganda. While mobile phone use has surged in recent years, smartphone penetration has remained low, primarily due to high costs. Smartphones, which typically range from UGX 400,000 to UGX 1,200,000, remain out of reach for many Ugandans, particularly those in rural areas.

38 Smartphone Financing – A Game-Changer for Uganda's Digital Economy - PML Daily

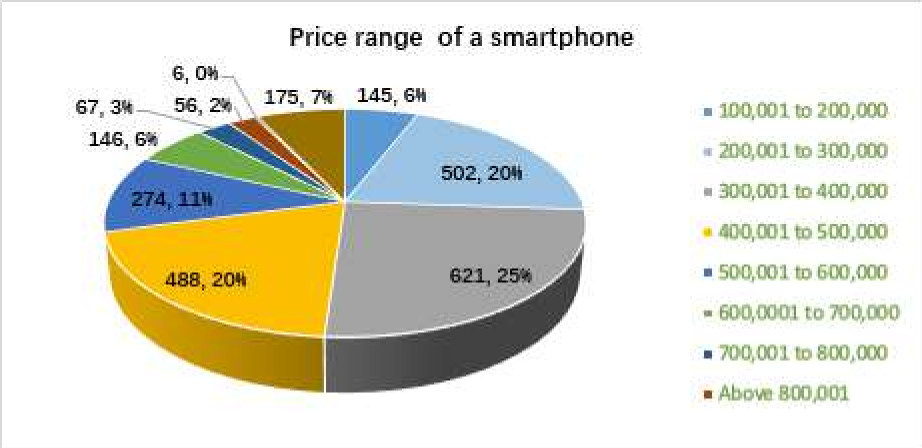


Figure 55: Price range of a Smartphone

Females reported slightly higher price brackets of smartphones than men, with 25% (312) females and 24% (309) males noting prices in the UGX 300,001 - 400,000 range. However, majority of the females accounting to 3% (33) respondents reported smartphone prices greater than 800000 as compared to 2% (23) males who reported the same scenario implying maybe females need to be sensitized about smartphone prices posing a possibility that they being exploited.

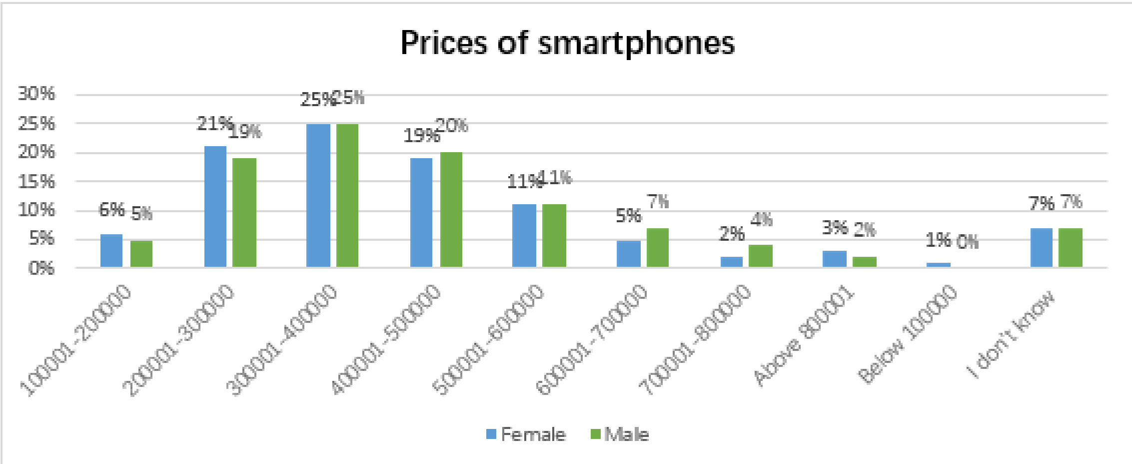


Figure 56: Prices of smartphones, By Gender

Breaking down smartphone prices by region, Buganda, West Nile, and Tooro reported the highest smartphone prices, with some phones exceeding UGX 800,000. In contrast, Lango and Acholi reported lower price ranges, mostly between UGX 200,000 - 400,000.

Region	Below 100,000	100,001-200,000	200,001-300,000	300,001-400,000	400,001-500,000	500,001-600,000	600,001-700,000	700,001-800,000	Above 800,001	I don't know
Acholi	0.0%	8.5%	33.8%	28.9%	15.5%	4.9%	0.7%	0.0%	0.7%	7.0%
Ankole	0.0%	0.0%	4.7%	35.2%	14.1%	16.4%	21.1%	7.8%	0.0%	0.8%
Buganda	0.6%	10.2%	22.2%	23.4%	17.3%	10.2%	3.9%	1.6%	5.3%	5.3%
Bukedi	0.0%	2.1%	14.3%	40.7%	25.0%	1.4%	1.4%	0.0%	0.7%	14.3%
Bunyoro	0.0%	5.5%	40.6%	6.1%	11.5%	6.7%	7.9%	10.3%	3.6%	7.9%
Busoga	0.0%	16.1%	27.6%	25.5%	15.6%	7.8%	1.0%	0.5%	0.0%	5.7%
Elgon	0.0%	1.5%	15.3%	33.6%	24.1%	5.8%	2.9%	0.7%	1.5%	14.6%
Kampala	0.0%	2.0%	8.0%	10.0%	22.0%	26.0%	10.0%	2.0%	8.0%	12.0%

Karamoja	0.0%	1.1%	2.8%	22.2%	30.1%	13.1%	18.8%	6.8%	1.1%	4.0%
Kigezi	0.0%	6.5%	3.6%	10.1%	20.3%	26.8%	6.5%	1.4%	2.9%	21.7%
Lango	0.0%	6.2%	46.6%	27.5%	13.0%	4.7%	0.5%	0.0%	0.0%	1.6%
Teso	0.0%	0.0%	9.5%	28.4%	27.4%	22.1%	9.5%	0.0%	0.0%	3.2%
Tooro	1.2%	1.8%	5.9%	18.3%	18.9%	22.5%	8.9%	6.5%	3.0%	13.0%
West Nile	0.4%	3.7%	20.7%	34.6%	27.6%	6.9%	2.0%	1.6%	1.6%	0.8%

These regional disparities highlight the need for affordability measures, particularly in high-cost areas to make sure that smartphones are affordable to everyone regardless of the region a person comes.

Furthermore, after assessing individual responses on whether the price of digital devices is affordable to all residents, we sought to understand if digital services are equally accessible to all groups within their communities through FGDs. Nearly all respondents (93%) 25 individuals indicated that digital services are not equally accessible, citing limited access for certain groups and issues related to poverty. However, two groups specifically among the youth and women in Kwania District reported equal accessibility, attributing it to the participation of all groups in the Parish Development Model (PDM).

"Yes, because in every group we are including the youth the PWD, good example is the PDM, But this for a few people around. Some of the villages don't have electricity, electricity is around the town and the main streets and for internet connectivity poor in those areas making access to internet connectivity difficult." Women, Kwania district.

"Such cases are not here, however for the persons with disabilities the transport means of training these people is a challenge." Persons with Disabilities, Pakwach

Perceived strategies for addressing Digital Service Affordability Challenges according to key informants

Key Informants highlighted various strategies including Subsidization and Cost Reduction (26.3%) which emerged as the most widely mentioned approach, including affordable data bundles, government subsidies, and cost-sharing initiatives to lower the financial burden on users. Free Internet Access Initiatives (17.5%) such as free Wi-Fi zones in public spaces such as schools, community centers, and government offices to provide connectivity for those unable to afford private internet access an initiative mainly being conducted by UCC. Digital Device Distribution & Financing (13.2%) was another strategy that has been implemented through UCC-led initiatives distributing phones and digital gadgets to underserved communities, along with financing models like M-Kopa, allowing installment-based payments for smartphones.

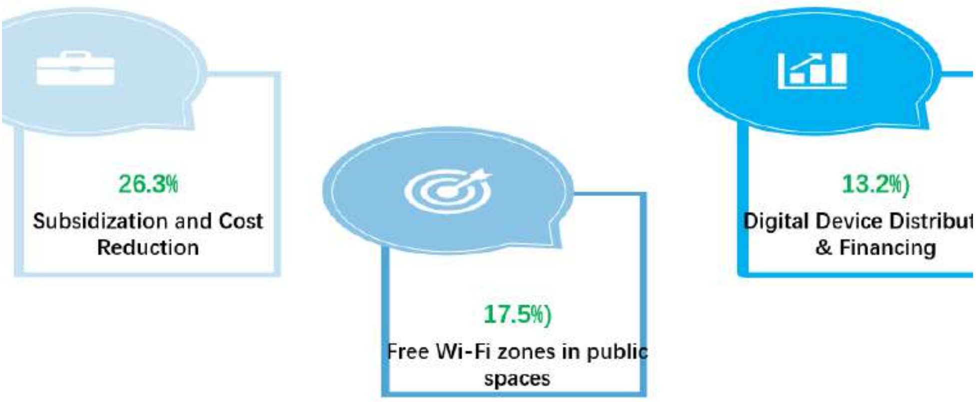


Figure 57: Strategies for addressing Digital Service Affordability Challenges

Despite these efforts, 23.7% of the KIIs reported no visible affordability interventions in their communities, highlighting the need for stronger public awareness, expanded subsidies, and better monitoring of policy impact.

"These have not been visible in my community on ground" (District official, Koboko)

These findings are further supported by feedback from key specific Key informants interviewed regarding strategies to address Digital Service Affordability Challenges as shown in the figure below.

NGOs	➢ We run programs that provide affordable access to technology and the internet through community hubs.
Local Governments	➢ At least each village should have a free surfing center with free internet. ➢ The approach of providing the ICT materials, basing on pilot efforts made by UCC can be rolled out. Working with the private people to regulate the provision of fake products.
Telecom Operators & ISPs	➢ We provide free internet zones and affordable data bundles. ➢ Infrastructure sharing helps reduce CAPEX and OPEX, allowing for lower service costs.
MDAs	➢ Zero-rating broadband services for schools has helped improve affordability. ➢ The government has encouraged telecom operators to introduce affordable data packages for low-income households.
Regulatory Authorities (UCC, UCUSAF)	➢ The Universal Service Fund provides subsidies, but sustainability is a concern. ➢ We are planning wireless hotspots, subsidizing them to make them more affordable. ➢ The solution is device financing with installments ... this would solve affordability.

D. Barriers to ownership of computers by SMEs

Among all the interviewed SMEs, (48%)34 reported owning computers, while a slightly higher number, totaling (52%)37 participants, indicated they did not own a computer. Out of the 37 SMEs that reported not having computers, the majority of them accounting to 73% (27) respondents cited the high cost as the main barrier, making it difficult for them to afford one. Additionally, (32%)12 respondents stated that they did not see the need for computers in their operations, while (19%)7 had previously owned computers that broke down, and another (19%)7 lost theirs to theft. Other challenges included limited electricity access, unavailability of computers in their area with 4 and 6 respondents respectively.

According to World Bank (2022). Digital Transformation of SMEs: Policy Perspectives, many small businesses are unable to own or use computers because they are too expensive. The report also explains that some SMEs do not see the need for digital tools, while others face challenges like poor electricity and internet, or lack the skills to use the technology. These findings support the results from our study, where high cost, lack of need, and other issues like theft and breakdown were the main barriers to computer ownership.

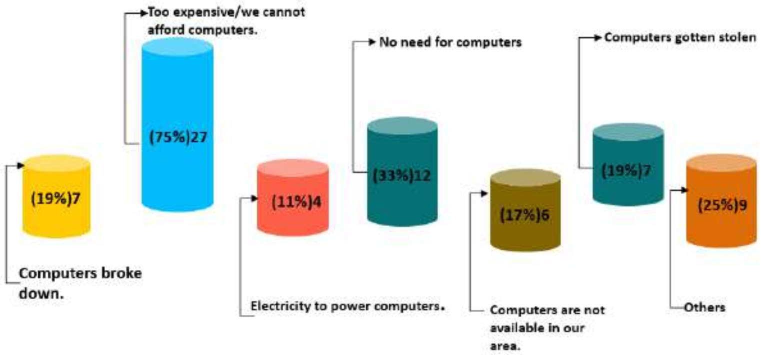


Figure 58: Barriers to ownership of computers among SMEs

Analyzing this data further by the type of a business, it was realized that affordability is the most significant challenge for ICT Centers/Mobile money Businesses, particularly for mobile money agents, where 57% (25) respondents indicated they could not afford computers. ICT centers faced fewer affordability issues, with only 2 reporting cost as a barrier. Computer breakdowns were reported across all categories, with mobile money agents being the most affected with 4 respondents, followed by digital hubs with 2 respondents and ICT-enabled SMEs with 1 respondent. Theft also emerged as a concern, particularly for mobile money agents with 5 cases and digital hubs with 2 cases, suggesting a need for better security measures.

Electricity access was a minor challenge, with only a few mobile money agents (3) and ICT-enabled SMEs (1) citing power issues. Additionally, a significant number of mobile money agents (12) indicated that they did not see the need for computers in their operations, reflecting differences in digital adoption needs among business types.

Limited availability of computers was reported mostly by mobile money agents (5) and to a lesser extent by digital hubs (1).

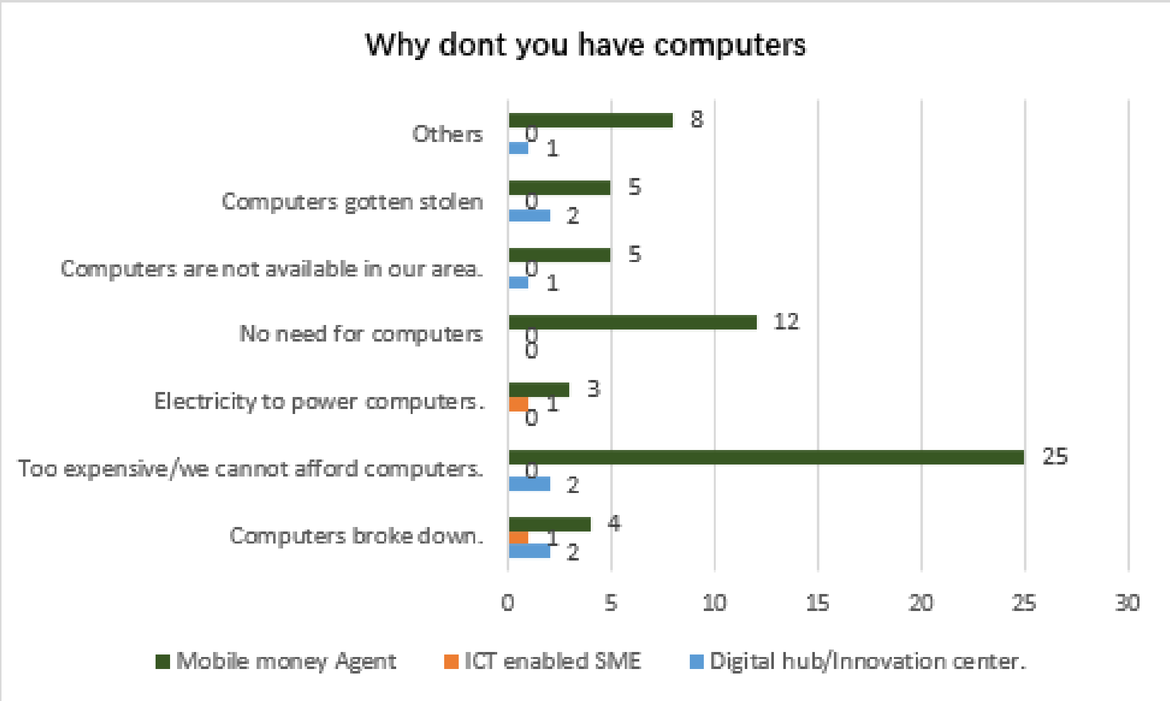


Figure 59: Barrier to usage of a computer by SME category

The demand for the service is too low. “Mobile Money Agent, Nabilatuk town council”
It is the boss to decide if I can get a computer. “Mobile Money Agent, Amuru district.”

3.2.4 Affordability of Telephony and Broadband Services

Disposable income for communication services in Uganda ranges from as low as UGX 5,000 among students and refugees to as high as UGX 1.5 million for senior professionals. With average fixed broadband costs between UGX 138,490 and 160,000 per month and mobile data bundles like 8 GB priced at UGX 25,000.

i. **Characteristics of unserved and underserved groups:**

Additionally, out of the 71 SMEs surveyed regarding the key characteristics of unserved and underserved groups, 50.7% (36 respondents) identified poor network connectivity and unreliable power supply as the primary challenges that identify the unserved and underserved groups. Economic constraints were mentioned by 14.08% (10 respondents) as a significant barrier, while 21.13% (15 respondents) pointed to low education and digital literacy as factors hindering access. Additionally, 8.45% (6 respondents) highlighted the vulnerability of specific groups, such as people with disabilities (PWDs), youth, the elderly, and women.

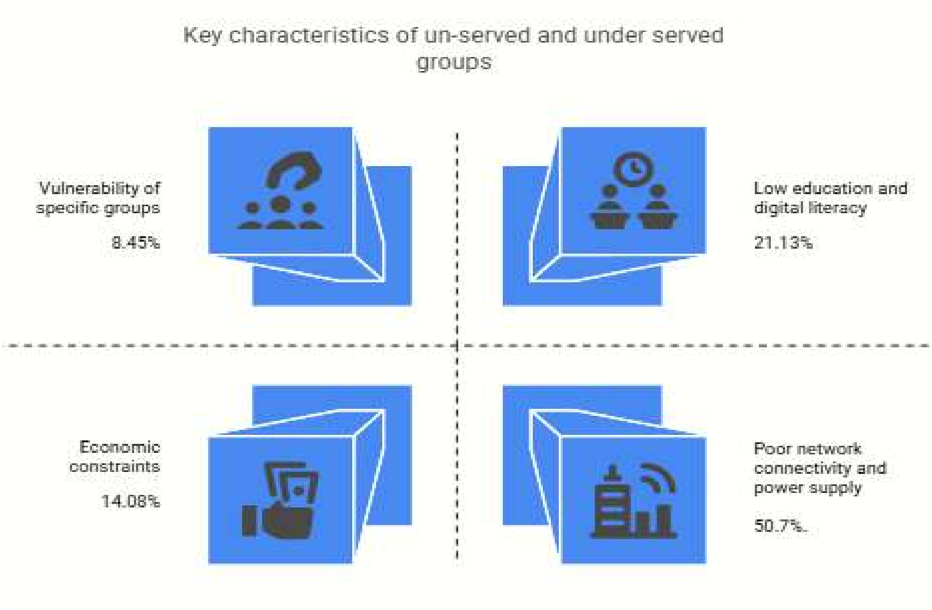


Figure 60: Characteristics of unserved and underserved community

The analysis of unserved and underserved groups highlighted several defining characteristics, including low-income levels, limited digital literacy, geographical isolation, and social vulnerability. Based on these characteristics, specific demographic groups such as persons with disabilities (PWDs), women, youth, smallholder farmers, and refugees were identified as most at risk of being excluded from access to affordable telephony and broadband services.

Understanding affordability for these vulnerable groups is therefore critical in assessing the real extent of the access and usage gap. The following analysis presents affordability patterns, highlighting how the intersection of income limitations and service costs continues to reinforce digital exclusion among the identified groups.

ii. Affordability of telephony and broadband services vie different demographics

Across Uganda today, fixed-line broadband and mobile telephony each carry distinct cost profiles that interact closely with residents' monthly communication budgets (i.e. their disposable income for services). Fixed-broadband packages such as an 8 Mbps home connection in Kampala average about UGX 138,490 per month[39], while entry-level Fiber-to-home plans now start around UGX 160,000 per month[40]. Mobile data bundles, by contrast, can be purchased in small increments: for example, MTN's` "Freedom" 8 GB bundle costs UGX 25,000 (About 3.125 UGX/MB) with no expiry[41] and standard prepaid data is charged at UGX 30/MB[42] (or 0.8 UGX/KB on default plans[43]).

Mapping these service costs against different demographic groups' monthly communication budgets, only higher-earning segments senior consultants (UGX 1.5 m), security managers (UGX 1.3 m), and medical officers (UGX 500 k) can comfortably afford fixed-broadband (UGX 138–160 k) alongside moderate telephony usage.

Mid-income groups such as SMEs (UGX 200 k), HODs (UGX 400 k) and science teachers (UGX 150 k) could opt for either modest Fiber packages or robust mobile bundles, but would need to allocate the bulk of their communication budget to broadband. The vast majority PWDs (UGX 30 k), women unserved/underserved (UGX 20 k), youth (UGX 15 k), students and refugees (UGX 5 k) can realistically afford only basic mobile-voice and small daily/weekly data bundles, relying almost entirely on low-cost mobile plans rather than fixed broadband. The demographic breakdown in the table below. Bottom of Form

Table 18 showing affordability of telephony and broadband services vie different demographics

39 Price of Internet 8 Mbps (1 month) in Kampala
40 Business Focus
41 MTN Uganda
42 lycamobile.ug
43 Tiketi.com

Description	Categories	Monthly Avg Income (UGX)[44]	Core Expenses [45]	Disposable Income Available for Communica-tion Services (UGX)[46]
PWDs	-	250,000	220,000 (food, healthcare, housing)	30,000
SMEs	-	1,500,000	1,300,000 (rent, utilities, supplies)	200,000
Women (Unserved and Underserved)	-	180,000	160,000 (food, childcare, education)	20,000
Youth (Underemployed & Unemployed)	-	150,000	135,000 (food, transport)	15,000
Students (Secondary & Primary)	-	50,000 (allowances)	45,000 (school fees, stationery)	5,000
Refugees	-	80,000 (aid/ hustles)	75,000 (food, shelter)	5,000
Health workers	CHW	400,000	350,000 (Living expenses & transport)	50,000
	Medical Officers	2,500,000	2,000,000 (Living & professional expenses)	500,000
	Senior Consultants	8,000,000	6,500,000 (Living & professional expenses)	1,500,000
Security Personnel	Security Guards	30000	260,000 (rent, food, utilities)	40,000
	Supervisors	800,000	500,000 (housing, school fees, transport)	100,000
	Senior Security Officers	2,000,000	950,000 (mortgage, healthcare, family support)	250,000
	Specialized Security Personnel	4,000,000	2,000,000 (advanced training, equipment loans)	500,000
	Security Managers	8,000,000	3,200,000 (investments, travel, insurance)	1,300,000
Low Cadre Civil Servants	CAO	1,200,000	1,000,000 (Household & transport)	200,000
	HOD	2,000,000	1, 600,000 (Household & transport)	400,000
Small Holder Farmers	-	300,000 (seasonal)	280,000 (seeds, labor, loans)	20,000
Teachers (Primary & Secondary, Arts & Sciences)	Primary	500,000	450,000 (Living & education-related expenses)	50,000
	Secondary (Arts)	800,000	700,000 (Living & education-related expenses)	100,000
	Secondary (Science)	1,000,000	850,000 (Living & education-related expenses)	150,000

44 **Uganda 2022 Poverty As**sessment Brief (World Bank Report)
45 Uga**nda Bureau of Statistics** (UBOS Income & Expenditure Report)
46 **Facts and Figures 2023 - Affordability of ICT Services** (ITU Report)

Opinions from the FGDs. Generally, the FGDs were asked whether they could afford the cost of mobile and internet services. Out of 27 FGDs conducted, nearly all participants stated that they could not afford internet services. They cited the high cost of smartphones and data as major barriers, preventing them from fully utilizing digital services.

Youth in Amuru district. Occasionally when there is availability of fund, but there are cheaper packages, need to lower the cost.
Youth in Obongi district. There is a select category that can afford the cost of mobile and internet services. It is only the youth, working class (formal employment) and people who are involved in creative art in the community. 95% of our community members use button phones (basic feature phones).
Youth in Koboko district. No. We literally have to sell a goat to afford a smartphone and sell a cock every week in order to afford internet bundles.

Furthermore, the FGDs were asked whether they had ever stopped using internet or mobile services due to cost. Nearly all respondents, out of 27 responses, indicated that they had to discontinue internet use primarily due to a lack of funds to purchase data. Some mentioned that they resorted to using data only occasionally.

"YES, some people specifically for cost but others are not aware of the purpose of the internet." Persons with Disabilities in Pakwach district.
"Yes. Most of us resorted to using the internet once in a while." Youth in Koboko district.

3.2.5 Awareness of Emerging Technologies (4IR and AI)

Among 71 surveyed SMEs (ICT centers and mobile money agents), only 34% reported using emerging technologies, highlighting limited grassroots adoption despite growing national-level initiatives.

Uganda has made strategic commitments to harness Fourth Industrial Revolution (4IR) technologies including AI, IoT, blockchain, and automation as drivers of inclusive growth. Key milestones such as the National 4IR Strategy (aligned with Vision 2040) and the launch of the AI Task Force in 2024 underscore efforts to integrate these technologies into sectors like agriculture, trade, and governance[47]. In 2024, UCC inaugurated an AI task force with the aim to promote the adoption of AI in the communications sector. [48]Part of the key areas of assessment in this study was the awareness and usage of emerging technologies. However, field data reveals a disconnect between national policy ambition and local adoption, especially among SMEs and rural actors.

The 33% (8) respondents adoption rate among SMEs employed emerging technologies for research, 5 21% (5) leveraged them for business transactions and another 21% (5) utilized them for business development through information generation, 17% (4) use them for communication. 4% (1) respondent used the technology for automation and another one for pricing his products through looking at the market rate online as illustrated in the figure below.

"Sometimes I use it to search some things." Said by A representative from Amolatar town council in Amolatar district.
"You can command it to write whatever you want, ask questions, and get answers from you." Said by A representative from Nabilatuk town council in Nabilatuk district.
"They help in carrying out research." By ICT Engineer from Kabale district.

47 Executive-Summary-Ugandas-National-4IR-Strategy.pdf
48 UCC Launches AI Task Force to Drive Adoption and Innovation in Uganda's Communications Sector

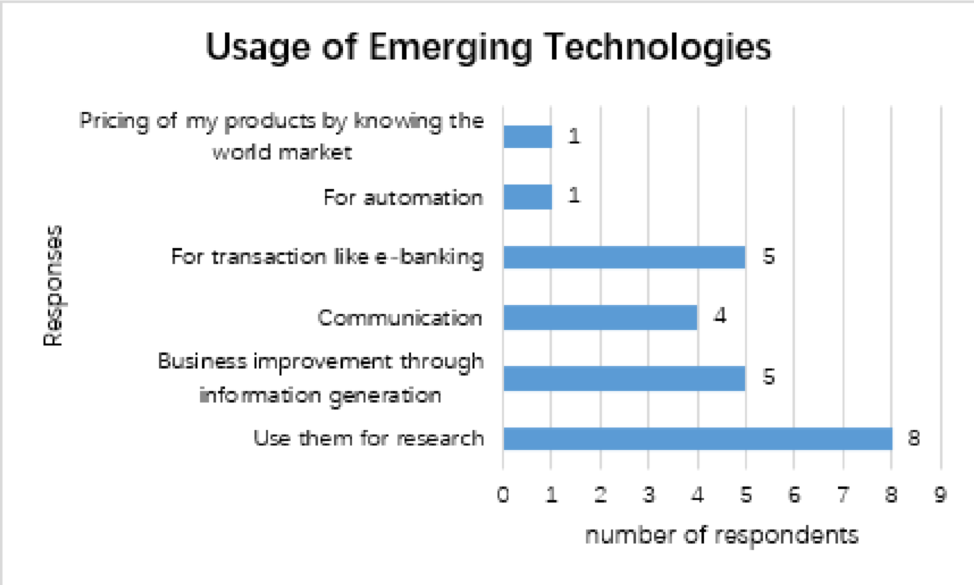


Figure 61: A Figure showing the usage of emerging technologies.

Among 115 key informants, 70% expressed awareness of ongoing efforts to integrate 4IR and AI into regulatory frameworks. Initiatives like the National 4IR Strategy and the Smart Uganda Master Plan were commonly cited. In further discussions, they didn't carry the clarity of how emerging technologies are being integrated however mainly MDAs especially regulatory bodies were fully aware mentioning frameworks such the national 4IR strategy as highlighted below,

"Emerging technologies, particularly AI and the Fourth Industrial Revolution (4IR), are increasingly being integrated into regulatory frameworks aimed at promoting universal access." (Local government official, Koboko District)

"Yes, emerging technologies like AI, IoT (Internet of Things) and blockchain are beginning to gain attention in Uganda and Mpigi has started to benefit from these technologies in some ways. The government's Smart Uganda Master Plan is one initiative aimed at promoting the use of ICT in government services, which can also help communities like ours." (Youth Leader Mpigi District)

"There's online banking, automated systems including e-government services" (Local Government Official, Kabale District)

Further discussions with key informants revealed several barriers hindering the adoption of emerging technologies for universal access. 35% (40) respondents cited unclear government policies and poor implementation, 22% (38) pointed to a lack of public awareness and digital literacy, while 32% (37) highlighted limited digital infrastructure and high costs.

"Knowledge and mindset gap. they think that phones are for only educated people" (Local Government Official, Karenga District)

"Policy gaps, including the lack of enabling regulations for emerging technologies and the absence of clear standards for AI and 4IR integration, are hindering the effective adoption of these technologies to promote universal access." (Telecom Operator)

3.2.6 Access and usage of free emergency communication services

According to this survey, awareness of free emergency communication services stands at 56%, with police emergency numbers (999 and 112) being the most recognized. However, usage does not fully align with awareness levels, as only 56% of those aware have ever used the services.

Free emergency communication services in Uganda encompass toll-free numbers designated for immediate assistance during crises. These include emergency lines for police, medical services, fire and rescue, and disaster response hotlines. For instance, the Uganda Police Force operates toll-free numbers such as 999 and 112 for general emergencies, and 0800199399 for the National Emergency Call Center. Additionally, the Ministry of Health maintains a 24-hour Rapid Response Centre accessible via 0800-990-000 and 0204-660-816.[49]

A. Awareness of Free Emergency communication services

Among the participants who participated in the survey, majority of them accounting to 56% of the total respondents indicated that they are aware of free emergency communication services while only 44% indicated unawareness of free emergency communication services.

Among survey participants, 56 % reported awareness of free emergency communication services, while 44 % did not. Among those aware, police emergency numbers (999 and 112) dominated at 59.6 %, followed by ambulance and UMEME lines at 6.4 % each, UCC toll free lines at 5.0 %, and fire service lines at 3.5 %; Other specialized hotlines services as mentioned by the respondents included the childprotection (WFP) line, solartoll line, Human Rights Commission line, URA, NIRA, UWA, NWSC, WASA, and WATO lines as cited by 1 % of the respondents who indicated awareness respectively.

Figure 62: Awareness of free emergency communication servives

B. Usage of Free Emergency communication services

Among the respondents who reported awareness of free emergency communication services, usage slightly declined with 56% reporting to have ever used the services at some point, while 44% indicated they have never utilized any of them.

Among the usage patterns of the free emergency communication services, 62% reported to have used the services at least once in the previous year, Additionally, 13% reported using the services twice during the same period, while 17% stated relying on them more than twice over the last year. On the other hand, 8% reported to have never used the services within the past year, possibly indicating usage at a much earlier time.

49 https://upf.go.ug/national-emergence-toll-free-numbers-for-public-safety/?utm_source=chatgpt.com

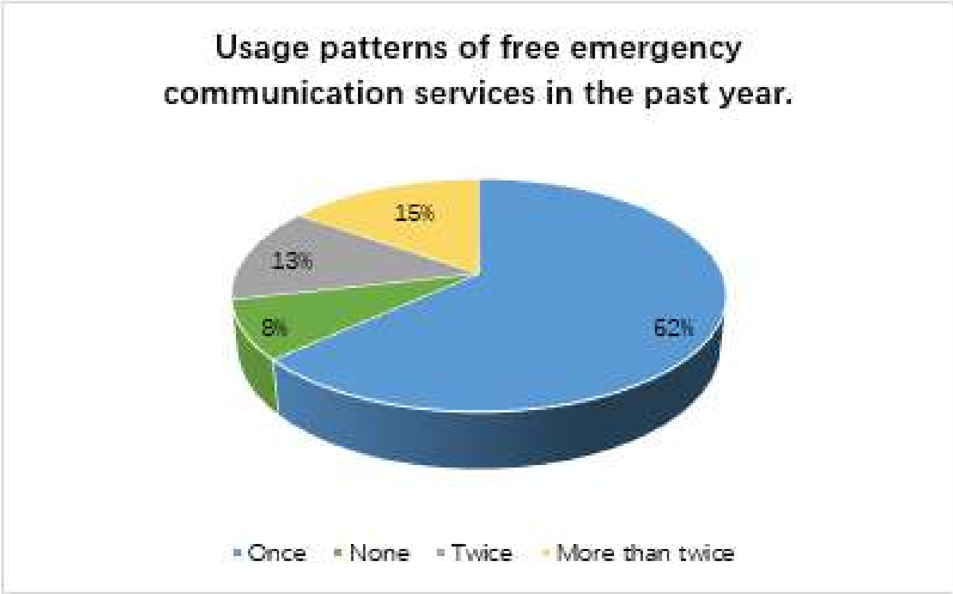


Figure 63: Usage patterns of free emergency communication services in the past year.

3.2.7 User Satisfaction with Operator Assistance and Directory Inquiry Services

According to the survey findings, 47.6% of respondents were highly satisfied with operator assistance and directory inquiry services, giving ratings of 4 and 5. Awareness stood at 82.8%, showing widespread familiarity, although usage varied, with 58% reporting rare engagement in the Assistance services. Overall, the findings highlight strong awareness and generally high satisfaction with these services.

Recent literature supports the survey's findings by highlighting the gap between awareness and usage of telecom assistance services. Kumar et al. (2021)[50] noted that high satisfaction levels such as the 47.6% recorded in our survey reflect user appreciation for fast and multilingual support in operator-assisted services. Despite 83% awareness in emerging markets, the GSMA (2022)[51] reported only 35% regular engagement, echoing our data where 58% of respondents rarely used these services. Studies by Ofori et al. (2022)[52] link low usage to a shift toward digital tools like AI chatbots, while the ITU (2023)[53] attributes this to behavioral inertia despite successful awareness campaigns. Smith and Johnson (2023)[54] suggest that SMS nudges and localized incentives can effectively bridge this gap, increasing user engagement by up to 18% in similar settings.

A. Awareness of Operator Customer Support Services Across Genders.

82.8% of the respondents reported awareness of operator customer support and inquiry services. Awareness rates were nearly identical across genders, with 44% of females and 37.6% of males indicating familiarity. However, 15.6% remained unaware, including 8% of females and 7.6% % of males. A minimal 0.8% (exclusively female respondents) provided unclear responses the 1.6% did not give their views. These results reflect strong overall awareness but highlight opportunities to address gaps for the uninformed minority and refine survey clarity to reduce ambiguity.

50 Kumar, R., et al. (2021). Service Quality in African Telecoms: A Post-Pandemic Analysis. Journal of Telecommunications.
51 GSMA. (2022). The State of Mobile Connectivity in Emerging Markets
52 Ofori, K. S., et al. (2022). Awareness vs. Usage: Bridging the Gap in Africa's Telecom Sector. ICT for Development.
53 ITU. (2023). Digital Trends in Emerging Economies
54 Smith, L., & Johnson, P. (2023). Nudging Telecom Engagement: Evidence from East Africa. Technology & Society

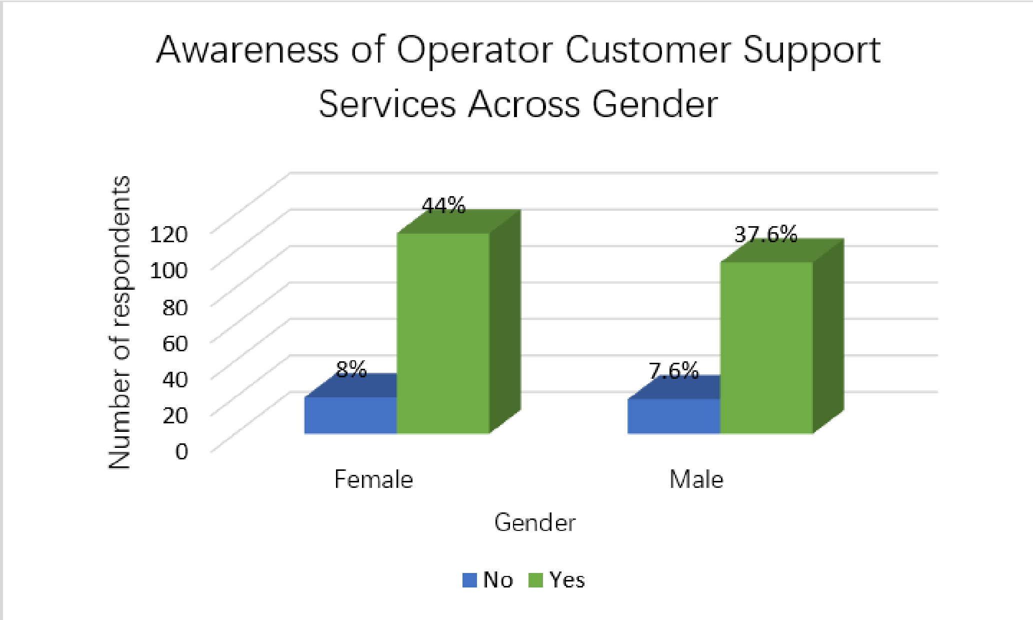


Figure 64: Awareness of Operator Customer Support services across Gender

Figure 8 showing awareness of Operator Customer Support Services Across Genders

B. Awareness of the existing customer support services.

24% respondents reported using MTN services, making it the most frequently mentioned operator. 14% cited Airtel, while 17% referenced both MTN and Airtel. Other categories, including TV/Entertainment services 6%, Mobile Money issues 11.2%, Utility services 4.8% and DSTV/GOTV 4.8%, were less commonly used. Other respondents mentioned various other services like customer support queries e.g., MTN Service centres, UMEME [electricity, 3.6%,] and outliers e.g., Police, indicating diverse engagement beyond mainstream operators. These insights highlight MTN's dominance in customer engagement while showcasing the varied service needs of users.

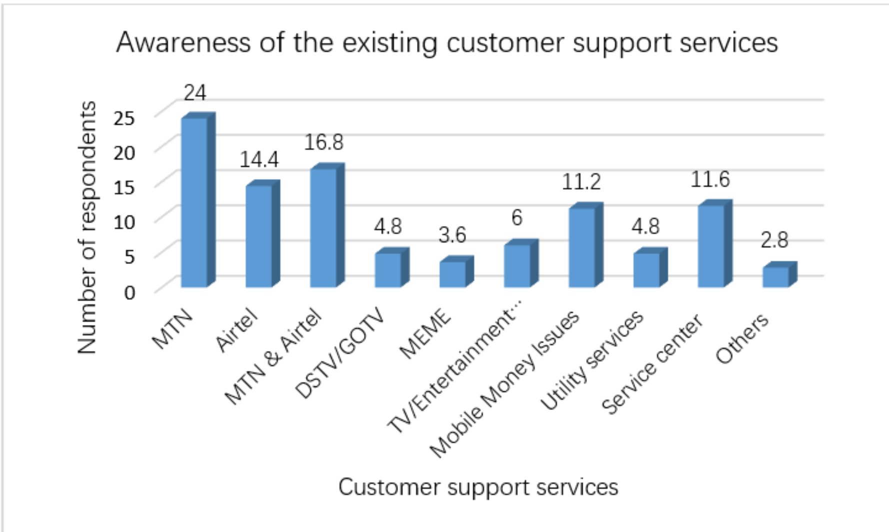


Figure 65: showing the awareness of the existing customer support services

C. Usage of the customer support services.

58% of the respondents reported using operator services such as MTN, Airtel, and TV operators rarely (once a month), making this the most common usage pattern. Meanwhile, 11.2% used the services occasionally (2–3 times a month), and 7.2% indicated they never used them. More frequent usage was less common, with 1.6% using operator services weekly and only 1.2% using them daily. Overall, 20.8% of respondents actively engaged with these services, highlighting significant variation in usage levels across different consumer groups.

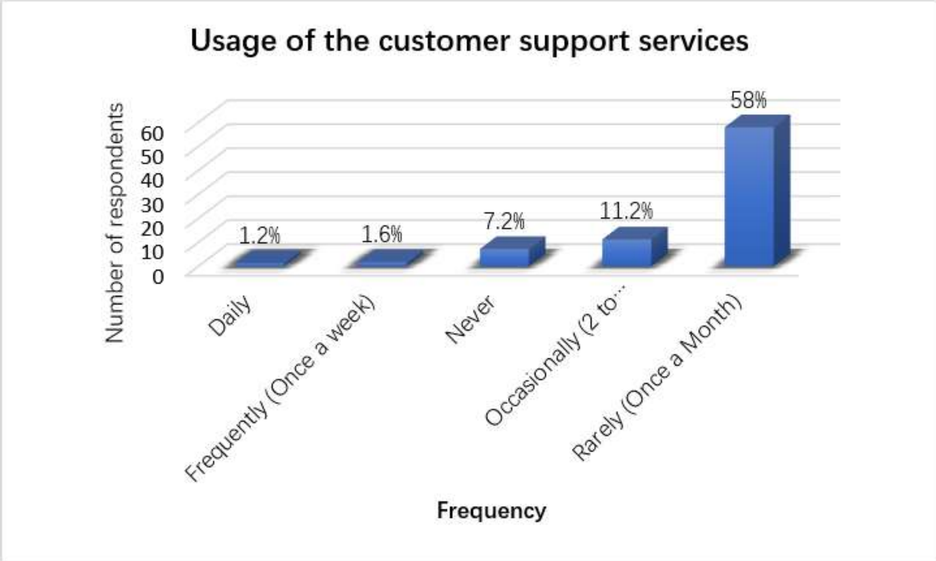


Figure 66: showing the usage of the customer support services

D. Satisfaction rating for the operator customer support services.

Among the survey respondents, 36% indicated to be satisfied with operator customer services, while 21.6% did not give their view on the customer satisfaction. The most common rating was 4, given by 36% of respondents, indicating generally high satisfaction levels. 22.4% rated their experience as 3, reflecting moderate satisfaction. Meanwhile, 11.6% gave the highest rating of 5, while 8.4% rated their experience at the lowest levels (1 and 2 combined). These findings suggest that customer satisfaction with operator services is mostly positive, with a majority of users rating their experiences favorably.

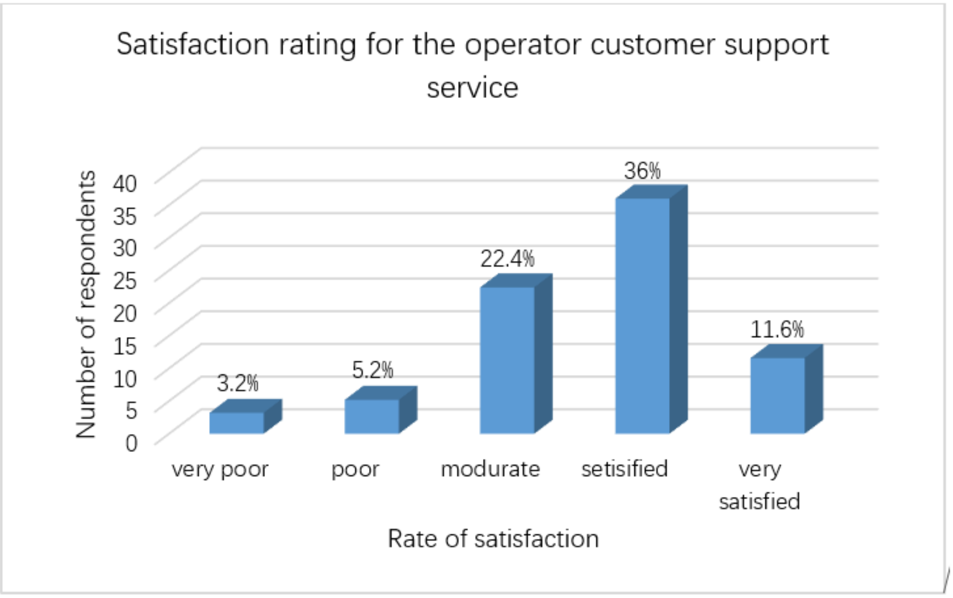


Figure 67: showing the Satisfaction rating for the operator customer support services

3.2.7 Impact of Digital Literacy Programs on Usage of Basic Communication Services

This section assesses the digital literacy skills of the respondents across five key areas: Internet Navigation, Email and Communication Tools, Social Media Usage, Use of Online Services and Basic Computer Skills.

The digital skills assessment revealed significant gaps among the 2,480 respondents, with the majority lacking foundational competencies. Nearly half (46%) had no internet navigation skills, and 51% were unable to use email or communication tools. Social media usage was slightly better, yet 39%

reported no experience with it. The most critical gap was in the use of online services, where 63% had no skills. Similarly, 48% lacked basic computer skills. These findings highlight a widespread digital exclusion, particularly in essential areas like online communication, services and computer use, underscoring the urgent need for targeted digital literacy interventions.

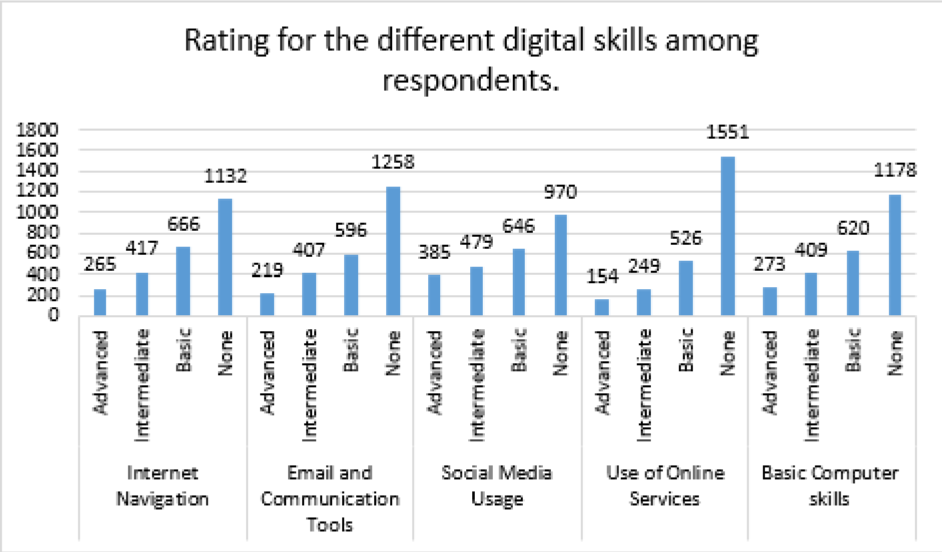


Figure 68: Digital Literacy skills possessed among respondents

A. Digital Literacy skills By Gender

The findings revealed persistent gender gaps in digital literacy across all skill areas. Males consistently outperformed females in advanced digital skills, including internet navigation (11.7% vs. 9.7%), email and communication tools (9.5% vs. 8.2%), social media usage (16.8% vs. 14.3%), online services (7.3% vs. 5.1%), and basic computer skills (12.1% vs. 10.0%). Conversely, females reported higher levels of having no skills, particularly in the use of online services (65.1% vs. 59.9%) and basic computer skills (49.6% vs. 45.3%). These disparities highlight the need for gender-responsive digital literacy programs that address the unique barriers women face in accessing and using digital tools effectively.

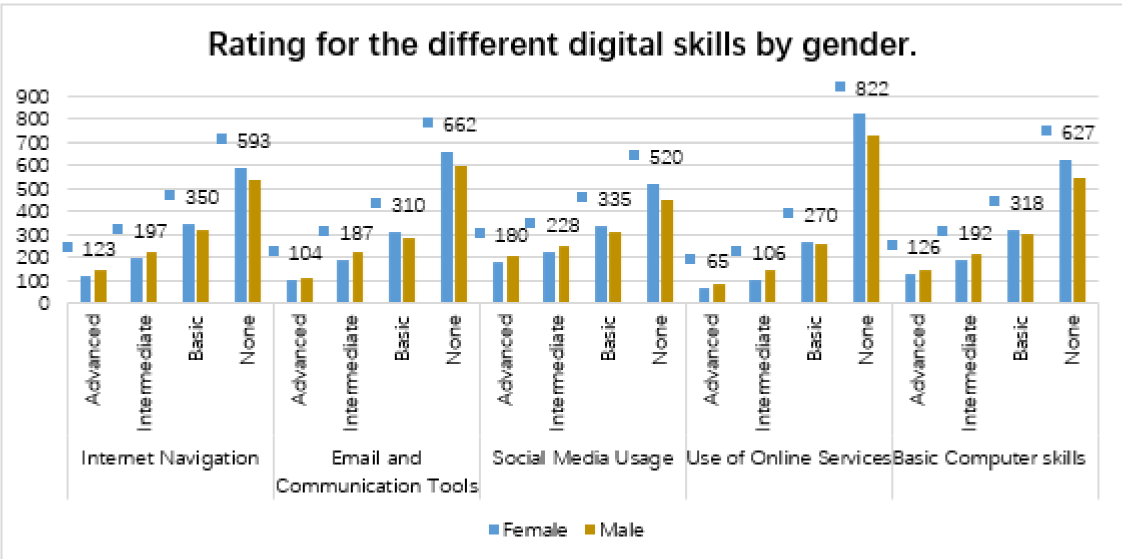


Figure 69: Digital Literacy Skills by Gender

B. Digital Skills Training Received in the Past.

Digital literacy training uptake remains uneven across Uganda, with Kampala 54% and Karamoja 52.3% showing the highest participation rates far outpacing regions like Lango 20.7% and Kigezi 22.5% highlighting a stark urban-rural divide. Age and disability status also drive disparities: younger groups aged 26–30 years 42.5% and 19–25 years 36.6% are more likely to have received training, while only 11.9% of those aged 71+ reported participation. Similarly, persons without disabilities 34.8% are significantly more likely to have received training than those with disabilities 24.6%. Even gender differences exist: slightly more men **35%** than women **32%** get training, but most people in both groups over **65%** still don't get any. These gaps mean many people miss out on basic communication services because of where they live, their age, or disabilities. Without fair access to training, digital tools and services remain out of reach for Uganda's most vulnerable groups.

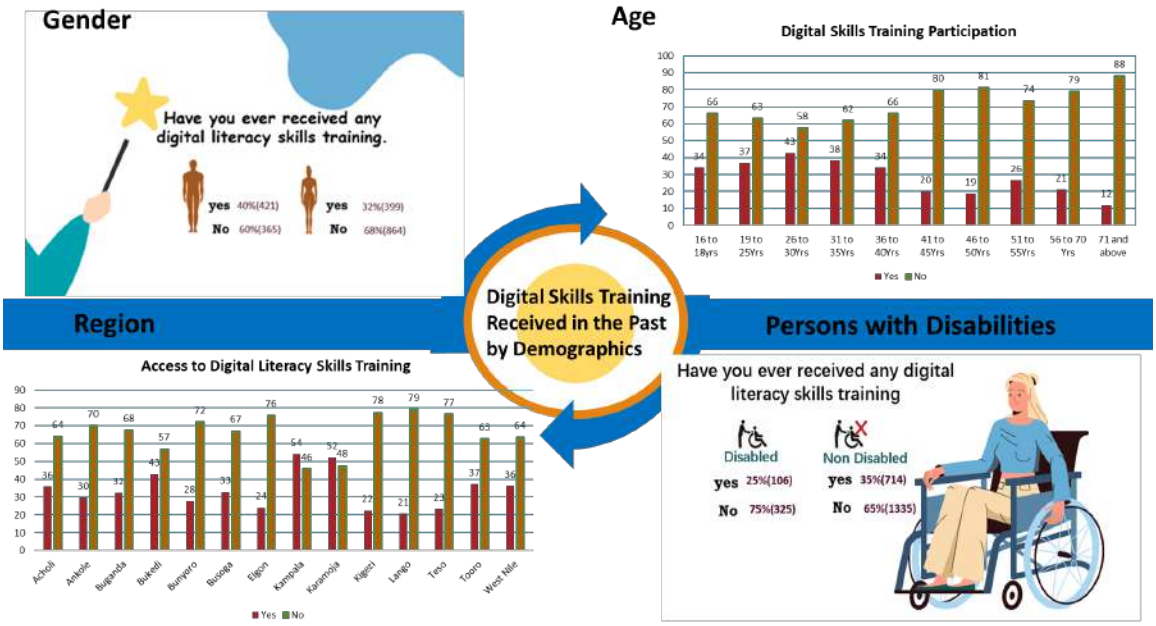


Figure 70. showing digital skills training received in the past.

C. Training providers with training content

The table below summarizes the different providers of digital skills training mentioned by respondents, along with the specific topics covered. It highlights the diversity of training sources from schools and government to NGOs and private institutions and the range of digital literacy and specialized ICT skills offered.

Training Providers	Specific training providers Mentioned	Description of key topics
Schools	Not specifically named	Basic computer literacy (Word, Excel, PowerPoint), general ICT, data entry, e-learning. Some received specialized training in cybersecurity, programming (Python, JavaScript), networking, and web design. Other topics included digital skilling for business, online banking, and e-government services.
Government	Uganda Communications Commission (UCC) and partners	Basic ICT training (Microsoft Office, internet), ICT for agriculture, online trade, digital financial services (e-banking), web design, media production, human capital management, and mindset change. Training offered by UCC and others, ranging from a few days to several months.

NGOs	Various NGOs (not individually named)	Training ranged from basic computer skills to advanced topics like MatLab, AutoCAD, digital security, data management. Sector-focused modules included ICT for agriculture, health (e.g., HIV prevention), business (e.g., e-commerce, digital marketing), and inclusive training for PWDs. Most programs were short-term.
Private Sector	Various private companies and training institutions	Focused on workplace skills: Microsoft Office, internet use, business applications (AutoCAD, MATLAB, GIS), financial analysis, e-commerce, and M&E. Some covered AI, cyberspace, and medical software. Emphasis on entrepreneurial skills and proprietary tools, with training from a few days to two years.
Others	Unspecified 'Others' (e.g., community groups, individuals)	Covered basic literacy (smartphone use, smart TV), agricultural ICT (digital skills for farmers), financial tools (mobile money, POS), and social media. Duration varied widely, mostly short-term.

> The Executive Director, of an SME in Arua pointed out that "Community based training, peer to peer training and community networks" are some of the ways digital literacy programs are being delivered to people in his community.

Community engagements were majorly concentrated in Karamoja with 20% (2) and Lango with 20% (2), while television/radio efforts were notable in Bunyoro 29% (2) and Ankole, 25% (1). Busoga stood out for organizational partnerships with 67% (2), while Lango with 46% (6) and West Nile with 23% (3) had the highest "no intervention" rates.

> The proprietor of an SME in Mbale City highlighted that, "Besides PWDs, other categories have not been trained on digital literacy programs."

D. Demand for Digital Literacy Training

The majority of respondents expressed a strong willingness to enhance their digital skills, with 71.7% (1,779 out of 2,480) indicating interest in attending digital literacy training sessions if provided. This included 36.7% (911) of females and 35% (868) of males. In contrast, a smaller group 7.5% (187 males and 165 females) showed no interest, suggesting the need for targeted awareness campaigns to boost participation. Additionally, a minor segment of just over 1.7% (43) respondents remained undecided, indicating that further engagement may be needed to understand and address their hesitations, as illustrated in the figure below.

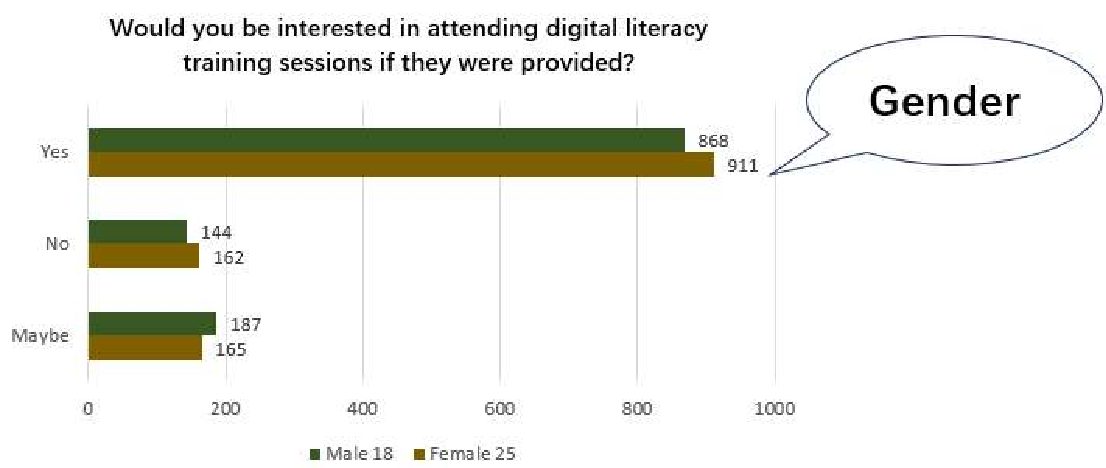


Figure 71: Interest in attending digital literacy training sessions by gender

Of the 82% (464) individuals aged 19–25 expressed willingness to attend digital skills training, making them the most responsive age group. They were followed by 79% (343) respondents in the 26–30 age bracket. This strong interest among younger adults highlights their enthusiasm for digital empowerment. Interest in digital training declined progressively with age, with only 38% (16) individuals aged 71 and above showing willingness to participate. These trends suggest that digital skilling initiatives should prioritize younger populations, who show significantly higher levels of interest, as illustrated in the figure below

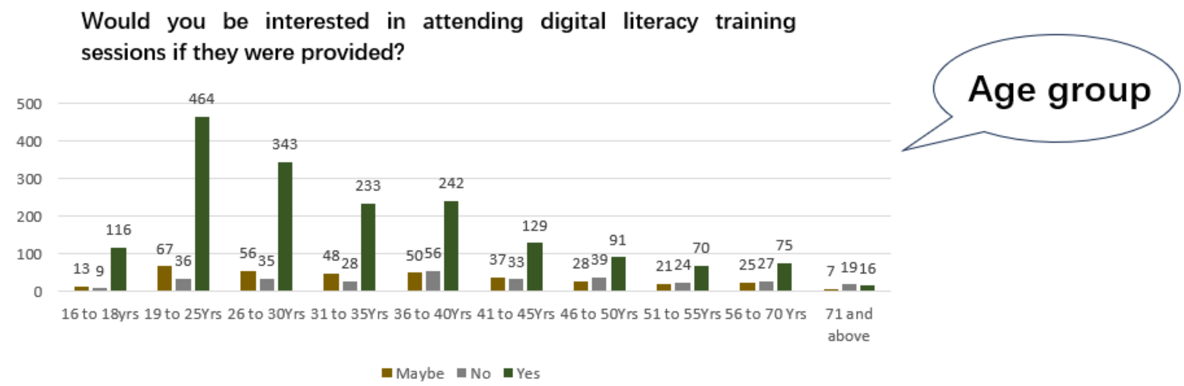


Figure 72: Interest in attending digital literacy training sessions by age group

Among persons with disabilities (PWDs), 61% expressed willingness to attend digital literacy training lower than the 74% recorded among non-disabled respondents. Additionally, 17% of both PWDs and non-PWDs indicated they were unwilling to attend, while another 17% of PWDs and 14% of non-PWDs remained undecided. Although willingness was generally higher across both groups, the lower interest among PWDs suggests a need for more inclusive and customized training approaches to enhance their participation, as shown in the figure below.

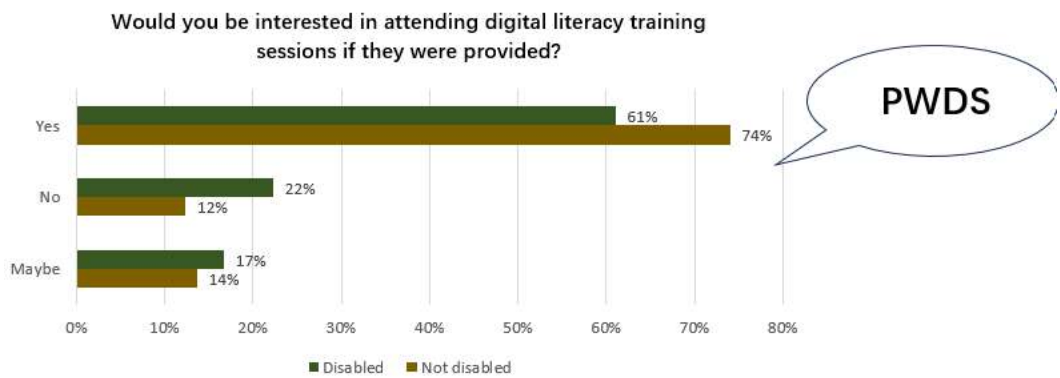


Figure 73: Interest to attend digital literacy training by disability category

3.2.8 Access and Usage of Basic Communication Services by Refugees and PWDs

Access to basic communication services remains limited among Persons with Disabilities (PWDs) and refugees, largely due to affordability, limited device ownership, and inadequate infrastructure. From the survey data (n=385 PWD respondents), 60.5% reported no internet access, with 35.6% citing lack of digital devices as a key barrier. While 63.4% own basic phones, only 32.7% own smartphones and 7.5% own laptops. Usage is dominated by basic communication 68% use phones for calls and SMS while 79.5% of internet users reported affordability challenges. Energy access is also inconsistent, with many relying on solar power, which is often unreliable for sustained internet use.

Among refugees, only 57% own a mobile phone and 23% rely on shared access. Internet usage remains low, with 22% using mobile internet and 18% accessing it via community Wi-Fi or shared devices. The digital divide is most pronounced among the elderly (58.3%) and PWDs (43.8%), who are cited as the most excluded groups. Focus group discussions highlighted barriers such as stigma, lack of awareness of assistive technologies, and physical inaccessibility to ICT spaces. Despite interventions like device subsidies, digital literacy programs, and ICT hubs from UCC, NITA-U, and NGOs, access remains constrained by high costs, poor infrastructure, and weak community-level engagement.

This section explores these challenges in detail, focusing on usage, affordability, accessibility, equity, the effectiveness of existing initiatives, emerging issues and recommendations aimed at enhancing digital inclusion among marginalized populations.

A. Refugee and PWD National Demographic

The term "marginalized groups" refers to those who face exclusion or disadvantage in multiple areas of life, often due to social, economic, or cultural factors. Among these groups are persons with disabilities (PWDs), refugees, youth, and women, all of whom often experience barriers to accessing technology, particularly digital services.

i. **Persons with Disabilities (PWDs):** According to the World Health Organization (WHO), about 15% of the global population lives with some form of disability, with significant disparities in access to technology and the internet[55]. PWDs often face physical, sensory, and cognitive challenges when engaging with digital services. The lack of accessible technologies and affordable devices, coupled with insufficient digital literacy, exacerbates these challenges[56]. This digital divide not only limits PWDs' ability to access essential services but also restricts their participation in social, economic, and political activities[57]

ii. **Refugees**: Refugees are another highly marginalized group. According to the United Nations High Commissioner for Refugees (UNHCR), over 26 million refugees worldwide are displaced due to conflict, persecution, and human rights violations[58]. These individuals often reside in environments with limited infrastructure, including access to digital devices and reliable internet. Moreover, language barriers, lack of digital skills, and limited exposure to technology contribute to their exclusion from digital services[59]. However, there are initiatives aimed at improving digital inclusion for refugees, such as providing access to learning platforms and vocational training online, which are crucial for their integration and empowerment[60].

For marginalized groups, the usage of the internet and access to devices are closely intertwined. The lack of affordable devices is a major barrier. In low-income communities, many individuals, including PWDs, refugees, and women, may not have the financial means to purchase devices or afford internet data[61]. This exacerbates the digital divide, preventing these groups from participating in educational, health, and economic opportunities that increasingly require internet access. Various studies have shown that even when devices are available, the usage of the internet among these marginalized groups can be hindered by low digital literacy[62]. For instance, a study in Uganda highlighted that many women and PWDs are unaware of the technologies available to help them overcome barriers in daily life, such as screen readers for the visually impaired or speech-to-text tools for those with mobility impairments[63]. Training and support in using these technologies are therefore crucial to ensure that these groups can fully participate in the digital world.

B. Access and Usage of Broadband Internet and Telephony Services

Most PWDs lack internet access (60.5%) mainly due to limited digital devices (35.6%) and rely heavily on basic phones (63.4%). Even among users, 79.5% face affordability challenges, while unreliable energy sources further limit digital engagement.

55 World Health Organization. (2011). World report on disability. World Health Organization
56 Ezeani, E., & Udoh, P. (2019). Access to ICT by persons with disabilities: The Nigerian experience. Journal of Disability Studie
57 Andoh, A., & Mensah, S. (2021). Empowering persons with disabilities through digital inclusion: A case study in Ghana. International Journal of Digital Inclusion.
58 UNHCR. (2021). Global trends: Forced displacement in 2020. United Nations High Commissioner for Refugees
59 Nair, R., & Garbe, M. (2018). Digital inclusion for refugees: Challenges and opportunities. Journal of Refugee Studies
60 Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. Journal of Economic Perspectives.
61 Hill, M. L., & Hensley, T. (2020). The economic impact of the digital divide on women and minorities. Journal of Information Policy.
62 Seitz, L. (2017). Digital literacy and the internet in marginalized communities. International Journal of Educational Development.
63 Museveni, Y. (2020). Digital inclusion for persons with disabilities in Uganda. Uganda National ICT Policy Report.

The above statistics resonate with findings from the 2023 NUDIPU report[64], which highlighted that over 60% of PWDs in Uganda lack basic ICT skills, with only 24.7% owning smartphones and 4.7% owning laptops. These findings show that there's urgent need for inclusive ICT interventions that improve access to affordable smart devices, expand digital literacy, and strengthen infrastructure to ensure equitable participation in the digital space.

Persons with Disabilities

i. Sources of energy used by PWDs:

The most commonly used energy sources are solar power and national grid.

While solar energy provides a renewable source of power, it may not consistently support the energy demands of telephony and broadband devices, especially in areas with limited sunlight or inadequate solar infrastructure thus affecting access and usage.

Table 19: Sources of energy among Persons with disabilities

PWDs category	Sources of energy used				
	Solar Power	Generator	National Grid	Other	None
Physical Disability (n=208)	52.4%	1.9%	26.0%	13.9%	5.8%
Visually Impaired (n=69)	66.2%	1.5%	23.5%	7.4%	2.9%
Hearing Impairment (n=58)	59.6%	3.5%	21.1%	14.0%	1.8%
Speech Impairment (n=24)	41.7%	4.2%	37.5%	16.7%	0.0%
Albinism (n=13)	69.2%	7.7%	15.4%	0.0%	7.7%
Little Person (n=8)	62.5%	0%	12.5%	25%	0%
Cerebral Palsy (n=11)	54.5%	18.2%	27.3%	9.1%	0.0
Autism &Mental (n=3)	33.3%		66.7%		

ii. Access and Ownership to digital devices by the PWDs respondents:

Basic phones are the most commonly owned and used digital devices among PWD respondents. Out of 385 PWDs, 63.4% (244) own a basic phone, while 67.3% (259) have access to one.

Table 20: Access and Ownership of digital devices by PWDs

Digital devices	Ownership to digital devices		Access to digital devices	
	YES	NO	YES	NO
Basic Phone	63.4%	33.5%	67.3%	29.6%
Smart TV	11.4%	81.8%	23.4%	69.1%
Desktop	2.9%	89.9%	9.9%	80.8%
Laptop	7.5%	84.9%	17.4%	74.5%
Smart phone	32.7%	61.8%	41.8%	51.2%

iii. Accessibility to internet:

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Majority of the PWD's [60.5% (233 of the 385)] do not have access to internet due to a lack of digital devices (smart phones) 29% (83 of the 233), this is because most of them use feature phones.

		If yes, which device do you use to access the internet?			
	YES Yes, 39.5% (152)	Smartphone 87.9%	Community Access Point 4.5%	Mifi 11.4%	Routers 9.1%

Figure 74: Accessibility to internet among persons with disabilities

iv. Usage of internet:

Majority 44.2% (65) communicated to use it daily however 79.5% sighted affordability challenges.

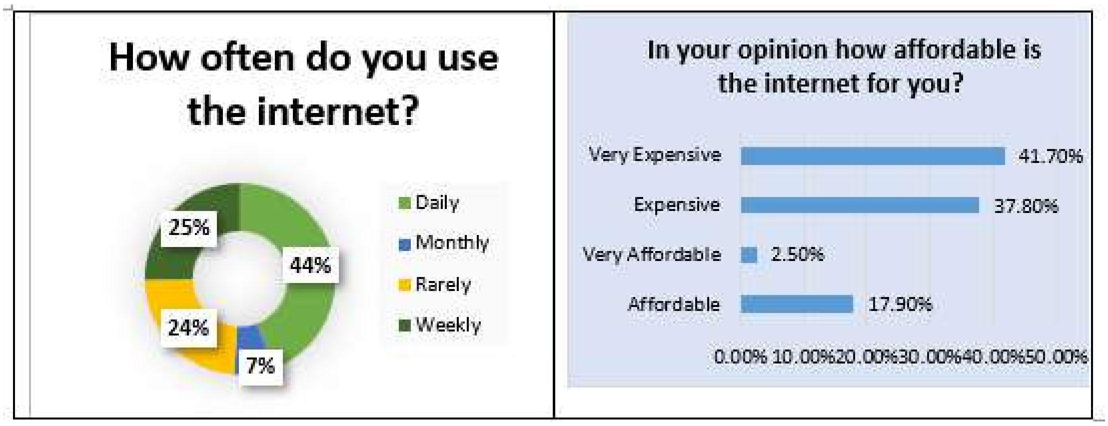

Figure 75: Usage and affordability of internet among PWDs

Refugees

i. Sources of Energy Used by PWDs in Refugee Settings

Reliable access to electricity is a foundational requirement for digital inclusion, yet it remains a critical challenge in refugee settlements. **According to the Situation Analysis Report, only 17.5% of refugee respondents reported having access to the national electricity grid, while the majority 68.9% depend on solar energy for powering their devices..**[65]

ii. Access and Ownership of Digital Devices by PWD Respondents

The Situation Analysis Report reveals that while most refugees own at least one communication device, **the majority of these are basic phones (button phones) 84% that lack internet capability**.

iii. Accessibility to internet

Internet accessibility remains one of the most pressing challenges in refugee settlements. Despite most settlements falling within 3G coverage zones, actual internet access is sparse and unreliable, particularly in the more remote parts of settlements. Poor signal strength, lack of affordable data packages, and the absence of public Wi-Fi significantly affect connectivity. Usage of Internet and Digital Services by PWDs.

iv. Usage of internet

Internet usage among refugee populations is largely limited to basic functions such as SMS (34.9%) and social media (29.2%), with WhatsApp being the most commonly used app. However, for PWDs, digital service usage is constrained by a combination of factors: lack of devices, poor digital literacy, cost barriers, and inaccessible content.

65

The report revealed that 66.1% of PWD respondents had no skills in using online services, while a majority lacked access to any form of structured digital training or exposure. This digital exclusion further widens socio-economic gaps and limits their ability to engage in education, work, or community life through online platforms.

v. Equity in Service Delivery

76.5% of respondents believe digital services are not equally accessible due to high costs, resistance to technology, and lack of awareness. Among marginalized groups, the elderly (58.3%) and Persons with Disabilities (PWDs) (43.8%) are the most excluded, facing affordability issues, limited awareness of assistive technologies, and social stigma. While 23.5% noted improvements in accessibility through affordability, mindset shifts, and sensitization efforts, regional variations highlight persistent barriers, particularly for these vulnerable groups.

This resonated with information from the Revised National Policy on Persons with Disabilities, 2023[66], which indicates that over 12.4% of Uganda's population consists of Persons with Disabilities (PWDs), many of whom face exclusion from digital services due to affordability issues, limited awareness, and social stigma. The policy highlights that PWDs and the elderly are among the most marginalized groups in accessing essential services, reinforcing the survey findings.

Categories of Specific Groups Left Out from Accessing Digital Services, Categorized by Region: From the survey conducted, the Elderly (58.3%) and PWDs(43.8%) are the most left out from accessing digital services.

Category	Women	PWDs	Refugees	Elderly	Illiterate and poor people	Youth & children	Under-served communities & Unserved communities
Respondents on equity in service delivery	24.8% (419)	43.8% (741)	9.1% (154)	58.3% (986)	7.7% (130)	3.8% (64)	2.8% (48)

Figure 76: Specific groups mentioned to be left out in accessing digital services

Respondents from the Focus Group Discussions highlighted that the main challenges faced by PWDs and refugees in accessing digital services are limited awareness, affordability issues, and social stigma are major barriers to digital inclusion for Persons with Disabilities (PWDs).

> "They are not aware of existing technologies that could support their disabilities. Additionally, most ICTs for the disabled are expensive and unaffordable for many in their communities," as noted by Women of Koboko.
> "They feel stigmatized and require specialized computer devices," according to Youth Women Farmers of Maracha.
> "They are often unable to access certain venues where opportunities are provided and are frequently exploited due to their lack of knowledge," shared by youth in Koboko.

Further discussions with survey respondents from Acholi and Ankole revealed that 43.8% (64) of the 146 respondents from Acholi indicated that Persons with Disabilities (PWDs) were excluded from accessing digital services, while 67.4% (62) of the 92 respondents from Ankole noted that the elderly were left out.

66 https://mglsd.go.ug/wp-content/uploads/2023/07/FINAL-REVISED-NATIONAL-POLICY-ON-PWDs-2023.pdf

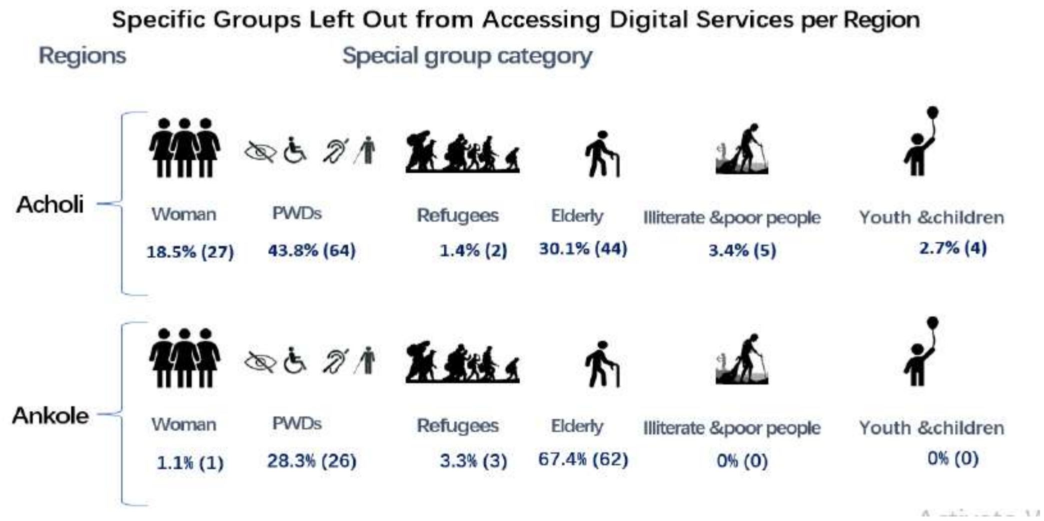

Figure 77 Findings from Acholi and Ankole on specific groups left out from accessing digital services per region.

Insights from survey respondents in Bukedi and Bunyoro showed that 41.3% (57) of the 138 participants from Bukedi highlighted that elderly were excluded from accessing digital services, while 37.7% (40) of the 106 respondents from Bunyoro pointed out that the elderly were left out.

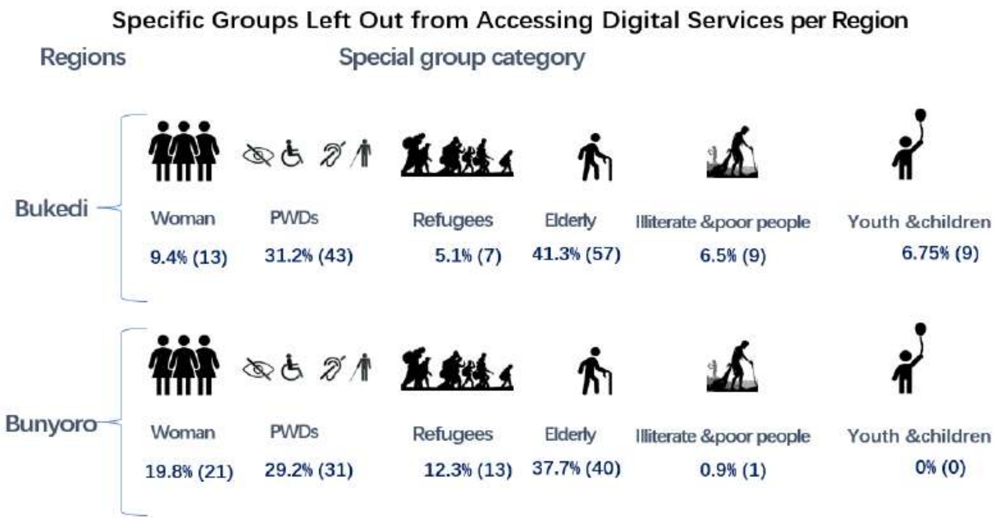

Figure 78 Findings from Bukedi and Bunyoro on specific groups left out from accessing digital services per region.

Additional insights from survey respondents in Busoga and Elgon showed that 32.9% (54) of the 164 participants from Busoga highlighted that elderly were excluded from accessing digital services, while 47.4% (45) of the 95 respondents from Elgon pointed out that the elderly were left out.

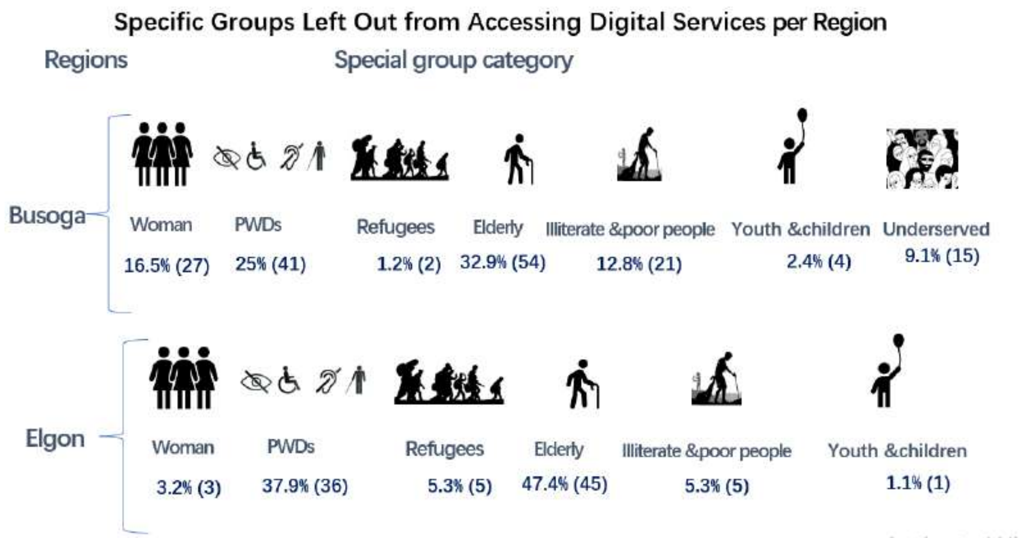

Figure 79 Findings from Busoga and Elgon on specific groups left out from accessing digital services per region.

Further feedback from survey respondents in Kampala and Karamoja revealed that 40% (12) of the 30 participants from Kampala indicated that Persons with Disabilities (PWDs) were excluded from accessing digital services, while 28.9% (105) of the 270 respondents from Karamoja highlighted that the elderly were left out.

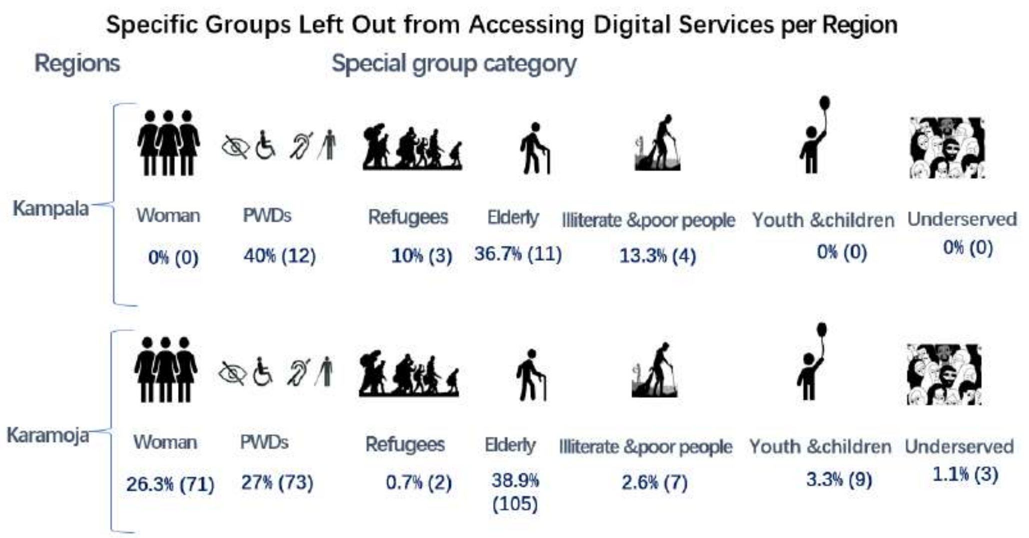

Figure 80 Findings from Kampala and Karamoja on specific groups left out from accessing digital services per region.

Further feedback from survey respondents in Kigezi and Lango revealed that 42% (60) of the 143 participants from Kigezi indicated that elderly were excluded from accessing digital services, while 28.7% (143) of the 499 respondents from Lango highlighted that the elderly were left out.

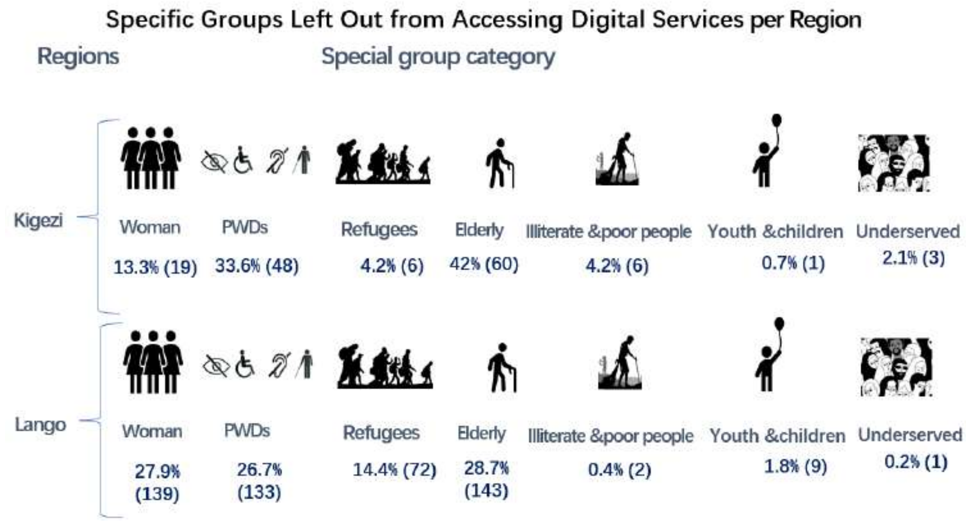

Figure 81 Findings from Kigezi and Lango on specific groups left out from accessing digital services per region.

Additional feedback from survey respondents in Buganda and Teso showed that 41.6% (189) of the 454 participants from Kigezi reported that the elderly were excluded from accessing digital services, while 38% (52.8) of the 72 respondents from Lango pointed out that the elderly were left out.

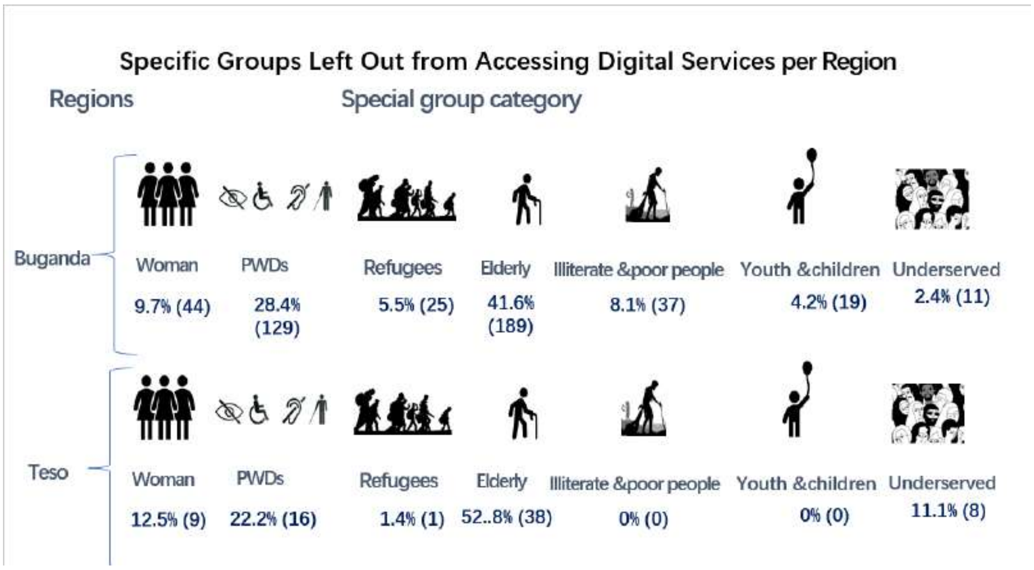

Figure 82 Findings from Buganda and Teso on specific groups left out from accessing digital services per region.

Further input from survey respondents in Tooro and West Nile revealed that 46.5% (74) of the 159 participants from Tooro stated that the elderly were excluded from accessing digital services, while 36.8% (64) of the 174 respondents from West Nile highlighted that the elderly were left out.

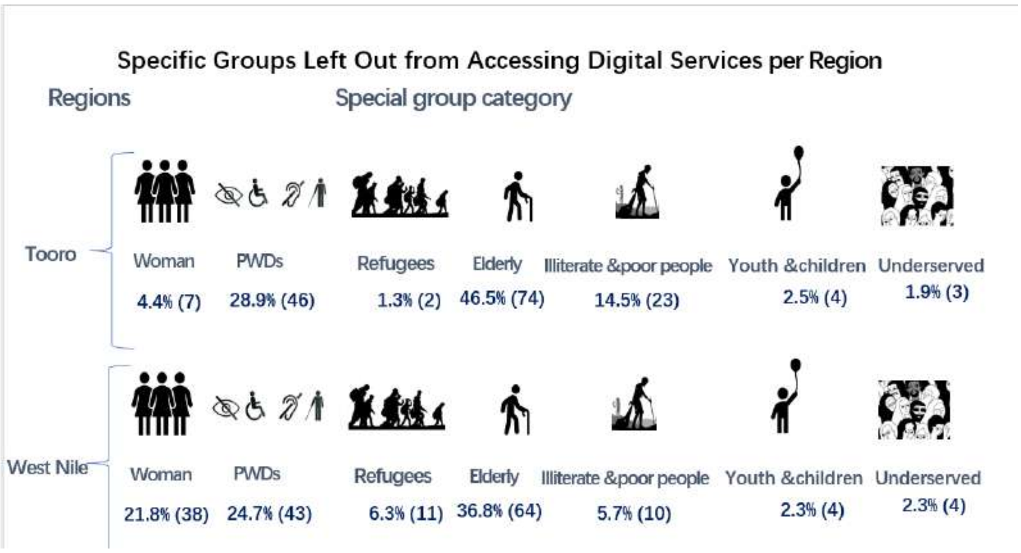

Figure 83 Findings from Tooro and West Nile on specific groups left out from accessing digital services per region.

vi. Equity in accessibility of digital services

When respondents were further asked “Do you belive that digital services are equally accessible to everyone in your community?”, 76.5% (1896) indicated that they don’t believe so. The reasons they cited for this belief include;

> “It is expensive for people,” which was mentioned by the 22.4% (374) respondents.
> “Some people are not ready to embrace change,” as noted by respondents from Lango and Acholi, many of whom are unaware of these services.
> “Most of them are ignorant of these services,” said a male respondent from Amuru district, aged 26-30 years.
> However, for the 23.5% that indicated that the services are equally accessible, they provided the following reasons;
> “Some digital devices are affordable,” as shared by a male respondent from Amuru district, aged 26-30 years.
> “It’s just a mindset that it’s possible,” mentioned by a male respondent from Terego district, aged 31-35 years.
> “Through sensitizing them about the advantages of digital services,” explained by a male respondent from Terego district, aged 56-70 years.

Some respondents affirmed that digital services are equally accessible to everyone in their community when asked about it. The reasons they provided for this belief include:

> “Some digital devices are affordable,” as shared by a male respondent from Amuru district, aged 26-30 years.
> “It’s just a mindset that it’s possible,” mentioned by a male respondent from Terego district, aged 31-35 years.
> “Through sensitizing them about the advantages of digital services,” explained by a male respondent from Terego district, aged 56-70 years.

vii. Existing initiatives to promote access to digital services for marginalized communities:

Findings from Key Informants on the existing initiatives to promote access to digital services for marginalized communities, such as persons with disabilities (PWDs), refugees, and women revealed that while **digital literacy programs (mentioned by 23.7% of the KIIs)** and **government-backed initiatives (mentioned by 21.9%)** have made progress i.e., UCUSAF has implemented training programs for farmers, youth, and PWDs to encourage digital adoption. Programs like NITA-U’s last-mile connectivity and UDAP program in refugee settlements, challenges such as **limited outreach, lack of assistive technologies, and infrastructure gaps persist**. Many respondents reported **limited awareness of existing initiatives**, emphasizing the need for **better stakeholder engagement and scaling up interventions**.

> "We are trying to do proof-of-concept projects to show that digital skilling for marginalized groups is possible." (UCC)
> "UCC's Rural Household Devices Project (solar-powered tablets), accessible devices for Rural communities" (Telecom Operator)

NOTE: Limited Awareness & Inclusivity Gaps Exist: Many respondents (About 60% of the KIIs), particularly local government officials, were unaware of digital inclusion programs, highlighting the need for stronger engagement at the community level.

It was important to understand the challenges faced in scaling these existing initiatives, the table below summarizes the findings

Table 21: Existing initiatives to promote access to digital services for marginalized communities and challenges faced in scaling up these assignments

Existing Initiatives	Effectiveness (KII Responses)
Digital Literacy Programs (Trainings for PWDs, women, refugees, and rural communities)	**Partially Effective** – Some respondents highlighted improved skills, but reach is limited. Many marginalized groups, especially in rural areas, remain unaware of such programs.
Public-Private Partnerships (PPPs) (Collaborations with NGOs, telecoms, and development partners to expand access)	Partially Effective – PPPs have led to affordable data bundles and free Wi-Fi zones, but implementation is inconsistent across regions.
Infrastructure Expansion (Last-mile connectivity by NITA-U, UCC, and private sector)	Limited Effectiveness – Poor infrastructure (e.g., limited electricity and internet coverage) hinders access in rural and refugee-hosting areas.
Device Subsidization & Distribution (UCC device programs, NGOs providing ICT equipment to marginalized groups)	**Partially Effective** – Some communities received smartphones and assistive devices, but affordability remains a barrier.
Community ICT Hubs & Free Internet Zones (Govt & NGO-led initiatives providing free Wi-Fi in select locations)	Not Effective – Some hubs exist, but most people in rural areas lack awareness or access. Infrastructure challenges persist.
Zero-Rated Services & Data Subsidies (Tax exemptions for ICT services, free access to education & health-related online platforms)	**Limited Effectiveness** – Some zero-rated platforms exist, but affordability remains a challenge. Many communities remain unaware of such initiatives.

C. Existing Initiatives in Addressing Communication Needs of PWDs and Refugees

Existing Initiatives	Description	Target Groups	Implementing Partners/NGO's	Effectiveness
Digital Literacy Programs	Training programs on basic ICT and assistive technologies to improve digital skills among excluded groups.	PWDs, refugees, women, youth, rural communities	UCUSAF, UCC, U-TOUCH, Windle International Uganda, Youth for Technology Foundation (YTF)	Partially effective – some skill improvements noted, but outreach is still limited.

Rural Household Devices Projects	Providing digital devices to underserved communities to enhance accessibility and digital participation.	PWDs, women, and youth in rural areas	UCC's Rural Household Devices Project, NGOs, Hello World, ATC Uganda	Partially effective – some device distribution, but cost remains a major barrier.
Last-Mile Connectivity Program	Expanding broadband infrastructure to improve internet access in underserved areas, including fiber optic deployment.	Refugees, rural populations	NITA-U, UCC, Hello World, BOSCO Uganda, UDAP Program	Limited effectiveness – poor network coverage and electricity gaps persist.
Digital Access Hubs	Establishing community hubs equipped with digital resources to provide internet and training for excluded groups.	PWDs, refugees, rural communities	BOSCO Uganda, Hello World, U-TOUCH, Windle International Uganda, CTEN, ATC Uganda	Not effective – while hubs exist, most rural users lack awareness or access.
Marginalized Community Programs	Initiatives aimed at reducing barriers to digital access through policy interventions, affordability measures, and awareness campaigns.	Marginalized communities	UCC, Telecom Companies, Government of Uganda (GOU)	Limited effectiveness – affordability and awareness barriers persist.
Broad Inclusion Efforts	General efforts promoting digital access for all marginalized groups through partnerships and policy reforms.	All marginalized groups	UCC, NITA-U, Telecom providers, NGOs, development partners	Partially effective – success varies across regions.

D. Emerging issues and recommendations

Theme	Emerging Issues	Recommendations	Actor(s)
Device access, ownership and usage	While basic phone access exceeds 70% across all demographic groups, smartphone penetration hovers around 50% nationally and falls as low as 33% in Karamoja. Advanced devices remain scarce: laptops account for only 15.8 % of ownership, desktops 4.2% and smart TVs 20.3% of households. Among surveyed SMEs, device ownership varies from 75 % in Kigezi to complete absence in Teso, underscoring stark regional disparities.	Introduce more affordable financing schemes, expand device subsidies, and promote awareness of digital benefits. Negotiation of bulk-purchase agreements with manufacturers to drive down unit costs in the most underserved areas, especially Karamoja, Teso and Lango.	UCC, MoICT, Ministry of Finance, Private Sector

Barriers to device access and usage	Cost remains the primary barrier as 47% of SMEs cited high computer prices, while 7% reported unreliable electricity. Low digital literacy and no perceived need for the devices were also reported by 21% of the respondents hence indicating both infrastructural and awareness gaps . High cost of devices, unreliable electricity, low digital literacy, and limited internet connectivity hinder adoption of digital services in some areas especially Karamoja region.	Implement device financing plans, improve infrastructure (electricity & connectivity), and expand digital literacy programs. Deploy solar-powered charging stations in off-grid zones to mitigate power outages, and integrate targeted awareness modules into SME training that demonstrate the operational and financial benefits of digital tools to overcome the “no-need” perception.	MoICT, UCC, Rural Electrification Agency (ERA/ UECCC), NITA-U, MoES, Private Sector, UCUSAF, NGOs
Awareness of emerging technologies	Awareness of AI and Fourth Industrial Revolution technologies remains across all regions and worser in rural areas. Only 34% of SMEs reported any use of Fourth Industrial Revolution technologies (AI, IoT, blockchain), with 21% leveraging AI for business transactions. Although 70% of key informants were aware of national 4IR policies, grassroots adoption remains below one-third, revealing a significant policy-practice gap .	Strengthen policy implementation, improve public awareness campaigns, and offer training on emerging tech applications. Integrate emerging-tech modules into existing digital literacy curricula at training centers	MoICT, UCC, NITA-U, Local Governments,
Affordability of Telephony and Broadband Services	High cost of mobile broadband data and smart devices continues to limit access and usage, particularly among PWDs, refugees, women, youth, and low-income groups. Broadband affordability is still far above the UN recommended threshold (1GB costing over 6% of monthly income versus the 2% target), disproportionately affecting rural and underserved areas.	Implement regulatory interventions to encourage price competition among service providers and invest in community Wi-Fi initiatives for rural areas.	UCC, MoICT, ISPs, Telecom Operators, UCUSAF, Local Governments
Access and usage of free emergency communication services	Awareness of toll-free emergency numbers stands at 56%, yet only 56% of those aware have ever used them. Usage frequency is low: 62% used these services only once in the past year, 13% twice, 17% more than twice, and 8% not at all, indicating both awareness and accessibility gaps in critical response channels. Many respondents are aware of emergency services (56%), but usage is inconsistent due to awareness gaps and network accessibility issues.	Increase public sensitization on available emergency services, improve service reliability, and ensure broader access.	UCC, Telecom Operators, Ministry of Information, Disaster Preparedness Department (OPM)
User satisfaction with operator assistance	There is a significant gap between awareness and actual usage of operator assistance and directory inquiry services, with 82.8% awareness but 58% rarely using the services.	Telecom operators should implement targeted engagement strategies to convert awareness into regular usage.	Telecom Operators, UCC, UCUSAF, Marketing & Research Partners

Impact of Digital Literacy Programs on Usage of Basic Communication Services	Although digital literacy initiatives have increased awareness of these services nationwide, actual usage remains limited by a shortage of digital devices. Foundational skill gaps remain since 46% of respondents reported lack internet-navigation skills, 51% cannot use email, 63% have no online-services competency and 48% lack basic computer skills. Training uptake varies sharply: Kampala (54%) and Karamoja (52.3%) lead, whereas Lango (20.7%) and Kigezi (22.5%) lag. Although 71.7% express willingness to train, only 61% of PWDs share this enthusiasm versus 74% of non-PWDs .	Deploy mobile digital-skills caravans that rotate through low-uptake regions (Lango, Kigezi), aiming to boost participation. Collaborate with local councils and disability organizations to develop inclusive training modules for PWDs, raising their engagement.	MoICT, NITA-U, UCUSAF, Local Governments, National Council for Persons with Disabilities

Key Emerging Issues and Recommendations for Access and Usage of Basic Communication Services by Refugees and PWDs

Emerging Issue	Description	Recommendation	Actor
Affordability Constraints	High cost of devices and internet services limits access for PWDs, refugees, and low-income groups.	Introduce targeted subsidies and tax exemptions for smartphones, assistive devices, and data packages. Expand zero-rated services for essential platforms.	Government (UCC, Ministry of ICT), Telecom providers, NGOs
Growing Demand for Digital Literacy	83% of refugees and host community members expressed willingness to learn digital skills, showing high motivation for training opportunities.	Design scalable and inclusive training programs. Use mobile and community-based learning approaches targeting women, youth, and PWDs.	Ministry of Education, NGOs, Community Centers, Development Partners
High Penetration of Basic Devices	Over 84% of respondents own basic mobile phones, creating a strong foundation for SMS- and USSD-based digital services.	Develop and deploy SMS/USSD platforms for e-government, e-learning, and awareness programs. Gradually transition to smartphone-based solutions.	Telecom Providers, NGOs, Ministry of ICT
Availability of Land for Digital Service Centers	All 13 Refugee Hosting Districts have earmarked land for digital centers, reflecting local government support and readiness for implementation.	Fast-track construction and operationalization of the centers. Prioritize accessible locations and integrate solar energy and inclusive design.	NITA-U, UCC, Local Governments, Ministry of ICT
Existing NGO and Private Sector Engagement	Active digital inclusion work by NGOs and private actors (e.g., BOSCO Uganda, Hello World, ATC Uganda) offers a strong platform for scaling efforts.	Strengthen coordination and partnerships. Replicate successful pilots and fund joint initiatives through PPPs and donor support.	UCC, NITA-U, Ministry of ICT, NGOs, Private Sector
Utilization of Solar Power	A majority (68.9%) of refugee respondents already use solar power, offering a viable energy source for digital services in off-grid areas.	Expand solar-powered digital hubs and charging stations. Incorporate solar solutions in infrastructure planning for service centers.	Ministry of Energy, NGOs Private Sector (solar providers)

Strong Community Willingness to Engage	High participation in surveys and focus groups (over 3,000 respondents) indicates strong interest in digital inclusion initiatives.	Engage communities early in program design. Establish local ICT champions to lead sensitization, uptake, and peer training.	Local Governments, NGOs, Community Leaders, Settlement Commandants
Inadequate ICT Infrastructure	Limited network coverage and electricity in rural and refugee-hosting areas hinder connectivity.	Invest in last-mile broadband infrastructure and off-grid energy solutions like solar-powered charging stations.	Government (NITA-U, Ministry of ICT), Private sector (Telecom providers, Energy companies), NGOs
Low Awareness and Digital Literacy	Many marginalized individuals are unaware of existing technologies or lack skills to use them.	Expand inclusive digital literacy programs, leveraging local languages and community-based facilitators. Integrate digital skills into school and adult learning programs.	UCC, Ministry of Education, NGOs
Stigma and Social Exclusion	PWDs, especially in rural areas, face stigma and exclusion from digital platforms and services.	Conduct awareness campaigns and sensitize communities on inclusive ICT use. Promote assistive technologies and inclusive content design.	NGOs (Government agencies (UCC, Ministry of ICT)
Limited Reach of Existing Programs	Most digital inclusion initiatives have limited geographic or demographic coverage.	Scale successful pilot projects and improve coordination among stakeholders to ensure wider coverage and inclusivity.	UCC, NITA-U, NGOs
Lack of Assistive Technologies	There is limited availability and affordability of devices adapted for various disabilities.	Support innovation and distribution of affordable assistive devices through public-private partnerships. Encourage local production of such technologies.	Private sector Government (UCC, Ministry of ICT), NGOs
Weak Community Engagement	Local authorities and end-users are often unaware of initiatives meant to benefit them.	Strengthen local stakeholder engagement through awareness drives, community ICT champions, and better dissemination of information.	Local governments, UCC, NGOs
Fragmented Implementation	Digital inclusion efforts are not well integrated, leading to duplication and inefficiencies.	Develop a coordinated national strategy for digital inclusion with clear roles for all actors government, NGOs, and private sector.	Government (Ministry of ICT, NITA-U, UCC), NGOs, Private sector

3.4 Development of ICT Applications and Services

ICT Applications and Services remain unevenly used, with most platforms concentrated in urban areas or limited to pilot projects. The following subsections present an analysis of ICT application development and content use in the agriculture and education sector, highlighting platforms in use, their reach, limitations, and opportunities for scaling digital inclusion across the country.

3.4.1 ICT Application Development

Innovation hubs serve as catalysts for application development by providing entrepreneurs with internet access, training, mentorship, and networking opportunities. For example, the National ICT Innovation Hub in Nakawa was revamped in 2023 with state-of-the-art facilities and has since seen a surge in usage a 190% increase in youth-led enterprises and innovators utilizing the hub. It has transformed into a vibrant community space, hosting over 2,800 events and 750+ business meetings, and directly empowering more than 6,500 individuals through digital skilling, capacity building, and mentorship programs. Dozens of local startups are resident at this hub, working on solutions ranging from fintech and e-health to agritech.[67] Some locally developed applications have even been adopted for public service delivery for instance, the Ministry's NIISP has incubated systems like the Parish Development Management System (PDMIS) for tracking community development data and ePosta for postal services, now in use by government agencies[68].

The Uganda Communications Commission (UCC) plays an instrumental role in establishing and supporting the ICT application ecosystem. As the sector regulator, UCC has fostered an enabling environment that encourages innovation for example, through its Universal Service & Access Fund (UCUSAF), UCC has also invested in ICT public access centers in more than 70 districts[69]

Statistics and Beneficiaries: Although comprehensive nationwide data is still emerging, available statistics illustrate the ecosystem's scale. Uganda now has on the order of dozens of active tech hubs and innovation spaces (public and private) supporting entrepreneurs. The table below provides a summary of some of the Public and Private ICT Innovation and Resource Centers in Uganda

Type of Center	Examples	Est.	Key Actors & Source	Main Districts/ Regions	Reference
National ICT Innovation Hubs	Nakawa Hub, Muni Univ, Soroti Univ, Kabale Univ	4	MoICT, UCUSAF-NIISP Annual Report 2021/22	Kampala, Arua, Soroti, Kabale	MoICT NIISP Report (2022)
Private Tech Hubs & Accelerators	Outbox, Innovation Village, Hive Colab, Refactory	15	Innovation Village, Hive Colab websites	Kampala, Jinja, Gulu, Mbarara, Fort Portal	Innovation Village (2023)
UCC/UCUSAF ICT Resource Centers	ICT labs in libraries, schools, CBOs, border posts	67	UCC – UCUSAF Annual Report (2023)	50+ districts across all regions	UCUSAF – Internet Connectivity Program Brochure (Oct 2023)[70]
University Incubation Hubs	Makerere, UCU, Mbarara, Lira, Gulu	6	MoES – Digital Agenda Strategy (2023–2027)	Central, Northern, Western, Eastern	MoES Digital Agenda (2023)
Community Access Centers	KACEP, Masaka CBO, Kayunga Library	10	NGOs, local gov'ts, CBOs	Wakiso, Masaka, Kayunga, Lira	Office of the Auditor General, Report on UCC (FY 2022/23)[71]

Estimated Beneficiary Reach & Gap

On assumption of an average hub capacity and reports (e.g., Nakawa Hub), assume:

i. Each national or private hub serves approximately 1,000-2,000 individuals annually

67 https://observer.ug/news/innovation-hubs-are-providing-space-for-technological-innovations-and-digital-skilling
68 https://observer.ug/news/innovation-hubs-are-providing-space-for-technological-innovations-and-digital-skilling/
69 https://www.ucc.co.ug/ucusaf/digital-skilling-program/
70 https://www.ucc.co.ug/wp-content/uploads/2023/10/Internet-Connectivity-program-Brochure-Oct-2023.pdf
71 https://www.oag.go.ug/storage/reports/ACC_FIIT_AGCY_2022_23_1731479424.pdf

ii. Each ICT resource center reaches approximately 500–800 people annually

iii. University incubators: 500–1,000 students/innovators annually

Using conservative averages:

- National Hubs: 4 hubs × 1,500 = **6,000**
- Private Hubs: 20 hubs × 1,200 = **24,000**
- ICT Resource Centers: 70 × 600 = **42,000**
- University Incubators: 6 × 750 = **4,500**
- Community Centers: 10 × 500 = **5,000**

Estimated Direct Beneficiaries are approximately 81,500

Estimating Indirect Beneficiaries Using the Diffusion of Innovation model, assume: Each direct beneficiary influences 4 others through awareness, exposure, and training trickle-down.

Indirect Beneficiaries = 81,500 × 4 = 326,000

Total Reach = Direct + Indirect = approximately 407,500 people

National Population & Service Gap: Considering the recent UBOS (2024) statistics, considering the Target Population as Youth and Working Age Adults 23,154,716 (UBOS 2024) If currently Reached by Innovation Centers: approximately 407,500 people, **Unreached Population** (Innovation Gap): 23.1M – 407,500 = **approximately 22.7 million**

Despite progress in developing ICT application hubs, only a fraction of Uganda's innovation-ready population currently benefits from these centers. Based on service data and estimated reach from 2023–2024, approximately 407,500 individuals (both direct and indirect beneficiaries) have accessed or been exposed to ICT innovation services across public and private hubs. However, considering Uganda's youth and working-age population of 27.9 million (UBOS 2024), over 27.5 million people remain unreached by innovation spaces and services.

3.3.2 Agricultural Content/Applications

Over 70% of the Ugandan population is engaged in agriculture many of them smallholder farmers[72], access to timely agronomic advice, market prices, weather updates, and e-financial services is vital for improving productivity, reducing post-harvest losses, and enhancing livelihoods. The Government of Uganda, alongside NGOs and private sector innovators, has introduced several digital platforms targeting farmers, extension agents, and agribusiness stakeholders. However, the reach and impact of these tools remain uneven due to disparities in connectivity, digital literacy, and device access, particularly among women and rural youth.

Platform Name	Provider	Intended Users	Purpose & Functionality	Summary of Use/ Awareness
EzyAgric	Akorion Company Ltd (Private Sector)	Smallholder farmers, agro-input dealers	Digital marketplace, crop advisory, input ordering, and garden mapping	Over 250,000 registered users across 40+ districts; used via app and agent-assisted model
M-Omulimisa	M-Omulimisa Ltd, with CTA & Ministry of Agriculture	Farmers, extension workers	SMS-based platform for farmer queries, responses from trained extension officers	Available in 12 languages; covered 40+ districts by 2021; strong uptake in Eastern and Northern Uganda

72 UBOS. (2022). Statistical Abstract – Agriculture sector overview.

AgroMarketDay	Makerere University (College of Computing), with support from CTA	Farmers, market vendors	Provides market prices, weather updates, and agri-news via app and web	Piloted in Central and Eastern Uganda; downloaded 50,000+ times on Google Play
UCC HELP Platform (Agri-integrated use)	Uganda Communications Commission	General public, including farmers	Toll-free service to access public info; adapted for agriculture advisories in emergencies	Used during locust outbreaks and COVID-19 for agro-alerts; promoted on radio
E-Voucher System (NAADS/MAAIF)	MAAIF & NAADS with World Bank/ IFAD	Input suppliers, farmers	Subsidy-based input distribution via digital voucher platform	Over 450,000 farmers reached by 2023; mobile verification used nationwide
Weather and Climate Information Services (WISER)	Uganda National Meteorological Authority (UNMA) with DFID	Farmers, agri-extension workers	Dissemination of localized weather and climate info via SMS and radio	Reached 100,000+ farmers in Northern Uganda; linked to resilience building
AgUnity	NGO/Private Tech Org (Pilot)	Farmer cooperatives	Blockchain-based digital record keeping and market linkage	Piloted in Western Uganda with dairy and coffee farmers; limited scale

Uganda's agricultural digital landscape has expanded over the past decade, offering farmers more tools to access information, inputs, and markets. However, usage is still fragmented and often limited to pilot projects or better-connected regions. Most platforms are mobile-based, yet device ownership, network coverage, and digital skills remain key barriers particularly among rural women and the elderly.

There is significant opportunity to:

i. Scale up **offline-capable platforms** and **USSD tools** to underserved communities;

ii. Promote **multi-language content delivery**;

iii. Strengthen **data-sharing frameworks** between public and private platforms; and

iv. Integrate digital agriculture into broader rural development strategies.

With targeted investment and policy coordination, digital platforms can help close the productivity and information gap for Uganda's farmers especially those in remote and climate-vulnerable areas.

3.3.4 Education Content/Applications

Access to inclusive, high-quality digital educational content is a cornerstone of Uganda's vision for universal digital inclusion. With growing broadband penetration and increasing efforts in digital skilling, digital platforms have become vital delivery channels for both formal and informal learning, especially during periods of disruption such as the COVID-19 pandemic[73]. Uganda's policy frameworks such as the National ICT Policy and the Ministry of Education's Digital Agenda Strategy (2023–2027) recognize the transformative role of educational technology in achieving equity in learning outcomes[74].

Multiple stakeholders including the Ministry of Education and Sports (MoES), Uganda Communications Commission (UCC), Uganda National Examinations Board (UNEB), and international partners like UNICEF have supported the rollout of digital platforms targeting learners in primary, secondary, and vocational levels[75]. These platforms aim to reduce education delivery gaps, especially among rural, underserved populations and marginalized groups such as refugees and girls. However, access and use of these platforms remain uneven due to disparities in infrastructure, device access, and teacher capacity[76].

73 MoES. (2021). eLearning Implementation Report During COVID-19.
74 MoES. (2023). Digital Agenda Strategy 2023–2027.
75 UNICEF & MoES. (2022). Digital Learning Progress Report in Uganda.
76 UCC. (2023). Digital Inclusion Status Report.

Platform Name	Education Level Served	Provider/Supporter	Summary of Use/Awareness	Source
Kolibri	Primary, Secondary	MoES, UNICEF, Learning Equality	As of 2019, Kolibri had been deployed in 33 government secondary schools, 20 primary schools, and 12 youth ICT centers in refugee settlements across multiple districts. Widely used during COVID-19 to reach learners without internet access. Supports interactive content and local curriculum alignment. The Government of Uganda (through MoES and the National IT Authority) partnered with UNICEF to roll out Kolibri especially in hard-to reach areas	MoES & UNICEF (2021), Learning Equality Reports[77]
RACHEL (Remote Area Community Hotspot for Education & Learning)	Primary, Secondary, Vocational	World Possible, UCC, UCUSAF	Deployed in ICT labs and libraries in underserved districts. Offers preloaded educational content (Wikipedia, Khan Academy) without the need for internet.	UCC UCUSAF ICT Resource Center Inventory (2023)[78]
Tuteeka	Upper Primary, Secondary	Private developer (Tuteeka Ltd), supported by MTN Uganda	Interactive mobile platform offering self-learning tools, mainly focused on UNEB content. Active partnerships with telecom operators.	MTN Uganda & Tuteeka Impact Reports (2022)[79]
Kolibri Studio (custom deployment)	Secondary	NCDC, Learning Equality	Used for localizing Uganda's curriculum and digitizing materials aligned with NCDC framework. Enables content upload and tracking.	NCDC Digital Content Updates (2022)[80]
eLearning Platform (MoES)	Teacher training, Upper Secondary	Ministry of Education and Sports	Government-owned platform used for teacher professional development, especially during COVID-19 lockdown.	MoES ICT in Education Status Report (2021)[81]
Schoolnet Uganda	Secondary, TVET	NGO (Schoolnet Uganda)	Provided computer labs and content distribution in 100+ schools. Focused on ICT integration in early 2000s; recent scale has plateaued.	Schoolnet Uganda Project Documentation[82]
UCC-HELP e-Learning platform[83]	Secondary, Teacher Education	UCC	Provides digital content on Lower secondary subjects such as mathematics, Biology, ICT, Entrepreneurship among others	UCC
UConnect	Primary	NGO initiative, with past support from UCC	Supported rural schools with computers and educational content; implementation slowed due to limited sustainability.	UConnect Review Reports[84]

77 Learning Equality. (2021). Kolibri Implementation Summary in Uganda.
78 UCC (2023). UCUSAF ICT Resource Center Distribution Report
79 Tuteeka Ltd. (2022). Platform Impact Evaluation with MTN Uganda.
80 NCDC. (2022). Digital Content Framework and Localization Guidelines.
81 MoES. (2021). ICT Integration in Teacher Training – eLearning Portal Use Review.
82 Schoolnet Uganda. Project Reports 2000–2015.
83 Home | eLearning
84 UConnect. ICT for Education Retrospective Report.

ULEARN (Uganda Learning Platform)	Teacher Education (continuous professional development for teachers)	MoES, MTN Foundation	A self-paced e-learning platform launched in 2023 to train and certify teachers and teacher educators nationwide .ULEARN is zero-rated on MTN (no data costs) and offers interactive lessons, quizzes, and discussion forums. Over 1,200 teachers have already been on-boarded and trained via ULEARN to earn the Certificate in Teacher Education Proficiency (CTEP) , improving their skills for delivering quality education.	MoES & MTN, 2023[85]
NCDC eLearning Platform (NeLP)	Teacher training and curriculum support (Primary, Secondary, Special Needs)	NCDC	A national e-learning portal run by NCDC's ICT & Multimedia department to train and orient educators on the new competency-based curriculum and other emerging issues. The platform (accessible via web and an Android app) hosts online courses, tutorials, and digital content for teacher support in implementing the curriculum .	NCDC, 2022[86]
Cyber School (Virtual Labs)	Secondary (O-Level) and Teacher Colleges (science and math)	Cyber School, MoES, UCC	Installed in 1,000+ schools; An offline interactive multimedia platform providing O-Level science and mathematics curriculum through 3D animations, virtual laboratory experiments, quizzes, and tests. The content is approved by NCDC and aligned to the national curriculum. MoES contracted CSTS to install this software in government secondary schools, with UCC supporting deployment to over 1,000 schools and teacher training colleges where computer labs exist	CSTS, MoES, UCC, 2023[87]
Khan Academy	Primary, Secondary (also early tertiary topics)	Khan Academy (Global)	Used informally in Uganda for UCE/UACE prep; requires internet; adopted by urban schools. Khan Academy is a free online platform offering courses and practice exercises in a wide range of subjects (math, science, humanities, etc.) from basic to advanced levels.	Khan Academy, 2023[88]
Can't Wait to Learn (NGO)	Primary	War Child Holland, MoES	An innovative tablet-based e-learning game that was originally developed for conflict-affected children. Tablet-based game for literacy/numeracy; By 2021, War Child's CWTL had reached around 7,000 refugee and host-community children in Uganda, providing a vital learning alternative during the prolonged school closures	War Child, 2021[89]

85 ChimpReports – Launch of ULEARN teacher platform (Jan 2023)
86 Home | NeLP https://e-le.ncdc.go.ug/
87 Digital Science & Virtual Lab Software – Cyber School Technology Solutions https://cyberschooltech.co.ug/digital-science/
88 Top Free Online Learning Platforms Ugandans Should Know About – Savanna Fibre Internet https://savannafibre.com/2024/11/20/top-free-online-learning-platforms-ugandans-should-know-about/
89 Restoring Hope For Uganda's Refugee Children | War Child

Save the Children EdTech	Early Child-hood, Primary, Non-formal	Save the Children	Digital games and solar tablets for basic education; piloted in refugee and rural areas. In 2019, Save's education programmes supported 167,130 girls and boys across Uganda (in 124 primary schools, 91 ECD centers, and 49 Accelerated Education centers)	Save the Children, 2023
Radio Lessons (MoES)	Primary, Secondary	MoES, UNICEF	When schools closed due to COVID-19, MoES launched nationwide radio instruction to ensure continuity of learning. COVID-19 radio programs aired on 15+ stations; localized content; coverage gaps in rural areas. Although Radio has a wide footprint (over 75% of Ugandan households have a radio), however there's no formal monitoring data on how many students regularly tuned in were published[90]	MoES/UNICEF, 2020
TV Lessons (MoES)	Primary, Secondary	MoES, UBC	TV broadcasts on UBC during lockdown; limited reach (20–30% of households). : Television can offer richer visual instruction, but TV ownership in Uganda is lower (around 20–30% of households, most-ly in urban centers) limiting rural learners had no access to a TV or electricity	MoES/UBC, 2020

90 Questions Over Uganda's Radio, TV School Lessons During Covid-19 Lockdown - floridasunreview.com

i. While Uganda has made progress in rolling out digital learning platforms with diversified content formats and target groups, significant disparities remain in:Local language integration: Most national platforms use English as the default medium of instruction, with radio lessons during COVID-19 also delivered in at least 15 local languages across Uganda's regions. Refugee- and NGO-supported platforms (e.g., War Child's CWTL) incorporate local cultural elements and basic Swahili or mother-tongue literacy support.
ii. Inclusivity for PWDs and learners with low literacy: Most platforms are tailored for learners in **formal school settings**, but few are deliberately designed for **Persons with Disabilities (PWDs)**, **out-of-school youth**, or **adult learners**.
iii. Scalability of content for offline use: Although several platforms such as Kolibri, Cyber School, and RACHEL are fully offline-enabled, making them ideal for deployment in low-connectivity and off-grid areas, these are still limited resources
iv. Expansion beyond exam-focused or urban-centric content: Currently several platforms tend to be exam-focused and are more frequently accessed by urban students who can afford smartphones or stable internet. Yet rural learners, especially in underserved districts or refugee settlements, need content that's not only accessible offline but also aligned with their livelihood needs, language preferences, and local learning environments.

3.3.4 Emerging Issues and Recommendations

Theme	Emerging Issues	Recommendations	Actor(s)
ICT Application Development	i. Limited geographic spread of innovation hubs beyond major towns. ii. Inadequate funding models to scale and sustain application development in rural areas. iii. Low integration of locally relevant challenges into innovation programs.	i. Expand innovation hubs to underserved sub-regions through PPPs and UCUSAF support. ii. Provide grants/seed funding to grassroots developers. iii. Integrate community challenges (e.g., agriculture, health) into ICT training curriculums.	MoICT&NG, UCUSAF, Private Sector, Innovation Hubs, MoLG, Local Governments
Agricultural Content/Applications	i. Most digital platforms are still in pilot or small-scale rollout stages, limiting national impact. ii. Limited inclusion of women, youth, and elderly in agri-tech adoption due to literacy, access, and cultural factors. iii. Inadequate language localization and low availability of multimedia content. iv. Poor last-mile connectivity and limited access to smartphones/devices in rural farming communities. v. Weak integration of government and private digital agriculture platforms.	i. Scale up proven platforms like M-Omulimisa and Ezy Agric through UCUSAF funding and PPPs. ii. Support development of agri-content in local languages and formats (e.g., voice, SMS, video). iii. Introduce targeted digital literacy and device financing for farmers, especially women and youth. iv. Integrate weather, market, and extension services into a unified national digital agriculture ecosystem. v. Leverage community radio and cooperative structures for last-mile info dissemination.	MAAIF, NAADS, MoICT&NG, UCUSAF, UCC, Private AgriTech Firms, Farmer Co-operatives, NGOs (CTA, War Child, UNMA)

Education Content/Applications	i. Digital platforms remain concentrated in urban or project-supported schools, with limited scale-up. ii. Content is often exam-focused and not tailored for life skills or vocational learners. iii. PWDs, refugees, and out-of-school youth are underrepresented in platform design. iv. Limited local language support and assistive technology. v. Infrastructure (power, devices, connectivity) constraints limit platform reach.	i. Scale up offline-ready, curriculum-aligned platforms (e.g., Kolibri, Cyber School) to all sub-regions. ii. Design inclusive content targeting girls, PWDs, and youth outside formal schooling. iii. Integrate more life skills and local context modules (e.g., agriculture, entrepreneurship, climate resilience). iv. Expand device access and solar-powered ICT labs in remote areas. v. Include sign language and screen-reader compatible content in national platforms.	MoES, NCDC, UCC, UCUSAF, NGOs District Education Offices, NITA-U

3.4 UCUSAF's Contribution to Strategic Pillars of Universal Access under the Current Strategic Framework

The assessment of UCUSAF's contribution to universal access pillars reveals significant progress in expanding broadband infrastructure, device access, digital skills, and connectivity, particularly for underserved and marginalized groups. Over the last strategic cycle, UCUSAF initiatives directly impacted more than 1.24 million beneficiaries, with an estimated indirect reach of over 5 million Ugandans through knowledge diffusion and community impact.

Major projects including ICT labs in schools, device distribution, rural digital skilling, and public internet access initiatives have strengthened access, adoption, and usage pillars. However, despite these achievements, the direct reach represents only 2.7% of Uganda's population, highlighting persistent gaps, especially in last-mile connectivity, affordability of devices and services, and sustained digital inclusion. Stakeholder feedback also emphasized the need for deeper value creation from internet access investments, enhanced partnerships, and expanded resource mobilization to meet universal access goals.

Therefore, this section delves into UCUSAF's performance per each of the set strategic objectives, Statistics of implemented projects, Key lessons learnt and emerging opportunities and the perceived effectiveness of UCUSAF's performance from various stakeholders

3.3.1 Performance per strategic Objective

Over the years UCUSAF has realized different outputs from the various projects undertaken and activities in line with the strategic objectives as per the strategic plan.

SO1: Increase Broadband Access to Unserved and Underserved

Strategic Action	Planned Outcomes	Actual Outcomes (Last 10 Years)	Remarks
Undertake passive Infrastructure roll out through subsidies for unserved and underserved areas.	Expand telecom infrastructure in commercially unviable areas by funding tower and backhaul development.	Over **200 telecom towers** established, many upgraded to 3G; coverage improved in multiple rural zones.	Further investment needed in power and road infrastructure to maximize impact.
Support the development of innovative sustainable connectivity solutions and models.	Pilot low-cost connectivity models such as community networks, solar-powered towers, or satellite access.	Test projects conducted with mixed results; some models like solar-powered sites viable but scaling slow.	Incentives needed for private sector adoption and replication of pilots.
Undertake the implementation of mobile device equipment financing schemes for low-income communities in the unserved and underserved areas.	Facilitate access to smart devices through subsidies or financing schemes to boost adoption and use.	**10,706 households in 54 districts** received subsidized smart devices preloaded with data plans.	Training on device usage and digital services still needed to ensure effective use.
Implement Computer public access centers in partnership with the National Libraries of Uganda, local communities and stakeholders to enhance community access to ICT services at strategic locations.	Establish ICT centers in libraries and other public spaces to improve digital access and services.	**85 centers established**; many operational but some face sustainability challenges due to local funding.	Explore PPP models and local authority engagement for continued service delivery.
Establish Computer Laboratories and high-speed connectivity to institutions of learning.	Connect schools to broadband and equip with computer labs to support digital literacy and curriculum.	**325 ICT labs deployed**; many schools have broadband at minimum 5Mbps as per policy targets.	Teacher ICT training and regular maintenance of labs must be institutionalized.
Implement the ICT4PWDs program focusing on provision of ICT equipment, Assistive Technologies and devices for targeted institutions across the country.	Support institutions for persons with disabilities with specialized assistive technology and digital access.	**Over 100,000 people including PWDs reached** through tailored training and access support programs.	Include follow-up assessments to evaluate accessibility effectiveness and tailor content accordingly.

Feedback from the case studies was as follows;

i. The **ICT Labs Project case study** featured Ofwono Abraham from Mbale. Financial constraints and limited infrastructure have slowed ICT adoption in schools. Challenges include not having enough devices and dealing with unreliable internet services. As Ofwono explained, "the school could not afford enough devices or consistent internet services," which hindered effective ICT use in education. Even with external support, difficulties remained: "the main challenge we face is internet connectivity… we are still waiting for the data payments to be completed," highlighting that infrastructure gaps continue to be a major barrier.The UCUSAF program helped alleviate some of these issues by providing resources that improved both teaching ICT and managing administrative tasks. Ofwono noted, "the school received 30 monitors and 6 computers (servers), which have greatly improved our ability to teach ICT and manage school data efficiently." The regular use of computers and the internet has transformed classroom dynamics, making administrative tasks such as generating report cards much easier, as Ofwono added: "we now use computers and the internet more regularly…" The program has also opened up opportunities for generating income, with Ofwono mentioning, "the school can generate income from training other institutions or individuals in ICT."

ii. **The Internet for Schools' Case Study** Featured Byaruhanga M Aron from Kabale. Improved ICT Access and Persistent Gaps Before the UCUSAF program, access to ICT services at Byaruhanga M Aron's school was very limited. He recalled that "the students had no access and we had a few computers," with internet confined solely to the headteacher's office. With the program's support, "we got computers" and "now all our students access Internet." Despite these improvements, challenges such as "intermittent power outages" and "slow… expensive" internet continue to limit seamless connectivity. New Educational and Communication Opportunities Byaruhanga noted that the program has significantly transformed both learning and administration. Students are now developing programming skills, and teachers have integrated ICT into their daily routines—as he explained, "teachers do their lessons using Internet… feeding in marks is done online." Furthermore, digital communication has improved; for example, a "WhatsApp group for staff" now facilitates better collaboration. These changes illustrate the impact of digital tools on education and administrative processes. Call for Further Support and Sustainability While progress is evident, Byaruhanga stressed the need for additional resources. He urged "UCC to give us more computers" and called on RENU to "subsidize the Internet." He also emphasized that efforts must "work on their speed" to effectively bridge the access gap. His recommendations highlight the ongoing need for investment in affordable, high-speed connectivity to secure long-term benefits.

SO2: Increase Usage of Digital Devices and Services by the Undeserved and Unserved

Strategic Action	Planned Outcomes	Actual Outcomes (Last 10 Years)	Remarks
Increase usage of digital devices and services by the undeserved and unserved.	Boost digital adoption in rural and underserved areas through targeted device distribution and connectivity programs.	Smart devices **distributed to over 10,000 households across 54 districts**, enabling basic access to digital services.	Access is increasing, but affordability and digital skills gaps continue to hinder consistent use.
Undertake basic digital literacy trainings for different target groupings such as the youth, women, SMEs, PWDs, Farmers, and Teachers, among others.	Empower various vulnerable and target groups with foundational digital skills for economic and social transformation.	Over **100,000 individuals trained in digital literacy**; programs included basic ICT, internet use, and digital tools.	Need to link training to economic and employment opportunities for greater impact.
Implement mobile digital literacy program to expand outreach and accessibility to targeted beneficiaries.	Deploy mobile training units to extend digital literacy to remote areas beyond static training centers.	2 mobile digital training platforms deployed, serving hard-to-reach communities and boosting outreach capacity.	More mobile units and ongoing support post-training are required to maintain engagement.
Implement cyber security awareness and online safety program alongside the basic digital literacy program.	Raise awareness on safe internet use, privacy, and cyber threats among new internet users.	Cybersecurity content integrated in basic literacy curricula; awareness remains moderate due to limited training time.	Develop stand-alone cyber safety modules and integrate into national awareness campaigns.
Develop and implement an end of life/e-waste disposal strategy for UCUSAF projects.	Ensure environmentally responsible disposal of obsolete ICT equipment supported by UCUSAF.	Draft e-waste strategy developed; implementation yet to be fully operationalized nationally.	Full rollout needed with MDA and private sector collaboration for collection and recycling.

Feedback from the case studies was as follows;

i. The case study **on ICT and multimedia for the youth** featured interviews with Yoacel Faith Obote and Lakisa from Packwach, as well as Tukei Stephen from Pallisa. Many young people face challenges accessing ICT (Information and Communication Technology) equipment. Yoacel Faith Obote shared, "Before joining the program, I didn't have a smartphone and had to use my parents' device," making it hard to practice digital skills. Tukei Stephen also mentioned, "Not having laptops and smartphones during training was a struggle," highlighting the need for affordable and accessible devices. Despite these challenges, having access to ICT tools created new opportunities. Lakisa Ivan said, "I got access to software and mentorship, which improved my multimedia skills," helping him find freelance work in digital content creation. Yoacel Faith Obote added, "Now that I can use cameras and the internet, I was able to get a job with the National Population and Housing Census," showing how digital skills can lead to employment.

ii. **The Digital Literacy for Farmers case study** was conducted across multiple districts, key responses included, Oyet Tommy Jorey shared, "I learned how to access e-government services, use online agricultural platforms, and improve my internet usage skills. Improved market access has helped in selling produce." Acayo Jackline expressed, "I learned how to use a smartphone to access farming resources and communicate with suppliers. I plan to start a small business using the knowledge I gained." Byaruhanga Zaveliyo highlighted his newfound skills, saying, "Now I can search for the prices of coffee using a smartphone and a computer. I have managed to acquire digital skills which I am going to teach my family and friends." Akiteng Esther shared how technology has improved her productivity: "I now type budgets using Excel. I market products online and earn money to buy inputs. I can reach various people through the internet." Additionally, Sekyaya mentioned, "We improved communication with the community. YouTube taught me to rear hens and grow crops on a small scale." These stories illustrate how digital access, even when limited, can empower individuals economically and socially.

iii. The **digital literacy for women in the informal sector** case study featured Margaret Oghi Atek from Kitgum. Margaret Oghi Atek, these highlight that the program opened up transformative opportunities for her. Margaret now actively incorporates ICT into her business, saying, "I now use my phone to place orders, communicate with suppliers, send mobile payments, and advertise my business." The training streamlined her business operations and empowered her to mentor others. She now helps other women set up digital accounts, market their products, and leverage online platforms, demonstrating the program's broader community impact.

iv. **The digital literacy for rural communities' project case study** featured Nakbondwe Maria Bena from Buvuma, along with Muteengwa Deed and Kemigisha Ritah from Kanungu. After participating in the program, beneficiaries applied their new skills to create income opportunities and improve communication. Maria described a change in mindset in Buvuma, where people now understand "why they should own a smartphone" and are using computers to market their produce online. Muteengwa shared that she "posts products in WhatsApp groups and gets customers," even earning extra income by helping others set up email accounts. Kemigisha Ritah mentioned that farmers now use WhatsApp groups for communication and emphasized the promise of e-agriculture platforms to boost livelihoods, illustrating how digital literacy has unlocked access to broader markets and collaborative tools that are transforming local economies.

SO3: Promote Development of ICT Applications and Services

Strategic Action	Planned Outcomes	Actual Outcomes (Last 10 Years)	Remarks
Develop and implement a digital solutions development program focusing on providing local ICT solutions to address the socio-economic challenges among the targeted beneficiaries.	Foster creation of ICT innovations addressing specific needs in agriculture, education, health, and trade.	Several digital solutions piloted, including e-agriculture platforms and digital learning tools for rural schools.	More investment in user research and continuous iteration required to ensure usability and relevance.
Implement a crowd sourcing/applications development program in partnership with key stakeholders e.g. academia, civil society, development partners, among others.	Stimulate innovation through competitions and collaborative ideation sessions to build context-specific ICT tools.	Hackathons and innovation challenges held with universities and civil society, producing several prototype applications.	Many solutions remain at prototype stage; incubation and commercialization support needed.
Develop an e-solutions application platform to showcase innovative and relevant locally developed solutions.	Create a digital marketplace or exhibition portal for showcasing and scaling ICT innovations.	Platform developed to highlight selected applications, but public awareness and usage remain low.	Boost visibility through outreach and integrate with government service portals to expand reach.

Feedback from the case studies was as follows;

v. **The Ebooster project case study** featured Aparo Anna and Basalirwa Richard from Iganga, along with Nantambi Zaina from Luwero. Before the program, beneficiaries encountered major obstacles in accessing ICT. Aparo Anna explained that visually impaired individuals were excluded because the available devices were not accessible, noting, "The biggest challenge is the lack of accessible devices... button phones do not support Talk Back." Basalirwa Richard highlighted broader systemic issues, saying, "Limited assistive devices and lack of Wi-Fi restricted our ability to download resources." Similarly, rural farmers like Nantambi Zaina faced digital illiteracy: "People didn't own smart devices... [they] lacked skills to use apps effectively." These issues limited opportunities in education, economic growth, and communication. After the intervention, digital tools greatly enhanced accessibility and independence. Aparo Anna shared her newfound empowerment: "We now have smartphones... I research lessons online and use apps for educational materials." Basalirwa added that "Smartphones enhanced accessibility for visually impaired learners, boosting motivation." Farmers also gained advantages; as Zaina explained, "I market products and receive buyers nationwide." Apps like Be My Eyes and Lookout have enabled visually impaired users to navigate daily tasks, while digital platforms have helped farmers expand their markets.

SO4: Promote Knowledge Informative and Evidenced Based Decision Making for Digital Inclusivity

Strategic Action	**Planned Outcomes**	**Actual Outcomes (Last 10 Years)**	**Remarks**
Undertake collaborative research on digital inclusion with key partners including government, development partners, academia, civil society among others.	Generate evidence-based insights to inform digital inclusion programs and policy directions.	Research conducted in partnership with universities and development partners on access, usage, and barriers.	Expand scope of research to emerging areas like AI, cybersecurity, and gender digital divide.
Develop and update an online Knowledge and data repository.	Establish a central platform for stakeholders to access digital inclusion data and resources.	Repository created and launched; partially populated with reports and baseline studies.	Needs regular content updates and promotional efforts to increase utilization.
Review and upgrade the UCUSAF M&E framework in line with the UCUSAF strategy and other UCC, sector and national frameworks.	Strengthen monitoring and evaluation systems to enhance program learning and accountability.	New M&E framework aligned with strategy developed; integration into implementation remains ongoing.	Full operationalization requires capacity building and harmonization with partner systems.
Undertake baseline studies and impact assessments to guide decisions on digital inclusion interventions.	Ensure all major initiatives are informed by baseline data and evaluated for effectiveness.	Baseline studies and periodic evaluations conducted for digital literacy, access and usage programs.	Results should be systematically fed into planning cycles to close feedback loops.

SO5: Enhance Multi-Sector Collaboration for Digital Inclusivity

Strategic Action	Planned Outcomes	Actual Outcomes (Last 10 Years)	Remarks
Develop and implement an ICT4D Forum in partnership with key stakeholders involved in promoting digital inclusion.	Create a multi-stakeholder dialogue platform to coordinate and align efforts toward digital inclusion.	ICT4D Forum launched with participation from government, private sector, and civil society; meetings held periodically.	Focus now needed on converting discussions into collaborative projects with measurable impact.
Develop and implement a resource mobilization strategy to diversify UCUSAF Fund base.	Secure additional funding from development partners and private investors to supplement operator levies.	Draft strategy developed; limited success in attracting external funding so far.	Refine strategy and actively engage international development agencies and philanthropic ICT funds.
Undertake global and nation-wide showcasing of UCUSAF digital inclusivity interventions.	Publicize success stories and innovations to build support and stimulate replication.	UCUSAF interventions presented at national forums and ICT expos; online visibility improving.	Enhance visibility through targeted media partnerships and international exposure.

3.4.2 Implemented Projects Statistics for the last 3 years (2021/22- 2023/24)

UCUSAF in collaboration with its partners to enhance digital inclusion across Uganda has implemented key programs in ICT and multimedia, digital skilling/ Literacy, and connectivity. This review encompassed the understanding of the initiatives that UCUSAF has implemented in the bid to fulfil the strategic pillars of universal access i.e., Access, Adoption, Usage, Value Creation and Cooperation.

The table below provides an overview of key projects implemented across our core programs ranging from ICT in Education and Agriculture to Digital Skilling and Device Distribution. It highlights both the number of direct beneficiaries per initiative and the broader reach (direct + indirect). In order to determine the indirect beneficiaries, an **Indirect Diffusion Model was employed**, which quantifies how knowledge, skills or devices 'ripple out' from each direct participant into their wider networks. This used the recent average number of people in a household which is 4.2 as per the recent UBOS Census report 2024

Table 22: UCUSAF Digital Inclusion Projects and Beneficiary Reach (source UCUSAF)

Strategic Objective	Name of the Project	Overview of the Project	Number of Direct Beneficiaries	Overall Beneficiaries Reached (Direct and Indirect)
SO1 - Increase Broadband Access to Unserved and Underserved	Broadband Roll-Out, Airtel	Aimed to expand broadband connectivity in underserved areas through the installation of 4G routers and modems, internet subscription support for tablet beneficiaries, dedicated internet for schools and libraries, and public Wi-Fi hotspots at border points.	8,548 individuals, 230 schools, 60 libraries, 12 Wi-Fi hotspots	839,830 total (Individuals: 42,740; Schools: 552,230; Libraries: 72,060; Hotspots: 172,800)
	RENU - Internet for Schools	The project supported the digital transformation of Uganda's education sector by supplying and installing ICT equipment and establishing solar and grid-powered laboratories, virtual science software, and ICT clubs across primary and secondary schools, and one leadership institute.	1 institution, 13 primary schools (5,200 students), 348 secondary schools (406,050 students)	411,500 total (NALI: 260; Primary: 27,040; Secondary: 384,200)
	Blue Crane Communications	Distributed solar-powered internet devices to provide affordable and sustainable internet access in off-grid communities.	50 devices	
	Devices for SMEs, underserved households	Promoted digital inclusion by distributing ICT devices (smartphones, tablets, laptops, computers) to marginalized and underserved communities.	21,036 individuals	105,180
	Assistive Devices for Persons with Special Needs	Provided persons with disabilities access to assistive digital tools to improve learning, communication, and inclusion.	4 regional centers	10,004
	Support to Computer Laboratories	Supplied and installed computers and ICT equipment in schools and one leadership institute; included solar/ grid-powered labs, ICT clubs, and virtual science software in secondary schools.	1 institution, 13 primary schools (5,200 students), 348 secondary schools (406,050 students)	411,500 total (NALI: 260; Primary: 27,040; Secondary: 384,200)

SO2 - Increase Usage of Digital Devices and Services by the Underserved and Unserved	Youth Digital Skilling	Equipped youth with ICT and multimedia skills to improve employability and promote digital entrepreneurship.	3,000 youths	14,000
	Community ICT Digital Skilling for Women	Trained women in rural and underserved communities in digital literacy.	8,085 women	40,425
	Community ICT Digital Skilling for Elderly	Helped elderly individuals understand and use digital tools for better access to services.	1,300 elderly	6,500
	Community ICT Digital Skilling for Unserved and Underserved Communities	Delivered essential digital skills to promote economic inclusion in rural areas.	10,000 persons	14,000
	Digital Skilling for Farmers	Empowered farmers to access agricultural data and engage with digital markets.	15,000 farmers	15,000
	Digital Literacy for Persons With Special Needs	Trained PWDs and provided assistive technology.	1,881 persons with disabilities	21,290
	ICT Skilling for Teachers	Trained secondary school teachers and teacher trainees in ICT integration.	1,000 teachers	3,000
	Digital Skilling for SMEs	Equipped SMEs with digital skills for improved operations and market access.	6,773 SMEs	37,865
	ICT Clubs for Schools	Established ICT clubs to engage students in digital learning and innovation.	283 students	1,133
	Science Lab Software	Deployed virtual science labs in ICT-enabled secondary schools.	297 schools (900 students)	900
SO3 - Promote Development of ICT Applications and Services	ICT Applications	Supported local ICT application development to address sector challenges.	5 innovations	50,000
	Mobile Digital Training Platform	Delivered digital training via mobile platforms to enhance accessibility.	Not specified	Not specified
	Agricultural Content/ Applications	Provided farmers with digital tools and content to improve productivity.	Not specified	15,000

The snapshot of implemented projects under UCUSAF reveals a significant contribution toward addressing the strategic pillars of universal access. Across various interventions**, UCUSAF-supported projects have directly impacted over 1.24 million beneficiaries** through initiatives such as ICT skilling for youth, women, and PWDs, device distribution programs, connectivity to schools and health centers, and public Wi-Fi rollouts. Using the Indirect Diffusion Model, it is estimated that the broader community reach extends to approximately **5 million people**, as access by one individual or institution tends to benefit multiple users within households, businesses, and community structures.

Despite this progress, when compared to Uganda's total population of approximately 45.9 million (UBOS, 2024 estimates), the direct reach covers only about 2.7% of the population. The projects have made strong strides in improving access and usage, particularly for targeted groups, yet a substantial gap remains in achieving universal, meaningful connectivity. Strategic areas requiring urgent reinforcement include last-mile broadband extension to rural sub-counties, reducing device acquisition costs, enhancing digital literacy programs, and strengthening infrastructure sharing mechanisms to expand efficient coverage.

UCUSAF's efforts under the current strategic framework have effectively contributed to narrowing Uganda's digital divide but scaling up investments, partnerships, and innovative delivery models will be essential to achieve Uganda's universal access vision by 2040.

3.4.3 Lessons Learnt and Emerging Opportunities from Projects implemented.

Provided below is a summary of key digital inclusion programs supported by the Uganda Communications Commission (UCC) through the Uganda Communications Universal Service and Access Fund (UCUSAF). The table below highlights the impact of each program, key lessons learned, and emerging opportunities to guide future planning and implementation.

Table 23: Key Lessons and impact of UCUSAF implemented projects

Program	Key Lessons Learned and Best Practices	Emerging Opportunities
ICT & Multimedia for the Youth	Inclusion of women and PWDs boosted participation; local partnerships enhanced delivery; mentorship sustained momentum.	Scale to underserved regions; enhance training on digital monetization; partner with private sector and leverage mobile tech.
Digital Literacy for Farmers	ICT tools like mobile apps and call centers improved access to info; gender inclusion was strong; radio and DFAs underutilized.	Add e-commerce to ICT4Farmers App; expand AI-driven support; promote digital financial services; subsidize devices.
ICT Labs	Infrastructure readiness, solar use, multi-phase design, and partnerships were key; teacher training and sustainability needed.	Train ICT teachers; expand to more schools; partner with ISPs for reliable internet; adopt e-learning platforms.
Digital Literacy for Women in the Informal Sector	Training in local languages; engaging men as advocates; building local trainer capacity; inclusion of low-education women.	Create ICT hubs; subsidize smartphones; introduce digital business platforms; categorize learners by skill and business sector.
Digital Literacy for Rural Communities	Tailored training by economic activity; stakeholder analysis crucial; mobile and radio-based delivery effective.	Continuous training; device subsidies; mobile agents as digital literacy advocates; operationalize UCC centers.
Internet for Schools	Stable power and internet needed; training for teachers essential; schools used ICT in admin and learning.	Expand coverage; provide more devices; subsidize internet; scale teacher training for ICT integration.

ICT for Persons with Disabilities (PWDs)	Stakeholder collaboration vital; training tailored to PWDs (e.g., sign language); affordability is a major barrier.	Subsidize assistive devices; improve platform reliability; promote awareness; scale digital inclusion policies.
E-Booster Project	Digital gap among farmers and PWDs; apps should use local languages; awareness is low despite high readiness.	Scale digital farming apps; support assistive tech; invest in awareness programs; expand access to internet.

3.4.4 Perceived effectiveness of UCUSAF in implementing its strategic pillars according to the key stakeholders.

From key discussions with key informants specifically from the regulatory, Ministry and Telecoms on the effectiveness of UCUSAF in implementing its strategic pillars for Universal access, Findings indicated a notable effectiveness demonstrated by UCUSAF in implementing its strategic pillars for universal access, particularly in Access and Adoption and Usage.

> "Broadband access and Internet have been good. There has been Internet services for institutions for a year. There have also been device distributions. They have done very well in access to devices and Internet services to institutions." (MDA).

However, under the **Value Creation pillar**, efforts to ensure subsidized internet translates into tangible benefits for end users remain a work in progress, requiring further alignment with user needs.

The **Cooperation pillar**: partnerships have been fostered with stakeholders like the Ministry of Education and telecom operators, enabling infrastructure rollout and discussions on subsidy models to accelerate service delivery. While UCUSAF's initiatives align well with its strategic objectives, challenges such as funding limitations, procurement delays, and affordability gaps persist, highlighting areas for improvement in achieving sustainable digital inclusivity.

The recommendations provided by various stakeholders for UCUSAF to achieve its fourth strategic cycle of "Digital Inclusivity through sustainable interventions and impactful collaborations" highlight several key areas for improvement as shown below.

i. **Addressing Affordability:** Stakeholders emphasized the need to reduce costs associated with broadband access, digital devices, and data. Suggestions included tax waivers on data and digital devices and subsidizing gadget costs to make technology more accessible to underserved communities. Affordable internet services for critical sectors such as health and education are recommended, with a focus on supporting unprivileged health centers and increasing the availability of computers in schools.

ii. **Expanding Resource Allocation:** Increasing the resource envelope is critical to meeting growing demand for infrastructure and digital skilling programs. UCUSAF is encouraged to explore additional funding sources, including partnerships with NGOs, private sector players, and advocating for the return of funds allocated to the consolidated fund.

iii. **Strategic Partnerships:** Collaboration with experienced implementers, Partnerships with utility companies and regulatory bodies like the National Forestry Authority (NFA) are recommended to streamline infrastructure deployment processes.

iv. **Sustainability of Interventions:** Ensuring the long-term sustainability of projects is crucial. Recommendations include establishing transition periods for projects, creating more digital community centers, and integrating successful initiatives like digital skilling into mainstream sectors such as education.

v. **Infrastructure Sharing:** Encouraging infrastructural sharing among telecom operators is suggested to reduce costs and enhance efficiency in rolling out services in remote areas.

vi. **Tailored Solutions:** Conducting thorough studies on end-user challenges and needs is recommended to ensure interventions are aligned with local realities. Innovative solutions driven by young minds are also encouraged.

vii. **Expanded Mandate:** Expanding UCUSAF's mandate beyond capital investments to include operational costs is proposed, as operational expenses often discourage service providers from participating in universal access initiatives.

These recommendations collectively aim to enhance UCUSAF's effectiveness in achieving digital inclusivity through affordable access, impactful collaborations, sustainable interventions, and innovative solutions tailored to Uganda's unique challenges.

3.4.5 Emerging Issues and Recommendations

Emerging Issue	Description	Recommendation	Actor(s)
Performance per Strategic Objective	UCUSAF interventions have made strong contributions in Access, Adoption, and Usage, but Value Creation from connectivity remains moderate, and Cooperation needs deeper operationalization. Funding gaps, procurement delays, and affordability barriers persist.	Refine strategies to deepen value creation; prioritize affordability interventions (e.g., tax waivers); build stronger cross-sector implementation platforms and fast-track project procurement reforms.	MoICT, UCC, Ministry of Finance,
Implemented Projects Statistics	Over 1.24 million direct beneficiaries reached and an estimated 5 million reached indirectly through major programs (ICT skilling, devices, connectivity). However, only 2.7% of Uganda's population has been directly reached, indicating a major gap relative to national targets.	Scale up programs to increase reach in rural and underserved areas; expand device distribution and digital skilling initiatives; leverage new funding models (PPP, grants).	UCUSAF, UCC, MoICT, NITA-U, Local Governments, Development Partners, Telecom Operators, ICT Hubs/CSOs
Lessons Learnt and Emerging Opportunities from Projects Implemented	Programs such as ICT for Farmers, Women's Digital Literacy, and Internet for Schools revealed the transformative potential of ICT access but also exposed sustainability, affordability, and device maintenance gaps.	Link training to livelihoods and entrepreneurship; embed sustainability models like community ICT hubs; expand partnerships for assistive technology; increase investments in affordable internet and device subsidies.	MoES, NITA-U, MoICT, UCC, OPM

3.5 Gap Identification and Budget Alignment

This section presents an estimation of the resources required to achieve inclusive and sustainable digital access across Uganda. It identifies existing gaps in infrastructure access, affordability of digital services, and digital skills, and aligns them with indicative financial requirements to achieve universal connectivity targets.

The estimates are derived from stakeholder consultations, project data, and national benchmarks, and are intended as indicative planning figures to guide investment prioritization and coordination among key stakeholders.

Closing Uganda's access gap requires UGX 3,852.4 billion across three pillars: Infrastructure Access (UGX 997.2 billion; 25.9%), Affordability of Digital Services (UGX 1,297.6 billion; 33.7%), and Digital Skills (UGX 1,557.6 billion; 40.4%). As a feasible implementation choice, a three-year programme at sixty per cent of the total would mobilize UGX 2,311.5 billion with the same proportional split by pillar (Infrastructure 25.9%, Affordability 33.7%, Digital Skills 40.4%).

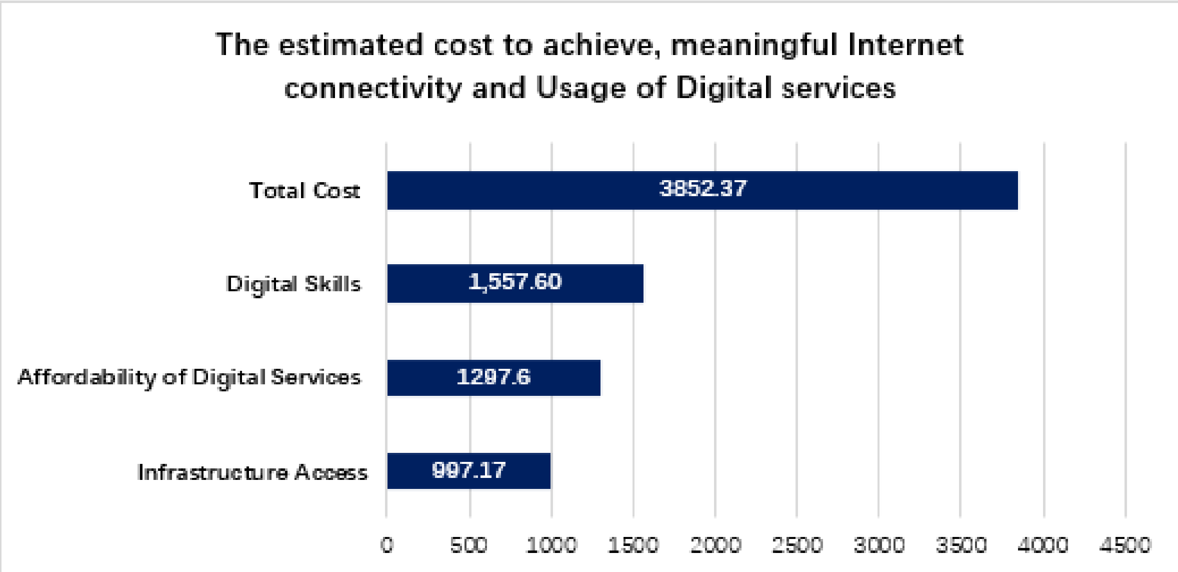

Figure 84: The estimated cost to achieve, meaningful Internet connectivity and Usage of Digital services

3.5.1 Methodology and Framework

The gap identification and budgeting model draws from evidence gathered during the Access Gap study and insights from ongoing and past UCUSAF interventions.

The approach involved:

i. Mapping existing coverage and usage deficits across population and service categories;

ii. Assessing the scale of infrastructure, affordability, and skills shortfalls;

iii. Applying unit cost estimates based on national and sector data; and

iv. Aggregating investment needs per sub-component.

The analysis is organized under **three categories**:

i. Infrastructure Access: addressing Broadband, backbone expansion, IXPs, and device availability.

ii. Affordability of Digital Services: addressing cost barriers to mobile, fixed services, and device ownership.

iii. Digital Skills: addressing both basic and above-basic skills required to drive meaningful digital inclusion.

Each category includes the underlying assumptions used in deriving the cost estimates.

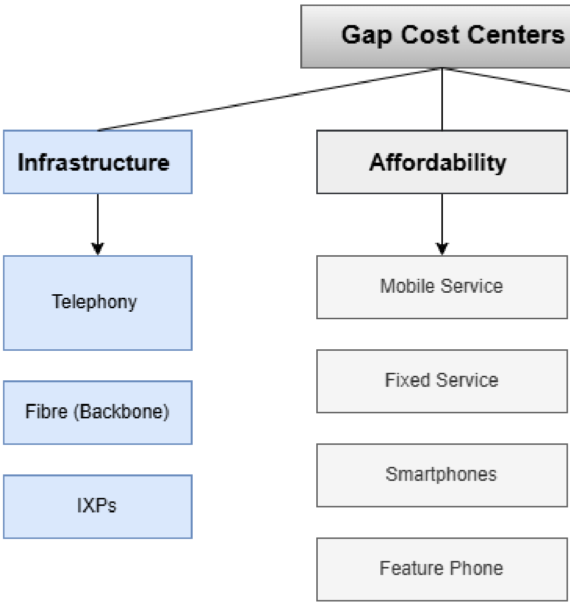

Figure 85: Conceptual Diagram

3.5.2 Infrastructure Access

This section covers three infrastructure cost centres: **Mobile and Wireless Broadband (2G - 4G voice and data), Fibre (Backbone Connectivity),** and **Internet Exchange Points (IXPs)**. **Infrastructure Access total cost is UGX 997.2 billion.** A feasible three-year kick-start can be established by programming **60%** of this requirement **UGX 598.3 billion** prioritizing mobile and wireless broadband coverage, backbone capacity, and IXP localization. Over this period, land coverage is expected to rise from 60% to about 85%, around 3,600 kilometres **of the residual backbone would be constructed, and** two regional IXPs would be commissioned.

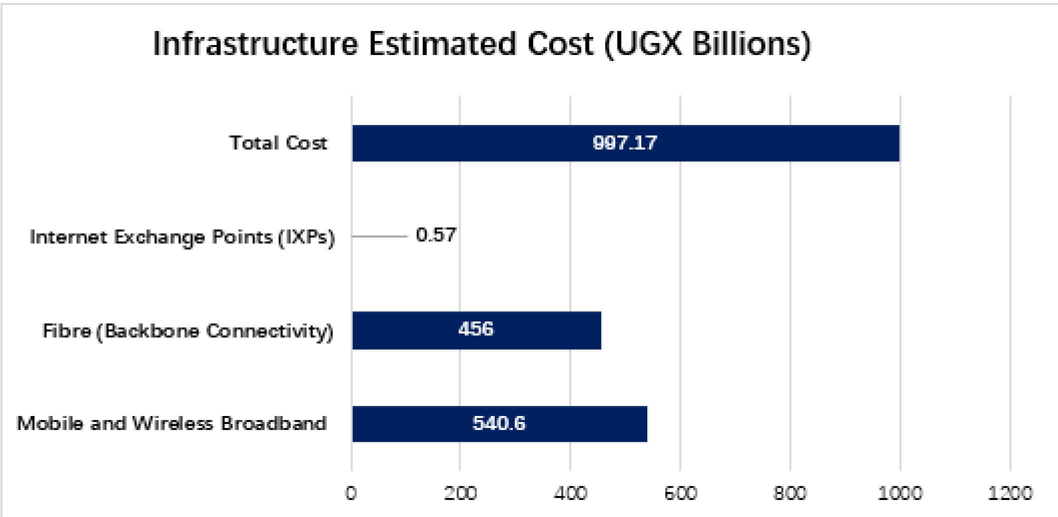

Figure 86: Estimated infrastructure cost

Mobile and Wireless Broadband

The estimated investment required to close Uganda's digital infrastructure gap is approximately UGX 540.6 billion (USD 142 million). This figure represents the combined cost of expanding mobile and wireless broadband coverage (including voice and data services) and establishing county-level public access centers across the country.

This subcomponent covered the expansion of mobile and wireless broadband infrastructure (2G, 3G, and 4G) providing both voice and data services to underserved and unserved areas across Uganda. It includes the construction of new telecom towers, upgrades of existing 2G sites to 3G/4G, deployment of backhaul connections to the nearest fibre or microwave nodes, and establishment of Public Access Centers at county level to promote shared community access to connectivity. This corresponds to UCUSAF Strategic Objective 1: Increase Broadband Access to Unserved and Underserved Areas, and supports the Uganda's National Telecom Operator (NTO) licensing framework requires telecom companies to cover at least 90% of Uganda's geographical area within five years of being licensed.

i. Uganda's mobile broadband land coverage currently stands at approximately 60%, leaving 40% of the country's land area without adequate coverage (Section 3.1.1 (A)).

ii. Under UCC's licensing framework, telecom operators are obligated to cover 90% of the national land area, while UCUSAF is mandated to support the remaining 10% (deep rural and high-cost regions).

iii. Therefore, out of the 40% total coverage gap,
    - 10% (UCC obligation) is costed under this report, and
    - **30% will be financed directly by telecom operators.**

iv. As per **UCUSAF record**s, 68 sub-counties have been served to date under prior interventions, leaving 424 still lacking meaningful service (Section 3.1.1 (A)).

v. Additionally, Public Access Centers are envisioned at county level to support rural communities, SMEs, and institutions.
    - Existing centers: 60
    - Target: 2,184 counties
    - Gap: 2,124 counties

Costing Basis and Estimate

a) Mobile/Wireless Broadband Infrastructure

Parameter	Value
Total unserved/underserved counties (approx.)	424 equivalent coverage zones
Unit cost per new or upgraded rural site	**UGX 1.25 billion**
Gross cost to cover 40% national gap	**UGX 530 billion**
UCC-funded share (10% of total gap)	**UGX 132.5 billion**
Telecom operators' share (30% of gap)	**UGX 397.5 billion**

b) County-Level Public Access Centers

Parameter	Value
Total counties	2,184
Existing centers	60
Gap	2,124
Unit cost per county center (setup, equipment, connectivity)	**UGX 5 million**
Total cost	**UGX 10.6 billion**

c) Adjusted UCC Cost Summary

Subcomponent	Gross Cost (UGX Billion)	UCC Obligation (10% Gap Coverage)	Telecom Obligation
Mobile/Wireless Broadband Infrastructure	530.0	132.5	397.5
County Public Access Centers	10.6	10.6	-
Total Estimated Cost	**540.6**	**143.1**	**397.5**

Note: UCC/UCUSAF's obligation is limited to 10% of the broadband infrastructure gap (representing deep rural coverage). The remaining 30% of the coverage deficit will be financed by licensed telecom operators as per their rollout obligations under UCC licensing regulations.

4. Key Assumptions

i. Broadband (data) and telephony (voice) services are delivered on the same network infrastructure (2G-4G).

ii. Current land coverage for broadband is 60%, with a 40% total gap of which 10% is the responsibility of UCC/UCUSAF.

iii. Each new site is assumed to cover approximately 20,000 people and a radius of 5-10 km.

iv. Unit site cost (UGX 1.25 billion) derived from UCUSAF's Telecom Infrastructure Roll-out project data.

v. County-level Public Access Centers leverage existing local government premises and infrastructure for deployment efficiency.

vi. Cost estimates exclude operational expenditure, which is expected to be recovered through PPPs and service usage fees.

vii. Exchange rate applied: UGX 3,800 = USD 1 (FY2024/25 average).

Fibre (Backbone Connectivity)

Uganda requires an additional UGX 456 billion (Approximately USD 120 million) to close the national fibre backbone gap of approximately 6,000 km remaining after the implementation of ongoing projects such as NITA-U Phase V.

This subcomponent covers the **expansion of the national fibre-optic backbone** required to achieve full inter-district connectivity and provide reliable, high-capacity transmission for broadband, telephony, and digital services. It involves extending the existing fibre network to unserved regions, enhancing redundancy, and ensuring that all district headquarters, border towns, and key public institutions are connected to the national grid.

This aligns with **SO1: Increase Broadband Access to Unserved and Underserved Areas** and responds directly to findings in **Section 3.1.1 (C)** of this report, which highlight that limited backbone connectivity continues to constrain last-mile broadband rollout, particularly in Northern Uganda, Karamoja, West Nile, and Island districts.

Current Coverage and Gap

According to the analysis conducted using UCC-provided primary data (July 2024), Uganda had 31,336 km of fibre deployed nationwide. This figure represents the combined lengths of government, private, and public–private network segments at that time. However, the UCC Market Performance Report (Q4 2024), which aggregates fibre infrastructure across all licensed operators and government networks, places the national total at 47,771 km. This higher figure reflects new private-sector builds and incremental NITA-U extensions completed during 2024.

To ensure that costing focuses only on the unfunded and uncovered portion, the following hierarchy was applied:

i. 47,771 km is taken as the latest comprehensive national baseline (public + private).

ii. The planned and funded NITA-U Phase V expansion (approximately 5,845 km) was excluded from costing, since it is already under implementation.

iii. The residual gap segments still unserved after ongoing public and private projects is estimated at 6,000 km, representing roughly 10 % of the national requirement for full redundancy and universal district-level coverage.

Costing Basis and Estimate

Parameter	Value / Source
National fibre coverage (UCC Q4 2024)	47,771 km
Planned / funded expansion (NITA-U Phase V)	5,845 km
National target for full backbone and redundancy	Approximately 60,000 km (total requirement)
Residual unfunded gap	Approximately **6,000 km**
Benchmark unit cost per km	**USD 20,000 About UGX 76 million** (ITU & GSMA benchmarks)
Total estimated cost	6,000 km * UGX 76 M = **UGX 456 billion (Abou USD 120 million)**

Key Assumptions

i. **Coverage baselines:**

- 31,336 km (UCC analysis, July 2024) baseline from primary data used in this study.
- 47,771 km (UCC Market Performance Report Q4 2024) total national fibre footprint used as the current reference point.

ii. **Target length:** The theoretical requirement for nationwide backbone and redundancy is estimated at approximately 60,000 km, consistent with continental infrastructure density ratios for a country of Uganda's size.

iii. **Residual gap (6,000 km)** reflects links to unconnected districts, islands, and redundancy corridors not covered under NITA-U Phase V or ongoing private investments.

iv. **Unit cost (UGX 76 M per km)** drawn from ITU (2021) and GSMA (2023) regional fibre benchmarks for mixed aerial and trenched deployments.

v. **Exchange rate:** UGX 3,800 = USD 1 (FY 2024/25 average).

vi. **Implementation model:** Collaborative approach involving NITA-U, UCC, and private operators under PPP frameworks.

vii. Excludes OPEX and maintenance costs, which will be addressed under network operations agreements.

Internet Exchange Points (IXPs)

Total investment: UGX **570,000,000** to have 2 IXPs

This subcomponent covers the establishment or expansion of Internet Exchange Points to localize domestic traffic exchange, reduce reliance on international transit, lower latency, and improve quality of service. Uganda operates one recognized IXP, the Uganda Internet Exchange Point (UIXP), located in the Greater Kampala area.[91]

Current coverage and gap

i. **Existing IXP(s):** One operational IXP (UIXP) in Kampala. I

ii. **Population reference:** Uganda's total population is 45,905,417 according to the National Population and Housing Census 2024 Final Report (Volume I).

iii. **Gap rule and unit costs:** The benchmark used for planning assumes that every country with a population above one hundred thousand and at least three network operators should have one IXP, and for countries that already have an IXP, the number of IXPs should match the number of cities with populations of three hundred thousand or more. The benchmark further applies a cost of sixty thousand United States dollars for a country's first IXP and seventy-five thousand United States dollars for each additional IXP. (ITU - Connecting humanity action blueprint 2025)[92]

91 Consultation Document UIXP.pdf
92 Connecting humanity action blueprint

Application to Uganda (two policy-defensible interpretations of "cities Greater or equal to 300,000"):

i. **Scenario A (strict current-city view):** Kampala is treated as the only city clearly above three hundred thousand in the most current public compilations; required IXPs = one; existing = one; **gap = zero**.

ii. **Scenario B (municipal view based on UBOS 2014 census municipalities still used in planning series):** Kampala, Nansana, and Kira each exceed three hundred thousand (Nansana 365,857; Kira 317,428 in the 2014 Main Report and UN-hosted copy of the same). Under this interpretation, required IXPs = three; existing = one; **gap = two**.

Note: The population base for the country is taken from UBOS 2024; the identification of municipalities above three hundred thousand for Scenario B is drawn from UBOS 2014 census outputs that remain the official historical reference for municipal population sizes used in several sector profiles.

Costing basis and estimate

Costing follows the benchmark unit costs.

Parameter	Scenario A (Kampala only ⩾300k)	Scenario B (Kampala, Nansana, Kira ⩾300k)
Required IXPs (per rule)	1	3
Existing IXPs	1	1
IXP gap	**0**	**2**
Unit cost per additional IXP	USD 75,000	USD 75,000
Total capital cost (USD)	**0**	**150,000**
Total capital cost (UGX, 3,800 per USD)	**0**	**UGX 570,000,000**

Sources: IXP cost rule and unit costs from the Connecting Humanity Action Blueprint (IXP component); existing IXP count and location from Internet Society Pulse IXP Tracker and UIXP public documentation.[93]

Key assumptions

i. The IXP count rule is applied exactly as stated in the cited benchmark: one IXP for countries meeting the population and operator threshold; where an IXP already exists, the number of IXPs aligns with the count of cities whose populations are at least three hundred thousand.

ii. Uganda's existing IXP satisfies the "first IXP" requirement; only additional IXPs, if any, are costed at seventy-five thousand United States dollars each.

iii. The national population total is taken from UBOS 2024 Final Report (Volume I). City-level thresholds for Scenario B are evidenced by UBOS 2014 census outputs (Main Report tables listing Nansana and Kira above three hundred thousand).

iv. Placement of any new IXPs would be determined through technical appraisal and operator consultation; potential regional hubs may include the Central/Western growth corridor and the Northern region, subject to traffic and facility readiness.

3.5.3 Affordability of Digital Services

This category quantifies the cost of interventions required to make digital services and devices affordable for low-income users. It includes **mobile services**, **fixed services**, **smartphones**, and **feature phones**. Total cost to close the affordability gap is UGX 1,297.6 billion. Feasible implementation option:

93 itu.int/dms_pub/itu-s/opb/gen/s-gen-invest.con-2025-pdf-e.pdf?utm_source=chatgpt.com

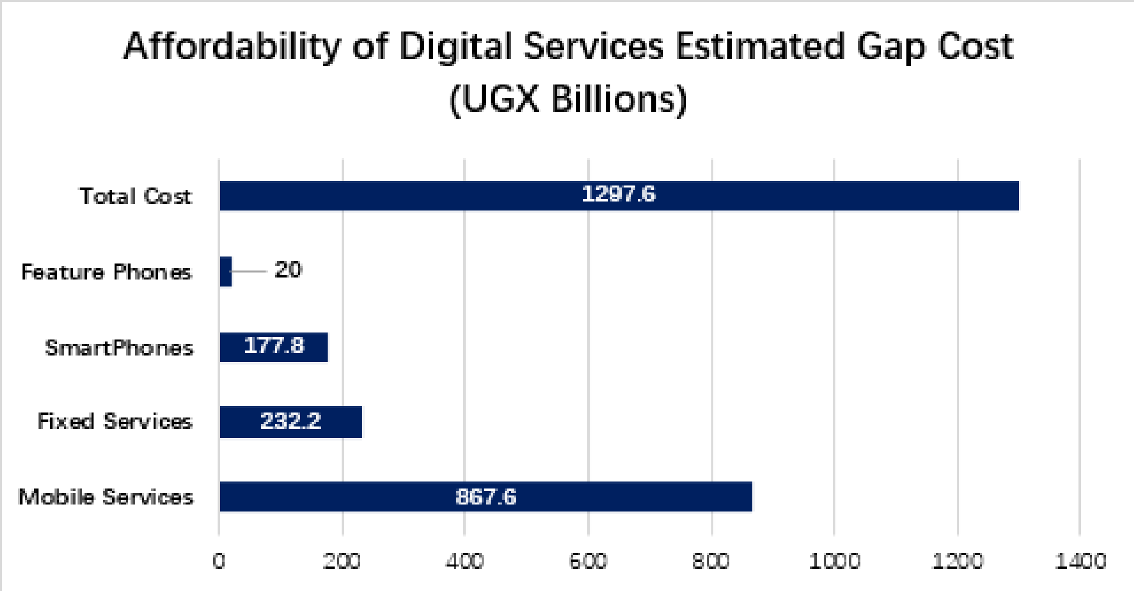

Figure 87: Affordability of Digital Services Estimated Cost (UGX Billions)

A three-year kick-start at 60% of the total UGX 778.6 billion can be programmed to deliver substantial impact while aligning to fiscal space.

Cost breakdown (UGX billions)

Component	Full gap	3-year (60%)
Mobile Services	867.6	520.6
Fixed Services	232.2	139.3
Smartphones	177.8	106.7
Feature Phones	20.0	12.0
Total	**1,297.6**	**778.6**

What the 60% envelope achieves (indicative):

i. Brings entry mobile and fixed service prices within the affordability thresholds for the targeted users/institutions in covered areas.

ii. Enables About 900,000 low-income users to acquire entry-level 4G smartphones at an effective UGX 150,000, and About 600,000 beneficiaries to obtain basic feature phones at UGX 20,000 out-of-pocket (aligned with the tranche definitions used in the device sub-sections).

iii. Uses audited pass-through (for social tariffs/vouchers) and eligibility verification per the Access Gap Model to ensure benefits reach end users (Refs: Sections 3.6.3; 3.2.2–3.2.3).

Mobile Services

Total public cost for Mobile Services (three years): UGX 867.6 billion.

This subcomponent finances targeted measures to reduce the effective monthly price of mobile broadband and voice bundles for low-income users in covered areas. Instruments include user-side vouchers/ social tariffs and/or wholesale discounts with audited pass-through to end users. Targeting and monitoring follow the Access Gap Model in **Section 3.6.3**, with user behavior and price barriers drawn from **Sections 3.2.2 - 3.2.3** of this report.

The affordability benchmark applied is the two-per-cent rule: monthly broadband service should not exceed two per cent of income, computed over income deciles and observed service-plan prices (international benchmark and basket definitions).[94]

94 The affordability of ICT services

Current affordability and gap

i. Price baskets & benchmark. ITU defines the mobile data-and-voice low-consumption basket (more or 70 minutes, 20 SMS, 500 MB; 3G+) and applies the two-per-cent of income affordability target (see definitions and Figures 9–10). ITU 2024

ii. Population base. Uganda's population is 45,905,417 (UBOS, 2024).

iii. Market context (for parameterization). UCC's Market Performance Reports provide the official snapshots of mobile and internet usage/pricing, including periodic comparative bundle schedules used for consumer guidance. We rely on these official series to anchor low-end bundle pricing levels when calibrating the subsidy per user.

Given that Section 3.2 provides qualitative evidence of price as a barrier, and in the absence of decile-level incomes in the public domain, we model the subsidy as a conservative monthly gap to bring an entry-level basket within the two-per-cent threshold for the bottom income deciles (Section 3.6.3 targeting). This is consistent with ITU's method (income deciles * price baskets * 2% threshold).[95]

Costing basis and estimate (three-year programme)

Target group and counts (planning parameters):

i. **Targeted income group:** bottom 30 per cent of the population (consistent with Section 3.6.3 "lowest deciles" focus).

ii. **Reachability filter:** 70 per cent of the targeted group is assumed to reside in covered areas (i.e., already covered or scheduled under Infrastructure).

iii. **Eligible users (E):** 45,905,417 × 30% × 70% = 9,640,138 users.

Programme levers:

i. **Monthly subsidy per eligible user (SE): UGX 5,000** - a pragmatic gap to pull an entry-level basket (as tracked in UCC's comparative schedules) within the two-per-cent threshold for the lowest deciles.

ii. **Uptake rate (U): 50 per cent** of eligible users enroll and redeem continuously (with verification).

iii. **Duration (M): 36 months**.

Formula:
Total public cost (UGX) = **E * U * SE * M**.

Computation (mid-case):

i. E * U = 9,640,138 * 0.50 = 4,820,069 beneficiaries

ii. Monthly outlay = 4,820,069 * UGX 5,000 = UGX 24.10 billion

iii. Three-year cost = 24.10 * 36 = UGX 867.6 billion

Mobile Services (3-year, mid-case): UGX 867.6 billion.

Sensitivity (policy dial):

Assumption set	Eligible in coverage	Uptake	Subsidy/user/month	3-year cost (UGX bn)
Lower-bound	9.64m	40%	3,000	**416.5**
Mid-case (used)	9.64m	50%	5,000	**867.6**
Upper-bound	9.64m	60%	7,000	**1,457.6**

This framing allows Government/UCC to **select a feasible envelope** while remaining consistent with the **2% affordability methodology** (income × baskets × threshold).

95 The affordability of ICT services

4) Implementation & controls

i. **Targeting:** bottom-decile beneficiaries per Section 3.6.3; geo-filter to covered counties (now or under Infrastructure phasing).

ii. **Instrument:** user-side e-vouchers or social tariffs with operator pass-through clauses (audited).

iii. **No double counting:** device support (smartphones/feature phones) is costed separately; only service price support is included here.

iv. **Monitoring:** verify (i) eligibility, (ii) price pass-through (bill/usage records), and (iii) sustained active usage at or below the affordability threshold (per ITU basket/threshold definitions).

Notes on sources and method linkage

- **Two-per-cent rule & baskets.** We apply the ITU affordability framework and mobile basket definitions (low-consumption basket; two-per-cent target).
- **Population base.** UBOS 2024 Final Report, Volume I.
- **Price anchoring.** UCC Market Performance Reports (and comparative bundle schedules) provide the official context for low-end monthly plans used to set the **UGX 5,000** mid-case subsidy dial.

Fixed Services

Total public cost over three years: UGX 232.2 billion. This brings institutional entry plans to UGX 150,000/month (3,000 sites) and household entry plans to UGX 100,000/month for 300,000 low-income households in covered areas, using verifiable social-tariff mechanisms and audited pass-through.

This subcomponent reduces the **recurring monthly tariff** of fixed broadband for:

i. **Priority public institutions**: government-aided secondary schools, public libraries and access centres, and public health facilities (HC III/IV) within feasible fibre or fixed-wireless reach; and

ii. **Low-income households** in covered urban and peri-urban areas.

Interventions use social tariffs, targeted vouchers, or wholesale discounts with audited pass-through, so the effective monthly price meets the programme's affordability target. Targeting and verification follow the Access Gap Model in Section 3.6.3, with usage and price-barrier evidence from Sections 3.2.2–3.2.3.

Current affordability and gap (anchored to market evidence)

- **Institutional entry plans (market anchors):** Publicly advertised business/institutional entry plans in Uganda cluster near UGX 300,000 per month (for example, Airtel Xstream Business "Fiber Lite" at UGX 300,000; higher tiers at 500,000 - 900,000).[96]
- **Household entry plans (market anchors):** Typical home entry plans fall between UGX 99,000 and UGX 130,000 per month (for example, Faiba/"Faibanet" 10 Mbps at UGX 99,000; Airtel Xstream Classic 15 Mbps at UGX 130,000; Liquid Home entry tiers in a similar band).

Programme affordability targets (what price the subsidy delivers)

To avoid ambiguity, the programme sets explicit target prices:

- **Institutions (target price, T_i):** UGX 150,000 per month for an entry institutional plan meeting minimum service standards for schools, libraries, and HC III/IV. Given an entry plan around UGX 300,000, the monthly gap per site is G_s = 150,000.[97]

- **Households (target price, T_h):** UGX 100,000 per month for an entry fixed plan in covered urban/peri-urban areas. With entry offers around UGX 99,000–130,000, the monthly gap per household is set at G_h = 20,000 to bring plans at or above UGX 120,000 down to the UGX 100,000 target.

96 Smartphone device financing: A catalyst for mobile money growth in an era of fintech apps | Mobile for Development
97 Smartphone device financing: A catalyst for mobile money growth in an era of fintech apps | Mobile for Development

These targets are consistent with the report's affordability framing (Section 3.6.3) and the international method that tests prices against a **two per cent of income** threshold using defined price baskets.[98]

Costing basis and estimate (three-year programme; 36 months)

A. **Priority public institutions**

Definition of "institutions" (distribution of the 3,000 target): This is inclusive of Secondary schools, public libraries and access centers, and Health facilities (HC III/IV): 1,300

Unit gap and source:

- Entry institutional price (P^f_i): UGX 300,000 per month (market anchor).
- Target price (T^f_i): UGX 150,000 per month, G_s = 150,000.

Computation:
$Cost_i$ = 3,000 × 150,000 × 36 = UGX 16.2 billion.

B. **Low-income households (urban/peri-urban, in coverage)**

Eligibility and uptake:

- Eligible households in coverage: 500,000
- Sustained enrolment: 60 per cent - 300,000 households subsidized

Unit gap and sources:

- Home entry price band: UGX 99,000–130,000.
- Target price (T^f_h): UGX 100,000 per month - G_h = 20,000.

Computation:
Cost = 300,000 × 20,000 × 36 = UGX 216.0 billion.

Fixed Services - three-year total

Component	Cost (UGX bn)
Priority public institutions (3,000 sites @ UGX 150k/month)	16.2
Low-income households (300k hh @ UGX 20k/month)	216.0
Total	**232.2**

4) Assumptions and controls

i. Price anchors use current public offers (business entry around UGX 300,000; home entry 99,000–130,000).

ii. Targets (T^f_i = 150,000; T^f_h = 100,000) are policy prices aligned with the two per cent affordability approach and the price-basket method (Section 3.6.3; ITU 2025).

iii. Scope boundary: Only recurring service charges are subsidized here. Infrastructure CAPEX is covered under Infrastructure Access; device support is handled under Smartphones and Feature phones.

iv. Eligibility and geo-filter: Institutions and households must be within technical reach; household selection focuses on the bottom income deciles per Section 3.6.3.

v. Pass-through and M&E: Social-tariff or wholesale discounts include contractual pass-through; monthly billing and service-quality audits verify delivery to end-users; oversight references UCC market monitoring.

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Smartphones

Full cost to close the Phase-1 device tranche is UGX 177.8 billion (recommended voucher and finance mix) to enable 1.5 million low-income users to acquire 4G smartphones at an effective UGX 150,000. As an implementation choice, a **three-year 60% kick-start (UGX 106.7 billion)** would equip **900,000** beneficiaries while enforcing activation, pass-through, and anti-leakage controls.

This subcomponent enables first-time or upgrade smartphone ownership among low-income users through device vouchers, results-based agreements with OEMs/distributors, and micro-financing with public risk-sharing. It directly addresses the device affordability barrier identified in the demand-side analysis so that beneficiaries can make meaningful use of network availability and discounted service (Mobile/Fixed) delivered elsewhere in this programme.

Current affordability and gap (evidence from the report)

i. **Usage/adoption signal.** Field evidence shows only a portion of users are active smartphone users (e.g., 40.7% of FGD participants reported daily smartphone use), indicating sizeable room for first-time adoption and sustained use. (Source: Sec. 3.2.2)

ii. **Price barrier.** The most common smartphone price band reported is UGX 300,001-400,000 (25%), followed by UGX 200,001–300,000 (20.2%); only 0.2% observed phones below UGX 100,000, and 2.3% reported above UGX 800,000. (Source: Sec. 3.2.3(C) - Fig. 55/56 and narrative)

iii. **Programme implication.** Given this distribution, a policy target price to the beneficiary of UGX 150,000 for an entry-level 4G smartphone is a reasonable threshold to unlock adoption at scale while maintaining minimum specifications. (Source: Sec. 3.2.3(C))

Costing (showing the full gap first, then a 3-year 60% implementation option)

Programme definition of the "full gap" for devices (Phase-1 tranche)

Because national device ownership data suitable for a precise, one-off "universal device gap" is not fully specified in the report, the programme defines a Phase-1 tranche aimed at 1,500,000 low-income beneficiaries in covered areas (prioritizing youth and women). This tranche size is material at national scale yet feasible to deliver over three years given logistics and verification capacity. (Source: Sec. 3.6.3 - targeting logic)

Unit economics for the tranche

i. **Median entry price assumed (P): UGX 300,000** (consistent with the most common band and adjacent band). (Source: Sec. 3.2.3(C))

ii. **Target price to user (T): UGX 150,000** (policy target).

iii. **Voucher unit gap (V): UGX 150,000** (= P_s - T_s).

iv. **Financing unit public cost (F): UGX 45,000** per financed device, using 15% expected loss on financed principal (public credit-guarantee). (Aligned to the de-risking approach in Sec. 3.6.3)

A. Full cost to close the tranche ("full gap")

Two views are provided for transparency:

i. **All-voucher baseline (simple grants):** UGX 225.0 billion.

ii. **Recommended mix (70% vouchers;** 30% financed with 15% expected loss): UGX 157.5 bn + UGX 20.25 bn = UGX 177.75 bn - UGX 177.8 billion (rounded).

Full gap (Phase-1 device tranche) - recommended mix: UGX 177.8 billion.

B. Feasible implementation option (3-year, 60% envelope)

To align with fiscal space and mirror the infrastructure presentation, a three-year kick-start at 60% of the full gap is proposed:

- **3-year 60% envelope: = UGX 106.7 billion**.
- **Indicative outputs over 3 years:** enable **900,000** beneficiaries (60% of 1.5m) to acquire an entry-level **4G smartphone** at **UGX 150,000** out-of-pocket, with verified activation and anti-leakage controls.

Assumptions, specifications, and controls (explicit)

i. Evidence base. Price distributions and affordability perceptions come from Sec. 3.2.3(C); usage intensity indicators from Sec. 3.2.2. The targeting and verification approach follows Sec. 3.6.3.

ii. Beneficiary definition. Low-income users in covered areas (now or via Infrastructure); lists validated with local government and social-protection registries. (Source: Sec. 3.6.3)

iii. Minimum device specs. Android Go or better; 4G-capable, 2GB RAM / 32GB storage, long-life battery to support e-government, education, and finance apps. (Aligned to meaningful-use framing in Sec. 3.2.2)

iv. Financing track. Public cost on financed units equals expected credit losses under a 15% guarantee, not a full grant; user out-of-pocket remains UGX 150,000. (Sec. 3.6.3 approach to de-risking)

v. Leakage control. IMEI registration, one-voucher-per-national-ID, activation-based vendor payment; randomized post-distribution audits.

vi. No double counting. Any starter data bundle associated with device activation is budgeted under Mobile Services affordability, not in this device line.

Feature Phones

Full cost to close the Phase-1 feature-phone tranche is UGX 20.0 billion to equip 1,000,000 very-low-income users with a durable basic phone at an effective UGX 20,000. As an implementation choice, a three-year 60% kick-start (UGX 12.0 billion) would reach 600,000 beneficiaries, targeting regions where the report shows the highest unaffordability and higher street prices for small phones.

This subcomponent enables first-time or replacement ownership of basic/feature phones among very-low-income users, the elderly, and first-time adopters in covered areas. Support is provided as a one-off rebate/voucher per device (no recurring service element here). The aim is to remove the device cost barrier so beneficiaries can at least access voice/SMS/USSD and entry-level mobile services (e.g., mobile money, alerts), as evidenced in the report's demand-side analysis. (Source: Sec. 3.2.3)

Current affordability and gap (evidence from the report)

i. Prices observed. The most common price range for small/feature phones is UGX 30,001-40,000 (About 42%), with UGX 40,001-50,000 About 23%) the next most common. The report cites Nokia 105 DS at About UGX 47,500, aligning with that second band. (Source: Sec. 3.2.3)

ii. Affordability perceptions. 47% of respondents consider small phones unaffordable, versus 28% who consider them affordable (About 25% unsure). (Source: Sec. 3.2.3)

iii. Regional spread. Some regions (e.g., Karamoja, parts of Tororo/West Nile) report many devices above UGX 70,000, while others skew to the 30-40k band indicating location-driven affordability pressure. (Source: Sec. 3.2.3)

Programme implication. A policy **target-price to the beneficiary of UGX 20,000** for a basic, durable feature phone will neutralize the most common affordability barrier (30–50k street prices), while keeping minimum quality intact.

Costing (full gap first, then 3-year 60% implementation)

Programme definition of the "full gap" for feature phones (Phase-1 tranche)

To avoid double-counting with smartphones and to stay implementable, the programme defines a Phase-1 tranche of 1,000,000 beneficiaries over three years, focused on very-low-income users and first-time adopters (validated lists via local government/social-protection). (Consistent with the targeting logic applied in Sec. 3.6.3.)

Unit economics

i. Median observed street price: UGX 40,000 (mid-point of the 30–50k range in the report). (Source: Sec. 3.2.3)

ii. Target price to user: UGX 20,000 (policy threshold).

iii. Unit gap: UGX 20,000

A. Full cost to close the tranche ("full gap")

Cost = 1,000,000*20,000 = UGX 20.0 billion

B. Feasible implementation option (3-year, 60% envelope)

0.60 * 20.0bn = UGX 12.0 billion

Indicative outputs (3 years): 600,000 very-low-income beneficiaries equipped with basic phones at **UGX 20,000** out-of-pocket, prioritized for remote counties and vulnerable groups flagged in the report.

Assumptions, specifications, and controls

i. Evidence base. Price ranges, regional variation, and affordability perceptions are taken directly from Sec. 3.2.3

ii. Beneficiary definition. Very-low-income users (including elderly and first-time adopters) in covered areas; lists validated with local government and social-protection registries (aligned with the Access Gap Model in Sec. 3.6.3).

iii. Minimum specs. Robust feature phone with long-life battery, multi-SIM where available, USSD/SMS, and local language support; warranty minimum 12 months.

iv. Distribution & anti-leakage. Vouchers redeemable at vetted local retailers; one-device-per-ID; spot checks; replacement only after a defined interval (e.g., 24 months) to prevent repeat claims.

v. No double counting. Households receiving smartphone support are excluded from the feature-phone line in the same tranche; this line is device acquisition only (service affordability appears under Mobile Services).

vi. Regional calibration. County allocations prioritize areas where the report shows higher unaffordability shares and higher street prices for small phones (e.g., Karamoja/West Nile). (Source: Sec. 3.2.3 regional analysis)

3.5.4 Digital Skills

This category estimates investments needed to enhance both **basic** and **above-basic** digital skills among Ugandans. The full requirement to close the digital skills gap for the working-age population is **UGX 1,557.6 billion,** comprising **UGX 604.0 billion** for **Basic Digital Skills** and **UGX 953.6 billion** for **Above-basic Digital Skills**.

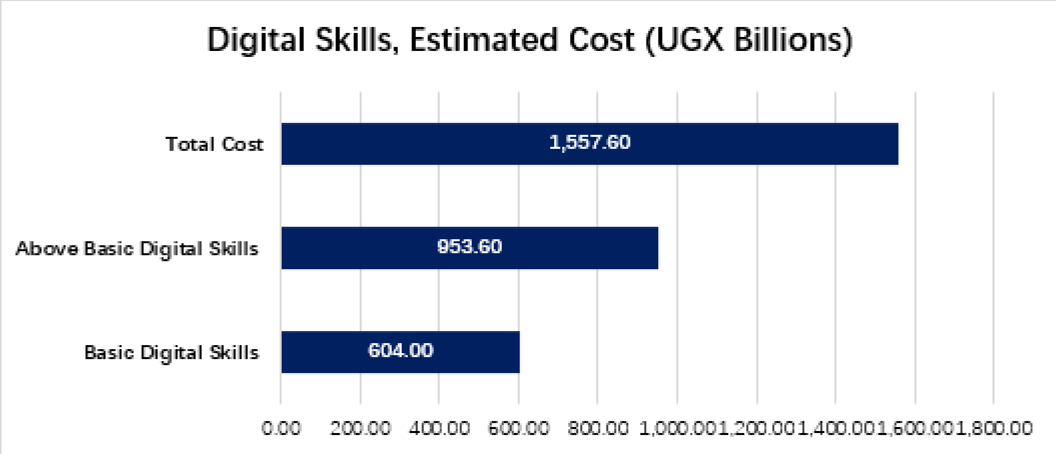


Figure 88: Digital Skills, Estimated Cost (UGX Billions)

A three-year 60 % kick-start would require UGX 934.6 billion. Working-age base: 24,975,065 (UBOS, ages 15 - 64). Method: ITU "Connecting Humanity" (training hours multiplied by trainer hourly wage plus a stipend equal to the average hourly wage for the bottom half of earners).

Track	Trainees (full gap)	Unit cost (UGX)	Full cost (UGX bn)	Trainees (60%)	Cost 60% (UGX bn)
Basic	4,745,262	127,280	**604.0**	2,847,157	**362.4**
Above-basic	6,885,813	254,560	**953.6**	4,131,488	**572.2**
Total	11,630,075	-	**1,557.6**	6,978,645	**934.6**

Basic Digital Skills

"Basic" skills include internet navigation, email and communication tools, social media use, use of online services, and basic computer operations. (Source: Section 3.2.8)

Current baseline and gap

Averaging the five "no-skill" indicators in Section 3.2.8 yields **49% lacking basic skills**. Applied to Uganda's working population of **24,975,065** (15 to 65yrs) that is **12,237,781** people without basic skills. Following the UN Universal Meaningful Connectivity targets: at least **70%** of people with **basic** digital skills and at least **50%** with **intermediate** skills[99], taking the 2030 target is **70%** of the working age population with basic skills. Moving from the current **51%** with basic skills to **70%** requires training an additional **19% of the population**, which is **4,745,262** people. (Sources: Section 3.2.8; UBOS 2024 Census Report)

Costing full gap (ITU hours-based method)[100]

i. Training hours per learner (basic): 40 hours

ii. Per-hour, per-learner cost: UGX 3,182 (trainer wage UGX 2,220 plus stipend UGX 962)

iii. Wage anchors used: bottom-half wage UGX 962 per hour; trainer wage UGX 2,220 per hour

- Unit cost per basic learner: 40 * 3,182 = UGX 127,280
- Full-gap cost (basic): 4,745,262 * 127,280 = UGX 604.0 billion

Three-year, 60% implementation option

i. Trainees: 2,847,157
ii. Cost: UGX 362.4 billion

Assumptions and delivery

99 New UN targets chart path to universal meaningful connectivity - ITU
100 Connecting humanity action blueprint

Delivery through community ICT hubs, schools, libraries, and public access centers; standardized curricula and assessment; pre- and post-tests; certification; stipend aligned to the bottom-half wage to support attendance. Hours follow ITU guidance for the basic track. (Sources: Section 3.2.8; UCC Digital Skills Assessment Draft; ITU Connecting Humanity.)

Above-Basic Digital Skills

"Above-basic" covers intermediate and advanced capabilities for the workforce and public service delivery: productivity beyond basics, data handling, work-oriented web and application use, cybersecurity hygiene, and entry-to-intermediate technical skills such as data analytics, cloud and DevOps, artificial intelligence and machine learning, and Internet of Things. (Sources: UCC Digital Skills Assessment; Access Gap Report cross-references.)

Current baseline and gap

Using the UCC Digital Skills Assessment (less than 30 percent have advanced technical skills; less than 40 percent have strong work-oriented foundational skills), we adopt 35 percent with above-basic and 65 percent lacking above-basic. The 2030 target is 50 percent with intermediate or above-basic skills. Moving from 35 percent to 50 percent requires training 15 percent of the working-age population, which is 6,885,813 people. (Sources: UCC Digital Skills Assessment; UBOS 2024 population total.)

Costing - full gap (ITU hours-based method)[101]

i. Training hours per learner (above-basic): 80 hours
ii. Per-hour, per-learner cost: UGX 3,182
iii. Unit cost per above-basic learner: UGX 254,560
iv. Full-gap cost (above-basic): 6,885,813 * 254,560 = UGX 953.6 billion

Three-year, 60% implementation option

i. Trainees: 4,131,488

ii. Cost: UGX572.2 billion

Assumptions and delivery

Priority domains per the UCC assessment (data, cybersecurity, cloud and DevOps, AI and ML, IoT). Delivery through accredited providers and sector academies; stackable micro-credentials; certification; six- to twelve-month outcomes tracking. Stipend and hours follow the ITU approach for the above-basic track. (Sources: UCC Digital Skills Assessment; ITU Connecting Humanity, pp. 27–29.)

101 Connecting humanity action blueprint

3.6 Socio-Economic Impact of Closing the Access and Usage Gap

Building on the identified gaps across Uganda's digital ecosystem, this study confirms that the country continues to face pronounced inequalities in access to telecommunication services, particularly in rural and underserved areas. While UCUSAF, has made tangible progress through targeted interventions across all five strategic objectives (SO1–SO5), the data reveals that these efforts remain significantly underfunded relative to the scale of need.

As highlighted in Section 3.2, disparities persist between urban areas, where broadband penetration and mobile connectivity have seen substantial growth and rural regions, which continue to suffer from infrastructure deficits, device unaffordability, low digital literacy, and limited localized service models. These access gaps are not just technical challenges; they are deeply social and economic, affecting Uganda's ability to achieve inclusive development.

This section further quantifies the broader socio-economic impact of closing the universal access gap. It assesses how limited connectivity and digital exclusion undermine national priorities such as job creation, SME growth, digital education, inclusive healthcare, civic engagement, and financial inclusion. Using a combination of established models including the **Lost Opportunity Cost Model**, the **Input-Output Model**, and the **Measuring ICT for Development Framework**, we estimate the national costs of inaction, alongside the potential returns on targeted investment.

Ultimately, this analysis strengthens the case for expanding support to UCUSAF and its implementing partners not only to scale up what works but also to unlock Uganda's full digital development potential. It underscores that bridging the gap is no longer optional; it is essential for accelerating Uganda's transition to a competitive, inclusive, and knowledge-driven economy.

Key sectors	Indicators	Broader Implication
Economic Growth and Employment	Barriers to Digital Economy Participation	Limited broadband and mobile connectivity in rural areas restricts participation in Uganda's growing digital economy. Small businesses, agricultural enterprises, and informal sector workers lack access to digital financial services, e-commerce platforms, and online marketplaces, reducing their ability to scale and compete.
	Impact on Job Creation	Broadband access is strongly linked to job creation and entrepreneurship. The absence of reliable internet connectivity in some regions limits opportunities for digital entrepreneurship, remote work, and business process outsourcing (BPO), which have the potential to generate employment, especially for youth.
	Financial Inclusion	Mobile money services have revolutionized financial inclusion in Uganda, but gaps in network coverage prevent some communities from fully benefiting. A lack of access to digital payment platforms increases reliance on cash-based transactions, which are less secure and limit economic mobility.
Education and Digital Literacy	Unequal Access to Online Learning	The digital divide has been particularly evident in the education sector, where students in rural areas struggle to access e-learning resources. This limits their ability to compete with peers in urban centers, further entrenching educational inequalities.
	Workforce Readiness and ICT Skills Development	Limited broadband access affects digital literacy, reducing the employability of young people in an increasingly digital job market. ICT skills are crucial for sectors such as software development, cybersecurity, and digital marketing, yet many students in underserved areas are unable to acquire them due to infrastructure deficits.
Healthcare and Telemedicine	Barriers to Telemedicine and Digital Health Services	Universal access to telecommunication services is critical for improving healthcare delivery. However, many remote healthcare facilities in Uganda lack reliable connectivity, hindering the adoption of telemedicine services that could bridge the healthcare accessibility gap.
	Emergency Communication Challenges	In areas with poor network coverage, residents face difficulties in accessing emergency services, including ambulance dispatch, maternal health consultations, and medical helplines. This contributes to preventable deaths and worsens health disparities.

Governance, Civic Engagement, and Social Inclusion	Access to E-Government Services	The Ugandan government has made strides in digitizing public services, yet many citizens in underserved regions remain excluded due to limited connectivity. This hampers access to critical services such as tax filing, land registration, and social security benefits.
	Digital Marginalization of Vulnerable Groups	Women, youth, persons with disabilities (PWDs), and elderly citizens are disproportionately affected by the access gap. Digital exclusion prevents them from engaging in economic activities, social networking, and accessing essential services, further deepening societal inequalities.
	Impact on Democratic Participation	A lack of internet access limits citizens' ability to engage in digital democracy, including online civic discussions, e-voting initiatives, and access to government information. This can lead to lower political engagement and reduced transparency in governance.

A. **Quantifying the Access Gap using integrated established economic models**

To provide a comprehensive assessment of the socioeconomic impact of the universal access gap, we will integrate quantitative models, including;

3.6.1 Lost Opportunity Cost Model

a. **Lost Opportunity Cost Models:** The **Lost Opportunity Cost Model** helps estimate the economic losses Uganda incurs due to limited ICT access. We have considered three factors as provided by the model;

Lost GDP Per Capita	i. The World Bank estimates that every 10% increase in broadband penetration results in a 1.21% increase in GDP per capita in developing economies [102]. ii. Uganda's GDP per capita (2023) is approximately $1,081 [103]. iii. Uganda's broadband penetration is estimated at 42%,[104]; closing the access gap (58%) could increase GDP per capita by 7%. iv. Estimated GDP loss due to the access gap 7%×1,081= 75.6 USD per person per year v. Total economic loss: With 45.9 million[105] people as per the 2024 census, Uganda loses approximately $3.473 billion annually in potential GDP due to lack of ICT access.

102 World Bank study titled "Information and Communications for Development 2009
103 Uganda's budget brief 2024/2025
104 Digital & Connectivity Indicators – Uganda 2025
105 National Population and Housing Census 2024

Number of Jobs Not Created	i. The International Telecommunication Union (ITU) estimates that every 1,000 broadband connections create 80 direct jobs and 300 indirect jobs.[106] ii. Uganda's current broadband penetration leaves out approximately 26.6 million people (58% of the population). iii. Assuming 4 people per broadband connection, Uganda could have 6.65 million new broadband connections if coverage were universal. iv. Estimated **job loss**: (6.65 million×80)/1000=532,000 direct jobs,(6.65 million×300)/1000=1.995million indirect jobs. **Total jobs lost= 2.53 million potential jobs** (Telecommunication Engineers – Network design, installation, and maintenance, ICT Technicians – Network troubleshooting, support, and repair, Fiber Optic Technicians – Laying and maintaining fiber optic cables, Software Developers – Developing applications and digital solutions for connectivity, Data Analysts – Managing and analyzing internet usage patterns, Cybersecurity Specialists – Ensuring safe internet usage, IT Trainers & Digital Literacy Coaches – Teaching digital skills to new users, Call Center Operators **–** Handling internet service inquiries and troubleshooting,) due to the ICT access gap. v. **Average Annual Tax Contribution per Employee** (PAYE + Other Direct Taxes) = Approx. **UGX 2 million** (assumed for mid-income earners in Uganda). **Therefore, Total Estimated Tax Revenue Lost** 2.53 million jobs×UGX 2 million per employee=UGX 5.06 trillion annually
Productivity Losses in Key Sectors	i. **Agriculture**- Smart farming and access to market data could increase productivity by **10%**[107]. ii. **Education**- E-learning access could improve student performance by **15%** [108]. Online teacher-student collaboration platforms facilitate access to support services, virtual sessions, and sharing of learning materials, thereby enhancing teacher productivity which is estimated to increase by 20-25%. Expanding access to quality education. According to the 2024 National Population and Housing Census, the number of Persons with Disabilities (PWDs) in Uganda has increased by 1.3 million over the past decade. However, detailed statistics on the number of PWDs attending school and those formally employed remain limited. Enhancing ICT access can provide tailored educational resources for PWDs, promoting inclusivity and expanding access to quality education iii. **Healthcare**: Telemedicine could reduce patient waiting time by **25%**, improving treatment outcomes[109]. iv. **Judiciary (Justice, Law, and Order Sector - JLOS)** - Case backlogs are a significant challenge in judicial systems globally. For instance, by September 2024, the Crown Court backlog in England and Wales reached 73,105 cases. While specific data for Uganda indicate a backlog of 161,838 cases as of 1st Jan 2025.[110] Implementing ICT solutions, such as digital case management systems, can streamline processes, reduce backlogs, and enhance judicial efficiency v. **Private sector** Data Consumption of SMEs SMEs are crucial to Uganda's economy, yet many face challenges due to limited internet access and high data costs. The Digital 2024: Uganda report highlights the growing reliance on digital platforms, but inadequate infrastructure restricts SMEs' growth and competitiveness. Enhancing digital access can help SMEs expand their market reach, improve efficiency, and drive economic development. Individuals in the Informal Sector The informal economy in Uganda is substantial, estimated at 40.1% [111]of GDP, representing approximately $46 billion. Improving ICT access for individuals in the informal sector can facilitate financial inclusion, access to market information, and integration into the formal economy

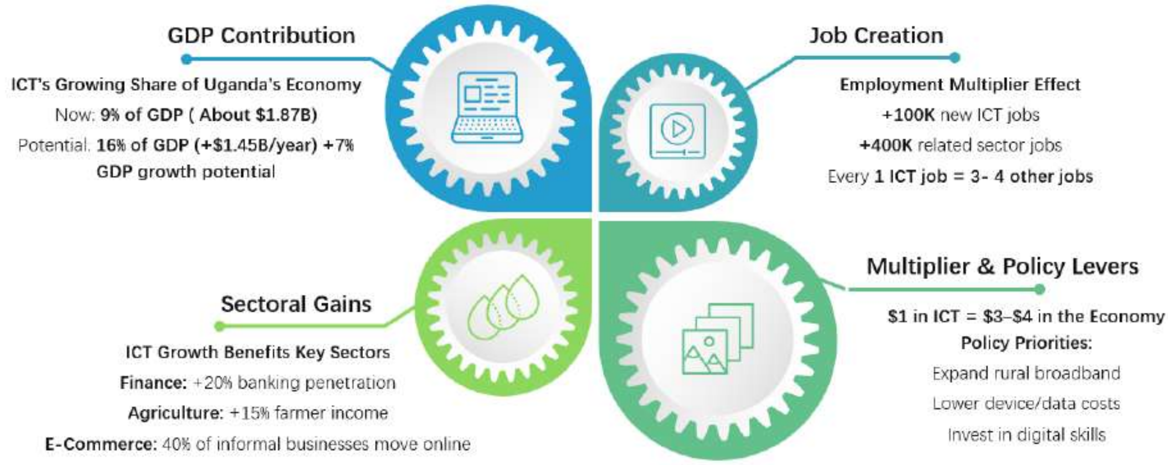
106 ITU's Measuring digital development: Facts and Figures 2024
107 The Food and Agriculture Organization (FAO) published the report titled "Smart farmers – Learning with digital technologies" in 2021
108 UNESCO Report on Education 2023
109 The World Health Organization (WHO) report "Reducing outpatient wait times through telemedicine: a systematic review and quantitative analysis" in 2025
110 Annual Performance Report 2023/24, Judiciary
111 Economic Policy Research Centre (EPRC): Referring to the Ministry of Finance, Planning and Economic Development (MoFPED), EPRC notes

A conservative estimate suggests Uganda **loses 5% of total national productivity** due to ICT deficiencies, translating to **$2.25 billion annually** in lost economic potential.

3.6.2 Input-Output Model

a. Input-Output (I-O) Model

We used the Input-Output Model to evaluate how ICT investment impacts GDP, job creation, and industry growth.



Contribution to GDP	i. ICT continue to grow at an average rate of 14.8% contributes 9% to Uganda's GDP (~$1.87 billion) and employs about 2.3 million people. [112] ii. In countries with strong ICT investment, ICT contributes at least 16-18% of GDP. iii. Potential increase in Uganda's GDP if ICT access is expanded therefore would be 16%-9%=7% = $1.45 billion additional GDP per year if the access gap is bridged.
Job Creation in ICT and Related Sectors	i. ICT sector job multipliers suggest that for every ICT job created, 3-4 jobs are generated in other industries.[113] ii. Closing the access gap could generate. ✓ Direct ICT jobs: 100,000 new tech-sector jobs. ✓ Indirect jobs: 300,000 - 400,000 jobs in complementary sectors (e.g., fin-tech, digital marketing, logistics). ✓ Total new jobs: 400,000 – 500,000 jobs created through ICT growth.
Multiplier Effects on Other Industries	The I-O Model also quantifies spillover benefits to industries such as; i. Financial Services- Mobile banking expansion increases formal banking penetration by 20%., Provision of quicker voluntary saving service aiding open market operations [114] ii. Agriculture- Market access via digital platforms increase farmer income by 15%. quality extension services (lead to farm yield)[115] iii. E-Commerce- ICT access enables 40% of informal businesses to transition online.

Therefore, with the Multiplier effect, ICT investments generate $2–$3 for every $1 invested, leading to $3–$4 billion in potential economic gains for Uganda.

3.6.3 Measuring ICT for Development Framework and ICT Access Gap Model

The Measuring ICT for Development Framework and ICT Access Gap Model assess ICT penetration, affordability, and socioeconomic impact.

112 Uganda's Digital Transformation roadmap 2023-2027
113 Bay Area Council (2012). For every new high-tech job, four more are created
114 GSMA State of the Industry Report on Mobile Money 2024
115 Lwanga, J. (2025). Role of agricultural extension services in enhancing farmers' income in Uganda. Journal of Agricultural Policy, 8(1), 55-65

a) **ICT Penetration and Accessibility (Based from statistics from section 3.2.1)**

i. Mobile penetration (2G): 75.2% (leaving 24.8% unconnected).

ii. Broadband penetration (at least 3G): 56.7% (leaving 43.3% unconnected).

iii. Smartphone adoption: 50% (limiting digital service usage).

iv. Fibre coverage - The National Backbone Infrastructure (NBI) project has laid approximately 4,172 kilometers of optical fiber cable across 63 districts, covering nearly 50% of Uganda as of December 2024[116]

v. Key gap: 19.8 million Ugandans lack meaningful access to digital services (43.3% of the National Population as per UBOS 2024 statistics).

b) **Geographic and Socioeconomic Disparities**

i. Urban broadband coverage- 85% vs. Rural broadband coverage- 35%.

ii. Regional variation

- ✓ Central Uganda: 85% access.
- ✓ Northern Uganda: 28% access.
- ✓ Karamoja region: 14% access.
- ✓ Refugees – 10%

The ICT Access Gap Model categorizes these as;

i. Unserved areas (No coverage at all): 5.6 million people.

ii. Underserved areas (Low-speed or unreliable): 7.4 million people.

iii. Limited access (Expensive or poor quality): 9.6 million people.

c) **Affordability and Usability Barriers**

i. Average Formally employed Ugandan earn around UGX 500,000-700,000

ii. According to the world bank, an average Ugandan earns UGX 280,000 per month while the recent the UBOS 2024, National Housing and Population Census approximates an average of UGX 300,000 per month.

iii. Internet cost- 1GB of data costs 6% of monthly income (ITU recommends <2%).

iv. Device affordability- The average smartphone price is $80, unaffordable for 46% of Ugandans.

v. Digital literacy gap- 35% of Ugandans lack digital skills needed for effective ICT usage.

B. Policy Insights and Infrastructure Recommendations

To bridge the access gap, the following policy actions are critical

a) Affordable Devices

Government-Backed Low-Cost Smartphone Initiatives

i. Implement subsidy programs to make smartphones affordable for at least **5 million low-income users**.

ii. Reduce import duties and value-added taxes (VAT) on smartphones and other digital devices to lower retail prices.

iii. Establish financing models such as device instalment plans with mobile network operators (MNOs) to make ownership easier for low-income households.

Promoting Local Manufacturing and Assembling

i. Encourage investments in local production of low-cost digital devices through tax incentives and public-private partnerships.

116 President Yoweri K Museveni launches NBI PHASE V in Karamoja | National Information Technology Authority - Uganda (NITA-U)

ii. Support initiatives like the Assembled in Uganda program to reduce dependence on expensive imports.

iii. Learn from models in India (Make in India initiative) and Rwanda (Mara Phone factory) to create jobs and lower costs.

Establishing Community Telecenters

i. Deploy community telecenters in underserved rural areas to offer free or low-cost internet access, ICT training, and e-government services.

ii. Build on successful models from Singapore (Infocom Development Authority's telecenter initiative) and Chile's Digital Inclusion Centers, which improved connectivity for marginalized groups.

b) Expanding Network Infrastructure

Public-Private Partnerships (PPPs) for 4G and 5G Expansion

i. Leverage government incentives to encourage telecom companies to invest in rural infrastructure.

ii. Offer subsidies for network rollout in low-income and sparsely populated areas.

iii. Utilize existing public infrastructure (roads, power lines, schools) to reduce network deployment costs.

iv. Encourage infrastructure-sharing between telecom operators to avoid duplication and lower costs.

Leveraging Alternative Technologies

i. Deploy satellite broadband (e.g., Starlink, Avanti) and TV white space technology in hard-to-reach areas.

ii. Expand fiber-optic backbones and incentivize local ISPs to extend last-mile connectivity.

c) Reducing Internet Costs

Government Subsidies for Internet Services

i. Implement targeted internet subsidies for low-income groups, schools, and health centers.

ii. Work towards lowering data costs to below 2% of monthly income, aligning with UN affordability targets.

iii. Reduce excise duties on data to bring down internet costs, ensuring affordability for marginalized communities.

Enhancing Competition in the Telecom Sector

i. Encourage new entrants into the ISP market to drive competition and lower costs.

ii. Strengthen regulatory frameworks to prevent monopolistic pricing by dominant players.

d) Enhancing Digital Literacy

Training Programs for 10 Million Ugandans by 2030

i. Introduce national digital skills programs for youth, women, and informal sector workers.

ii. Partner with universities, vocational institutions, and NGOs to offer digital literacy training.

iii. Develop government-backed online platforms for free digital skills courses.

Integration of Digital Skills in Education

i. Revise school curricula to ensure early exposure to ICT skills.

ii. Provide free coding and programming training for students in secondary and tertiary institutions.

Public Awareness Campaigns

i. Launch nationwide digital awareness initiatives to educate people on online safety, e-commerce, and digital opportunities.

e) Targeted Investment in Underserved Areas

Expanding the Universal Service Fund (USF)

i. Increase USF coverage to at least 80% of rural areas by 2028 to ensure last-mile connectivity.

ii. Use USF to support local ISPs in deploying infrastructure in high-cost, low-return areas.

iii. Prioritize refugee settlements, remote villages, and economically disadvantaged regions.

- **Encouraging Localized Solutions**

i. Support community-based ISPs and cooperative-owned broadband networks to improve access in rural areas.

ii. Offer incentives for innovative last-mile connectivity solutions, such as Wi-Fi mesh networks and low-cost solar-powered base stations.

3.6.4 Emerging Issues and Recommendations

A. **Emerging Issues**

Bridging the ICT Access Gap

Summary of Economic Impact of Closing the Access Gap

i. $3.15 billion annual GDP gain from expanded broadband.
ii. 2.53 million jobs created in the ICT and related sectors.
iii. $2.25 billion in productivity gains across healthcare, education, and agriculture.
iv. $3–$4 billion in industry-wide multiplier effects from ICT expansion.
v. Bridging the access gap could drive Uganda's GDP growth by 3-5% annually.

B. **Recommendations**

Theme	Emerging Issue	Recommendation	Actor(s)
Lost Opportunity Cost Model	Uganda is losing approximately USD 3.473 billion annually in GDP, missing out on 2.53 million jobs and UGX 5.06 trillion in potential tax revenues due to gaps in ICT infrastructure and usage.	Prioritize broadband access in underserved regions through a National Broadband Acceleration Plan; model investment against economic returns.	MoICT, UCC, Ministry of Finance, NPA
Input-Output Model	Sectors like agriculture, health, education, and financial services experience annual productivity losses of over USD 2.25 billion due to poor ICT access.	Integrate ICT infrastructure into sectoral development plans and fast-track cross-sector digital transformation initiatives.	MoICT, MoH, MoES, Ministry of Agriculture, UCC
Measuring ICT for Development Framework and ICT Access Gap Model	Lack of disaggregated data and localized digital development metrics limits planning and measurement of ICT impact on socio-economic inclusion.	Establish a national framework for tracking ICT access and usage across demographic groups; incorporate digital development indicators into national surveys.	UBOS, MoICT, NITA-U, UCC

3.7 Multi-sector collaboration for Digital Inclusivity

UCUSAF has formed partnerships across key sectors such as education, health, security, and local governance to support ICT infrastructure deployment, digital skilling, and service access. However, some sectors remain under-engaged, despite their strategic relevance to inclusive digital transformation.

3.7.1 Partnership & collaboration

UCUSAF formally known as RCDF has implemented several projects, the table below summarises the different sectors

UCUSAF Partner Sectors (Based on Projects Implemented)	Sectors for Future Collaboration (Linked to NDP IV Priorities)
i. Education ii. Health iii. Agriculture iv. Youth and Employment v. Gender and Social Inclusion vi. Local Government & Community Development vii. Security & Border Control viii. Innovation and Emerging Technologies ix. Private Sector/MSMEs x. Research and Academia	**i. Tourism:** Enable digital presence of cultural/tourism sites; offer e-ticketing, e-guides, and SME digital skills in hospitality. **ii. Justice/Law:** Enhance access to legal information through ICT kiosks; digitize lower court services and mobile mediation tools. **iii. Social Protection:** Expand digital registration, e-wallets for vulnerable persons (elderly, PWDs); integrate connectivity in community centres.

These partnerships will unlock inclusive access to e-services, boost citizen participation, and catalyse rural transformation.

3.7.2 E-waste Management Activities

Uganda's digital transformation is not only driving connectivity but also generating a parallel challenge electronic waste (e-waste). Effective e-waste management is vital for environmental sustainability, public health, and circular economy opportunities. Despite the presence of guiding frameworks like the Guidelines for E-Waste Management in Uganda (2016), implementation remains limited, particularly in rural and underserved areas[117].

Table 24: Current Status of E-Waste Management in Uganda

Component	Status / Observations
Legal Framework	E-Waste Guidelines (2016) provide direction on collection, handling, and disposal. No standalone e-waste law yet.
Key Actors	National Environment Management Authority (NEMA): oversight. UCC: oversees ICT device end-of-life compliance. Private Sector: entities like AST Recycling, EnviroServe Uganda engaged in collection/refurbishing. Urban Authorities: limited role in enforcement.
Geographic Coverage	Most formal e-waste collection and recycling facilities are concentrated in Central Region (Kampala and Wakiso).
Tracking & Data Systems	No national registry for tracking ICT device lifecycle or returns. E-waste volumes are underreported and not centrally managed.
Awareness and Training	Low awareness among institutions and individuals on e-waste risks. Few certified e-waste handlers and technicians.

117 May _ August 2021 FP | CSpread.indd

UCUSAF's Role	UCUSAF-supported ICT labs and centers rarely include end-of-life protocols. No current tracking system for school/community equipment post-deployment.

3.7.3 Emerging Issues and Recommendations

Theme	Emerging Issues	Recommendations	Actor(s)
Partnerships & Collaboration	i. UCUSAF partnerships are concentrated in traditional sectors (education, health), with limited engagement in tourism, justice, trade, and local innovation ecosystems.	i. Expand multi-sector partnerships into high-impact but under-engaged sectors aligned to NDP IV (e.g., justice, tourism, trade). ii. Develop formal collaboration frameworks with MDAs and local governments to coordinate planning, co-funding, and infrastructure rollout.	UCUSAF, UCC, MoICT&NG, MoLG, NPA, OPM, sectoral MDAs
E-Waste Management	i. Uganda lacks a centralized e-waste tracking and reporting system. ii. Recycling facilities and repair centers are concentrated in urban areas; rural coverage is negligible. iii. Most public ICT programs (including UCUSAF projects) do not incorporate end-of-life equipment plans. iv. Public awareness and technician certification on e-waste handling remains low.	i. Establish a national digital platform for e-waste tracking and reporting linked to UCC licensing and device importation systems. ii. Integrate e-waste planning (recovery, refurbishment, disposal) into all public ICT rollouts, including school labs and community centers. iii. Incentivize private repair hubs and collection points in underserved regions. iv. Launch awareness campaigns and certification programs targeting technicians and schools.	UCC, NEMA, MoICT&NG, MoLG, Local Governments, UCUSAF, Private Sector Development Partners

3.8 Policy, Legal and Regulatory Environment Analysis

Uganda has established a broad legal and policy framework aligned with international and regional commitments to promote Universal Access to communication services. Key instruments such as the Uganda Communications Act, 2013[118], Digital Uganda Vision[119], and The National Broadband Policy, 2018[120] provide a solid foundation for advancing digital inclusion. However, implementation is hindered by weak enforcement, limited coordination among institutions, and conflicting policy provisions such as high ICT taxes that contradict access goals. Awareness of these policies remains low among SMEs, and stakeholder feedback reflects mixed perceptions of their effectiveness, especially in rural and underserved areas.

While Uganda's National 4IR Strategy signals a forward-looking vision, the regulatory environment is yet to catch up with global best practices on emerging technologies like AI, 5G, and IoT. Countries such as Estonia and South Korea have developed agile, innovation-ready regulations that Uganda can learn from. To close the universal access gap, Uganda must prioritize harmonizing policies, developing regulatory frameworks for new technologies, strengthening accountability, and expanding digital literacy and infrastructure investment, particularly for marginalized groups.

118 Uganda Communications Act, 2013 – Uganda Communications Commission
119 Digital Uganda Vision | Ministry of ICT and National Guidance
120 NATIONAL-BROADBAND-POLICY-2018.pdf

This section evaluates Uganda's policy, legal, and regulatory environment in promoting universal access to basic communication services. It highlights key gaps, opportunities, and presents actionable recommendations for policy enhancement.

3.7.1 Key Policy, Legal and Regulatory Instruments

The National Policy, Legal and Regulatory Instruments:

This section examines Uganda's national policy, legal, and regulatory frameworks that underpin efforts to achieve universal digital access. It reviews key instruments detailing their objectives, effectiveness, and the challenges they face in bridging the digital divide.

Legal and Regulatory Instruments (Laws, Acts, Constitution)

Instrument	Objective	Sections Enhancing Access/Usage	Sections Creating Challenges/Inhibitions
The Constitution of the Republic of Uganda (1995, as amended)	Supreme law; guarantees fundamental rights including access to information, equality, and development.	**i. Article 41**: Right of access to information. **ii. Article 21**: Equality before the law enabler for inclusive digital access. **iii. National Objectives XVII & XX**: Encourage balanced development and accessibility to public services. **iv. Article 32**: Affirmative action for marginalized groups (e.g., PWDs, women).	i. No explicit right to internet/digital access. ii. Implementation depends heavily on subordinate laws and policies.
Uganda Communications Act (Cap 106, 2013)	Regulates communications sector and mandates equitable service provision.	**i. Section 5 (1)(b)**: Ensures equitable access and service quality. **ii. Section 22A**: Establishes **UCUSAF** (formerly RCDF) to support underserved areas. **iii. Section 6 (e)**: Promotes innovation and local content. **Section 24**: Licensing obligation includes access considerations.	i. High spectrum and licensing costs restrict new players. **ii. Section 21**: Vague universal service obligations. iii. Slow rollout of UCUSAF programs. iv. Enforcement mechanisms not well publicized. Dependence on operators' willingness to extend coverage.

Tax Amendments 2024–2025	To broaden the tax base, stimulate investment in priority sectors, promote local manufacturing, and ensure fiscal sustainability for Uganda's development goals under the 2024/25 budget..	**i. VAT Amendment Act, 2024:** Introduces VAT exemptions for supplies of electric vehicles, charging equipment, and safety headgear indirectly promoting digital and smart infrastructure (Pg. 7). **ii. Stamp Duty (Amendment) Act, 2024:** Offers NIL duty on instruments executed by manufacturers of ICT-relevant technology such as EV components and specialized hospital infrastructure (Pg. 10). **iii. Income Tax Exemptions:** Exempts income derived from venture capital funds, which could support ICT infrastructure ventures in rural areas (Pg. 6). **Excise Duty Act, 2024:** Offers exemption for international calls from EAC partner states, promoting affordable regional connectivity (Pg. 9)	**i. VAT Act, Section 19 (Amended)**: Imposes 18% VAT on digital services like software and equipment installation, which could deter investment in broadband expansion, particularly for SMEs (Pg. 7). **Limited direct targeting of telecom and broadband sectors:** The amendments broadly support manufacturing and investment but do not explicitly incentivize broadband network rollout, last-mile connectivity, or telecommunication devices affordability.
Access to Information Act (2005)	Operationalizes Article 41 of the Constitution. Ensures access to public sector information.	**i. Section 5**: Every citizen has the right to access information. ii. Digitalization of government services encourages broadband use. iii. Enables digital inclusion through open governance. Encourages data-driven development initiatives.	**i. Section 8(1)**: Requests must be written—discriminates against illiterate/digitally excluded. ii. Enforcement is weak and slow. iii. Poor awareness of rights among citizens. Limited ICT capacity at local governments.
Persons with Disabilities Act (2020)	Promotes inclusion of PWDs in all aspects of life, including access to ICTs.	**i. Section 15:** Ensures access to ICTs and digital services for PWDs. ii. Mandates accessible formats and assistive technologies. iii. Recognizes PWDs' right to information. Affirmative action for accessible infrastructure design.	i. Implementation not adequately funded. ii. ICT providers lack incentives to build accessible platforms. iii. Accessibility features absent in most services. iv. Weak monitoring of compliance. PWDs often excluded in digital literacy programs.

Refugees Act (2006)	Provides rights for refugees including access to services.	**i. Section 29**: Refugees entitled to access social services, including education and information. ii. Inclusion in digital registration and service access. iii. Use of telecoms for aid distribution (e.g., via mobile money). Humanitarian telecom partnerships exist (e.g., UNHCR/UCC).	i. No explicit reference to ICT access. ii. Refugee settlements often lack network infrastructure. iii. SIM card registration and national ID requirements are barriers. Policy disconnect between OPM, UCC, and telecoms on coverage priorities.
The Computer Misuse Act, 2010 (as amended by the Computer Misuse (Amendment) Act, 2022)	To ensure the secure, safe, and responsible use of information and communication technologies, including telephony and internet services.	**i. Sections 3-6 (2010 Act)**: Criminalizes unauthorized access, interference, and modification of computer systems and communications infrastructure, helping maintain trust and security in telephony and broadband services. **ii. Sections 9-11 (2010 Act)**: Establish procedures for Preservation and Production Orders, which strengthen lawful access to digital evidence, supporting trust in telecom services. **Section 23A (2022 Amendment)**: Protects children's digital communications by prohibiting unauthorized sharing of child-related content, supporting safer internet usage.	**i. Section 12 (Amended 2022)**: Broad criminalization of unauthorized access without clear differentiation between malicious and benign activities could discourage innovation (e.g., telecom troubleshooting, ethical hacking) that supports service reliability. **Sections 26B-26D (2022 Amendment)**: Vaguely defined offences related to unsolicited and malicious communications may create uncertainty among users and service providers, possibly discouraging active engagement with broadband platforms.

National Information Technology Authority, Uganda (NITA-U) Act, 2009	To establish NITA-U as the government body responsible for coordinating, regulating, and promoting information technology developments and usage across Uganda.	i. **Section 4(b)**: Promotes standardization in planning, acquisition, implementation, and delivery of IT infrastructure, facilitating uniform broadband and telephony systems. ii. **Section 5(b)**: Mandates advising government on IT development and deployment, supporting broadband network expansion and mobile telephony services. iii. **Section 5(h)**: Supports e-Government, e-Commerce, and e-Transactions, increasing demand and reliance on broadband services. **Section 6(a)**: Empowers NITA-U to conduct regular e-Readiness surveys to track infrastructure gaps, informing broadband expansion strategies.	i. **Section 5(c)**: Broad supervision mandate over ICT usage in both public and private sectors without clear coordination mechanisms could cause operational delays in broadband and telephony infrastructure rollouts. **Section 32**: Generalized cooperation requirement with other organizations, but without strong binding enforcement, may result in fragmented broadband and ICT infrastructure development.

A. Policies

Instrument	Objective	Sections Enhancing Access/Usage	Sections Creating Challenges/Inhibitions
Draft National ICT Policy for Uganda (2014)	To leverage ICT for the transformation of Uganda into a knowledge society by ensuring universal access to affordable and reliable ICT services, including broadband and telephony.	i. **Section 3.2.1**: Prioritizes expansion of ICT infrastructure across the entire country, specifically addressing last-mile broadband challenges. ii. **Section 4.1**: Emphasizes universal access to telecommunications services, recognizing rural and underserved communities (Policy Objectives iv and v). iii. **Section 4.5.1**: Promotes scaling up the National Backbone Infrastructure (NBI) and optimizing international connectivity to expand broadband. **Section 4.5.8**: Explicitly targets universal access with strategies like rolling out last-mile broadband, subsidizing deployment in underserved areas, and providing public access computers.	i. **Section 4.5.2**: Notes that fragmentation of ICT-related legislation and lack of comprehensive laws on emerging technologies could delay or complicate broadband expansion and telephony service rollout. **Section 5.1**: Although promoting internet uptake, it lacks clear policy enforcement mechanisms for broadband quality standards or fair competition rules, which could slow equitable access growth if not addressed during implementation.

Uganda National Broadband Policy (2018)	Facilitates universal broadband access to drive development.	**i. Section 4.1.1**: Infrastructure sharing. **ii. Section 4.2.3**: Rural broadband access support. **iii. Section 4.3.2**: Incentivizes last-mile connectivity. iv. Supports digital skills development.	i. No binding rollout deadlines. ii. Weak integration with local governments. iii. Dependent on private sector participation. iv. Poor monitoring and reporting on impact.
The Digital Uganda Vision (DUV), 2040 and the Digital Transformation Programme (DTP)[121]	i. It reviews, integrates, consolidates, and improves all existing ICT strategies, policies, and plans into one by providing a unified direction for ICT development and an integrated ICT project implementation approach. It aims to align ICT investments in the various sectors to improve the country's Global ICT indices to attract investors.	i. The Vision emphasizes equitable access to digital infrastructure such as internet connectivity and mobile networks. ii. The document also emphasizes the need for digital financial inclusion. v. The vision advocates for digital skills training and literacy across the country, ensuring that vulnerable populations are equipped with the knowledge and skills to use digital tools effectively.	i. Lacks deliberate strategies and investments to bridge the infrastructure gap in underserved areas. v. Creates a risk of reinforcing existing inequalities rather than fostering inclusive digital transformation.

B. Strategies and Programmatic Frameworks

Instrument	Objective	Sections Enhancing Access/Usage	Sections Creating Challenges/Inhibitions
Digital Transformation Roadmap 2023/24–2027/28	To operationalize the Digital Uganda Vision by expanding digital infrastructure, increasing broadband coverage, promoting digital services, and fostering innovation to drive socio-economic transformation.	**i. Section 2.1 (Pillar One: Digital Infrastructure and Connectivity)**: Focuses on expanding National Backbone Infrastructure (NBI) to all districts; addressing last-mile connectivity gaps; subsidizing Radio Access Network (RAN) rollout; and supporting new technologies like 5G and Low Earth Orbit (LEO) satellites. **ii. Section 2.2 (Pillar Two: Digital Services)**: Emphasizes digitization of services and integrated e-service delivery platforms to increase the use of broadband-dependent services. **Section 2.6 (Systematic Experimentation)**: Promotes adoption of emerging technologies like IoT, blockchain, and AI that depend on robust broadband infrastructure.	**i. Section 2.1 (Pillar One)**: Notes persistent high cost of mobile broadband relative to income levels, limiting practical accessibility for low-income users despite coverage. **ii. Section 2.1 (Pillar One)**: Identifies regulatory overlaps in broadband policies and spectrum management as barriers that slow infrastructure expansion. **Section 3.2 (Cross-Sector Collaboration)**: Highlights challenges such as taxation of ICT equipment and telecom infrastructure levies by Local Governments, which increase costs for operators and indirectly inhibit network expansion.

121 The Digital Uganda Vision (DUV), 2040 and the Digital Transformation Programme (DTP)

The Fourth National Development Plan 2025/26-2029/30 (NDP IV)[122]	It provides a strategic framework for advancing digital service delivery. It lays focus on increasing ICT connectivity across the country on ICT penetration and infrastructure development.	i. It sets initiatives to extend broadband ICT infrastructure coverage countrywide ii. Extend last-mile connectivity of the National Backbone Infrastructure (NBI) by 5,613 km iii. Implement last-mile connectivity with alternative technologies to sites e.g., strategic tourism sites, AFCON facilities, hotspots in the GKMA, etc. c) Extend high-speed broadband to schools, tertiary institutions, hospitals, LGs, etc.	NDP initiatives depend on laws that are yet to be amended or created.
Ministry of Education and Sports Digital Agenda Strategy 2023–2027	To transform Uganda's education and sports sectors through the strategic use of ICT, expanding infrastructure, digital skills, and digital inclusion by 2027.	**i. Section 3.1 (Strategic Aspirations)**: Targets deployment of secure, integrated cross-sector ICT infrastructure and expansion of broadband access in educational institutions. **ii. Section 3.2 (Guiding Principles)**: Promotes universal access and inclusivity, emphasizing the extension of broadband to rural and marginalized communities. **Section 4.1 (Implementation Framework)**: Prioritizes connecting all education institutions to broadband and internet services through partnerships and NBI expansion.	**i. Section 2.3.1 (Policy and Regulatory Gaps)**: Highlights absence of a specific approved national ICT-in-Education policy, creating ambiguity and delays in broadband rollouts. **Section 2.3.1 (Institutional Gaps)**: Notes lack of an entity driving digital skills and broadband usage in education, leading to fragmented efforts and slow progress especially in rural/underserved schools.
NRM Manifesto (2021–2026)	Political commitment to national development, including ICT access.	i. Commitment to 100% broadband coverage. ii. Emphasis on rural electrification and fiber rollout. iii. Support for digital skilling and e-government. Incentives for telecom investment.	i. Lacks legal enforceability. ii. Limited follow-through in hard-to-reach regions. iii. May prioritize political visibility over equitable rollout. Monitoring and reporting mechanisms are weak.

122 The Fourth National Development Plan 2025/26-2029/30 (NDP IV) https://parliamentwatch.ug/wp-content/uploads/2025/01/PDF-FINAL-NDPIV-for-Parliament-Approval-13122024-1.pdf

Guidelines for E-Waste Management in Uganda (2016)	To establish a national framework for the safe handling, recycling, and disposal of electronic and electrical waste in Uganda, thereby promoting environmental sustainability and supporting ICT infrastructure growth.	i. **Section 2.6 (Situational Analysis)**: Highlights the proliferation of ICT equipment and recognizes the need for proper disposal to protect the expansion and sustainability of broadband and mobile services. ii. **Section 4.1-4.12 (Target Group Guidelines)**: Assigns clear roles to telecom operators, importers, assemblers, and consumers in safe disposal of mobile phones, telecom infrastructure, and broadband equipment. **Section 5 (Collection Systems)**: Establishes organized e-waste collection systems (retail, producer, public institutions) essential to prevent pollution of telecommunication infrastructure sites and ensure sustainability.	i. **Section 3.1 (Legal Framework)**: Notes absence of dedicated e-waste regulations and standards under the National Environment Act Cap.153, limiting enforcement and proper management of obsolete telecom and broadband devices. **Section 2.6 (Situational Analysis)**: Identifies limited formal recycling options and reliance on informal disposal methods, creating risks of environmental degradation around telecom masts and broadband infrastructure.

C. Stakeholder Perspectives on Awareness of National Policies

In regards to awareness of several policies from discussions with SMEs, out of the 71 SMEs that participated in the study, the majority 73.2% (52) respondents, were unaware of any national or local government policies or regulatory instruments promoting universal access to communication services. In contrast, only 26.8% (19) respondents reported awareness of such policies.

i. Among those unaware, 67% (6) respondents were from digital hubs, 72%(13) respondents were from ICT-enabled SMEs, and the largest proportion, 75%, (33) respondents were mobile money agents.
ii. On the other hand, of those who reported awareness, 33% (3) respondents were from digital hubs, 28% (5) respondents were from ICT-enabled SMEs, and 25% (11) respondents were mobile money agents.

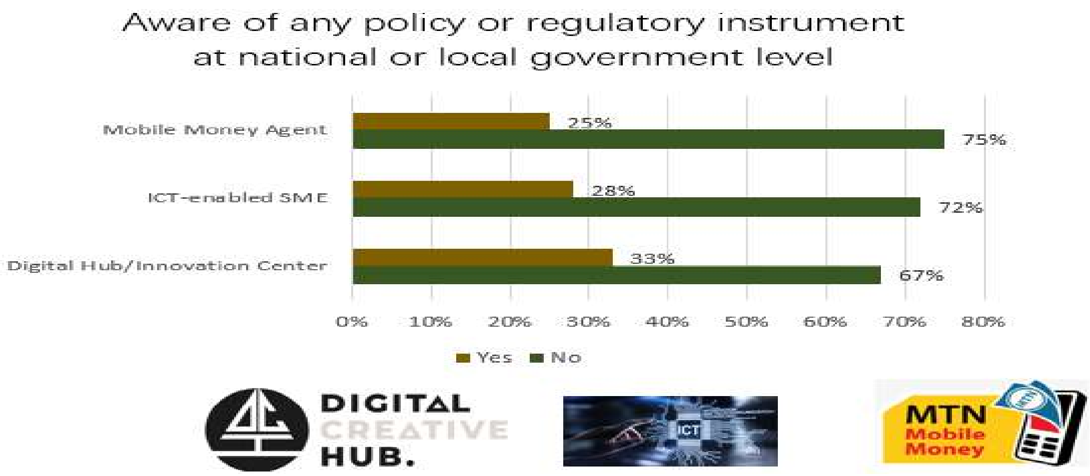


Figure 89: Awareness of Regulatory instruments at national and local gov't level by SMEs

Further more Among the 19 respondents who were aware of these policies, 5 did not report any challenges with the existing policies. However, the remaining 14 highlighted various difficulties, including poor network quality, unreliable customer feedback, and frequent power outages which they believe are a result of policies. Financial constraints were also a major concern, with respondents citing high taxation and the overall cost of services. Additionally, some faced challenges with mobile money transactions due to deductions that reduced their profits, while others struggled with lengthy registration processes and restricted access to devices and SIM cards due to regulatory requirements.

"I faced a challenge when corn man took my phone and managed to send money to himself without knowing the pin. I kept on wondering how he got the pin." Mobile money agent Nabilatuk town council

In further discussions with Key Informants, on the effectiveness of existing legal and regulatory framework mixed findings were identified. Out of the 119 key informants, only 102 managed to give feedback, among these were 17% (17) respondents who described it as very effective, 33% (34) respondents as somewhat effective while 50% (51) respondents finding the framework less effective.

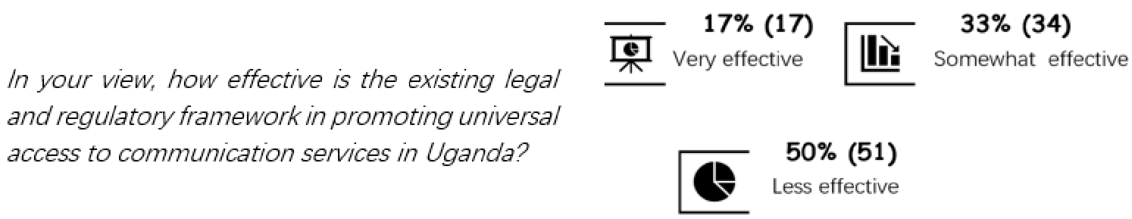


Figure 90: Effectiveness of the existing legal and regulatory frameworks. (KII responses)

Specifically,

1 **Local Government Officials** revealed that the existing legal and regulatory frameworks have made progress in improving access to communication services, especially in urban areas with approximately 30% indicating so highlighting achievements such as urban connectivity improvements, consumer protection policies, and support for marginalized groups like refugees. However, 45% rated it as less effective citing challenges such as poor infrastructure in rural areas like Karamoja, Budaka, and Kanungu, limited public awareness of policies and high costs of services.

"Despite the frameworks in place, rural districts like Budaka still face significant gaps in communication infrastructure, such as weak mobile networks, limited broadband coverage, and insufficient public telecenters and also he frameworks do not adequately address the need for digital literacy programs to empower residents of rural areas like Budaka to utilize communication services effectively."

2 **MDAs** 3 respondents from these bodies noted that the framework has indeed made it easier to operate as they highlighted increased compliance, expanded network coverage in rural areas, and measures that have helped to reduce unfair pricing and cheating. Specifically, they pointed to the Uganda Communications Act of 2013 and reforms such as the 2020 licensing reform, which focused on the implementation of communication and financial services, and the 2015 infrastructure sharing reform.

"It has increased compliance; Helped to increase network coverage in rural areas; Some frameworks have helped to reduce unfair pricing and cheating" **MDAs**

3 **NGO'S and Community-Based Organizations(CBOs)** indicated that the framework has made progress in addressing gaps in communication services highlighting its overall effectiveness as moderate, with 30% of respondents describing it as somewhat effective. Achievements highlighted include initiatives like the Rural Communication Development Fund, which helps subsidize telecommunication infrastructure in remote regions. However, significant issues remain, such as high infrastructure deployment costs, limited awareness of digital opportunities at the grassroots level, and regional imbalances in broadcasting and internet coverage due to terrain and poor road infrastructure as reported by the respondents. Respondents also noted that while policies exist on paper, their implementation often falls short in addressing the unique challenges faced by local communities.

"The framework does not always reflect the unique challenges faced by local communities, such as limited awareness of digital opportunities, access to affordable internet, or infrastructure gaps. While these regulations exist on paper, the challenge lies in their effectiveness at the grassroots level where many communities still lack basic services." **(NGO'S and Community-Based Organizations)**

4 **Regulatory Authorities (UCC, UCUSAF).** 2 respondents from this category acknowledged that the framework, particularly the Uganda Communications Act, provides a strong foundation for promoting universal access. They highlighted the deliberate action taken through the creation of the Rural Communication Development Fund.

5 **Telecom Operators and ISPs.** 9 responses from this category highlighted the mixed effectiveness of Uganda's legal and regulatory framework. While some respondents acknowledged positive aspects such as affordable licensing, infrastructure-sharing policies, and market fairness, others raised concerns about gaps in implementation and misalignment with market realities. Specific challenges included high costs of deploying services in sparsely populated areas like Karamoja, with regulations requiring geographical instead of population-based coverage.

"The legal and regulatory framework is adequate, but it has demanded a lot than what the market demands. The framework has to align with market expectations since it maybe a huge strain for telecom operators to offer some demands from the framework such as it is demanded to have a geographical area

coverage for telephony and broadband instead of using population coverage to broadband and telephony coverage. for example, in a place where there sparsely populated people, the cost services will be high."
(Telecom Operators and ISPs.)

D. Overview of existing International Legal Frameworks

Uganda's approach to universal access aligns with several international and regional agreements that set legal standards for ICT access and digital inclusion. **Overall, the review reveals that international and regional frameworks overwhelmingly promote universal access to basic communication services in Uganda. Most frameworks provide normative backing for inclusive ICT development, promote accessibility for marginalized groups, and align with Uganda's national goals. However, limitations in ratification, enforcement, or grassroots engagement (especially in regional instruments) may inhibit their full potential in accelerating universal access.**

The table below summarizes key international frameworks and their relevance to Uganda.

Policy/Legal Framework	Objective/brief description	Relevance to Uganda	Effect on Universal Access
Constitution and Convention of the International Telecommunication Union of 1992[123]	To develop and coordinate technical standards for telecommunications echnologies, services, and operations	It is fundamental in shaping Uganda's ICT sector, ensuring global compliance, promoting digital inclusion, and enhancing cybersecurity. It helps Uganda stay competitive in the global digital economy	**Promotes:** By ensuring Uganda aligns with global telecom norms, boosting infrastructure compatibility and fostering international cooperation for service reach, especially in rural areas.
The Global Symposium for Regulators (GSRs) Universal Access Regulatory Best Practice Guidelines of 2003[124]	To promote universal, affordable, and inclusive access to ICT services by providing regulatory best practices for governments and regulators worldwide.	They help in formulating policies for expanding affordable and inclusive ICT access, particularly in rural and underserved areas, aligning with Uganda's digital transformation goals.	**Promotes:** Encourages pro-poor policies, tariff regulation, and rural connectivity strategies in line with Uganda's digital inclusion goals.
The United Nations (UN) Convention on the Rights of Persons with Disabilities (UNCRPD) of 2006[125]	Clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made.	It mandates the provision of accessible communication services for persons with disabilities including promoting the use of accessible formats and technologies.	**Promotes:** Supports accessibility standards, inclusive content formats, and the removal of barriers for PWDs in communication services.

123 Constitution and Convention of the International Telecommunication Union (with annexes and optional protocol). Concluded at Geneva on 22 December 1992 https://treaties.un.org/doc/Publication/UNTS/Volume%201825/volume-1825-I-31251-English.pdf
124 Global Symposium for Regulators 2003 Universal Access Regulatory Best Practice Guidelines https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/bestpractices.aspx
125 The United Nations (UN) Convention on the Rights of Persons with Disabilities (UNCRPD) of 2006 https://www.un.org/disabilities/documents/convention/convoptprot-e.pdf

The ITU's Connect 2030 Agenda for Global Telecommunication/ICT Development, of 2014[126]	It aims to achieve **universal connectivity** by 2030, ensuring that everyone has access to broadband services.	It aligns with Uganda's **Digital Uganda Vision,** which seeks to integrate ICT into various sectors to drive digital transformation and sustainable development.	**Promotes:** Guides long-term broadband infrastructure development, monitoring progress towards universal, affordable access.
The ITU Guidelines for Policy-Makers on Child Online Protection 2020[127]	They aim to assist national governments in developing effective strategies to safeguard children in the digital environment	Uganda experiences increased internet usage among children, with 40% of 12-17-year-olds being internet users. These guidelines are important for the government to fight online sexual abuse and exploitation of children.	**Promotes:** Encourages protective mechanisms that foster safer digital inclusion for minors, supporting trust and broader use.
The Universal Declaration of Human Rights (UDCHR), 1948[128]	It sets out, for the first time, fundamental human rights to be universally protected. Article 19 establishes the right to freedom of opinion and expression, which includes the freedom to seek, receive, and impart information and ideas through any media	In Uganda, Article 19 underscores the importance of **universal access to communication services,** ensuring that all individuals can freely express themselves and access information. This is vital for informed citizen participation and upholding democratic values.	**Promote:** Legitimizes efforts to make communication universally accessible as a human right, pressuring states to expand access equitably.

E. Regional Frameworks:

Uganda's universal access legal framework is also shaped by regional instruments which enhance connectivity and help bridge the digital divide across the region as shown in the table below:

126 The International Telecommunication Union (ITU)'s Connect 2030 Agenda for Global Telecommunication/ICT Development, of 2014
127 The ITU Guidelines for Policy-Makers on Child Online Protection 2020 https://www.itu-cop-guidelines.com/_files/ugd/24bbaa_b5fec426d50d4a21b721489099b5781f.pdf
128 The Universal Declaration of Human Rights (UDCHR), 1948 https://www.un.org/sites/un2.un.org/files/2021/03/udhr.pdf

Policy/Legal Framework	Objective/brief description	Relevance to Uganda & gaps	Effect on Universal Access
The Constitution and Convention of the African Telecommunications Union (ATU), 2014[129]	It aims to promote the rapid development of information and communication in Africa to achieve universal access.	Uganda has ratified the **Constitution and Convention of the African Telecommunications Union (ATU)**. This ratification signifies Uganda's commitment to regional cooperation in the development and harmonization of telecommunications and ICT policies across Africa. Only 32 out of 52 African countries have ratified or acceded to the Union's Constitution and Convention, despite its initial signing in 1999 and revision in 2014. This limits the ATU's effectiveness in fostering continent-wide cooperation in telecommuniations and ICT development.	**Partially promotes:** While Uganda benefits from the vision, low ratification by other member states weakens regional synergy and limits Uganda's ability to fully leverage continental ICT momentum.
The African Telecommunications Union (ATU) Communication Strategy, 1999[130]	Comprehensive roadmap designed to strengthen both the internal and external communication efforts of the ATU.	Limited engagement with grassroots communities, which can result in a lack of awareness and participation at the local level.	Lacks strong mechanisms for local community involvement,
Agenda 2063: The Africa We Want[131]	A long-term strategic framework for Africa's socio-economic development.	Includes flagship projects and policy priorities such as the creation of a Pan-African digital data network and harmonized ICT policies that foster universal digital access and encourage regional integration.	**Promotes:** Provides long-term policy direction for harmonized ICT frameworks, regional infrastructure, and digital skills development.
African Union (AU) Digital Transformation Strategy (2020–2030)[132]	Aims to transform African societies by boosting digital inclusion, job creation, and socio-economic growth	Covers infrastructure expansion, policy harmonization, digital skills, cybersecurity, and measures to bridge the digital divide. Supports national ambitions under the Digital Uganda Vision.	**Promotes:** Emphasizes access infrastructure, localized policy adaptation, and digital literacy—core pillars of universal access.
The African Charter on Human and People's Rights (ACHPR), 1981.[133]	Sets out a broad spectrum of rights for both individuals and peoples. It combines civil and political rights with economic, social, and cultural rights	Foundational framework that supports the notion that access to digital technologies. Article 9 guarantees the right of every individual to receive information.	**Promotes:** Reinforces government responsibility to ensure access to communication services as part of civil rights.

129 Constitution of the African Telecommunications Union (Cape Town 1999, Rev. Harare 2014) https://atuuat.africa/wp-content/uploads/2019/11/ATU-Constitution-and-Convention-Cape-Town-1999-Rev.-Harare-2014.pdf
130 The African Telecommunications Union (ATU) Communication Strategy, 1999
131 Agenda 2063: The Africa We Want https://au.int/Agenda2063/popular_version
132 African Union (AU) Digital Transformation Strategy (2020–2030)
133 The African Charter on Human and People's Rights (ACHPR), 1981. It was adopted in 1981 and entering into force in 1986

3.8.2 Regulatory Frameworks for Emerging Technologies

Emerging technologies are transforming global access to Information and Communication Technologies (ICTs). They play a pivotal role in advancing Sustainable Development Goals by fostering innovation and ensuring the effective deployment of ICT solutions, particularly in support of developing nations.[134] Emerging Technologies comprise of Artificial Intelligence, Blockchain Technology, Internet of Things, 5G Networks, Quantum Computing among others. Research suggests that AI has a potential to add approximately $15.7 trillion to the global economy by 2030, with Africa reaping a possible $1.2 trillion and a 5.6% GDP boost[135]. Uganda's National 4IR Strategy, launched in 2022, aims to transform the country into a continental hub for 4IR technologies by 2040.[136] The strategy identifies key areas such as agriculture, healthcare, education, and urban development where technologies like artificial intelligence (AI), blockchain, and the Internet of Things (IoT) can drive significant progress. It emphasizes the need for critical enablers, including 4IR connectivity, agile governance, and an upskilled population, to realize these opportunities.

Despite this strategic vision, Uganda currently lacks comprehensive regulatory frameworks specifically tailored to emerging technologies. Existing laws, such as the Data Protection and Privacy Act of 2019 and the Computer Misuse Act of 2011, provide a foundational legal environment but do not adequately address the unique challenges posed by AI, 5G, and other 4IR technologies. For instance, there are no specific guidelines on AI ethics, data governance, or the deployment of autonomous systems.

Currently:

i. There is **no specific legal framework** governing the ethical, security, and data privacy implications of AI, IoT, or blockchain.
ii. Existing policies such as the **National ICT Policy (2014)** and **Broadband Policy (2018)** do not mention or regulate the integration of these technologies.
iii. The **Computer Misuse Act, Cap 96** and **Data Protection and Privacy Act, Cap 97** touch on cybersecurity and privacy but are not tailored for the complexities introduced by AI and related technologies.
iv. The **National Science, Technology, and Innovation Policy** highlights innovation but lacks clarity on regulatory pathways for technology adoption.

Countries like **South Korea**, **Estonia**, and **Mauritius** provide useful lessons:

i. **South Korea's Telecommunications Business Act** defines regulatory categories for emerging technologies, including AI and IoT, and mandates licensing procedures for value-added services.
ii. **Estonia** has embedded AI ethics guidelines into national policy and enforces strong interoperability standards for digital public services.
iii. **Mauritius** has developed a National AI Strategy and a dedicated regulatory sandbox to pilot innovation within a safe and legally structured environment.

3.8.3 Extent to which Policy, Legal and Regulatory are Promoting Access and Usage

Uganda's policy, legal, and regulatory frameworks have made commendable progress in promoting access and usage of telecommunication and broadband services, particularly through the creation of institutions such as the Uganda Communications Commission (UCC) and the Uganda Communications Universal Service and Access Fund (UCUSAF). Several key policies such as the Uganda Communications Act, Cap 103, the National ICT Policy (2014), the Broadband Policy (2018), and the Digital Uganda Vision (2040) are aligned with international best practices that promote universal access and digital inclusion.

However, while these frameworks provide a strong legal and institutional foundation, their actual impact on access and usage is mixed. The study revealed that:

a. **Awareness of policies among SMEs is low**: 73.2% of the 71 surveyed SMEs were unaware of national or local policies promoting universal access. Mobile money agents were the least informed (75% unaware), highlighting a gap between policy formulation and grassroots dissemination.

134 Emerging Technologies

135 Kenya Enters Partnership With GIZ to Develop National Artificial Intelligence (AI) Strategy - Empower Africa

136 Executive-Summary-Ugandas-National-4IR-Strategy.pdf

b. **Perceived effectiveness is limited**: Among 102 key informants, only 17% rated the framework as "very effective," 33% as "somewhat effective," and 50% as "less effective." Local government officials, MDAs, NGOs, and telecom operators cited improvements in urban connectivity and regulatory reforms but also noted issues such as poor rural infrastructure, high service costs, and weak implementation.

c. **Key achievements include:**

   i. Expansion of rural connectivity through UCUSAF-supported infrastructure.
   ii. Implementation of the infrastructure sharing policy.
   iii. Legal recognition of the rights of PWDs and marginalized groups in several acts (e.g., the PWD Act Cap 115)

d. **Persistent barriers include:**

   i. High taxation on ICT services and devices, such as the 12% internet tax and 18% VAT.
   ii. Limited incentives for telecom operators to expand into sparsely populated regions.
   iii. Lack of harmonized enforcement and accountability across implementing agencies.
   iv. Weak integration of emerging technologies like AI and 5G into national laws.

e. **User experiences reflect the gaps**: Respondents in FGDs and KIIs cited challenges such as unreliable mobile networks, burdensome registration requirements, financial losses from mobile money fraud, and insufficient protection from exploitative service charges.

Despite the regulatory intentions, **actual access and usage remain constrained by affordability, infrastructure gaps, and uneven service delivery**, especially in rural, low-income, and marginalized communities. Addressing these barriers will require improved policy coherence and stronger enforcement, targeted subsidies, and broader stakeholder engagement at all levels of the communication ecosystem.

3.8.4 Barriers and Opportunities in the Regulatory Framework

Thematic Area	Sub-Theme	Barriers	Opportunities
Governance & Regulation of ICT	Policy Provisions	i. Contradictions exist between taxation policies (e.g., Excise Duty on internet/data, VAT) and access goals outlined in the National Broadband Policy and Digital Uganda Vision. ii. No clear hierarchy or coherence among policies — for instance, the Computer Misuse Act restricts online expression, contradicting the Access to Information Act. iii. Lack of policy alignment with newer frameworks like the Fourth NDP or Digital Transformation Roadmap.	i. Establish a **policy coherence review mechanism** (e.g., under MoICT/ NITA-U) to harmonize conflicting provisions. ii. Embed **ICT policy impact assessments** in all future legislation to ensure alignment with universal access goals.
	Policy Implementation	i. Weak enforcement of service obligations ii. Limited coordination among MDAs; low awareness of policies among SMEs and grassroots communities. iii. Heavy taxation, including a 12% excise duty on internet data and an 18% VAT on telecom services has made broadband unaffordable for many, particularly low-income	i. Strengthen inter-agency coordination and create inclusive awareness campaigns; ii. Use digital platforms for citizen engagement and transparency. iii. Policy Reform for Affordability and Inclusivity. Updating Uganda's fiscal and telecom policies to reduce taxes on digital services and devices, while providing subsidies for marginalized groups, can improve adoption and affordability.
Infrastructure & Access Enablement	Infrastructure Development and Access	i. High deployment costs in rural/remote areas ii. Insufficient funding for UCUSAF limited public-private coordination; iii. Poor energy access in schools and health centers.	i. Revise fiscal policies to incentivize rural deployment ii. Strengthening UCUSAF Implementation iii. The Uganda Communications Universal Service and Access Fund (UCUSAF) is a valuable instrument for bridging the access gap. Strengthening its operational capacity, improving transparency, and expanding its scope to cover more digital inclusion programs will significantly enhance impact. iv. Integrate with rural electrification programs.
	Connectivity	i. High cost of devices and data ii. Prevalence of counterfeit devices iii. SIM registration barriers for refugees and marginalized groups	i. Develop affordable device programs ii. Regulate counterfeit markets iii. Adopt flexible ID policies for marginalized populations
	Digital Devices	i. Limited access to assistive technologies ii. Accessibility features not standard in telecom services iii. Lack of e-waste regulation	i. Incentivize development and importation of accessible devices ii. Create local repair hubs iii. Develop e-waste guidelines and circular economy models

Human Capital & Digital Skills Development	Inclusivity	i. Digital divide affecting PWDs, women, youth, refugees, and rural residents ii. Most policies don't account for intersectionality	i. Mandate inclusive access in all ICT policies ii. Integrate gender and disability perspectives into ICT strategies and reporting tools
	Digital Literacy	i. Lack of digital education programs for underserved groups ii. Weak integration with national curriculum iii. Limited digital skilling in TVETs	i. Scale up digital skilling through community centers, mobile labs, and school partnerships ii. Integrate ICT in teacher training iii. Leverage CSOs for grassroots outreach
Vision & Strategic Direction	Security and Data Privacy	i. Vague or punitive cyber laws (e.g., Computer Misuse Act) ii. Insufficient safeguards for vulnerable groups iii. Chilling effect on digital expression	i. Reform cybersecurity laws to balance safety with rights ii. Develop user-centric privacy policies iii. Promote awareness on digital rights and protection
	Emerging Technologies	i. Uganda lags in policy development on AI, 5G, IoT, and satellite internet ii. No regulatory sandbox for innovation testing.	i. Create a national emerging tech framework ii. Adopt regulatory sandboxes for experimentation iii. Benchmark best practices from Estonia, South Korea, and Kenya.

3.8.5 Recommendations

The country needs to align its frameworks with international standards and best practices to bridge the digital divide, enhance connectivity, and ensure that all citizens benefit from the opportunities afforded by ICT. In order to close the digital divide and promote equitable socio-economic development, this study emphasizes how crucial it is to match Uganda's universal access and service frameworks with international best practices. Even though Uganda has achieved noteworthy progress, significant gaps exist, such as the creation of the Universal Access Fund (UAF) and the implementation of Digital Uganda Vision policies. These include a lack of infrastructure in rural areas, issues with affordability, a failure to integrate developing technology, and a lack of steps to guarantee that marginalised populations are included. A complex strategy that incorporates lessons from successful jurisdictions and tailors them to Uganda's particular socio-economic situation would be needed to address these weaknesses. The recommendations include;

Identified Gap	Recommendation	Actor	Benchmark Example
Weak enforcement of universal access obligations	Establish an enforcement framework requiring telecom operators to meet rural connectivity targets	UCC, MoICT	Kenya's Universal Service Fund (USF) mandates annual rural expansion reports
Lack of a uniform policy framework enforcing universal design and access across public and private sectors.	Develop and implement a National Strategic Framework on Universal Design and Access, requiring both public and private entities to comply with accessibility standards. Establish legal sanctions for non-compliance and set minimum accessibility requirements for all digital and communication services.	MoICT, UCC	South Africa's National Strategic Framework on Universal Design and Access, which applies to both public and private sectors. It enforces legal accountability for non-compliance and prioritizes the rights of marginalized groups.
Limited digital inclusion	Develop and officially gazette a comprehensive Digital Skills Framework to standardize national skilling efforts.	MoICT, NITA-U	South Africa's National Strategic Framework on Universal Design and Access ensures that all groups especially marginalised populations benefit from ICT advancements. Kenya's transformation of public libraries into e-resource centres with specialised software for visually impaired users
Identified Gap	Recommendation	Actor	Benchmark Example
High tariffs on ICT services	Reduce taxes on ICT devices and services to lower the cost for low-income populations; Establish targeted subsidies or discounts for marginalised groups e.g PWDs, refugees & low income households	MoICT, MoFPED, URA	South Korea's provision of reduced service charges for vulnerable populations
Limited formal information on governing policies for emerging technologies (AI, IoT, and blockchain) in legal and policy frameworks.	Update Uganda's ICT policies to integrate emerging technologies, ensuring digital transformation strategies include AI, IoT, and blockchain applications for universal access and service delivery.	NITA-U, MoICT	i. Mauritius' National ICT Policy aligns with international standards, considers emerging technologies, and integrates them into national development strategies. ii. South Korea's Telecommunications Business Act categorises and regulates core & value-added telecommunications services

Limited ICT infrastructure developmnet & public internet access points, particularly in rural areas.	Expanding ICT infrastructure in underserved and rural areas e.g through leveraging PPPs and promotion of infrastructure sharing Prioritise the deployment of broadband & satellite technologies to remote regions	UCC, MoICT, UTEL, NITA-U, UCC	i. Kenya's ICT PPPs implementation ii. Estonia has an advanced digital literacy program, ensuring widespread ICT adoption, including e-government services and digital citizen engagement. iii. Kenya's voice infrastructure projects & broadband initiates have enhanced connectivity in schools, & underserved communities

3.8.9 Benchmarking Findings: Lessons and Practices from Other countries

This section examines how countries such as Kenya, South Africa, Mauritius, Estonia and South Korea have addressed challenges in achieving universal access and service in their communication sectors. It evaluates their strategies, including policy development, infrastructure expansion, affordability measures, and digital inclusion initiatives. The analysis highlights actionable lessons and practices that Uganda can adapt to overcome its unique challenges, bridge the digital divide, and foster inclusive socio-economic development.

A. Kenya

Kenya's liberalisation of the communications sector has expanded ICT infrastructure[137], but access remains uneven, especially in underserved regions. The Universal Service Fund (USF), managed by the Communications Authority of Kenya, addresses these gaps through targeted projects and policies to ensure equitable ICT access nationwide. Licensed commercial operators and service providers primarily focus their operations in areas that guarantee a return on investment, leaving some regions underserved.[138]

The Kenya Information and Communications (Amendment) Act, 2009 established the Universal Service Fund (USF), which is managed by the Communications Authority of Kenya (CA). This fund aims to enhance ICT access nationwide, support capacity building, and encourage innovation in ICT services. Funding sources include levies on licensees, government allocations, and grants or donations. The USF is intended to finance national projects that improve ICT availability and accessibility in underserved rural, remote, and low-income urban areas.

As a result, regions deemed commercially unprofitable—both urban and rural—continue to face inadequate service delivery. The Communications Authority of Kenya is tasked with ensuring affordable communications services are accessible to all citizens. To address these challenges, the Authority conducted ICT Access Gap Studies in 2016[139] and 2021[140] to assess the level of access and use of ICT by public institutions and enterprises. In response to identified gaps, several projects have been implemented, with more initiatives underway. These include Voice Infrastructure Projects, Education Broadband Connectivity Project, E-Resource Centres: The Authority partnered with the Kenya National Library Service (KNLS), Open Education Resources: In collaboration with the Kenya Institute of Curriculum Development (KICD).

Like Uganda, Kenya has a National ICT Policy, of 2019 which is designed to realise the potential of the digital economy by creating an enabling environment for all citizens and stakeholders. Uganda however still has some lessons to learn from Kenya as shown in the table below.

Table 25: Kenya's experience and best practices, along with actionable lessons for Uganda.

137 Microsoft Word - telecoms-kenya.doc

138 Communications Authority of Kenya, n.d. *Universal access overview*. [Online] Available at: https://www.ca.go.ke/universal-access-overview [Accessed 26 January 2025]. (accessed on 26th January 2025)

139 ICT Access Gaps Study, Final Report 2016, Communications Authority of Kenya.

140 Digital Accessibility Gap Analysis, Report for Kenya 2021, 2022. Communications Authority of Kenya.

Focus Area/ Objective	Description	Key Lessons for Uganda
Existing Policy, Legal and Regulatory Framework	Kenya has a robust National ICT Policy (2019)[141] that aims to drive digital transformation, enhance infrastructure, and position ICT as a key contributor to GDP. The Kenya Information and Communications (Amendment) Act (2009)[142] established the Universal Service Fund (USF) to expand ICT access to underserved areas. Kenya benefits from having a converged regulatory authority, the Communications Commission of Kenya (CCK), which plays a key role in promoting investment, equity, affordability, and access to services. Once operational, the Universal Service Fund (USF) is expected to incentivize the expansion of ICT services in underserved and unserved areas. Recognizing the importance of ICT, the government has established the National ICT Policy of 2006 and a legal framework to support the sector (GoK, 2009). Additionally, the constitution and various legislations, including the Consumer Protection Act (2012), Regulations (2010), Competition Act (2010), Persons with Disabilities Act (2003), and draft laws on Data Protection and Access to Information, strengthen the existing ICT policy, legal, and regulatory frameworks, addressing a wide range of issues such as access to information, security, and data protection. Kenya's vibrant market has attracted global ICT giants like Huawei, ZTE, and Cisco, enabling access to affordable and customized ICT infrastructure.	Uganda can learn from Kenya's approach to expanding ICT access by establishing a Universal Service Fund (USF) to target underserved areas and creating a converged regulatory authority to promote investment, equity, affordability, and access to services. Uganda should strengthen its ICT policy framework by ensuring structured national policies with clear implementation plans, similar to Kenya's approach with its ICT Policy and USF. Regular assessments of ICT needs and structured funding mechanisms can help address digital gaps.
Telephony and Broadband Infrastructure Coverage	Kenya has significantly expanded ICT infrastructure since liberalizing its communications sector over 20 years ago. However, service providers still focus on commercially viable areas, leaving some regions underserved. The government has addressed this through Voice Infrastructure Projects, connecting 78 sub-locations in the first phase, 101 in the second, and 67 in the upcoming third phase. However, the high cost of advanced ICT devices, such as computers, smartphones, and tablets, remains a barrier to broadband adoption, especially among rural and low-income communities. [143] Despite decreasing prices, many devices remain out of reach for a significant portion of the population. Kenya's progressive reputation and innovation culture have created opportunities for participation in the global economy, with the potential to enhance SME competitiveness through broadband and ICT. Given that broadband services are currently limited to urban areas and cover only 18% of Kenya's geographic space, there is a need to ensure widespread access to quality broadband for all citizens. Expanding and improving the broadband network across the country will enhance the quality of life for citizens, transforming how they work, live, and learn through increased connectivity.[144]	Uganda can adopt a phased approach to extending connectivity to underserved regions by identifying and addressing communication blackspots through government-supported infrastructure projects. Embracing innovation and fostering a progressive reputation can create opportunities for global economic participation and enhance SME competitiveness through broadband and ICT.

141 National ICT Policy of 2019 – Kenya
142 Kenya Information and Communications (Amendment) Act of 2009 – Kenya
143 CAK (2008-2014). Quarterly Sector Statistics Reports. (Online) Available: http://www.cck.go.ke/resc/statcs.html
144 CAK (2008-2014). Quarterly Sector Statistics Reports. (Online) Available: http://www.cck.go.ke/resc/statcs.html

Level of Universal Access and Usage of Digital Devices and Services	As of March 2019, Kenya had a mobile penetration of 106%, while internet subscriptions stood at 46.8 million, of which 46.7% were on broadband.[145]In November 2007, the Kenyan government launched the Fibre Optical National Network (FONN), a 4,000 km backbone network designed to connect district headquarters and border towns while linking Kenya with neighboring countries, including Tanzania, Ethiopia, Sudan, Uganda, and Somalia.[146] From the information found in the yearly reports from Communications Authority of Kenya (CAK) reveals that mobile phone subscription in Kenya reached the 32.2 million subscriptions by June 2014. The mobile penetration has not been left behind in which case it has also been increasing from 1999 to march 2014 where it hit a high of 78%.[147] The telecommunications industry in Kenya has experienced significant transformation. Over the past 15 years, the Communications Authority of Kenya has licensed four mobile operators—Safaricom, Airtel, and Essar (Yu)—all of which are globally recognized companies, along with several internet service providers such as Wananchi and Jamii Telkom. [148]This has led to intensified competition in both voice and data services. Among the mobile operators, Safaricom Ltd holds the leading position in terms of market share and profitability. While the other companies have smaller market shares in Kenya, they are subsidiaries of globally renowned organizations. For instance, Airtel has an extensive subscriber base in Asia, with 183.61 million subscribers in India (as of November 2012) and 5.1 million subscribers in Bangladesh (as of June 2011), ranking as a top player in these markets.[149]. However, the rate of growth in the subscriber base is flattening as the sector progressively tends towards maturity. The leveling observed could be attributed to the anticipated maturity of the market. To remain competitive, mobile operators should consider introducing value-added services, such as enhancements to money transfer systems and various other mobile technologies. [150]	Uganda should integrate broadband connectivity in schools to improve digital literacy and ensure equitable access to online education, particularly in rural areas.

145 https://cipesa.org/blog/page/80/
146 https://documents1.worldbank.org/curated/fr/277671468330886996/pdf/518390PUB0REPL101Official0Use0Only1.pdf
147 CAK (2008-2014). Quarterly Sector Statistics Reports. (Online) Available: http://www.cck.go.ke/resc/statcs.html
148 CAK (2008-2014). Quarterly Sector Statistics Reports. (Online) Available: http://www.cck.go.ke/resc/statcs.html
149 R. Jai Krishna and Prasanta Sahu (2010-01-12). "Bharti Airtel to Buy Warid Telecom for $300 Million - WSJ.com"
150 Oteri, O. M., Kibet, L. P., & Ndung'u, E. N. (Department of Telecommunication and Information Engineering, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya).

Extent of Un-serviced and Underserved Demographics	Despite growth in internet penetration, senior citizens and people living with disabilities are often among the least likely to access related devices because either the equipment lacks the necessary accessibility features or because assistive software and hardware remain unaffordable. Kenya's last National Population and Housing Census conducted in 2009, indicates that about 1.3 million people were living with some form of disability, representing 3.5% of the total population.[151] Kenya has implemented various initiatives to serve marginalized communities. The e-Resource Centres initiative has equipped 56 public libraries with computers, internet connectivity, and software for visually impaired users. Open Education Resources are being developed in collaboration with the Kenya Institute of Curriculum Development (KICD).	Uganda can repurpose public libraries as digital hubs to improve ICT access for underserved populations, including PWDs. Additionally, digitizing educational content will enhance accessibility to quality learning materials.
Impact of Universal Access and Usage of Communication Services on Economic Development	Kenya has demonstrated a strong track record in the production and application of emerging digital technologies, particularly in the financial sector, as highlighted by the Global Innovation Index and other international rankings. Kenyan banks and non-banking entities are rapidly adopting technologies such as IoT, AI, big data, data analytics, and blockchain. Building on the success of Safaricom's mobile money transfer service, M-Pesa, several locally developed fintech solutions, like Jambo Pay (an electronic payment platform), have emerged and are widely utilized. [152] These innovations are also applied in areas such as telemedicine, e-health, health record management, farm and soil nutrition analytics, online marketplaces for farmers, product design, energy management, and logistics. Notable examples include Ujuzi Kilimo (farm and soil sensors with data analytics), Mkulima Young (an online farmer marketplace), Afyakit (a health analytics platform), and MyDawa (an online pharmacy). The Kenyan government has also embraced digital technologies through platforms like Ardhisasa, which facilitates access to land information and services, and e-Citizen, which has streamlined public service delivery.[153] Kenya's ICT sector is a key driver of economic growth, with the goal of contributing 10% to GDP by 2030. The ICT policy fosters a secure and innovation-friendly ecosystem, supports digital transformation, and encourages global cooperation to harness emerging trends such as AI, IoT, and digital startups.	Uganda can boost economic growth by strategically integrating ICT into key sectors, fostering innovation, and positioning itself as a regional leader in digital transformation through targeted investments in ICT infrastructure and digital entrepreneurship.

151 https://cipesa.org/wp-content/files/reports/Removing-Barriers-to-ICT-Accessibility-in-Kenya-Tanzania-and-Uganda.pdf
152 https://sdgs.un.org/sites/default/files/2023-05/A40%20-%20Salome%20Guchu%20 %20Leveraging%20on%20Emerging%20Technologies%20Landscape%20in%20Kenya.pdf
153 https://sdgs.un.org/sites/default/files/2023-05/A40%20-%20Salome%20Guchu%20-%20Leveraging%20on%20Emerging%20Technologies%20Landscape%20in%20Kenya.pdf

Delivery of Affordable Basic Communication Services to PWDs, Women, and Refugees	Across the region, the rights of persons with disabilities are provided for in national constitutions and specific laws. For example, Kenya's constitution outlaws discrimination on the grounds of disability, under article 27(4). It also provides that a person with a disability shall be entitled to treatment with respect and dignity, access educational institutions and facilities, have reasonable access to all places, public transport and information, and access materials and devices including for communications (article 54). Moreover, Kenya's National ICT Policy of 2016 outlines, under article 13, strategies for "an accessible ICT environment in the country in order to enable marginalized groups to take full advantage of ICTs.[154] A 2017 study by Article 19 East Africa on civic participation among persons with disabilities in Kenya revealed that limited access to information hindered their effective participation in decision-making and policy development processes at both national and county levels. Despite having some progressive laws and policies, there has been laxity in implementing them. In Kenya, according to a study, only 13 out of the 18 free-to-air channels were providing sign language interpretation during newscasts.[155] Kenya has focused on digital inclusivity through initiatives such as e-Resource Centres and education broadband projects. However, challenges remain in ensuring universal affordability and accessibility of services.	Despite having progressive laws and policies, there is a need to improve accessibility measures, such as providing sign language interpretation during newscasts, to ensure inclusive civic participation. Uganda should adopt similar digital inclusion strategies by targeting vulnerable populations with affordable ICT services, accessibility initiatives, and digital literacy programs tailored for marginalized communities.

B. South Africa

South Africa's geography and population distribution are conducive to communications.[156] Growth in penetration was moderate but steady in the early years, but it had recently accelerated to 70% of inhabitants by mid-2006. Despite having many low-income people, South Africa's per capita income is high by African standards and recent political and economic developments have markedly reduced income disparity and increased affordability. Low tax on mobile consumers has assisted the operators achieve coverage and penetration.[157]

However, Uganda's penetration of ICT services is low largely due to the punitive tax regime affecting the communications sector, contributing 30% to the cost of mobile ownership, which surely impacts significantly Uganda's level of affordability and achievable market penetration at the country's level of income. Unlike Uganda, South Africa has a robust legal and regulatory framework fostering universal access of ICT, as reflected in the table below.

154 https://cipesa.org/wp-content/files/reports/Removing-Barriers-to-ICT-Accessibility-in-Kenya-Tanzania-and-Uganda.pdf
155 https://www.article19.org/regional-office/eastern-africa/
156 GSMA Universal Access Report 2012, Universal Access: How Mobile can Bring Communications to All. Available at https://www.gsma.com/publicpolicy/wp-content/uploads/2012/03/universalaccessfullreport.pdf (accessed on 26th January 2025)
157 Ibid

Table 26: South Africa's experience and best practices, along with actionable lessons for Uganda:

Focus Area/Objective	Description	Key Lessons for Uganda
Existing Policy, Legal and Regulatory Framework	South Africa's robust National Strategic Framework on Universal Design and Access (NSFUDA), 2021 mandates that both public and private sectors adhere to uniform standards. The framework establishes national norms, performance indicators, and Universal Design Access Plans (UDAPs) within the context of Equality Plans envisaged in Section 5 of the Promotion of Equality and Prevention of Unfair Discrimination (PEPUDA) Act; enforces compliance through legal sanctions; and aligns with global human rights standards, including the United Nations Convention on the Rights of Persons with Disabilities (CRPD). [158] Following global telecommunications reforms in the mid-1990s, the country's ICT sector underwent significant changes, including market liberalisation, partial privatisation of the incumbent provider, and the establishment of an independent regulator. The roles were divided between the government (responsible for policy formulation) and the national regulatory agency (initially SATRA), which regulated telecommunications until its merger with the Independent Broadcasting Authority (IBA) to form the Independent Communications Authority of South Africa (ICASA). [159] The ICT Vision 2020 aimed to position South Africa as a leader in the information era through a unified industry strategy and research-driven development. However, despite initiatives like the National Development Plan (NDP), SA Connect, and the 2016 ICT Policy White Paper, implementation has been slow, with challenges in market liberalization, regulatory reforms, and achieving a truly inclusive digital society. Key efforts include merging regulatory bodies, improving broadband access, and enacting laws like the Protection of Personal Information Act (POPI) to safeguard online users. [160] South Africa's robust National Strategic Framework on Universal Design and Access (NSFUDA), 2021[161] mandates that both public and private sectors adhere to uniform standards. The framework establishes national norms, performance indicators, and Universal Design Access Plans (UDAPs) within the context of Equality Plans envisaged in Section 5 of the Promotion of Equality and Prevention of Unfair Discrimination (PEPUDA) Act[162]; enforces compliance through legal sanctions; and aligns with global human rights standards, including the United Nations Convention on the Rights of Persons with Disabilities (CRPD)[163]	Uganda can learn from South Africa's experience by establishing a robust national framework that mandates uniform standards for universal design and access across public and private sectors. This includes creating national norms, performance indicators, and access plans within the context of equality and anti-discrimination laws, and ensuring compliance through legal sanctions. Additionally, Uganda should focus on liberalizing the ICT sector, establishing an independent regulatory body, improving broadband access, and enacting laws to safeguard user data and privacy, aligning with global human rights standards. Uganda should develop a comprehensive, uniform policy framework that mandates universal access and design. This framework must include clear minimum standards and legal enforcement mechanisms. Additionally, reviewing punitive tax regimes that hinder ICT affordability would help remove barriers to market penetration.

158 Promotion of Equality and Prevention of Unfair Discrimination (PEPUDA) Act 4 of 2000 – South Africa https://www.gov.za/documents/promotion-equality-and-prevention-unfair-discrimination-act
159 https://researchictafrica.net/wp-content/uploads/2018/10/the-state-of-ict-in-south-africa.pdf
160 Ibid
161 National Strategic Framework on Universal Design and Access, No. 45328 of 2021 – South Africa https://www.gov.za/sites/default/files/gcis_document/202110/45328gen606.pdf
162 Promotion of Equality and Prevention of Unfair Discrimination (PEPUDA) Act 4 of 2000 – South Africa https://www.gov.za/documents/promotion-equality-and-prevention-unfair-discrimination-act
163 United Nations Convention on the Rights of Persons with Disabilities (CRPD), 2006.

Telephony and Broadband Infrastructure Coverage	South Africa boasts a dynamic mobile market that has experienced rapid adoption and unexpected innovations, exceeding initial market expectations since the first two licenses were granted in 1993. Vodacom and MTN lead the market in terms of SIM cards and voice minutes, with Cell C and Telkom Mobile following behind. To attract and retain customers, all operators are compelled to find innovative ways to differentiate themselves, especially as they contend with disruptive OTT services and the shift from voice to data as their core business.[164] Leveraging favourable geography and a competitive market environment—with government policies such as roll-out targets, and low taxes on mobile consumers—South Africa achieved steady growth in mobile penetration, reaching 70% by mid-2006.[165]	Uganda can benefit by adopting targeted roll-out strategies, encouraging public–private partnerships, and reforming tax policies. Tailoring infrastructure expansion to address rural and underserved areas will be crucial for improving overall coverage.
Level of Universal Access and Usage of Digital Devices and Services	In January 2023, South Africa had 25.80 million social media users, representing 42.9 percent of the population, and 112.7 million active cellular mobile connections, amounting to 187.4 percent of the population. There were 43.48 million internet users in South Africa as of 2023 and internet penetration stood at 72.3%. [166] Despite increased network capacity, there remains a significant global disparity in broadband speeds, with the five fastest countries having download speeds around 40 times faster than the five slowest. South Africa, ranking 80th out of 189 countries with an average speed of 4.36 Mbps, performs relatively well among African nations, though fixed-line infrastructure challenges contribute to slower speeds, and improvements continue due to technological advancements.[167] Despite having a significant low-income segment, South Africa's proactive policies and affordability measures have resulted in moderate to high penetration of mobile and digital services, making connectivity more accessible to a broad population.	Uganda can learn from South Africa's proactive policies and affordability measures, which have led to moderate to high penetration of mobile and digital services, making connectivity more accessible to a broad population. By implementing similar measures, Uganda can enhance its internet penetration, address infrastructure challenges, and improve broadband speeds to ensure wider access and better connectivity for its citizens. To enhance digital inclusion, Uganda should implement affordability measures—such as reducing taxes on mobile services and offering subsidies—and launch digital literacy initiatives that promote wider adoption of digital devices and services across all income groups.

164 https://researchictafrica.net/wp-content/uploads/2018/10/the-state-of-ict-in-south-africa.pdf
165 GSMA Universal Access Report 2012, Universal Access: How Mobile can Bring Communications to All. Available at https://www.gsma.com/publicpolicy/wpcontent/uploads/2012/03/universalaccessfullreport.pdf
166 https://datareportal.com/reports/digital-2023-south-africa
167 www.cable.co.uk/media-centre/release/New-Worldwide-Broadband-Speed-League-Unveiled-UK-Ranks-31

Extent of Un-serviced and Underserved Demographics	Kepios analysis indicates that internet users in South Africa increased by 357 thousand (+0.8 percent) between 2022 and 2023. Figures reveal that 16.66 million people in South Africa did not use the internet at the start of 2023, suggesting that 27.7 percent of the population remained offline at the beginning of the year. [168] Although South Africa has achieved widespread coverage, certain rural and marginalized urban areas remain underserved. This gap is partly mitigated through policies that incentivize operators to expand services into low tele-density areas.	Uganda must prioritize identifying and targeting underserved demographics. This can be achieved through data-driven planning, targeted operator incentives, and community-focused initiatives that ensure rural and marginalized groups are effectively included in the digital expansion.
Impact of Universal Access and Usage of Communication Services on Economic Development	In the past five years, major telecom companies have invested 11.45 billion USD (R200 billion) to develop fiber optic networks and data centers, enhancing connectivity and bolstering the growing digital economy. [169] Investments in data centers and cloud services are expanding, with firms such as Amazon Web Services, Microsoft, Teraco, and Dimension Data pledging 1.2 billion USD (R21 billion) over the last five years and new data center investments from Equinix Inc. Johannesburg, Cape Town, and Durban are emerging as tech hubs, fostering innovation and startup ecosystems. The startup sector, particularly in FinTech, HealthTech, and EdTech, is thriving and attracting local and foreign investment. The online gaming market in South Africa continues to grow, with both local and international companies targeting gamers, while social media consumers increased by 200,000 from early 2023 to 2024. [170] There is a rising need for comprehensive cybersecurity measures, alongside significant investments in 5G technology, AI, and digital skills development, creating a favourable environment for sustained digital economy growth. South Africa's digital economy is evolving rapidly, characterized by increased competition, technological advancements, and a thriving startup environment, with major players including local telecommunications providers, international e-commerce giants, and innovative fintech and cloud service companies.[171] Enhanced connectivity in South Africa has driven socio-economic growth by improving affordability, reducing income disparities, and stimulating economic activities through increased communication access.	Uganda should harness universal access as a catalyst for socio-economic development. Improving ICT penetration can drive economic inclusion, support job creation, and foster overall economic growth when integrated with broader development policies.

168 https://datareportal.com/reports/digital-2023-south-africa
169 https://www.trade.gov/country-commercial-guides/south-africa-digital-economy
170 https://www.trade.gov/country-commercial-guides/south-africa-digital-economy

171 Ibid

Delivery of Affordable Basic Communication Services to PWDs, Women and Refugees	Around 1 billion people worldwide, roughly 13% of the global population, lack identity documents. These individuals are often among the most vulnerable, not only because they lack documentation but also because their inability to obtain it stems from deeper issues like limited access to services or socio-economic challenges. [172] The study by Faith, Roberts, & Alfers, 2024 revealed that women face unique challenges in accessing digital social protection, including digital literacy gaps and financial barriers to affording digital devices. [173] A study by CIPESA (2020) revealed that MTN South Africa offered an affordable, accessible handset priced at ZAR 250 (USD 16), which included features like a 'talk back' option for users with disabilities. However, this handset was unavailable in MTN outlets at Campus Square and Rosebank Mall in Johannesburg. Staff at these outlets were unaware of any special offerings, such as discounted rates or services tailored for persons with disabilities. Similarly, Vodacom South Africa advertised on its website that it provided Apple and Android smartphones with built-in text-to-speech applications (e.g., Apple's VoiceOver and Android's TalkBack) to assist visually impaired users. The website also mentioned in-store activation, step-by-step guides, and training support, as well as easy-to-use devices with large keypads and inclusive designs. However, visits to Vodacom outlets found that these handsets were not prominently displayed, and some sales agents were unaware of their availability.[174]	Uganda needs to institute inclusive policies that guarantee affordable and accessible communication services for PWDs, women, and refugees. Establishing clear standards, legal protections, and collaborative initiatives between the public and private sectors is essential for achieving true universal access.

C. Mauritius

The telecommunications sector in Mauritius has undergone changes similar to those in many other nations. In May 1988, a significant decision was made to separate regulatory and operational responsibilities within the sector. This led to the dissolution of the Department of Telecommunications, which had previously managed both functions.[175] With the enactment of the Telecommunication Act of 1988, a Telecommunication Authority was established to handle the regulatory aspects of the industry. Additionally, a Telecommunication Advisory Council was formed to provide guidance to the Minister in charge of telecommunications on issues concerning the sector. The major changes are reflected in the table below:

Table 27: Showing the systematic developments within Mauritius' telecommunications sector.

172 IFRC Report (2021)
173 https://ituc-africa.org/IMG/pdf/policy_brief_dsp_1__inclusion-data_protection_09dec2024.pdf

174 Ibid
175 National ICT Policy, 2007 – Mauritius

Year	Development
1988	i. Separation of regulatory and operational functions in the telecom sector. ii. Telecommunications Act (1988)[176] established the Telecommunication Authority to regulate the sector. iii. Creation of the Telecommunication Advisory Council to guide policymakers.
	Telecommunication (Transfer) Act facilitated the transfer of telecom operations to Mauritius Telecommunications Services Ltd (established in April 1988).
1992	Mauritius Telecommunications Services Ltd rebranded as Mauritius Telecom after a merger of domestic and international service operations.
1997	The government released the Green Paper on Telecommunications (1997-2007)[177] to assess the sector and outline key policy directions. Identified four foundational pillars for the information economy: i. Liberalisation and sector efficiency – Commitment to full market competition by 2004 (WTO negotiations). ii. Regulatory framework – Need for an independent regulatory body to ensure fair competition. iii. Ownership and investment – A review of government ownership in Mauritius Telecom to attract private capital. iv. Promotion of an Information-Intensive Society – Positioning Mauritius as a competitive digital economy.
2001	Implementation of Section 16(a) of the Information and Technologies Act (ICTA) 2001[178]. Empowered the Mauritius Telecommunications Authority (MTA) to ensure affordable and accessible telecommunication services.
2007	Enactment of the National ICT Policy (2007) to promote ICT as a key pillar of economic growth. The policy focused on: i. Aligning with the needs of the information-driven economy. ii. Following international ICT standards. iii. Addressing technological convergence. iv. Encouraging ICT adoption through trust and confidence-building.
2000-2005	-Electronic Transactions Act (2000)[179] based on the UNCITRAL Model Law for eCommerce[180]. - Revisions in 2005 to address gaps and align with global eCommerce standards.
2004	- The Data Protection Act (2004)was updated to meet European Union (EU) data protection standards[181]. - Allowed Mauritius to be recognized by the European Community as a compliant third country for data security.
1997-2007	-Copyright Act (1997)[182] revised to comply with international copyright agreements. - Aligned with the WIPO Copyright Treaty[183] and WIPO Phonogram and Performances Treaty[184].

From the above, it can be said that in Mauritius, regulatory frameworks have become stronger to cater to the changing dynamics in ICT developments and international frameworks. Uganda hence has lessons to learn from Mauritius, as shown in the table below.

176 Telecommunications Act (1988) - Mauritius
177 Mauritius 2007, 1997 — Green Paper on Telecommunications: Strategies and Policies for the Info-Communications sector, 1997–2007, Sept. 1997
178 Information and Technologies Act (ICTA) 2001 – Mauritius
179 Electronic Transactions Act (2000) – Mauritius
180 UNCITRAL Model Law on Electronic Commerce (1996)
181 General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679)
182 Copyright Act (1997) - Mauritius
183 WIPO Copyright Treaty of 1996
184 WIPO Performances and Phonograms Treaty (WPPT) of 1996

Table 28: showing Mauritius' experience and best practices, along with actionable lessons for Uganda:

Focus Area	Description	Lessons for Uganda
Existing Policy, Legal, and Regulatory Framework	Mauritius established the Telecommunications Authority under the Telecommunications Act (1988) to regulate the sector independently. The Information and Technologies Act (2001) mandated the Mauritius Telecommunications Authority (MTA) to ensure affordable and accessible telecom services. The National ICT Policy (2007) focused on regulatory alignment with international standards.	Uganda can strengthen its ICT sector by establishing a harmonized legal and regulatory framework, ensuring alignment with global standards for better investment attraction and sector growth.
Telephony and Broadband Infrastructure Coverage	Mauritius liberalized its telecom sector, committing to full market competition by 2004. The government invested in ICT infrastructure while gradually reducing its monopoly in Mauritius Telecom.	Uganda should enhance competition in the telecom sector by supporting private investment and ensuring a competitive licensing framework to boost broadband expansion.
Level of Universal Access and Usage of Digital Devices and Services	The ICTA Act (2001) mandated affordable and accessible telecom services. The government introduced national broadband initiatives to expand connectivity and promote ICT usage across society.	Uganda can prioritize broadband expansion through targeted national policies and public-private partnerships (PPPs) to increase universal access to digital services.
Extent of Unserviced and Underserved Demographics	Mauritius focused on digital inclusivity by promoting the use of ICT across different economic sectors and ensuring access in rural and underserved areas.	Uganda should implement national strategies to bridge the digital divide, ensuring rural populations, small businesses, and low-income groups benefit from digital services.
Impact of Universal Access and Usage of Communication Services on Economic Development	Mauritius aims to become an information-driven economy, leveraging ICT as a key pillar of economic growth. The alignment of ICT laws with international standards has helped attract foreign investment and boost digital transformation.	Uganda can position ICT as a driver of economic growth by aligning regulations with global best practices, fostering digital innovation, and encouraging investment in the tech sector.
Delivery of Affordable Basic Communication Services to PWDs, Women, and Refugees	Mauritius introduced data protection laws aligned with EU standards, ensuring digital security and inclusivity. Legal updates to the Copyright Act and Electronic Transactions Act further strengthened digital trust and accessibility.	Uganda can modernize its data protection and copyright laws to enhance digital security, trust, and inclusivity, ensuring equitable access to communication services for vulnerable populations.

D. Estonia

Estonia has made significant progress in government communications, including the creation of a Code of Conduct, the Public Information Act, and ranking second globally for Public Internet Access Points, offering valuable lessons for Uganda. According to the GSM Universal Access Report, Estonia ranks among the countries with the highest coverage indicators.[185] Estonia is making notable strides in setting up proper systems to manage government communications, though there are still challenges related to coordination between them. A positive development in this area is the creation of a Code of Conduct for government communications officers, which outlines their responsibilities, behavior, and values.

185 GSMA Universal Access Report 2012, Universal Access: How Mobile can Bring Communications to All. Available at https://www.gsma.com/publicpolicy/wp-content/uploads/2012/03/universalaccessfullreport.pdf (accessed on 26th January 2025)

In June 2000, Estonia passed the Public Information Act,[186] which governs how the government handles information requests and shares general information. This act includes the establishment of an electronic registry of government documents, which, except for those that are excluded, can be accessed directly by the public. The framework for providing citizen information has been favorably reviewed according to OECD standards, though challenges remain, such as the difficulty in finding specific information within the large volume available and the need for simpler language in government materials. Electronic communication is a key priority for the Estonian Government, and Estonia now ranks second in the world for the number of Public Internet Access Points per person.[187] Even though there is no data available yet on how often these points are used for communication with the government, there are lessons Uganda can pick from Estonia as shown in the table below.

Table 29: showing Estonia's experience and best practices, along with actionable lessons for Uganda.

Focus Area/ Objective	Description	Key Lessons for Uganda
Existing Policy, Legal and Regulatory Framework	The Electronic Communications Act (ECA) oversees the operation of electronic communications networks, ensuring their public availability along with communications services, radio communication, management of radio frequencies and numbering, apparatus, and state supervision for compliance and liability. The Minister of Economic Affairs and Communications is authorized to specify provisions under the ECA regulations, which include over 30 regulations in this domain. Additional legislative acts in this area include the Competition Act, Consumer Protection Act, Broadcasting Act, Digital Signatures Act, State Fees Act, and Information Society Services Act. Estonia has a strong legal framework for government communications, including the Public Information Act[188], which mandates transparency and provides public access to government documents. This Code of Conduct for government communication officers ensures accountability.	Even though Uganda has the Access to Information Act, Cap 95[189] in place, it can strengthen its legal framework by enhancing transparency laws and adopting a Code of Conduct for government officials to improve public trust, streamline communication, and promote accountability.

186 Public Information Act, 2000 – Estonia https://www.riigiteataja.ee/en/eli/514112013001/consolide

187 United Nations Development Programme (UNDP) Regional Bureau for Europe & CIS (RBEC). (2004). *Assessing communication practices of governments in Central Europe and the Baltic States: Pilot phase summary, conclusions & next steps* (condensed version). Institute On Governance. https://www.files.ethz.ch/isn/122185/govt_cit_comm_condensed.pdf (accessed on 26th January 2025)

188 Public Information Act, 2000 (Supra) – Estonia

189 Access to Information Act, Cap 95 – Estonia

Telephony and Broadband Infrastructure Coverage	Estonia faces no infrastructural barriers to internet access. As of July 2020, Statistics Estonia reported that 89.1 percent of households had internet connections, and 98 percent of individuals aged 16 to 44 used the internet daily or almost daily. The EU's latest Digital Economy and Society Index (DESI) indicated that 82.6 percent of Estonian households had fixed-line broadband connections in 2020, with mobile broadband penetration at 152.2 percent, both surpassing EU averages.[190] Estonia ranks among the highest in coverage indicators and has widespread public internet access, ranking second globally in Public Internet Access Points per person.	Uganda should prioritize broadband expansion and set up more public access points, especially in underserved areas, to improve connectivity and facilitate access to digital services.
Level of Universal Access and Usage of Digital Devices and Services	According to the Digital Economy and Society Index (DESI), Estonia ranks among the highest in Europe, with 93% of its population using e-government services. Estonia has effectively minimized digital divides, ensuring that nearly all its citizens can access distance learning, virtual court procedures, and other digital public services. The Consumer Protection and Technical Regulatory Authority (TTJA), Estonia's telecommunications regulator, provides an online map detailing available internet services at any location in the country. Public Wi-Fi is widely available in places such as cafés, hotels, hospitals, schools, and gas stations. According to the Economist Intelligence Unit's 2021 Inclusive Internet Index, 3G mobile networks cover 100 percent of Estonia's population, while 4G networks cover 99%.[191] The country prioritizes electronic communication, offering widespread internet access and digital government services. However, challenges remain in ensuring that public information is easily understandable.	Uganda should integrate digital communication into public services and simplify government information to enhance citizen engagement and accessibility. Digital literacy programs will also be essential to boost effective usage.
Extent of Un-serviced and Underserved Demographics	The share of rural households with internet access in Estonia increased by 2.3 percentage points (+2.56 percent) since the previous year. Therefore, the share of rural households with internet access in Estonia reached a peak in 2023 with 92.25%.[192] Estonia has made significant progress in digital inclusion through government initiatives, but challenges persist in ensuring equitable access for all demographics.	Uganda must ensure that underserved populations, particularly in rural areas, benefit from digital infrastructure by implementing targeted policies and increasing awareness of available services.

190 https://freedomhouse.org/country/estonia/freedom-net/2021
191 https://freedomhouse.org/country/estonia/freedom-net/2021
192 https://www.statista.com/statistics/1236280/share-towns-rural-households-internet-access-europa-estonia/

Impact of Universal Access and Usage of Communication Services on Economic Development	The Estonian government is one of the most digitally advanced in the world, offering over 3,000 online services accessible to citizens, businesses, and government agencies at any time. This achievement is built on innovative public-sector initiatives, such as the X-Road interoperability platform, a unique e-ID system for every citizen, and the groundbreaking e-residence program. As a result, Estonians enjoy seamless e-government services, including online voting, filing tax returns in just five minutes, and registering a business in under 20 minutes.[193] Estonia's strong digital infrastructure and open government practices have driven economic efficiency, transparency, and citizen participation.	Uganda can leverage digital access and open governance to stimulate economic growth, attract investment, and enhance service delivery, particularly in sectors like e-governance and digital finance.
Delivery of Affordable Basic Communication Services to PWDs, Women, and Refugees	Estonia facilitated Refugees and forcibly displaced persons with improved access to UNHCR services by strengthening organization's digital ID ecosystem, fulfilling a pledge made by Estonia during the 2019 Global Refugee Forum. The cooperation focuses on managing digital IDs for secure service access, designing user-friendly e-governance services, ensuring system interoperability, and safeguarding data privacy and protection.[194] Estonia prioritizes digital inclusion but still faces challenges in ensuring that all citizens can easily access and understand online government services.	Uganda should develop targeted digital inclusion policies, ensuring that marginalized groups have access to affordable digital services and that online government services are designed to be user-friendly and accessible to all.

E. South Korea

South Korea's telecommunications sector, governed by the Telecommunications Business Act and Radio Waves Act, offers valuable regulatory and infrastructure benchmarks for Uganda. The communication services market in South Korea is projected to grow by -0.09% (2025-2029) resulting in a market value of US$31.8bn in 2029.[195] The telecommunications sector in South Korea is primarily regulated by the Telecommunications Business Act (TBA) of 2021 and the Radio Waves Act (RWA). The Ministry of Science and ICT (MSIT) and the Korea Communications Commission (KCC) are the key bodies responsible for implementing these regulations. The TBA outlines the procedures for entering and exiting the telecommunications industry, while the RWA sets specific requirements for telecommunications carriers that build networks using radio equipment. Uganda has a lot to benchmark from South Korea as shown in the table below:

193 https://blogs.worldbank.org/en/digital-development/digital-dividends-and-sdgs-following-estonian-example
194 https://www.biometricupdate.com/202112/unhcr-gets-digital-id-boost-from-estonia-to-improve-service-delivery-for-refugees
195 Bae Kim and Lee LLC (2020), In brief: Telecoms Regulation in South Korea. Lexology. Available at https://www.lexology.com/library/detail.aspx?g=60852913-d707-43df-bcd7-68678daa0aa3 (accessed on 26th January 2025)

Table 30: showing South Korea's experience and best practices, along with actionable lessons for Uganda.

Focus Area	South Korea's Approach	Lessons for Uganda
Existing Policy, Legal, and Regulatory Framework	The Ministry of Information and Communications (MIC) is the primary government agency responsible for overseeing telecommunications and information policy issues and regulating the telecom industry, promoting market competition and fairness. The MIC manages permits, licenses, and registrations, making it the most influential regulatory authority in this area. The Korea Communications Commission (KCC), a sub-agency of the MIC established under Article 37 of the Framework Act on Telecommunications, addresses fair competition and consumer protection in telecommunications services and mediates disputes among operators and users. Four major laws govern South Korea's telecommunications industry: the Telecommunications Business Act (TBA), which covers operations, regulations, and user protection; the Framework Act on Telecommunications, which provides the general legal framework; the Radio Waves Act, which oversees the effective management of radio wave resources; and the Act on Promotion of Information and Communications Network Utilization and Information Protection, which promotes network utilization, user data protection, and the creation of a secure information environment.[196] The telecommunications sector is regulated by the Telecommunications Business Act (TBA), 2021[197] and the Radio Waves Act (RWA), 2022[198]. The Ministry of Science and ICT (MSIT) and the Korea Communications Commission (KCC) oversee these regulations. The TBA sets rules for market entry, service classification, and licensing, while the RWA governs the allocation and use of radio frequencies.	Uganda can refine its regulatory framework by adopting clear service classifications (Core Telecommunications Services vs. Value-Added Services) and streamlining the licensing process to encourage innovation and investment.
	The TBA divides services into Core Telecommunications Services (CTS) (e.g., internet access, mobile networks, VoIP) and Value-Added Telecommunications Services (VATS) (e.g., cloud computing, e-commerce). CTS providers must obtain a license, while most VATS providers only need to file a report. Small VATS providers with capital below 100 million won are exempt from reporting, except for peer-to-peer and SMS services.	Uganda can adopt separate regulations for core and value-added services to ease compliance for startups, fostering innovation and investment in digital services.

196 https://www.leeko.com/pdf/Article_KBP_3.pdf
197 Telecommunications Business Act (TBA), 2021 – South Korea
198 Radio Waves Act (RWA), Act No 18957, 2022 – South Korea

Telephone and Broadband Infrastructure Coverage	In South Korea, Broadband was not simply seen as an upgrade to the nation's communication infrastructure but as a crucial step towards an information-based society. To foster competition, the government implemented robust policies that made services affordable. Both public and private sectors collaborated in developing applications, anticipating that this would lead to thriving industries in e-government, online entertainment, e-commerce, and e-learning. The combination of affordable services and plentiful digital content resulted in rapid adoption and sustained demand.[199] South Korea has one of the highest broadband penetration rates globally. Major investments in fiber-optic networks, 5G expansion, and nationwide mobile coverage have made high-speed internet accessible even in remote areas. Public-private partnerships (PPPs) play a key role in infrastructure development.	Uganda should leverage PPPs to expand broadband and mobile coverage, particularly in rural areas, and invest in fiber-optic networks to enhance high-speed connectivity.
Level of Universal Access and Usage of Digital Devices and Services	South Korea has a highly mature mobile market and the most advanced broadband market globally. According to the Inclusive Internet Index Report 2023, the country comes second out of 100 countries in terms of its quality of internet infrastructure and level of internet usage. South Korea, with its highly urbanized and tech-savvy population, has achieved exceptional penetration rates across all communication sectors: fixed-line telephony (41.5% by the end of 2024), fixed broadband (47.5%), mobile voice and data (175%), and mobile broadband (125%). While its mobile sector performs similarly to other developed markets in the region, South Korea excels in its wireline segment, largely due to the fact that around 60% of its population lives in apartment buildings. This makes it easier and more cost-effective to deploy fibre and apartment LAN connections. A key driver of this success is the government's Ultra Broadband Convergence Network (UBcN), which promotes nationwide fibre-based broadband and encourages infrastructure sharing among telecom companies, significantly reducing deployment costs.[200] The Universal Service Obligation (USO), 2021[201] ensures essential communication services (wired telephone, internet, emergency calls) are available nationwide. Service providers can either deliver universal services or contribute financially to a universal service fund.	Uganda can adopt a flexible USO model where telecom operators can either provide services or contribute financially to improve accessibility in underserved areas.

199 https://www.researchgate.net/profile/Sora-Park/publication/263274480_Lessons_from_South_Korea's_Digital_Divide_Index/links/544cab3c0cf24b5d6c40aa56/Lessons-from-South-Koreas-Digital-Divide-Index.pdf
200 https://www.budde.com.au/Research/South-Korea-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses
201 Universal Service Obligation (USO), 2021 – South Korea

Extent of Unserviced and Underserved Demographics	The digital divide index is split into three components: infrastructure, utilization and education. There is a positive correlation between income and level of digitalization. High income earners pulling in more than four million won per month are two times as digitalized as those earning less than one million won. By index, the digital utilization gap is a little wider than that of digital infrastructure. Older individuals tend to be less digitalized compared to younger generations, indicating a negative correlation between age and digitalization. People in their twenties lead in digital infrastructure and utilization indexes, while those in their fifties and above lag behind. There is also a gender disparity, with a greater gap observed in utilization than in infrastructure. This digital divide may stem from more men being employed as white-collar workers, providing them better access to computers and the internet in office settings compared to at home.[202] While South Korea has high digital penetration, rural and low-income communities still face some challenges in accessing cutting-edge services. Government initiatives provide subsidized internet and mobile services to low-income households.	Uganda can introduce subsidies for rural and low-income users to improve affordability and prioritize connectivity in underserved communities through targeted interventions.
Impact of Universal Access and Usage of Communication Services on Economic Development	In 2025, the revenue in South Korea's Telephony market is expected to be US$8.8bn, growing annually by 0.90% (CAGR) from 2025 to 2029. China leads the global market with revenue of US$115.8bn in 2025. For South Korea, the per person revenue is US$171.36, with the market volume projected to reach 22.6m pieces by 2029 and an estimated volume growth of -0.8% in 2026. The average volume per person is projected to be 0.5 pieces, indicating high telephony usage and adoption. South Korea's advanced 5G network infrastructure and widespread smartphone adoption position it as a leader in telephony.[203] South Korea's advanced telecommunications infrastructure has driven economic growth, innovation, and job creation. The country's digital economy contributes significantly to GDP, and widespread connectivity enables e-commerce, e-government, and smart city initiatives.	Uganda can boost its digital economy by promoting broadband access, supporting e-government services, and fostering local digital innovations to drive economic growth.

202 https://www.hri.co.kr/upload/board/EVP200011_06.pdf
203 https://www.statista.com/outlook/cmo/consumer-electronics/telephony/south-korea

Delivery of Affordable Basic Communication Services to PWDs, Women, and Refugees	The National Information Society Agency (NIA) has identified six vulnerable groups facing a digital divide in South Korea: older adults, people with disabilities, low-income individuals, agricultural and fishery workers, marriage immigrants, and North Korean refugees. This digital divide is closely linked to existing social divides, such as class, gender, politics, income, and region, and has become a significant policy issue for the South Korean government. As technology becomes more integrated into society, the ability to use technology and the perception of one's own technological capability have emerged as crucial aspects. To address this, the South Korean government has implemented programs like Digital Learning Centers, which provide digital literacy education nationwide, teaching skills such as Hangul, Excel, Photoshop, video editing, and basic coding. These centers, both permanent and mobile, have successfully increased digital education, benefiting groups like older adults, people with disabilities, and multicultural families, and providing a promising approach to bridging the digital divide.[204] South Korea provides reduced or exempted service charges for disabled individuals and low-income persons on toll calls, mobile networks, and LTE services. Government programs also ensure accessible communication services for people with disabilities.	Uganda can implement targeted subsidies and discounts for PWDs, women, and vulnerable groups to ensure inclusivity in digital access and affordability.

204 https://blogs.iu.edu/ilsnewsletter/ils-updates/2024-iks-colloquium-dr-younei-soe-presents-on-the-digital-divide-in-south-korea/

Chapter four

CONCLUSION AND RECCOMENDATIONS

This section provides conclusions and recommendations from the study

4.1 Conclusions

Key emerging conclusions

i. **Telephony and Broadband Infrastructure Coverage:** While Uganda has expanded coverage significantly (especially 2G/3G), gaps remain in geographical coverage (only 56.5% of land area, serving approximately 76% of the population through 7,296 telecom masts nationwide.), rural-urban infrastructure disparities, and last-mile fiber connectivity. Rural and remote regions like Karamoja and Teso remain critically underserved.

ii. **Access and Usage of Digital Devices and Services:** Access and usage of digital devices and services in Uganda have significantly improved, however disparities still remain, particularly among underserved communities. While smartphone penetration has increased to nearly 50%, affordability remains a key barrier, with high device costs limiting ownership, especially for women, rural populations, and persons with disabilities.

iii. **Development of ICT Applications and Services:** UCUSAF has made commendable progress in supporting ICT innovation through hubs, e-learning platforms, and agricultural technologies. However, usage remains uneven due to limited regional access, device constraints. Addressing these gaps through structured support and localization will be key to scaling digital participation across underserved communities.

iv. **Policy, Legal, and Regulatory Frameworks:** Uganda's legal and policy environment supports universal access, aligning with international standards. However, weak enforcement, policy contradictions (especially around taxation and digital access), low public awareness, and slow regulatory adaptation to emerging technologies limit its effectiveness.

v. **Profile of Unserved and Underserved Demographics:** Unserved and underserved populations are concentrated in rural subregions, among women, persons with disabilities (PWDs), the elderly, low-income groups, and refugees. Access is hampered by device affordability, limited digital literacy, and lack of infrastructure.

vi. **Universal Access and Usage of Digital Devices and Services:** Device affordability and unreliable power significantly restrict digital inclusion. Though digital literacy initiatives exist, large skill gaps persist, especially among women, PWDs, and rural populations. Awareness of free emergency services is high, but usage remains low.

vii. **Access for PWDs and Refugees:** PWDs and refugees face significant communication service barriers due to device cost, infrastructure gaps, lack of tailored services, and social exclusion. Fragmented initiatives and limited use of assistive technology further widen the access gap.

viii. **Gap Identification and Budget Alignment:** Closing Uganda's access gap requires UGX 3,852.4 billion across three pillars: Infrastructure Access (UGX 997.2 billion; 25.9%), Affordability of Digital Services (UGX 1,297.6 billion; 33.7%), and Digital Skills (UGX 1,557.6 billion; 40.4%). As a feasible implementation choice, a three-year programme at sixty per cent of the total would mobilize UGX 2,311.5 billion with the same proportional split by pillar (Infrastructure 25.9%, Affordability 33.7%, Digital Skills 40.4%).

ix. **Socioeconomic Impact of Access Gaps:** The access gap results in substantial socioeconomic losses for Uganda, including an estimated $2.25 billion annually in lost productivity. Bridging the gap could boost GDP by 3–5% per year, create 2.53 million jobs, and enhance outcomes across sectors like education, health, and agriculture.

x. **Multi-sector Collaboration for Digital Inclusivity:** UCUSAF's partnerships have significantly enhanced access in key sectors like education and health, but untapped potential remains in areas like justice and tourism. A coordinated, cross-sector approach backed by robust policy alignment and shared infrastructure will be essential for achieving universal digital inclusion. Similarly, strategic e-waste management integration must be prioritized to ensure sustainable digital growth.

xi. **Lessons from Regional and International Benchmarks:** Countries like Estonia, South Korea, and Kenya show that proactive regulation, public-private partnerships (PPPs), and investment in inclusive digital policies can effectively close access gaps. Uganda can adapt such best practices to its context.

4.2 Recommendations

The detailed operational recommendations are provided under each thematic section of the report. Below is a consolidation of strategic and cross-cutting recommendations emerging from the entire study

Issue	Recommendation	Actor(s)
Weak enforcement of universal service obligations	Establish a robust enforcement framework with clear rural connectivity targets and penalties for non-compliance	UCC, MoICT
Contradictions between ICT taxation policies and access goals	Align tax policies with digital inclusion goals by reducing taxes on ICT devices and services and introducing targeted subsidies	MoICT, MoFPED, URA
Limited policy adaptation to emerging technologies (AI, IoT, 5G)	Update ICT policies and regulations to integrate emerging technologies with a focus on accessibility and universal service	NITA-U, MoICT
Rural-urban broadband coverage disparity	Expand last-mile fiber and broadband infrastructure using public-private partnerships and enforce infrastructure-sharing frameworks	UCC, NITA-U, MoICT, Telecom Operators
Persistent device affordability barriers	Introduce device financing models, subsidies, and incentives for low-cost smartphones and assistive technologies	UCC, MoICT, UCUSAF, Telecom Operators
Low digital literacy among marginalized groups	Scale up localized, community-driven digital literacy programs tied to livelihoods and inclusive of PWDs and the elderly	MoICT, UCUSAF, MoES, NGOs, CSOs
Inadequate access and usage among PWDs and refugees	Develop tailored digital access initiatives for PWDs/refugees including assistive technology integration and subsidized services	Ministry of ICT, UCC, MoGLSD, NGOs
Affordability and structural barriers limiting rural digital adoption	Establish rural device lending hubs, integrate digital literacy with energy access programs, and promote off-grid telecom solutions	UCC, REA, MoICT, Local Governments, NGOs
Low sustainability of digital inclusion projects	Foster community ownership models, strategic partnerships, and link interventions to income-generating activities	UCUSAF, MoICT, Development Partners, Local Governments
Underutilization of emergency and customer service channels	Improve public education and tailor service delivery to the needs of vulnerable and marginalized groups	UCC, Telecom Operators, MoICT
Loss of economic productivity due to ICT access gaps	Prioritize broadband acceleration through a National Broadband Plan aligned to sectoral development strategies	MoICT, Ministry of Finance, UCC, NPA
Insufficient tracking of ICT access and usage disparities	Establish a national digital access monitoring framework integrated into UBOS national surveys	UBOS, MoICT, UCC, NITA-U
Fragmented digital inclusion efforts	Consolidate under a National Digital Inclusion Framework with cross-sectoral participation and local community involvement	Ministry of ICT, UCC, MoGLSD, CSOs

APPENDICES

Appendix A: Glossary of Terms

Term	Definition
Broadband Access:	According to the National Broadband Strategy for Uganda, broadband is defined as a high-speed internet connection that is always on and faster than traditional dial-up access. The strategy emphasizes providing affordable, reliable, and equitable broadband access to all citizens, focusing on infrastructure development, connectivity, and digital inclusivity.[205]
Digital Devices and Services:	Under this assignment we understand Digital devices as electronic gadgets that can process, store, and transmit data. These include smartphones, tablets, computers among others. Digital services encompass a wide range of online services accessible via these devices, such as internet access, online banking, e-commerce, e-learning, and digital entertainment platforms among others.
ICT Applications and Services:	We understand ICT Applications refer to software applications specifically designed for productive or operational purposes across sectors. ICT Services includes a broader range of support and infrastructure that facilitates the deployment and functioning of IT applications such as network services, data management and system support. ICT services include the technical support network infrastructure.
Digital Inclusivity	refers to the availability, affordability, and accessibility of digital technologies and services for all individuals, especially those in underserved or marginalized communities.[206] The International Telecommunication Union (ITU) defines digital inclusivity as removing barriers to access and usage of digital technologies and services hence ensuring equal opportunities to all regardless of socio-economic status, geography, gender, disability, or other factors.
Basic Communication Services:	According to the Uganda Universal Access Policy, Basic Communication Services include; 1) Telephone Services (Both landline and mobile phone services), 2) Internet Access (Broadband and mobile internet services), 3) Postal Services (Delivery of physical mail and packages), 4) Broadcast Services (Television and radio broadcasting), 5) Emergency Services (Communication channels for emergency response). However, for this study basic communication services shall be limited to Telephony and Internet Access
Sustainable Interventions	The consultant understands sustainable interventions as initiatives designed to address specific challenges or needs that are able to maintain their outcomes and impact over the long term without depleting resources or requiring continuous external inputs. In the context of ICTs and universal service, sustainable interventions involve establishing systems, structures and processes that promote continuous access and usage of digital services in the targeted community.
Impactful Collaborations	are strategic partnerships or joint efforts between multiple stakeholders (governments, private sector, civil society) that lead to significant, measurable improvements in a given area, such as digital access or service provision. These collaborations aim for long-term, meaningful outcomes by combining resources, expertise, and networks for greater societal impact.
Access	in the context of the universal access policy refers to the ability of individuals or communities to connect to and use communication technologies. This includes physical access to ICT infrastructure, such as internet connectivity, mobile networks, and digital devices, as well as financial access, ensuring that these services are affordable.

205 https://ict.go.ug/wp-content/uploads/2019/12/National-Broadband-Strategy-for-Uganda-Draft-V8.pdf
206 World Bank Document

Adoption	refers to the process by which individuals or organizations begin to use and integrate ICT services and technologies into their daily activities. It involves not only access but also the ability and willingness to utilize these technologies effectively, which can be influenced by digital literacy, cultural factors, and economic conditions.
Usage	refers to the frequency and ways in which digital services and ICT tools are employed by individuals or communities after gaining access and adopting the technologies. Usage involves how much, how often, and for what purposes ICTs are utilized, whether for communication, education, business, or social services.
Value Creation	in the digital economy context refers to the process by which digital technologies and services generate economic, social, or environmental benefits for individuals, businesses, or communities. Value creation can take many forms, including improved business efficiency, enhanced access to information, and greater social inclusion.
Cooperation	is the process where different stakeholders, such as governments, private companies, and civil society organizations, work together to achieve common goals. In the ICT sector, cooperation often involves joint efforts to expand access, develop infrastructure, or create inclusive digital policies.
Unserved Communities:	This refers to communities that have no access to basic communications services, such as mobile telephony and internet connectivity.
Underserved Communities:	This refers to communities that have limited or unreliable (poor quality) access to basic communication services, or services i.e., that only have access to 2G network that only supports telephony cervices and not wireless broadband

Appendix C: Case Studies

PROJECT NAME	Digital Literacy for Farmers
BENEFICIARY PROFILE (BENEFICIARY ONE)	**Sekyaya is a 38-year-old farmer from Kiboga District. He relies on farming as his primary source of income.**
PRE- PROGRAM CONDITIONS	Before participating in the program, Sekyaya relied on analogue phones, radio, and TV for communication and information. He had very limited digital literacy skills and had never received any ICT training. Although he could afford basic analogue devices, he did not understand the benefits of digital tools, and had no exposure to platforms like smartphones, internet applications, or computers.
EXPERIENCE WITH ECUSAF	Sekyaya heard about the UCUSAF program through the Kiboga District Farmers Association. He joined the training facilitated by Eight Tech Consults, which was delivered virtually via Zoom. During the training, he learned how to use WhatsApp effectively, create group chats for farmer coordination, search for agricultural information using YouTube, and use Excel for managing group savings and records. The training also helped him connect with other farmers and learn from their experiences.
POST PROGRAM IMPACT	After completing the program, Sekyaya gained confidence in using digital tools to improve his farming practices. He started watching agricultural tutorials on YouTube, coordinated more effectively with fellow farmers through WhatsApp groups, and began maintaining digital records of group finances. His knowledge of digital platforms has improved, and he can now identify and access better markets for his produce. His community has also benefited from improved access to internet services through internet cafes.

OVERALL PROGRAM EVALUATION	Sekyaya found the program extremely useful in helping him and his fellow farmers understand how to access agricultural information online. He particularly appreciated the exposure to YouTube and M-Mulimisa, which provided valuable farming insights. However, he faced challenges such as poor internet coverage, expensive data bundles, and power blackouts. He recommended that future trainings be conducted in local languages to increase understanding, and suggested continuous monthly training sessions and increased access to affordable digital resources.
BENEFICIARY POFILE (BENEFICIARY TWO)	**Oyet Tommy Jorey is a 50-year-old farmer from Padibe in Lamwo District. He also served as a coordinator for the program in his district**
PRE-PROGRAM EVALUATIONS	Prior to the program, Oyet owned a smartphone and a radio, which he used regularly for communication and coordinating farming activities. His knowledge of computers was minimal, having received only a week of prior training. Although he could afford some digital devices, the high cost of smartphones and the lack of access to computers in rural areas made full participation in the digital economy difficult. His primary source of income was farming, and he had not been involved in any ICT-related jobs before.
EXPERIENCE WITH UCUSAF	Oyet was contacted by the Uganda Communications Commission (UCC), which reached out through the Uganda National Farmers Federation. UCC was seeking a farmers' organization for digital skills training, and Oyet helped coordinate the training through the district office. The training was conducted by Makerere University CAES and covered topics such as the use of digital devices, accessing e-government services, passport and TIN number applications, using agricultural apps, and connecting with other farmers through online platforms. However, no mentorship or follow-up support was provided after the training.
POST PROGRAM IMPACT	Since completing the program, Oyet has started using e-government platforms to access services and has utilized agricultural platforms to improve his market access. While the training did not directly create a new income source or employment opportunity, it enhanced his ability to connect with buyers and coordinate more effectively with fellow farmers using digital tools.
OVERALL PROGRAM EVALUATION	Oyet believes the program was very beneficial in helping him and his community understand how to use digital tools to access important services. He noted that the training was too short and that the lack of access to computers and smartphones limited the practical value for some participants. He recommends extending the training duration to at least one week instead of the two days, establishing a district ICT resource center, appointing a district focal person for digital issues, and providing regular follow-up and refresher training. He believes continued support from UCC is essential to sustain the gains from the training.
BENEFICIARY PROFILE (BENEFICIARY THREE)	**Acayo Jackline is a 40-year-old community development officer from Amuru District, residing in the town council.**
PRE-PROGRAM CONDITIONS	Before the program, Acayo had access to mobile phones, internet, TV, and computers, but she used them primarily for personal communication and basic online browsing. While she owned a smartphone and could use basic apps and the internet, she had not received formal ICT training. Her digital skills were self-taught, and financial constraints sometimes limited her ability to access more advanced ICT services.
EXPERIENCE WITH UCUSAF	Acayo learned about the UCUSAF program through the district administration, where she was nominated to participate in the digital literacy training. The training, facilitated by Eight Tech Consults and Makerere University CAES, covered practical skills including mobile money usage, internet navigation, access to government online portals, and the use of agricultural apps. The program also emphasized the importance of digital tools for information dissemination and community service delivery.

POST PROGRAM IMPACT	After the training, Acayo began applying her digital skills in her work, particularly in using government portals for service delivery and sharing agricultural market information with farmers in her community. She also helped guide other community members on how to apply for government services such as passports and TIN numbers online. Though the training did not directly impact her income, it significantly improved her efficiency and service to the community.
OVERALL PROGRAM EVALUATION	Acayo found the UCUSAF program very helpful in enhancing her digital skills, which she now uses in both professional and community settings. She appreciated the exposure to e-government services and digital platforms for agriculture. However, she noted challenges such as limited access to computers for hands-on learning, network issues, and a short training period. She recommended longer training sessions, community ICT centers, and continuous mentorship to ensure lasting impact.

I

CT & MULTI MEDIA FOR YOUTH

PROJECT NAME	ICT & multi-media for youth
BENEFICIARY PROFILE	Yoacel Faith Obote is a 26-year-old student from Jukutumu, Packwach District. She served as a team leader in the program.
PRE- PROGRAM CONDITIONS	Before the program, Yoacel accessed mobile phones, the internet, radio, and TV almost daily. She did not own a smartphone and relied on her parents' phone while at school. Her digital literacy was limited to apps like WhatsApp and Xender, despite having studied ICT at school. She had no source of income and struggled to afford internet data. She had not worked in any ICT-related job before the program.
EXPERIENCE WITH ECUSAF	Yoacel learned about the UCUSAF program through a link shared by a friend online. She received digital skills training, a guidebook, and access to multimedia devices like cameras. The training was highly useful, helping her acquire video editing, poster design, and digital communication skills through platforms like Zoom and Google Meet. Although she did not receive formal mentoring or job placements, she benefited from networking and received a transport refund.
POST PROGRAM IMPACT	After the program, Yoacel began using her phone for productive purposes such as digital design and online meetings. She secured a job with the National Population and Housing Census, where she applied her digital skills. Her access to ICT has improved her communication abilities, allowing her to create and share digital content effectively.
OVERALL PROGRAM EVALUATION	Yoacel considers the program very effective in building her digital skills and opening up employment opportunities. The most valuable aspects for her were the practical training sessions on tools like Canva and Zoom. Challenges included over-crowding in the computer lab, slow internet, and limited water supply. She recommends using public notice boards for mo-bilization. Going forward, she needs access to a local printing machine to sustain her work in digital design.
BENEFICIARY TWO	**Lakisa Ivan is a 28-year-old journalist from Packwach Town Council, Packwach District. He served as a team leader during the program.**

PRE-PROGRAM CONDITIONS	Before the program, Lakisa used mobile phones, the internet, radio, and TV daily for his journalism work, particularly for communication and listening to stories. He owned a smartphone but not a laptop, and due to financial limitations, his device quality was low. He had some digital literacy from his journalism background and prior training by ACME, as well as ICT studies in A-Level. His main source of income was fishing, and financial constraints hindered his access to better ICT tools. He worked as a reporter for Papa KFM radio, using ICT in his reporting work.
EXPERIENCE WITH UCUSAF	Lakisa learned about the UCUSAF program through a group link shared by a friend and later connected with Media Vision Academy. Through the program, he received digital skills training, career mentorship, and hands-on experience in multimedia tools. He was trained in storytelling, poster creation, video editing using VN, Canva design, and received financial and business mentorship. He also gained access to internet services, useful software, and networking opportunities.
POST PROGRAM IMPACT	The program transformed Lakisa's digital capabilities. He is now able to design posters, edit videos, and create compelling digital content. These skills have earned him freelance jobs in branding and design, contributing to a significant improvement in his income. He has undertaken paid digital content creation assignments and now produces content that positively influences his community and inspires local government responsiveness.
OVERALL PROGRAM EVALUATION	Lakisa believes the UCUSAF program was highly effective in enhancing his digital skill set and expanding job prospects. He found the multimedia training, financial mentorship, and business guidance most valuable. Challenges included network issues, short training duration, and limited access to water. He suggests extending the training period, providing personal data allowances instead of shared Wi-Fi, and improving catering services. To maintain the progress he's made, Lakisa would benefit from a local digital hub equipped with printers and other ICT tools to support ongoing practice and skill development
BENEFICIARY THREE	**Tukei Stephen is a 23-year-old student and embroidery section manager from Pallisa District. He participated in the program to improve his ICT knowledge and apply it to his work.**
PRE-PROGRAM CONDITIONS	Prior to the program, Stephen had regular access to a mobile phone and internet but lacked access to advanced ICT tools. Though he owned a mobile phone, he was not utilizing it for professional purposes. He had basic digital literacy and had previously received ICT training from City Uganda, where he earned a certificate. His main source of income was managing an embroidery workshop. Cost was a significant barrier to accessing advanced digital services.
EXPERIENCE WITH UCUSAF	Stephen learned about the program from friends who knew about his interest in ICT. During the program, he received training in Google tools, Zoom, YouTube channel creation, WhatsApp for business, video editing, and audio production. The five-day training covered a new topic each day, with interactive sessions and question time. He gained skills in using ICT tools for marketing, managing digital content, and improving embroidery operations by transferring logo designs digitally.
POST PROGRAM IMPACT	Stephen now uses ICT tools in his daily work, such as WhatsApp for business communications and video editing to market his services. These skills have helped him reduce travel costs and improve work efficiency. He has also started supporting peers with CV writing and digital literacy. His increased productivity in embroidery and digital content creation has positively impacted his income.

OVERALL PROGRAM EVALUATION	Stephen found the program highly beneficial, especially in learning digital tools for business and personal development. However, he faced challenges due to limited access to ICT equipment like laptops and smartphones. He recommends that future programs provide devices for hands-on learning. To build on his progress, Stephen would like advanced training in artificial intelligence (AI) to further enhance his digital skills.

E-BOOSTER PROGRAM

PROJECT	E-Booster Program
BENEFICIARY PROFILE_	**Aparo Anna, a 50-year-old assistant head of the special needs department in Boya, Iganga District**
PRE-PROGRAM_ CONDITIONS	Despite having access to ministry-provided desktops and laptops, the devices lacked proper accessibility features, making research and communication difficult. Most teachers, including Anna, relied on basic button phones that didn't support TalkBack, leaving them unable to read messages or navigate digital tools independently. Online resources remained out of reach, forcing Anna to depend on printed textbooks, which often lacked comprehensive information. The struggle to integrate ICT into education was frustrating, but there were no alternatives that met the needs of visually impaired learners and teachers.
EXPERIENCE WITH UCUSAF	When Suzzie Water introduced the E-Booster Program, Anna saw a chance to break digital barriers. Through their partnership with UCC, the program distributed 30 smartphones to visually impaired students, teachers, and parents, ensuring access to essential digital tools. Over five days, Anna underwent training that transformed her approach to technology. She learned to use TalkBack for reading messages independently, access educational apps, browse the internet for research, and explore tools like Be My Eyes for real-time assistance. The newfound skills allowed her to engage with digital content without relying on others.
POST-PROGRAM_ IMPACT	The training proved life-changing. Anna, who once struggled with digital accessibility, can now read messages on her own, research lesson materials online, and interact with students more effectively. The students themselves have embraced digital learning, eagerly using smartphones to listen to textbooks, explore online content, and communicate with peers. The newfound independence has sparked excitement, with students wanting to keep their phones even during lesson time.
OVERALL PROGRAM EVALUATION	While the program was impactful, certain challenges limited its effectiveness. The five-day training was too short for participants to fully grasp all features. The iTel phones provided were slow, making TalkBack navigation difficult. The absence of visually impaired trainers reduced relatability, and afternoon sessions made learning harder due to exhaustion after regular teaching hours. Looking ahead, Anna hopes for improvements, including longer training periods, better-quality devices, visually impaired trainers, morning sessions, and transport support for teachers. Despite these hurdles, she deeply appreciates the efforts of UCC and Suzzie Water, recognizing that the program has set a foundation for digital inclusion in special needs education.
BENEFICIARY TWO (PROFILE)	**Basalirwa Richard is a 50-year-old head of the special needs department in Mowoya, Iganga District.**
PRE-PROGRAM CONDITIONS	Although the school had laptops, desktops, and assistive devices like Victor Readers and Blaze ET, limited access and lack of internet connectivity hindered their effective use. Richard owned a smartphone, but like many others, he had only moderate digital literacy and lacked experience with specialized assistive applications. Teachers and students faced challenges in downloading and using digital resources.

EXPERIENCE WITH UCUSAF	When Suzzie Water introduced the UCUSAF program at his school, providing smartphones and training on assistive apps, Richard learned to navigate accessibility tools such as Lookout and Be My Eyes, research academic materials online, and improve digital integration in his lesson planning. The training gave him confidence in guiding students toward independent digital learning.
POST PROGRAM IMPACT	After the training, Richard applied his new skills in the classroom, helping students use smartphones to access digital learning materials. His ability to use accessibility apps improved, allowing him to enhance lesson preparation. However, device limitations still made access difficult, and the lack of Wi-Fi restricted full integration of digital tools into teaching.
OVERALL PROGRAM EVALUATION	The program was valuable, but challenges remained short training duration, slow smartphones, lack of internet connectivity, and difficulties using TalkBack in classrooms. Richard suggests extending the training period, providing better-quality devices, introducing Wi-Fi in the school, and ensuring every visually impaired learner and teacher has access to a smartphone. He appreciates UCC and Suzzie Water for their efforts and hopes for continued support to sustain and expand digital learning opportunities.

ICT LABS

PROJECT	ICT LABS
BENEFICIARY PROFILE	Ofwono Abraham is a 43-year-old ICT teacher from Makhai village in Mbale District.
PRE-PROGRAM CONDITIONS	Before the program, Abraham had access to mobile phones, radio, TV, and limited internet via personal hotspots. He mainly used mobile phones for communication, while internet use was restricted due to cost. The school had a few digital devices like laptops and smartphones. These were used for teaching, school management, and communicating with students, but access was limited. Affording consistent digital services was a challenge. The school couldn't maintain or upgrade its ICT resources regularly, mainly due to financial constraints and high internet costs. Abraham had formal ICT training and possessed basic to intermediate digital skills. However, he lacked experience with managing ICT infrastructure. His main income came from his teaching job and government funding. Despite his role as an ICT teacher, the lack of resources made it difficult to deliver quality education.
EXPERIENCE WITH UCUSAF	Abraham heard about the UCUSAF program through his school administration and staff meetings. The program provided digital devices (30 monitors and 6 computers) as well as access to internet and training for both staff and students. The training focused on digital skills such as internet use, mobile money, and educational software. Abraham found the training helpful in improving his teaching and school data management. While there was no formal mentoring or job placement, the training and devices significantly improved ICT use in the school. He did not participate in similar programs from other organizations.

POST PROGRAM IMPACT	After the program, ICT usage at the school increased. Computers and the internet are now regularly used in classrooms and for administrative work like report card generation. Abraham now teaches more effectively using the new devices. The school also has the potential to earn income by offering ICT training to others. Although his salary hasn't changed, his improved teaching skills have made him more valuable. He hasn't started a new business yet but sees potential due to the skills gained. Access to digital services has also improved communication between students, teachers, and administrators.
OVERALL -PROGRAM EVALUATION	Abraham believes the UCUSAF program was very effective. The digital devices and training were the most useful aspects. However, he mentioned internet connectivity as a challenge. Though infrastructure was provided, data payments were still pending. He recommends better support for consistent internet access and providing projectors for large classrooms. To sustain the gains made, he suggests continued internet support, regular training updates, and mentorship opportunities in ICT.

DIGITAL LITERACY FOR WOMEN-PENDA CAPITAL

PROJECT NAME	Digital Literacy for Women
BENEFICIARY PROFILE	Morgaret Oghi Atek is a small business owner and the chairperson of KBLA, based in Upland Cell, Kitgum District.
PRE-PROGRAM CONDITIONS	Before the program, Morgaret frequently used her mobile phone for communication, while her computer usage was occasional. Although she owned both devices, she didn't fully understand how to use them for business purposes. She had basic digital literacy mainly using mobile phones but lacked knowledge in leveraging digital tools for business growth, marketing, and networking. This program marked her first formal ICT training experience. Morgaret earned a living from selling secondary products and providing payroll services. Though she had access to digital devices, limited knowledge restricted her ability to use them effectively. Her business operations were not digitally integrated before the training.

EXPERIENCE WITH UCUSAF	Morgaret learned about the UCUSAF program through a needs assessment by the district office. She was contacted to participate and helped mobilize other women for the training. The program provided training on using mobile phones for business operations, mobile payments, online marketing, and networking. Morgaret found the training very useful, she learned how to market her business, communicate with suppliers, and help others create digital accounts. Although no personal devices were provided, her group received access to a shared tablet, which faced high demand. She also supported the program by organizing the training venue and mobilizing participants. However, there was no structured follow-up or mentoring after the program. She has not participated in similar programs from other organizations.
POST-PROGRAM IMPACT	Morgaret now actively uses her phone for placing orders, communicating with suppliers, advertising, and making mobile payments. She also supports other women by helping them navigate digital tools. She has incorporated digital marketing and mobile money into her business operations, allowing her to save on transport costs and improve efficiency. While she hasn't started a new business, she has significantly enhanced her existing one using ICT skills gained from the program. The program also helped her build community connections—she now assists other women in creating online accounts and marketing their products digitally.
OVERALL PROGRAM EVALUATION	Morgaret found the program beneficial, especially in teaching practical mobile-based business tools. However, she noted challenges, such as mixed training levels that made it hard for beginners to follow, and limited access to shared devices like tablets. She suggests that future programs should group participants based on their digital literacy and business sectors. More structured support and follow-up would help sustain the benefits. To build on the progress made, she recommends providing backstopping support, a contact person for ICT guidance, and creating a digital business platform specifically for women entrepreneurs.

INTERNET CONNECTIVITY -RENU

PROJECT NAME	Internet Connectivity
BENEFICIARY PROFILE	Byaruhanga M. Aron is a 43-year-old Head Te acher based in Kabale Subcounty, Kabale District.

PRE-PROGRAM CONDITIONS	Before the program, Aron and his school accessed communication services like mobile phones, internet, and radio, with internet provided via Airtel and MTN modems. However, access was restricted to the head teacher's office, and students had no access to these services due to a limited number of computers. While Aron personally owned digital devices, including a smartphone and laptop, there was no formal ICT training provided to him or the students. He noted that previous engagements, such as the introduction of modems and Wi-Fi, lacked structured training and only involved basic demonstrations. The main challenges faced before the program included poor internet speed and insufficient access to computers for students and teachers.
EXPERIENCE WITH UCUSAF	Aron learned about the UCUSAF program through direct outreach by RENU, who explained their partnership with UCC to improve internet connectivity in schools. Excited by the prospect, his school quickly joined the program, which provided both internet access and computers. The training component focused on internet usage, particularly helping students learn how to connect to the internet. This empowered students to start learning programming and create simple digital content like calendars. RENU provided full internet access in the first year, a 50% subsidy in the second, and required full payment from the school in the third year. They continue to offer technical support by monitoring internet performance and troubleshooting issues.
POST-PROGRAM IMPACT	Following the program, all students now have internet access in classrooms. The school uses the internet actively in teaching, with students gaining programming skills and working on digital projects. Internet-based lessons, digital communication, and e-reporting systems have become part of daily operations. Teachers now communicate more effectively through WhatsApp and email. The school has transitioned to an online system for reporting and tracking academic performance, significantly streamlining operations.
OVERALL PROGRAM EVALUATION	Aron believes the UCUSAF program has been very effective in meeting their needs. Teachers use the internet for lesson preparation and communication, while students are now engaged in digital learning and developing new skills. The most valuable aspects of the program were the provision of computers and internet connectivity by RENU. However, the school faced some challenges, including limited computers, which restricted student access, and unreliable internet connectivity in the early phases. Power outages in Kabale have also caused damage to computers, and internet speed has been a consistent issue. The cost of maintaining internet services remains a burden for the school.

DIGITAL LITERACY FOR RURAL COMMUNITIES

PROJECT NAME	Digital Literacy for rural communities
BENEFICIARY PROFILE	Nakbondwe Maria Bena is a 43-year-old businesswoman from Bukayo, Buvuma District.
PRE-PROGRAM CONDITIONS	Maria's livelihood depended on fishing and farming, including growing cassava, beans, and matoke. However, digital tools were largely inaccessible in Buvuma due to high costs, lack of computers, and schools not offering computer lessons. Before the program, her digital literacy was minimal she could only make calls and send messages but had no knowledge of internet services or digital tools.
EXPERIENCE WITH UCUSAF	Maria first learned about the program when she received a call from Nkumba University, inviting her to participate. As a coordinator, she helped mobilize participants while also undergoing training herself. The program provided hands-on experience with computers and covered essential digital topics such as internet usage, online safety, Microsoft Word and Excel, e-government services, and e-agriculture platforms. Participants received t-shirts, meals, transport allowances, and certificates, making the training accessible and engaging.
POST-PROGRAM IMPACT	The training was transformative. Maria gained confidence in using smartphones, learned how to create virtual meetings, and explored digital marketing for agricultural products. While she had never received formal ICT training before, she now understands how to use computers effectively and leverage digital tools for economic growth
OVERALL PROGRAM EVALUATION	The program successfully shifted mindsets in Buvuma, helping people see the importance of owning a smartphone. However, challenges included limited training materials, overcrowding on the last day, and insufficient smartphones for practical learning. To improve future sessions, Maria suggests larger training venues, increased focus on youth aged 18 and above, and continuous digital literacy programs. She believes that regular training sessions will ensure sustained progress and hopes for further support to expand ICT accessibility in her community.