NITA UGANDA

- Driving the IT Revolution -

National Information Technology Survey 2017/18 Report

March 2018

Study conducted by:
The Collaboration on International ICT Policy for East and Southern Africa (CIPESA)

CIPESA

Contents

List of Figures

List of Tables

Abbreviations

BC	Business Continuity
BPO	Business Process Outsourcing
CAO	Chief Administrative Officer
CERT	Computer Emergency Response Team
CIPESA	Collaboration on International ICT Policy for East and Southern Africa
CMS	Content Management System
CSV	Comma Separated Value
CV	Curriculum Vitae
DBMS	Database Management System
DR	Disaster Recovery
EA	Enumeration Area
EGDI	e-Government Development Index
EOI	Expression of Interest
HCI	Human Capital Index
HH	Household
ICT	Information and Communication Technology
ICT4D	Information and Communication Technology for Development
IDI	ICT Development Index
ISP	Internet Service Provider
IT	Information Technology
ITES	IT Enabled Services
ITU	International Telecommunications Union
KML	Keyhole Markup Language
LAN	Local Area Network
LC	Local Council
LG	Local Government
M&E	Monitoring and Evaluation
MDAs	Ministries, Departments and Agencies
MoICT	Ministry of Information and Communications Technology
MOOC	Massive Open Online Course
NBI	National Backbone Infrastructure
NITA-U	National Information Technology Authority Uganda
NRI	Network Readiness Index
ODK	Open Data Kit
OECD	Organisation for Economic Co-operation and Development
OSI	Online Service Index
PDF	Portable Document Format
PKI	Public Key Infrastructure
PPS	Probability Proportional to Size
QoS	Quality of Service
R&D	Research and Development

RDC	Resident District Commissioner
RFP	Request for Proposal
SDG	Sustainable Development Goal
SEO	Search Engine Optimisation
SIM	Subscriber Identification/Identity Module
STATA	Statistical Analysis Software
SWOT	Strengths, Weakness, Opportunities and Threats
TII	Telecommunication Infrastructure Index
ToR	Terms of Reference
TV	Television
UBOS	Uganda Bureau of Statistics
UCC	Uganda Communications Commission
UGX	Uganda Shillings
UN	United Nations
UNHS	Uganda National Household Survey
VOIP	Voice over Internet Protocol
XML	eXentsible Markup Language

Executive Summary

Introduction

The National Information Technology Authority-Uganda (NITA-U) is implementing a five-year Strategic Plan for Statistics whose focus is on the provision of quality IT statistics for informed policy and decision making in line with its mandate defined by the NITA-U Act 2009. This report presents the findings of the National IT survey 2017/18 amongst government Ministries, Departments and Agencies (MDAs), Local Governments (LGs) and citizens across the country.

The study used a mixture of qualitative and quantitative approaches to facilitate triangulation of the findings and help enrich the outcomes. Using desk research, the team reviewed a variety of literature and datasets to extract key issues as well as policy and regulatory aspects relating to IT access and usage across the country. In addition, the study conducted in-depth interviews and focus group discussions with key informants selected from MDAs and individuals representing a wide range of ICT actors with first-hand information about Uganda's IT sector. Furthermore, the study conducted a nationally representative survey that collected data for a comprehensive set of indicators to measure ICT access, usage, skills, trust in the online environment, social and economic impacts of ICT access and use by MDAs, LGs and citizens. Additionally, the survey captured data to measure the adequacy of telecommunication infrastructure, core indicators on e-government and e-public services, e-commerce, the ability of human resources to promote and use ICT, the availability of online services and content, security and privacy.

Key Findings

Ministries, Departments and Agencies

Within MDAs, ICT personnel account for only 1.9% of the total work force. This is a slight improvement compared to 2012/13, when 1.6% of all MDA employees were ICT personnel. Given government's ambition to mainstream ICT in its operations and to leverage ICT to improve the efficiency and effectiveness of service delivery through use of e-government services, the proportion of ICT personnel is still very low. Other issues like the gender bias among ICT personnel (31.2% female vs. 68.8% male), as well as increased specialisation in key areas like IT security and user experience design, need to be urgently addressed through targeted efforts and programmes.

Trends in ICT personnel within MDAs

	Total	Male	Female
2017/18	**1.9%**	68.9%	31.2%
2012/13	**1.6%**	69.5%	30.5%

All MDAs have Internet access and possess various computing devices, but the proportion of employees that routinely use computers is just over one third of the total MDA workforce (37%), while the proportion that routinely use the Internet is less than a quarter (22.5%). The low levels of routine use are a result of MDAs owning inadequate number of computers, procuring insufficient Internet bandwidth to serve all employees, poor internal network infrastructure and the lack of adequate ICT skills and knowledge among employees that would enable them to effectively use computers and the Internet. Other challenges such as aging IT equipment and insufficient budgetary allocations for IT compound these problems.

NITA-U is the primary Internet Service Provider (ISP) for MDAs in Uganda, covering 83.1% of MDAs. Two thirds of MDAs (66.2%) report that they restrict access to particular websites, primarily as a mechanism to manage bandwidth. In addition, MDAs report the high cost of the Internet and insufficient bandwidth (60.6% and 54.5% respectively) as the major obstacles to wider use of the Internet for MDA work. Key informants reported that the cost of 1 Mbps/month was higher in Uganda than in other countries in the region, in Europe or the US. Nonetheless, the cost has been progressively falling: for instance, the average cost of 1 Mbps/month from NITA-U is US$ 70, down from US$600 in 2014. Whereas this is significantly lower than average market prices, the commercial providers have also progressively lowered their prices over the last five years.

MDAs have embraced the use of digital platforms to provide government services with half of them (50.7%) offering e-Government services via the web, 19.5% via SMS and 13% using mobile applications. In addition, 61% of MDAs plan to implement new e-Government services in the next five years. However, government needs to create more awareness and encourage new use of e-Government services. For example, just 17.4% of individuals that had interacted with an MDA were aware of any government or public service available online. Usage is even much lower, with only 5% of those aware of e-Government services having used an

online service. Only 28.6% of MDAs have adopted cloud computing services with email as the most adopted cloud service, outpacing storage and software services. Most MDAs (86.4%) cite reduced ICT related costs as the primary benefit of cloud computing, but still have concerns about data security and the high cost of cloud services.

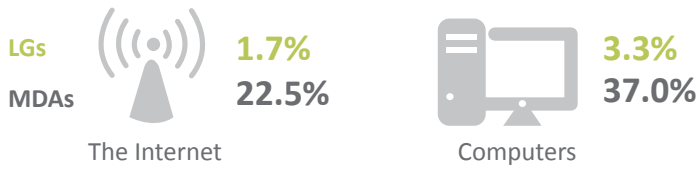
Information security has increased in importance to help protect MDA networks from cyberattacks and security breaches. More than a quarter of the MDAs (77.3%) have developed an information security policy (Figure 3.68), but it is unclear how many of them have fully implemented their security policies and monitor compliance on a regular basis. A majority of MDAs - 71.4% - experienced a security incident during financial year 2016/17 (Figure 3.72), however only half of them (50.9%) reported an incident, increasing the likelihood of such security incidents re-occurring (Figure 3.73). On a positive note, many MDAs have implemented security measures within their networks to minimise the impact of security incidents (Figure 3.75). The MDAs that have appointed dedicated security personnel are 37.7% (Figure 3.76). However, shortage of personnel with sufficient skills is still a major issue (Figure 3.8) and regular comprehensive security awareness training for general MDA employees (as opposed to staff with IT functions) is largely non-existent (section 3.10.6).

As MDAs increasingly use digital technologies, information security becomes ever more important to help protect MDA networks from cyber attacks and security breaches.

Local Governments

Local Governments (LGs) provide government with an avenue to reach down to the grassroots and directly serve citizens. Survey findings show that the proportion of LG employees that routinely use computers is only 3.3%, while the proportion that routinely use the Internet is 1.7%. Corresponding figures for MDAs are 37% and 22.5%, highlighting the digital divide between MDAs and LGs even as government seeks to mainstream e-government services to serve more citizens more efficiently and effectively.

Proportion of persons employed, routinely using:



Similarly, ICT infrastructure among LGs is inadequate with 24.1% of LGs having an intranet and 43.3% having a Local Area Network (LAN). About one third of LGs (31%) lack institutional Internet access and 24.1% do not have an institutional website. In terms of reach, the National Backbone Infrastructure (NBI) currently traverses only 60 out of 113 districts, with fewer having actual drop-off points. NITA-U currently serves only 19.1% of LGs with Internet bandwidth compared to 83.1% of MDAs. Similar to MDAs, LGs cite high cost as the biggest barrier to wider use of the Internet for work purposes given their meagre budgets. Correspondingly, LGs generally have negative perceptions when it comes to their Internet service, compared to MDAs who are generally positive about the internet service they receive. Other barriers include the lack of IT knowledge and skills among staff, as well as the lack of computers and other digital equipment.

Comparison of perceptions about Internet service between MDAs and LGs

	Overall quality of Internet service offered to my institution	Customer support/ service offered to my institution when we report faults	Speed of the internet connection(s) at my institution	Reliability of the Internet connection at my institution	Cost of buying bandwidth from the various providers at my institution
LGs	42.9%	42.9%	33.3%	33.3%	19.1%
MDAs	94.8%	89.6%	87.0%	97.4%	68.8%

More LGs (95.2%) reported experiencing security incidents in Financial Year 2016/17 compared to MDAs (71.4%). The most common type of incidents were virus or computer infection related. Others included loss of institutional ICT equipment and loss of data due to lack of backups.

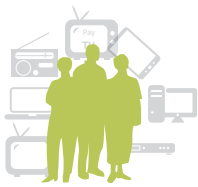
Only one in three (30%) LGs provides any form of internal IT training for their staff compared to 78.6% of MDAs. For both, staff training is still rare and random. Just like with MDAs, IT funding limitations were a recurrent theme among LGs from both survey findings and stakeholder interviews.

Households and Individuals

The proportion of households with a household telephone is 10.8%. Of these, 98.1% use a mobile phone kept at home as the household phone. Among households with no household phone, 51% indicate that members of the household use individual mobile phones, eliminating the need for a household telephone. Only 5.9% of households have access to a computer at home. This is composed of 3.3% of households with a member that owned a computer accessible at home and 2.6% of households with a member that had access to a computer they could use at home (for example a laptop from their job that they could use at home). The former figure rhymes with the 3% of households that indicated owning a computer at home in the recent 2016/17 Uganda National Household Survey (UNHS). In terms of other IT assets, 65.3% of households own a radio while 21.8% of households own a television.

Proportion of households with different IT assets

Radio	Tv	Pay Tv	Working Laptop	Working tablet (or similar handheld device)	Working Desktop Computer	Digital Tv set-top box
65.3%	21.8%	17.3%	1.8%	1.5%	1.3%	0.3%



Proportion of individuals that own and use different IT assets

Used a mobile in last 3 months	Owned a radio	Listened to radio	Owned a mobile phone	Watched TV	Used mobile money	Used the Internet in last 12 months	Used a computer in last 12 months
84.2%	83.4%	77.7%	70.9%	41.3%	20.4%	12.1%	7.2%

At the individual level, 70.9% own a mobile phone. There is a location bias with more urban individuals owning mobile phones compared to rural counterparts (78.5% vs 65.7% respectively) and a gender bias with more males owning mobile phones compared to females (81.6% vs. 63.2%). From interviews and discussions, stakeholders attribute this to the fact that urban and male individuals have more economic opportunity and tend to be have higher incomes compared to rural and female counterparts

Among individuals with mobile phones, 15.8% have smart phones. More females (18.1%) own smartphones compared to males (13.4%), while younger individuals own a higher proportion of smart phones compared to older individuals. In terms of cost, most individuals on average spent UGX 14,500 per month on their phone. Among individuals that do not own a mobile phone, the cost of the mobile phone is the biggest barrier (cited by 88.9% of respondents), followed by the challenges of charging the phone battery (cited by 36.6% of respondents).

Findings from the survey indicate that 7.2% of individuals had used a computer and 12.1% had used the Internet in the 12 months preceding the survey. Both indicators portray urban-rural and male-female biases. Individuals primarily accessed the Internet at home (86.1%) and on mobile phones via the mobile cellular network (94.8%). This has major implications for e-Government content creation and consumption since content should be easily accessible via different screen sizes including small mobile phone screens

When subscribing to the Internet, individuals consider maximum download speed (35%) more important than the price of the subscription (30.9%). Individual internet users mentioned the high cost of using the Internet (76.6%), the slow speed (49.2%) and poor connectivity in some areas (41.4%) as the three top barriers to using the Internet. Non-users of the Internet cited lack of knowledge or skills (75%), not knowing what the Internet is (57.5%) and lack of need (49.5%) as the main reasons for non-use.

When subscribing to the Internet, individuals consider maximum download speed (35%) more important than the price of the subscription (30.9%). Individual internet users mentioned the high cost of using the Internet (76.6%), the slow speed (49.2%) and poor connectivity in some areas (41.4%) as the three top barriers to using the Internet. Non-users of the Internet cited lack of knowledge or skills (75%), not knowing what the Internet is (57.5%) and lack of need (49.5%) as the main reasons for non-use.

Mobile payment for utility bills is the most used e-Government service (62.6%), followed by online registration for the Tax Identification Number (TIN). E-payments are now mainstream, as 62.1% of individuals have sent or transferred money within Uganda using an electronic method, most likely a mobile phone-to-mobile phone transfer involving mobile money. E-commerce is still a nascent service in Uganda with only 1.7% of individuals having ever made an online purchase, even when you consider offline payments for the purchase. Non e-commerce users highlight a number of impediments to e-commerce, including their preference for physical interaction with goods before purchase (70.6%), trust and privacy concerns, as well as the security of payment details.

Interviews and discussions with stakeholders highlighted transaction charges as a barrier for e-payments. This matched findings from the survey, where individuals identified system or network failures, high transaction costs, and mobile money agents' lack of liquidity as the top three obstacles in using e-payments. On the other hand, non-users of electronic payments cited lack of registration, lack of knowledge to use e-payments, and preference to use cash as the top three barriers. All of these provide useful guide to NITA-U as it strives to build and deploy a central and shared payment infrastructure that can be used to power transactions for various e-Government services.

Individual awareness of risks from cybercrime is still low. Only 19% of Internet users consider themselves to be at any risk while only 18.5% of Internet users are aware of any Ugandan laws governing electronic communications and transactions. This is despite many individuals having been victims over the previous 12 months. Among Internet users, only 20.1% are aware that they can report cybercrimes to law enforcement and other agencies under the Computer Misuse Act 2011 while only 3% have ever reported cybercrimes committed against them to anyone, making their recurrence more likely. This depicts poor security awareness among individuals in an increasingly connected world that makes it easier for cyber criminals to target unsuspecting victims. This makes it imperative that NITA-U in collaboration with other agencies designs avenues to improve the security awareness of Internet users, given that cybercrime will only grow in complexity.

Recommendations

Based on the study findings and conclusions, the study recommends that the Government, through NITA-U, should:

i. Government working through the MoICT and its Agencies including NITA-U, needs to design strategies to improve the level of IT skills and knowledge among MDA and LG staff. This may entail developing of a government-wide IT training and skills development programme that equips government staff with basic digital literacy skills (both cognitive and technical) on a regular basis to keep them abreast of the rapidly changing trends in the use of IT. Beyond this, the programme can also offer training in other critical areas like information security awareness.

ii. Recognise that it is in competition both nationally and globally for competent ICT staff and come up with strategies to recruit, develop and retain staff with key ICT skills. This may involve revamping and implementing recommendations of the Report on the institutionalising of the ICT function in MDAs and LGs in consultation with the Ministry of Public Service to create a government-wide ICT Career Structure that includes training and development programs for ICT personnel in key skills areas (for example information security and systems architecture).

iii. Develop and maintain a government-wide Strategic ICT Workforce Plan that draws on the work done by multiple MDAs in terms of resourcing and training IT personnel. NITA-U can then update the plan annually based on inputs from other MDAs and recommend options to the Cabinet ICT Committee on how to deal with identified skills shortages through recruitment, training and development. With the combination of a common Career Structure and a Workforce Plan, it should become easier to plan to smooth peaks and valleys of demand for different ICT skills across individual MDAs.

iv. Equip MDA and LG top leadership with knowledge on how to harness the potential benefits of ICT within their organisations to create buy-in. This can be through regular events where leaders interact with (both local and foreign) invited guest speakers, private sector CEOs and leaders of other government MDAs that have successfully implemented ICT projects. NITA-U can use the same fora to raise awareness and secure top leadership commitment for digital security and privacy issues within MDAs.

v. Build mechanisms to identify, monitor and reward superior performance and professionalism across government agencies and their ICT staff - including through competence testing. NITA-U can set up annual awards to recognise the performance of MDAs and LGs in various ICT categories ranging from outstanding MDA websites to e-government services. Additionally, NITA-U can also recognise the outstanding professionalism of ICT staff in particular skills areas that government wants to stimulate like information security and software development.

vi. Leverage her collective buying power in areas where true economies of scale are achievable. Examples here include procurement of bandwidth, new computers and software. NITA-U can explore how to improve procurement arrangements for ICT commodity products and services, as well as volume sourcing arrangements for key items of software. This may include arrangements that aggregate

demand, and would need to be done in line with existing approval arrangements for coordinated procurements.

vii. Implement strategic management of key government ICT suppliers. The definition of who is a key supplier does not only have to relate to the total price of contracts, but can also include the critical nature of what they supply to government. Strategic management in this case can entail gathering intelligence of general industry performance, health and trends to inform proactive government stances in dealing with increasing supplier dominance and other issues.

viii. Extend coverage of the National Backbone Infrastructure (NBI) to all parts of the country and create a drop-off point within each district. In addition, connect all MDAs and LGs (at least at District level) via fibre by 2020 in line with the National Broadband Strategy.

ix. At the individual level, the cost of computing devices and data bundles continue to hinder IT access and use. Government through a multi-agency collaborative approach needs to design strategies to lower the cost of end-user devices and communication costs. These may include efforts geared towards reducing or eliminating taxes as well as increasing competition among service providers.

x. Invest more in creating awareness about benefits of using e-government services to increase their use by citizens and business enterprises. Another avenue can be through improving on factors identified by individuals that use e-government services as merits of using such services, for instance time and money savings.

xi. Nurture a data-driven culture by developing frameworks that enable and guide collection, use and sharing of increasing amounts of data produced by various government agencies from the use of e-government services and other digital processes. Analysis of such data can support different government procedures like policy making and budgeting.

xii. Prepare guidelines to facilitate more sharing of public data through using open standards and open data formats while balancing the need to provide timely official data and managing the potential risks that can arise from data misuse. Government should encourage and empower MDAs and the private sector to remix and reuse such data in innovative ways to improve data integration between disparate systems across government as well as create new products and services that enhance and share such information with the public.

xiii. Develop institutional Bring Your Own Device (BYOD) guidelines particularly for devices that connect to internal MDA networks. At a minimum, the guidelines should cover the kind of devices permitted, basic security requirements expected of such devices, what MDA applications BYOD devices can access as well as ownership issues of the resulting data.

xiv. Build general digital security awareness among individuals using regular digital and mass media campaigns, bearing in mind that digital risks and cybercrime are continuously growing in volume and complexity.

Chapter 1 Introduction

1.1 Overview

The National Information Technology Authority Uganda (NITA-U) is an autonomous statutory body that coordinates and regulates Information Technology (IT) services in Uganda through a mandate proffered by the NITA-U Act 2009. To effectively execute its mandate as provided under the law, NITA-U requires up-to-date information on the availability, access and usage, affordability and satisfaction with IT infrastructure, equipment and services.

The Uganda Government has prioritised ICT among the priority sectors to drive economic development and the push towards attainment of middle-income status. The Uganda Vision 2040 accordingly acknowledges the role that ICT should play towards national development but notes the need to improve access to ICT infrastructure and its usage, as well as skills development in the sector. The country's vision for ICT-driven transformation is supported by various laws and policies, including the National ICT Policy, the Telecommunication Policy (2016), the Rural Communications Development Policy and the Broadband Strategy. Strategic investments like the National Data Transmission Backbone Infrastructure (NBI) are further helping to propel the usage of IT among citizens and government departments and the attainment of high-level development objectives such as the Sustainable Development Goals (SDGs).

In line with its mandate to coordinate, promote and monitor IT developments in Uganda within the context of national social and economic development, NITA-U developed a five year Strategic Plan for Statistics whose focus is on the provision of quality IT statistics for informed policy and decision making. This report presents the findings of the national IT survey 2017/18 amongst government Ministries, Departments and Agencies (MDAs), Local Governments (LGs) and citizens across the country. For trends analysis, the study uses the Uganda e-Government readiness assessment undertaken by NITA-U between 2012 and 2013 across MDAs, businesses and citizens.

NITA-U contracted the Collaboration on International ICT Policy for East and Southern Africa (CIPESA) for support with survey-related activities and the survey has been conducted in collaboration with other pertinent government agencies.

1.2 Study Objectives

The main objective of the study is to enhance the availability of relevant and accurate information on access, usage and satisfaction related to IT in Uganda for regular internal and external reporting purposes.

The specific objectives of the study are to:

i. Establish status on availability, access and usage, affordability and satisfaction of IT infrastructure, equipment and services among government Ministries, Departments and Agencies (MDAs), Local Governments, as well as households and individuals.

ii. Determine level of awareness and satisfaction of IT services among users and the general public.

iii. Collect data for international and regional benchmarking and for tracking progress towards achieving the set development targets such as Sustainable Development Goals (SDGs), Global Broadband Targets, ITU Connect 2020 Targets and the WSIS targets.

iv. Identify the existing gaps on access, affordability and usage of IT systems, applications, infrastructure and services in Uganda and propose policy recommendations to address them.

v. Establishing citizens' needs for E-Services in the Health, Education, Justice, Laws and order (JLOS), and Agriculture sectors.

1.3 Study Methodology

The National IT survey 2017/18 used a mixture of qualitative and quantitative approaches to facilitate triangulation of the findings and help enrich the outcomes. Below we summarise some of the activities undertaken by the consulting team in collaboration with the NITA-U team (the team).

1.3.1 Desk research

During this activity, the team reviewed a variety of literature and datasets in order to extract key issues relating to IT access, afordability and usage - especially of internet bandwidth - in addition to policy, laws, regulations, and processes that affect or are likely to affect IT access and usage interventions across the country. The team placed emphasis on previous studies related to access and usage of IT at the East African or regional level. This empowered the team to understand the issues and challenges related to access, perceptions and usage of IT at government levels and among citizens. Given that any proposed recommendations or interventions have to occur within Uganda's macro-economic environment and be responsive to Uganda's development direction, the team reviewed key policy documents including:

i. Uganda Vision 2040[1]
ii. The Second National Development Plan (2015/16 – 2019/20)[2]
iii. The National ICT Policy (2014)[3]
iv. The ICT Sector Strategy and Investment Plan (2015 – 2020)[4]
v. The National Broadband Strategy for Uganda (2016 – 2020)[5]
vi. The Uganda Communications Act (2013)[6]
vii. National e-Government framework[7]
viii. Electronic Government Readiness Assessment Final Report[8]

The team reviewed global IT indices used to monitor and track IT performance such as the ICT Development Index by ITU,[9] UN E-Government Development Index,[10] the Networked Readiness Index by the World Economic Forum,[11] and the OECD Model Survey on ICT Access and Usage by Households and Individuals.[12] In addition, the team reviewed the local IT indicator frameworks developed by NITA-U to arrive at a collection of indices for use in data collection, for NITA-U to continue monitoring national IT performance and to populate the database system created as part of this assignment

1.3.2 Key informant interviews and focus group discussions

Qualitatively, the study involved conducting 30 in-depth interviews and 5 focus group discussions (FGDs) with key informants selected from MDAs and individuals representing a wide range of ICT actors with first-hand information about Uganda's IT sector. The team conducted both interviews and group discussions face-to-face in locations convenient for respondents, facilitating participants to provide insight into the nature of barriers and challenges relating to access and usage of IT and recommendations for potential solutions. This preliminary work then fed into the collaborative development of the various survey instruments.

1.3.3 Survey

Drawing on earlier activities, the team designed a survey to collect data from government Ministries, Departments and Agencies (MDAs), Local Governments (LGs) and citizens across the country. In addition to the global indices, the study draws on the National Standard Indicator (NSI) Framework by Uganda Bureau of Statistics (UBOS), the Compendium of Concepts and Definitions on Core IT Indicators by NITA-U as well as the International Telecommunication Union (ITU)'s Partnership for Measuring ICT for Development[13] as captured in the ITU Manual for Measuring ICT Access and Use by Households and Individuals.[14]

1 *Uganda Vision 2040, https://goo.gl/2iuXdS*
2 *Second National Development Plan (2015/16 – 2018/20), https://goo.gl/EjlgRs*
3 *The final version is not yet on line but can be obtained by contacting the Ministry of ICT and National Guidance*
4 *ICT Sector Strategy and Investment Plan 2015 – 2020, https://goo.gl/NsteVY*
5 *The National Broadband Strategy for Uganda (2016 – 2020), https://goo.gl/cU7hUi*
6 *The Uganda Communications Act, 2013, https://goo.gl/WOLHKs*
7 *National E-Government Framework, https://goo.gl/DpxtDx*
8 *E-Government Readiness Report, https://goo.gl/eZNSgj*
9 *ICT Development Index 2016, https://goo.gl/4qtvVN*
10 *UN E-Government Survey 2016, https://goo.gl/y4Nyfb*
11 *Networked Readiness Index, https://goo.gl/KJYOSX*
12 *OECD Model Survey on ICT Access and Usage by Households and Individuals, https://goo.gl/UHjKcj*
13 *Partnership for Measuring ICT for Development, www.itu.int/en/ITUFD/Statistics/Pages/intlcoop/partnership/default.aspx*
14 *ITU Manual for Measuring ICT Access and Use by Households and Individuals, 2014 edition, www.itu.int/en/ITUFD/Statistics/Pages/publications/manual2014.aspx*

The study captures data for a comprehensive set of indicators to measure ICT access, usage, skills, trust in the online environment, social and economic impacts of ICT access and use by MDAs, LGs and citizens. Furthermore, the study captures data to measure the adequacy of telecommunication infrastructure, core indicators on e-government and e-public services, e-commerce, the ability of human resources to promote and use ICT, the availability of online services and content, security and privacy.

The team organised a consultative workshop bringing together key stakeholders and IT professionals invited by NITA-U from MDAs, academia, civil society and the private sector that helped review, improve and validate the various data collection instruments.

The survey process involved other activities prior to the production of the findings. These included survey planning, sampling design, pretesting the data collection instruments, finalising the data collection instruments, recruitment and training of enumerators and field supervisors, digital data collection in the field, data processing and management, checking and analysis, report writing as well as the dissemination of survey findings and data.

1.4 Survey Design

1.4.1 Scope and coverage

The survey was nationally representative with the target population including households, Local Government administrations as well as government Ministries, Departments and Agencies (MDAs) across the country. Individuals were restricted to a subset of those randomly selected from participating households and had to be 15 years or older to be eligible to participate.[15]

Trained enumerators administered three questionnaires, one for randomly selected households and individuals, one for randomly selected Local Government administrations and the other targeting all MDAs. The household and individual questionnaire included both household and individual modules. The household modules captured data on household characteristics like number of household members, household IT assets, access and use of different IT services as well as household expenditure on IT services. The individual modules captured individual demographic data, individual access and use of IT services as well as individual satisfaction with different IT services.

The Local Government and MDA questionnaires included modules that captured data on IT personnel and their qualifications, institutional IT resources, total number of employees as well as their access and use of different IT resources, particularly computers and Internet access. Other modules captured data on institutional software and web applications, information systems as well as electronic government (e-government) services offered by the institutions to the public. The survey included a module on information security to measure institutional readiness given the drive to provide more digital services to the public.

A copy of the questionnaires is included in Appendix C.

15 *ITU Manual for Measuring ICT Access and Use by Household and Individuals, 2014 (pages 39, 127 and 154)*

1.4.2 Sampling Design

The consulting team in collaboration with UBOS and NITA-U designed the sample to allow for estimates at the national level as well as for urban and rural areas using a two-stage stratified sampling design. At the first stage, UBOS grouped Enumeration Areas (EAs) from the national census sample frame together by districts of similar socio-economic characteristics and by rural-urban location. UBOS then randomly selected 160 EAs using Probability Proportional to Size (PPS). At the second stage, trained enumeration-teams using maps for each selected EA produced an updated listing for households within the EA boundary. A supervisor used Systematic Random Sampling to draw target households from the updated listing that they assigned to each member of their enumeration team. Within a selected household, an enumerator randomly selected an individual 15 years or older using the (next upcoming) birthday method.

The survey interviewed 15 households per EA and 1 individual per household, resulting in 2,400 households and 2,400 individuals. All district administrations with sampled EAs were included in the Local Government sample, resulting in a total sample of 33 districts. The survey targeted 109 MDAs specifically selected by NITA-U.

The survey defined a household as an entity that constitutes a person or group of persons, irrespective of whether related or not, who normally live together in the same housing unit or group of housing units and have common cooking arrangements.

1.4.3 Training of enumerators

After recruitment, the team trained enumerators and field supervisors for three days. Since these were all experienced enumerators that had participated in digital data collection before, the purpose of the training was to familiarise them with the specific instruments for this study, explain any technical terms and local language translations. The training involved discussing each item of the questionnaire to ensure clarity and ensure robustness of the survey. The enumerators then tested the instruments among themselves before proceeding to the field for trial interviews. The enumerators reconvened to discuss their experiences with trial interviews with the consulting team, after which they were assigned teams based on their local language proficiency.

1.5 Data Collection and Processing

1.5.1 Data collection

Using five operational zones—Central 1 & 2, Eastern, Northern and Western based on language and logistical efficiency, five field teams, each consisting of one supervisor and five enumerators, were dispatched to collect data. The data collection exercise commenced on 15th October 2017 and was completed by 15th December 2017.

Prior to each team visiting a given EA to collect data, an advance team had visited the area to deliver letters from NITA-U to the Chief Administration Officer (CAO), the Resident District Commissioner (RDC), Local Council (LC) 5 Chairperson and the LC 1 Chairperson of the actual village where a particular EA was located. The letter formally introduced the survey, explained its purpose and helped the advance team establish contact with the LC 1 Chairperson.

For all MDAs, NITA-U contracted a commercial courier company to deliver the letters. A delivery note was stamped by the MDA to acknowledge receipt and act as proof of delivery.

1.5.2 Data processing and management

The survey team deployed the Open Data Kit (ODK) platform,[16] a free and open source platform for digital data collection using mobile phones and tablets. Each enumerator was equipped with a 7" android tablet to facilitate direct capture of responses.

With digital data collection, data processing involved designing a data collection form for each questionnaire, including consistency checks, skipping patterns and validation rules. All tablets were data-enabled, allowing them to use the GSM network to transmit data to the server. The system supported an offline-capable mode by allowing enumerators to cache questionnaires on their tablets, collect data in areas that had no coverage and later submit the data when they next encountered network coverage. Each team was equipped with a generator to recharge the tablets in areas that had no power.

Each enumerator used ODK Collect on their tablet to capture data depending on the selected form and submitted the collected data to a server on completion of the interview. The server aggregated the collected data. Questionnaires also captured the GPS coordinates of the location where an enumerator interviewed a selected respondent, allowing the server to aggregate and map data as it came in from the field in real-time, as shown in Figure 1.1. The supervisor would then visualise and review the submitted data in real time, allowing data management to start while enumerators were still out in the field and to effectively track and coordinate the different field teams. The supervisor could extract the data in a variety of useful formats to support analysis.

16 *Open Data Kit website http://opendatakit.org*

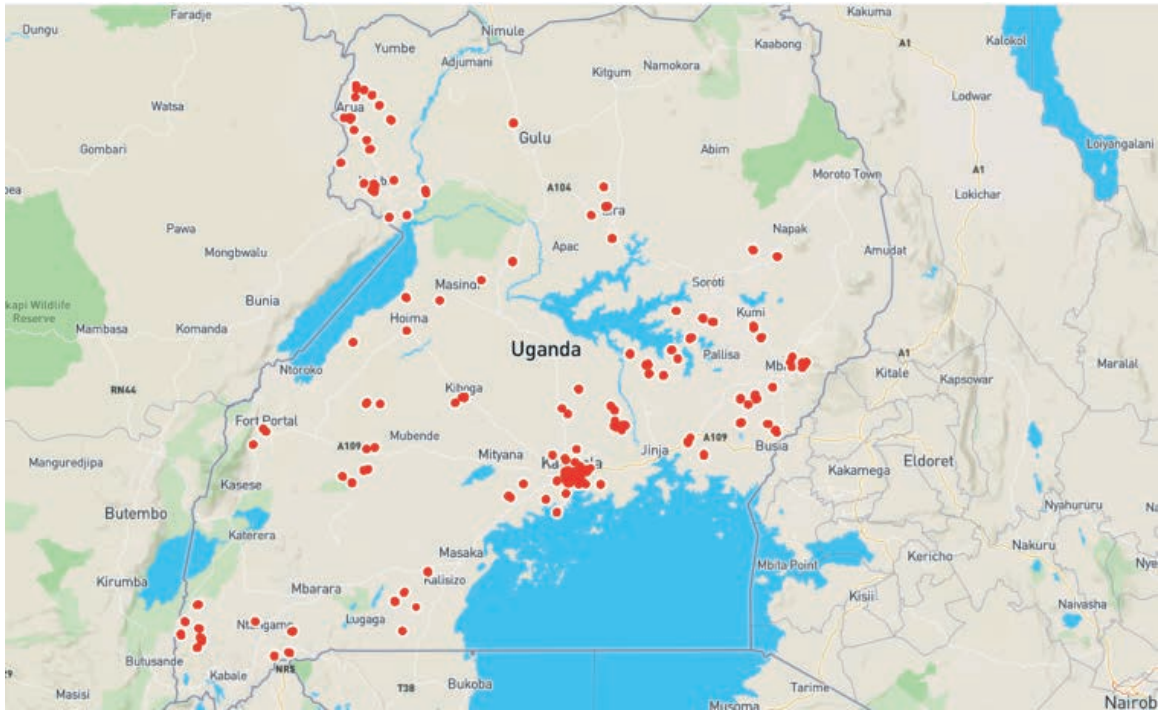


Figure 1.1: Map showing data collection in the field

For MDAs, we provided both paper-based questionnaires that we sent to the IT contacts from NITA-U's database in advance to facilitate them to start collecting data, particularly from the other departments within their institution, as well as a link to a web-based version of the questionnaire that they could populate at leisure. An enumerator who had an ODK-version of the same questionnaire on their tablet visited an MDA two weeks later to capture any missing data, trouble shoot any submission challenges if necessary and to engage the IT contact to complete the survey for final submission if the MDA had not yet submitted any data

.

1.5.3 Response rate

Out of a sample of 109 government MDAs contacted by NITA-U for the survey and approached by trained enumerators to enhance responses rates, 77 provided full data, a response rate of 70.6%, while three provided partial data. For Local Governments, out of the 33 that were targeted, 28 provided full data - a response rate of 84.8% - while two provided partial data. Major reasons for non-response included the unavailability of ICT personnel to complete the questionnaire

Of the 164 enumeration areas (EA) sampled for households and individuals, UBOS replaced four using the same selection criteria as defined earlier after local authorities in those EAs prevented enumerators from collecting data due to political campaigns that were going on during the data collection exercise. The supervisors replaced households where no member was present at home for the survey using the same household selection criteria.

1.6 Report Structure

The survey findings are organised around the major groupings used for data collection—MDAs, Local Governments, households and individuals to minimise cross-referencing and improve readability. This report is arranged as follows:

Chapter 1 introduces the study, describing the survey design and methodology as well as the data collection and processing processes.

Chapter 2 summarises a desk review conducted to understand the issues and challenges related to access and usage of IT in MDAs, Local Governments and among citizens.

Chapter 3 presents survey findings on IT access, usage and satisfaction with infrastructure, equipment and services across government MDAs.

Chapter 4 presents survey findings across Local Governments.

Chapter 5, 6 and 7 summarise the findings on IT access, usage and satisfaction at the household and individual levels.

Chapter 8 provides the findings of IT access, usage and satisfaction at the different levels, highlighting some of the gaps and offering recommendations to address them.

Appendices (at the end of the document) provide detailed information about various aspects that are not captured in the main report. They include:

- Appendix A References
- Appendix B ICT Indicators
- Appendix C Questionnaires
- Appendix D Digital Files

Chapter 2 Desk Review

The consulting team conducted a desk review to generate an understanding of the issues and challenges related to access and usage of IT in central and local governments, as well as among citizens. The review included an assessment of existing policies, regulations, standards and guidelines that have a bearing on access and usage of IT in Uganda and provides an understanding of how the existing regulatory and institutional framework supports or hampers IT access and usage in Uganda. In addition, the assessment benchmarks Uganda's ICT sector performance against a selection of neighbouring countries on a number of international ICT indices.

2.1 Sector Overview

The ICT Sector budget framework paper for FY 2017/18 by the Ministry of Finance reports a cumulative sector annual growth rate of over 25% since 2008.[17] Notably, over the first National Development Plan (NDP I) period, the ICT sector contribution to GDP averaged at 3.1%. The communication sector contribution to tax revenue has steadily increased over the years, from UGX 155.58 billion in 2008 to UGX 484.42 billion in 2014/15, before registering a slight drop to UGX 457.64 billion in 2015/16.[18] The country has also registered an expansion in network coverage and penetration of access to ICT. According to Uganda Communications Commission (UCC), communication networks cover 95% of the country's population and 85% of the land area.

2.1.1 Policies and strategies

The Government of Uganda recognises the central role that the ICT sector plays in enabling national economic and social transformation. Accordingly, government has put various policies and strategies in place with the aim of establishing a conducive environment through which government and citizens can reap the social and economic benefits enabled by ICT.

Uganda's Vision 2040[19] (currently in the second National Development Plan, NDP II) consolidates previous national development strategies and future prospects and acknowledges the role ICT plays towards national development. However, the NDP II notes a number of challenges that have emerged to hinder further growth of the sector.[20] The plan notes that in order to improve access to ICT infrastructure and its usage, as well as skills development in the sector, the following challenges need to be addressed: the limited ICT infrastructure network; investment in research, innovation and human capital development. It also recommends the need to implement policy reforms to ensure increased local participation, including ownership of ICT infrastructure and businesses, in order to reduce the externalisation of sector gains.

17 *ICT sector budget framework paper http://goo.gl/sVDUTq*
18 *UCC Annual Market & Industry Report 2015/16 http://goo.gl/gMKcLx*
19 *Uganda Vision 2040, http://goo.gl/2iuXds*
20 *Second National Development Plan (2015/16 – 2018/20), https://goo.gl/EjlgRs*

The National ICT Policy 2014 seeks to address some of these gaps through deepening utilisation of ICT services by government, private sector, not-for-profit ICT organisations and the wider citizenry. Furthermore, the ICT Sector Strategy and Investment Plan (ICT-SIP) aims to operationalise the NDP II and National ICT Policy priorities, through actions in ICT governance, human resource development, research and innovation, information security, promotion of ICT exports, and infrastructure development.

The National Broadband Strategy for Uganda (2016-2020)[21] defines the minimum requirements for high-speed transmission and access for voice, data and video to homes and businesses. The strategy highlights five thematic areas that are key to ensuring increased access and use of ICT for national development: infrastructure, connectivity and devices; content, applications and innovation; capacity building and awareness creation; policy, legal and regulatory environment; and finance and investment. Some of the key targets defined for the five-year period include raising the minimum broadband speeds from 512kbps (in 2014/15) to 3Mbps and reducing the cost per Mbps of broadband in relations to average income by 10%. The strategy also seeks to achieve 100% broadband connectivity at all district and sub-county headquarters, health centre IVs, tertiary institutions and secondary schools by 2020. Additionally, the current Rural Communications Development Fund (RCDF) Policy is aimed at ensuring affordable broadband connectivity and access by all communities in Uganda.

In 2017, the Ministry of ICT and National Guidance embarked on the Digital Vision Uganda initiative[22] that aims to leverage technological innovations to meet various national and international goals including universal inclusion, sustainable development, economic progress and poverty eradication. This campaign aims to achieve a unified action plan that draws on various initiatives from all sectors and focuses on technology-based empowerment, thus fostering relevant ICT use. While the Digital Vision Uganda campaign aims to address pertinent ICT development issues that will improve ICT access, usage and penetration, the strategy is still under development with implementation yet to start.

Other supporting policies and strategies include the National Information Security Strategy (NISS) 2011, Transition from Internet Protocol version 4 (IPv4) to Internet Protocol version 6 (IPv6) address space Strategy 2011, National Postal Policy, E-waste Management Policy 2012, Migration from Analogue to Digital Terrestrial TV Broadcasting Policy 2011, Country Code Top Level Domain (ugccTLD) Policy 2013, and National Broadcasting Policy 2006. Some policies and strategies championed by NITA-U include Institutionalization of ICTs in MDAs and LGs strategy; BPO Strategy and Model for Uganda; National IT Research, Development and Innovation Strategy as well as National IT data collection analysis and dissemination framework.

However, despite this outstanding policy framework, ICT access and affordability are still a challenge for sections of the population such as the poor, rural populations, women, and PWDs.[23]

2.1.2 Laws and Regulations

Towards establishing a conducive and competitive ICT legal framework, various Acts of Parliament and regulations are in existence, while others are in the pipeline, with provisions geared towards supporting ICT access and use at various levels of governance, businesses and livelihoods across different sectors. Some of these are summarised in Table 2.1 below.

21 *National Broadband Strategy, http://goo.gl/cU7hUi*
22 *Digital Vision Uganda, http://goo.gl/fKvvs6*
23 *State of Open Government Index in Uganda, https://cipesa.org/?wpfb_dl=255*

The existing legal framework has significantly influenced ICT access and usage in the country. For instance, the Computer Misuse Act of 2011 seeks to prevent unlawful access to and misuse of information systems. The Electronic Signatures Act of 2011 and Electronic Signatures Regulations (Statutory Instrument no. 43 of 2013)[24] provide for the use of electronic signatures and ensure consumer protection against unauthorised access and modification of consumer information. The Electronic Transactions Act of 2011 and Electronic Transactions Regulations (Statutory Instrument no. 42 of 2013)[25] provide for the use, security, facilitation and regulation of electronic communications and transactions. The Electronic Signatures Act and the Electronic Transactions Act are designed to improve the capacity to conduct electronic business by ensuring that there is functional equivalence in terms of legality of online transactions similar to what exists for offline transactions.

Table 2.1: The Legal, Regulatory and Institutional Framework [26]

	Laws	Regulations
Enacted	• National Information Technology Authority – Uganda (NITA-U) Act 2009 • Electronic Signatures Act 2011 • Electronic Transactions Act 2011 • Computer Misuse Act 2011 • Uganda Communications Act 2013 • Access to Information Act 2005	• Electronic Transactions Regulations S.I 42 of 2013 • Electronic Signatures, S.I 43 of 2013 • NITA-U (E-Government Regulations) 2015 - SI No. 23 of 2015 • NITA-U (Authentication of IT Training) Regulations 2016 - SI No. 70 of 2016 • NITA-U (Certification of Providers of IT Products and Services) Regulations 2016 - SI No. 69 of 2016 • Access to Information Regulations 2011
Proposed	• Data Protection and Privacy Bill (2015)	• NITA-U (National Data Bank) Regulations

Other supporting regulations in place include the NITA-U Authentication of IT Training Regulations 2016[27] and the NITA-U Certification of Providers of IT Products and Services Regulations 2016.[28]

The Government of Uganda has endeavoured to create awareness of the various laws and bills at different levels of governance. In the financial year 2016/17, sensitisation and awareness drives were conducted on Cyber laws, NITA-U (E-Government) Regulations, NITA-U (Authentication of IT Training) Regulations, and NITA-U (Certification of Providers of IT Products and Services) Regulations among forty-five (45) MDAs, local governments, training institutions, Courts of Judicature and the private sector.

24 *https://www.nita.go.ug/publication/electronic-signatures-regulations-statutory-instrument-no-43-2013*
25 *Electronic Transactions Regulations 2013, http://goo.gl/CmX7mq*
26 *Modified based on the list in the ICT Sector Strategy and Investment Plan 2015/2020, https://goo.gl/NsteVY*
27 *NITA-U Authentication of IT Training Regulations 2016, http://goo.gl/otBhTc*
28 *NITA IT Certification Office, http://itco.nita.co.ug*

2.2 E-Government and Online Services

In 2006, Uganda developed an e-Government framework to guide harmonised implementation of e-Government initiatives as one of the pillars to transform the country into a knowledge-based economy. Furthermore, the National Information Management Services (IMS) Policy[29] set out to guide the effective use of IMS in government agencies through the development and implementation of an appropriate legal framework, relevant IMS standards to ensure interoperability, security, infrastructure, human resource development, awareness creation and resource mobilisation.

However, an assessment of e-Government readiness in 2012/13 found a low level of e-government capacity and implementation. Regarding human resource, only 1.6% of staff in respondent institutions were ICT personnel. The assessment further established that government institutions allocated a very small percentage of their institutional budgets to ICT, and few institutions had an IT strategic plan in place.

To-date, various agencies have set up e-Government platforms to support service delivery, efficient transactions and information provision. Examples include the National government portal—that provides information about MDAs and a selection of online services to citizens and potential investors;[30] eBiz—an integrated platform to support local entrepreneurs and foreign investors in the setup of businesses in Uganda;[31] and the e-Citizen portal—that provides centralised access to government provisioned online services.[32] Additionally, Know Your Budget—helps citizens access and give feedback on budget performance at national and local levels;[33] Ask Your Government—setup by the Office of the Prime Minister and civil society organisations enables citizens to request for information from MDAs[34]; and the Government Citizen Interaction Centre—that provides citizens with government information and interaction through various channels.[35]

2.3 Uganda's performance on Global IT indicators

This section reviews Uganda's ICT sector performance on the global IT indices. It also draws comparisons among a selection of states in the region including Kenya, Tanzania, Ghana and South Africa. This will ascertain Uganda's relative performance in the region, and on the international scene. The review focuses on the e-Government Development[36] and the e-Participation[37] indices by United Nations, the Networked Readiness Index[38] by the World Economic Forum and ICT Development Index[39] by the International Telecommunication Union (ITU).

29 *Draft Information Management Services Policy, http://goo.gl/X1EeeY*
30 *National government portal http://www.gou.go.ug*
31 *eBiz http://ebiz.go.ug*
32 *eCitizens portal http://ecitizen.go.ug*
33 *Know your budget http://www.budget.go.ug*
34 *Ask your government http://askyourgov.ug*
35 *Government citizen interaction centre http://gcic.gou.go.ug*
36 *E-government development index, http://goo.gl/PqqhrA*
37 *E-participation index, http://goo.gl/7eWbQR*
38 *Networked Readiness index, http://goo.gl/dkKN9x*
39 *ICT Development Index by ITU, http://goo.gl/x1mQ7z*

2.3.1 E-Government Development Index

The United Nations e-Government Development Index (EGDI) comparatively measures the e-Government readiness of states in terms of the scope and quality of online services (Online Service Index, OSI), the development status of telecommunication infrastructure (Telecommunication Infrastructure Index, TII) and the human capital (Human Capital Index, HCI).

According to the UN e-Government Survey 2016 Report,[40] Uganda improved in rank by 28 positions from 156 in 2014 to 128 in 2016. Uganda was estimated to be 36% e-Government ready in 2016, which was lower than the World's average of 49.2%. The status has since improved by approximately 10% from 25.9% in 2014, which can be directly attributed to the increasing provision of online services by various MDAs.

In comparison to select African countries, Uganda ranks slightly better than Tanzania (ranked 130), but falls behind South Africa (ranked 76), Kenya (ranked 119) and Ghana (ranked 120). Uganda's online services index has grown significantly since 2014. Overall, Uganda performs above the regional average in the online services index. It is also slightly better on the human capital index (HCI) at 47% compared to the regional average of 44%.

2.3.2 The e-Participation Index

The e-Participation Index complements the e-Government Index by assessing citizens' use of the available online services and infrastructure. In 2016, Uganda stood at position 91 of 193 countries, up from position 117 in 2010, 109 in 2012, and 152 in 2014. Uganda continues to lag behind comparable countries in Africa.

E-participation performance for a selection of Economies 2010-2016 (Source: UN Reports)

	Kenya	Ghana	South Africa	Uganda	Tanzania
2010	0.22857	0.08571	0.18571	0.07142	0.4285
2012	0.0526	0.1053	0.1579	0.0789	0.0789
2014	0.64706	0.39215	0.33333	0.13725	0.39215
2016	0.52542	0.45763	0.55932	0.49153	0.59322

Figure 2.1: E-Participation Index for Selected African Countries from 2010 to 2016

2.3.3 Networked Readiness Index

The Networked Readiness Index (NRI) measures a nation's level of preparedness to embrace ICT. It aims at guiding policymakers on the factors that should be taken into account to leverage ICT in national development strategies. The NRI is a composite index consisting of three components: the environment for ICT offered by a given country (political and regulatory; business and innovation environment); the readiness of the country's key stakeholders (individuals, businesses, and governments) to use ICT; and the usage of ICT among these stakeholders.

According to the 2016 edition of the Global Information Technology Report, Uganda's NRI score is 3.1 on a scale of 1 to 7, placing it in position 121 out of 139 countries reviewed. This is a drop in ranking from 110 in2013 at a score of 3.3. A 2014 study attributed the drop in the use of the mobile phone in Uganda to the decline in affordability. The study noted that the drop in affordability had resulted from the increasing

40 *UN E-Government Survey 2016, http://goo.gl/sL7Tc2*

government charges on mobile services including excise duty on airtime, phone calls and money transfers, as well as withholding tax on mobile money transfer charges.[41]

Uganda's best performance is in the political and regulatory environment (3.7) as well as the business and innovations (3.6) environment sub-indexes. Impact and usage are the least performing sub-indices at 2.9 each, with individual usage scoring the lowest at 1.9 over the years.

2.3.4 The ICT Development Index

The ICT Development Index[42] (IDI) developed by the International Telecommunication Union (ITU) is a composite index combining 11 indicators into a benchmark measure that serves to monitor and compare developments in information and communication technology across countries. The IDI is composed of ICT access, ICT use and ICT skills components.

The key objectives of the IDI are to measure: i) the level and evolution over time of ICT developments; ii) progress in ICT development in both developed and developing countries; iii) the digital divide, and iv) the development potential of ICTs and the extent to which countries can make use of them to enhance growth and development in the context of available capabilities and skills.

According to ITU's Measuring the Information Society Report 2017,[43] Uganda improved by six places from rank 158 in 2016, to rank 152 out of 176 countries. The IDI value has also improved from 1.9 in 2016 to 2.19 on a scale of 1 to 10, lowest to highest respectively. Uganda's IDI score is still lower than the African region average at 2.64, while the country's position has improved to 20th in the African region.

2.3.5 Implications of Global Indices Review

Evident from the analysis of Uganda's performance on the global indices is that while there has been progress, Uganda still ranks low in ICT access and use, with affordability being among the biggest hindrance. In addition, availability, access, and use of infrastructure is another key issue. There have been significant infrastructural developments in the country, such as expansion of mobile network coverage and of the national backbone. However, EGDI's telecommunications Infrastructure Index, NRI's usage sub-index and IDI's access and usage sub-indices which assess the level of infrastructure penetration at personal level, are still low although improvements have been reported in for example in government and business usage. Individual usage is still low though it is gradually improving as reported by both the NRI and IDI. The electricity status as well as the international Internet bandwidth, and Internet security are still key concerns as established by the EGDI.

2.4 Cost of Internet Bandwidth

By end of September 2017, Uganda had an estimated 18.1 million internet users translating into an internet penetration rate of 48 internet users per 100 inhabitants, according to the UCC. Of these users, 14.8 million were mobile internet subscriptions.[44] The growing mobile broadband access and usage is a result of increasing 4G and 3G coverage, a drop in smartphones and modem prices, and a fall in bandwidth prices. While these subscribers have to pay the high cost of mobile internet, figures from the regulator similarly show that telephone subscribers are largely deterred from calling across networks due to prohibitive costs.

41 *UCC. (2015), "Analysis of the Access and Usage of Communications Services in Uganda."*
42 *IDI 2017 Rank, http://goo.gl/b1YKZ8*
43 *ITU Measuring the Information Society 2017, http://goo.gl/nXhWrH*
44 *UCC, Post, Broadcasting and Telecommunications Market & Industry Q3 Report, 2017, http://www.ucc.co.ug/wp-content/uploads/2018/02/Market-Industry-Quarterly-Report-for-the-Quarter-ending-September-2017-Final.pdf*

The cost of internet access in Uganda remains higher than in most countries in the region, partly because of Uganda's landlocked nature that means it does not have direct access to marine fibre. Nonetheless, the cost of internet bandwidth has been progressively falling. For instance, the average cost of 1 Mbps/month from NITA-U to government agencies (MDAs) stood at US$ 70 as of January 2018, down from US$ 600 in 2013. This has granted the MDAs access to affordable services and helped to reduce their cost of communication. Moreover, this progressive cut in the bandwidth price by NITA-U has prompted Internet Service Providers to correspondingly lower their prices, as can be seen in figure 2.2 below. The commercial ISPs have accordingly slashed their prices for 1 Mbps/month from an average of US$ 617 in 2013, down to US$ 300 in 2015 and further down to US$ 237 in 2018 representing a 61.9% reduction in the price of 1 mbps over the last 6 years. Further, increasing competition between commercial service providers is steadily driving down the prices.

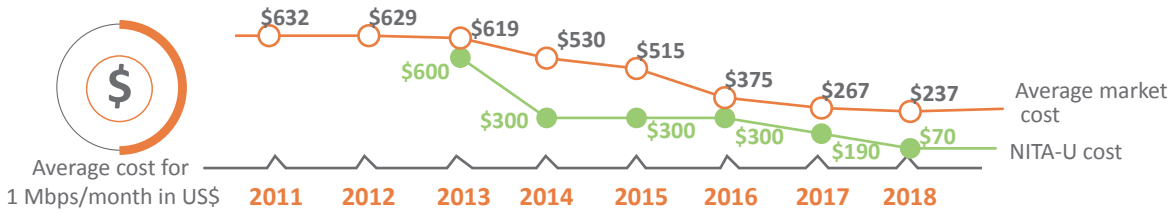


Figure 2.2: Trend of Market Prices per Mbps/Month

Whereas the high data prices force a great number of Ugandans not to use the internet and associated services, rising competition is steadily driving down the prices, thereby improving affordability and bringing more Ugandans into the fold of those who regularly use the internet. Strategic initiatives such as the NBI that offer bulk bandwidth at low prices, as well as MYUG that offers free Wi-Fi, are growing the appetite for internet use while making bandwidth more affordable to a growing number of government MDAs and ordinary citizens. Indeed, further price reductions are expected to be realised in the coming financial years as more MDA sites and districts are connected to the NBI/EGI. This could prompt the commercial ISPS to further lower their prices in reaction. For instance, when NITA-U dropped the internet prices from US$ 300 to US$ 190 per Mbps on June 1, 2017, there was an immediate reduction on the internet prices by ISPs, namely MTN, Africell, Vodafone, Smile, Uganda Telecom, Smart Telecom, all of whom announced new data prices within a week of NITA-U effecting its cost reduction. Similarly, when NITA-U dropped prices from US$ 190 to US$ 70 per Mbps in November 2017, commercial ISPs followed suit with price reductions of their own.

The issue of cost nonetheless remains a major stumbling block to meaningfully deploying ICT in socio-economic development. As the global development indices above show, Uganda ranks low in ICT access and use, with affordability being among the biggest hindrances. One study conducted in 2014 found that the poor standing on affordability resulted from the increasing government charges on mobile services including excise duty on airtime, phone calls and money transfers, as well as withholding tax on mobile money transfer charges.[45] Indeed, the Ministry of ICT, in its Policy Statement for 2016/17, noted that among the measures needed to address challenges in the sector, such as the high cost of access, included reducing tax on ICT equipment, end-user devices and international telecommunications traffic; and increasing ICT infrastructure roll-out (including expansion of the NBI and last mile connectivity).[46]

47 *Tusubira F. F., Ndiwalana A. and Stork C. (2015),"Analysis of the Access and Usage of Communications Services in Uganda". UCC Final Report*

46 *Ministry of ICT, Ministerial Policy Statement FY 2016/17, http://www.ict.go.ug/resource/ministerial-policy-statement-fy-201617 See also NITA-U Annual Report FY 2015/16, https://www.nita.go.ug/sites/default/files/publications/FY%202015.16%20ANNUAL%20REPORT_%20FINAL.pdf and NITA-U reduces cost of Internet Bandwidth further for Government Institutions, https://www.nita.go.ug/media/nita-u-reduces-cost-internet-bandwidth-further-government-institutions*

Chapter 3 Findings from MDAs

This chapter summarises findings on different indicators related to access and usage of different Information Technology (IT) services by government Ministries, Departments and Agencies (MDAs). The indicators are organised in different categories that include the ICT workforce, computing device penetration, network connectivity and internet access, process automation capabilities, websites and social media, cloud services, information security and ICT policies. Figure 3.1 and Table 3.1 to Table 3.4 highlight some of the key MDA IT indicators.

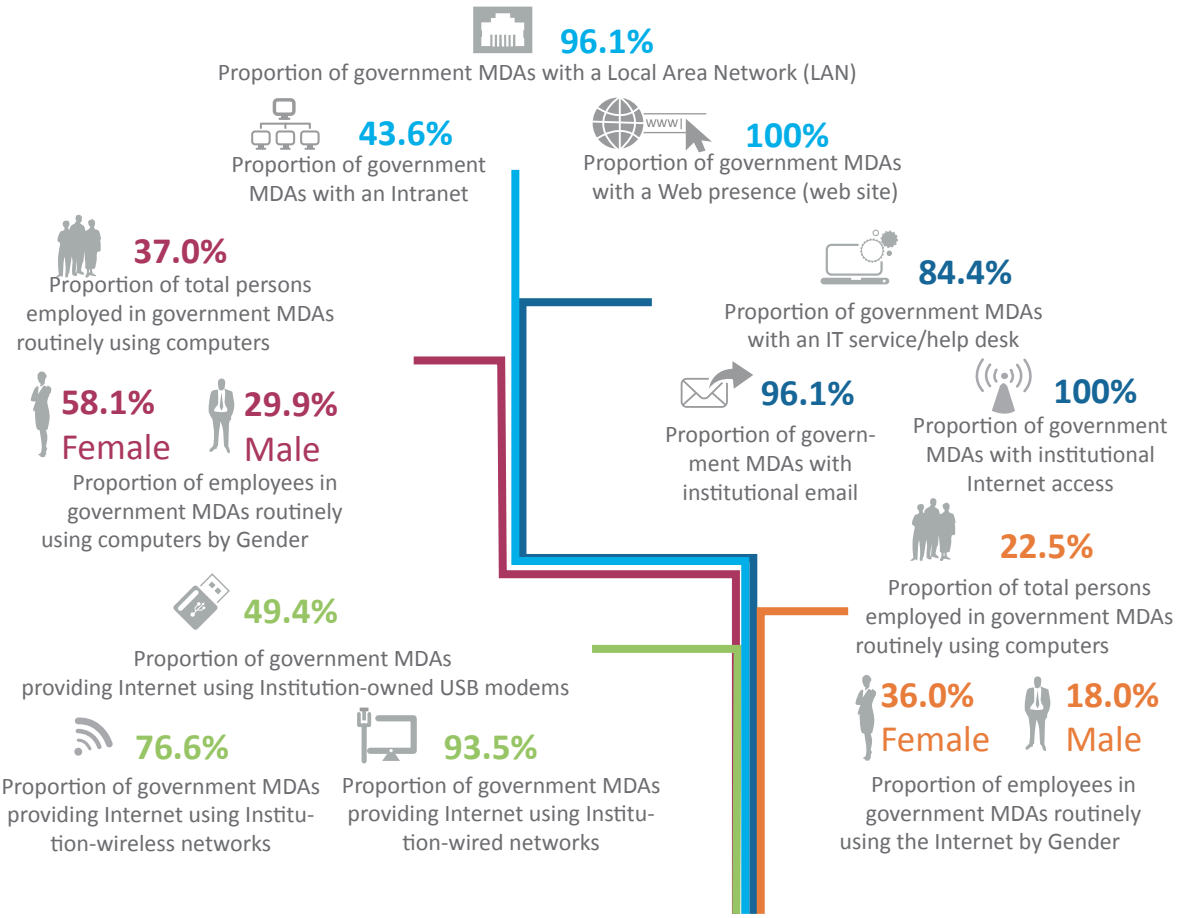


Figure 3.1: Summary of key government MDA IT indicators

Table 3.1: Percentage of MDAs with access to different IT services

Institutional blog	An Intranet	IT Service/Help Desk	A Local Area Network (LAN)
10.4%	43.6%	81.8%	96.1%

Institutional Email	Institutional Website	Internet Access	Computers
96.1%	100.0%	100.0%	100.0%

*Table 3.2: Percentage of MDA employees routinely using computers and the Internet**

Proportion of persons employed in government MDAs routinely using:

	Total	Gender
Computers	37.0%	Male 29.9%
		18.0%
Internet	22.5%	Female 58.1%
		36.0%

**The survey defined routine usage of computers and the Internet as any usage that occurred at least once a week*

Table 3.3: Percentage of MDAs and their staff with access to the Internet by type of access

Proportion of government MDAs providing Internet access for work-related purposes via:

	MDA-owned USB modem	MDA-wireless networks	MDA-wired networks
MDAs using this type of access	49.4%	76.6%	93.5%
Staff using this type of access	12.4%	50.0%	77.7%

Table 3.4: Percentage of MDA computers connected to a LAN and the Internet

	Connected to a LAN	Connected to Internet
Proportion of MDA computers:	68.0%	69.8%

3.1 MDA Characteristics

Out of 109 government Ministries, Departments and Agencies (MDAs) contacted by NITA-U for the survey, 77 provided data, a response rate of 70.6%. In this section, we describe the type of MDAs that responded to the survey, their IT budgets and IT governance structures.

3.1.1 Type of institution

Overall, most of the MDAs covered during the survey were government agencies (52.0%), followed by government ministries (24.7%) as summarised in Figure 2.2.

What type of institution is your MDA?

Agencies and Departments	Ministries
75.3%	**24.7%**

Figure 3.2: Types of MDAs that participated in the survey

3.1.2 IT budget

On average, the estimated total annual expenditure on ICT during financial year 2016/17 for MDAs (n=54) was UGX 1.1 billion. This was 0.9% of the average total institutional expenditure for an average MDA for the financial year 2016/17. Table 3.5 shows that 48.1% of MDAs spent UGX 1 billion or more in ICT expenditure for financial year 2016/17 at the top end compared to 9.1% of MDAs that spent less than UGX 50 million during the same period at the lower end. On average, the top spending group spent about UGX 3.5 billion per year compared to UGX 22.6 million for the lowest spending group as summarised in Table 3.5.

Table 3.5: Proportion of MDAs by size of ICT Expenditure

ICT Budget for 2016/17 (million)				
	< 50	**50 – 200**	**200 – 500**	
Proportion of MDAs: Average Annual ICT Budget	**9.1%** 22.6 million (UGX)	**19.5%** 85.4 million (UGX)	**15.6%** 323.9 million (UGX)	
500 to 1000		**>= 1000**		
Proportion of MDAs: Average Annual ICT Budget	**7.8%** 640.1 million (UGX)		**48.1%** 3,583 million (UGX)	

3.1.3 IT governance

Most MDAs (84.4%) indicated having a dedicated internal entity to address ICT issues within the institution. These entities were positioned at different levels within the structure of the MDA, with most of them positioned at the unit-level (53.9%), followed by the department level (33.9%) as shown in Figure 2.3. At the top administrative level of the ICT structure, most MDAs had an ICT Technical Committee (29.9%), followed by an ICT Steering Committee (28.6). All of this indicates that many MDAs are yet to mainstream ICT within their operations.

Figure 3.3: Proportion of MDAs with dedicated ICT unit at different levels of their structure

3.2 ICT Workforce

3.2.1 ICT workforce at a glance

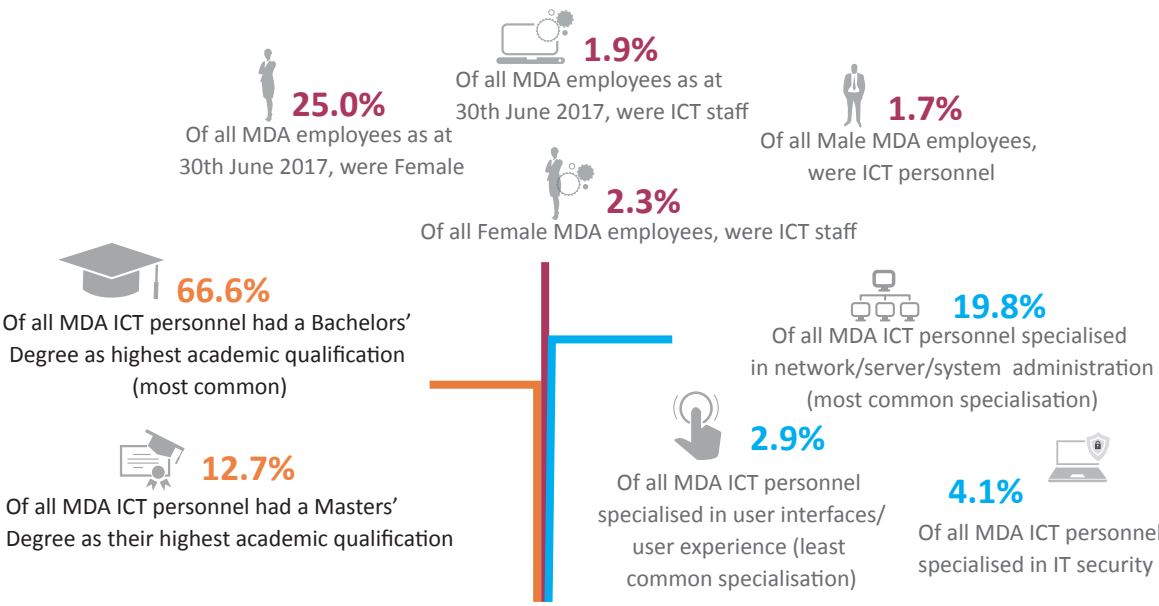


Figure 3.4: ICT workforce statistics at a glance

3.2.2 Workforce characteristics

The survey sought to establish the gender proportions of the ICT workforce. Overall, male employees accounted for 75% of total employees across all MDAs, compared to female employees at 25% as at June 30th 2017. Employees in ICT functions/roles make up only 1.9% of the total permanent work force across all MDAs as indicated in Figure 3.5. The proportion of female ICT employees (2.3%) among all female employees is higher than that of male ICT employees (1.7%) among all male employees. There are no marked differences in the proportion of female ICT employees in Ministries as opposed to those in Departments and Agencies. Table 3.6 summarises the proportion of ICT personnel by MDA type.

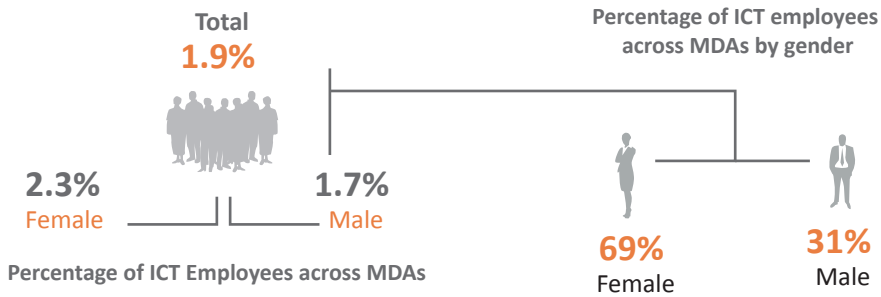


Figure 3.5: Proportion of ICT employees across all MDAs by gender

Table 3.6: Proportion of ICT personnel by MDA type

	MDA type		
	Agency & Departments	Ministry	Total
Female	2.5%	1.7%	2.3%
Male	1.5%	3.0%	1.7%
Total	**1.8%**	**2.5%**	**1.9%**

In terms of academic qualifications, most ICT employees had a Bachelor's Degree (67%), followed by those with a Masters' degree (13%) as highlighted in Figure 3.6. There has been an increase in the proportion of ICT employees with a Bachelor's degree from 49.9% in 2011/12 while the proportion with a Master's degree has declined from 17.8%.

In terms of qualifications, how many ICT personnel had the following as their HIGHEST academic qualifications as at June 30 2017?

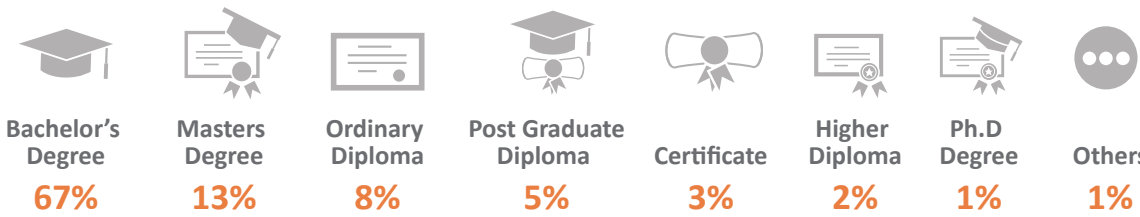
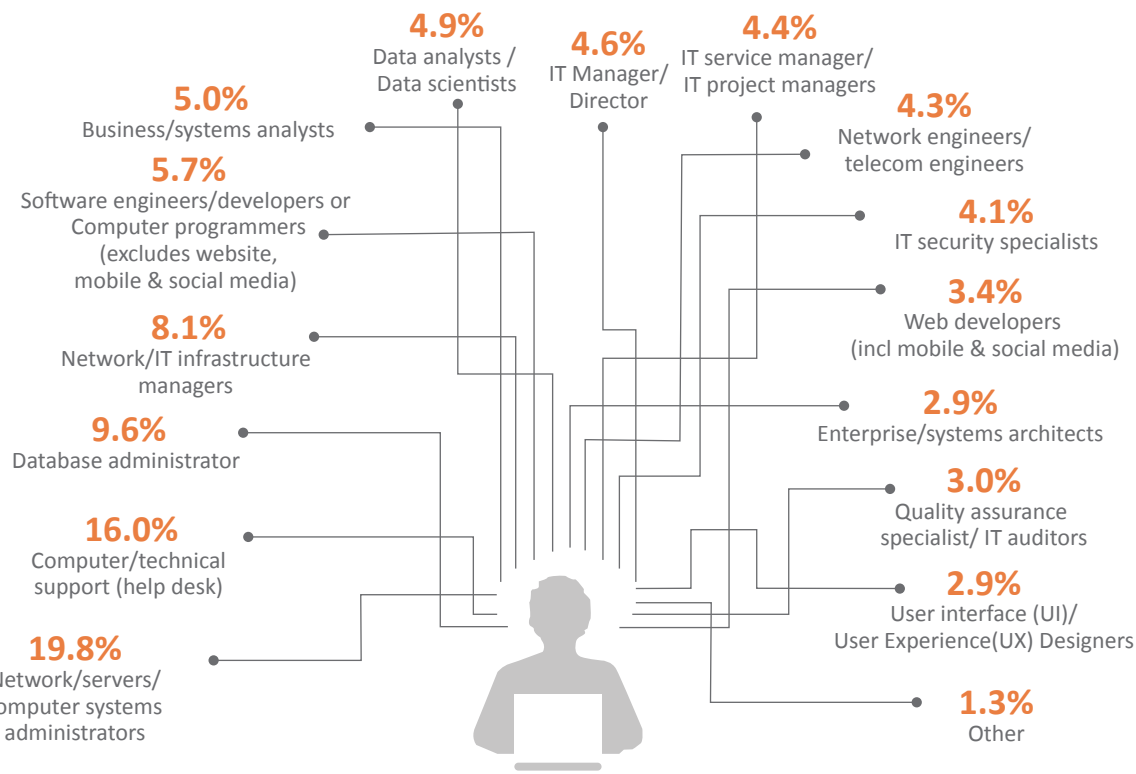


Figure 3.6: Highest academic qualifications of ICT employees across MDAs

In terms of specialisation, most ICT employees were Network/server/computer system administrators (19.8%), followed by computer/technical support personnel (16.0%) and database administrators (9.6%) as shown in Figure 3.7.



In terms of specialisation, how many ICT personnel were in the following categories as at June 30 2017?

Figure 3.7: Specialisations of ICT employees across MDAs

The survey further asked MDAs that reported having IT security specialists about the kind of professional qualifications that their security specialists had attained. Most (14) IT Security professionals were Certified Information Systems Auditors (CISA), followed by those with CompTIA Security + (10) as presented in Figure 3.8.

In terms of qualifications, how many of the IT Security personnel above have the following professional qualifications as at June 30 2017?

Other	Certified Information Systems Auditor (CISA)	CompTIA Security+	Certified Information Systems Security Professional (CISSP)	Computer Hacking Forensics Investigator(CHEI)	Certified Information Security Manager (CISM)	Certified Cyber Forensics Professional (CCFP)	Systems Security Certified Practitioner (SSCP)
48	14	10	9	6	5	4	1

Figure 3.8: Number of IT employees with security professional qualifications across MDAs

3.2.3 IT outsourcing

The survey revealed that MDAs relied largely on in-house staff for end-user support and management of end-user devices. However, as the complexity of IT tasks increases, they tend to outsource functions to external parties as depicted in Figure 3.9.

What degree of outsourcing does your institution undertake when it comes to the following ICT roles? (multiple-select, ranked by only internal staff)

	End-user support	Management of end-user computers and devices	Management of institutional systems	Securitymonitoring of ICT infrastructure	Management of servers	Project management of ICT procurements	ICT strategy development
Only internal staff	74.0%	68.8%	55.8%	55.8%	54.6%	45.5%	39.0%
Mainly internal staff	18.2%	22.1%	22.1%	23.4%	26.0%	33.8%	35.1%
Largely equal distribution	1.3%	2.6%	13.0%	13.0%	5.2%	6.5%	5.2%
Mainly external suppliers	5.2%	5.2%	6.5%	2.6%	10.4%	6.5%	11.7%
Only external suppliers	-	1.3%	2.6%	3.9%	3.9%	6.5%	2.6%
Don't know	1.3%	-	-	1.3%	-	1.3%	6.5%

Figure 3.9: Degree of outsourcing of IT services amongst MDAs

3.3 Device Penetration

The survey collected data about the type and numbers of computing devices owned by government MDAs and the proportion of MDA employees that routinely use computers and the Internet for work-related purposes. The survey defined routine usage of computers and the Internet as any usage that occurred at least once a week.

3.3.1 Computing device penetration at a glance

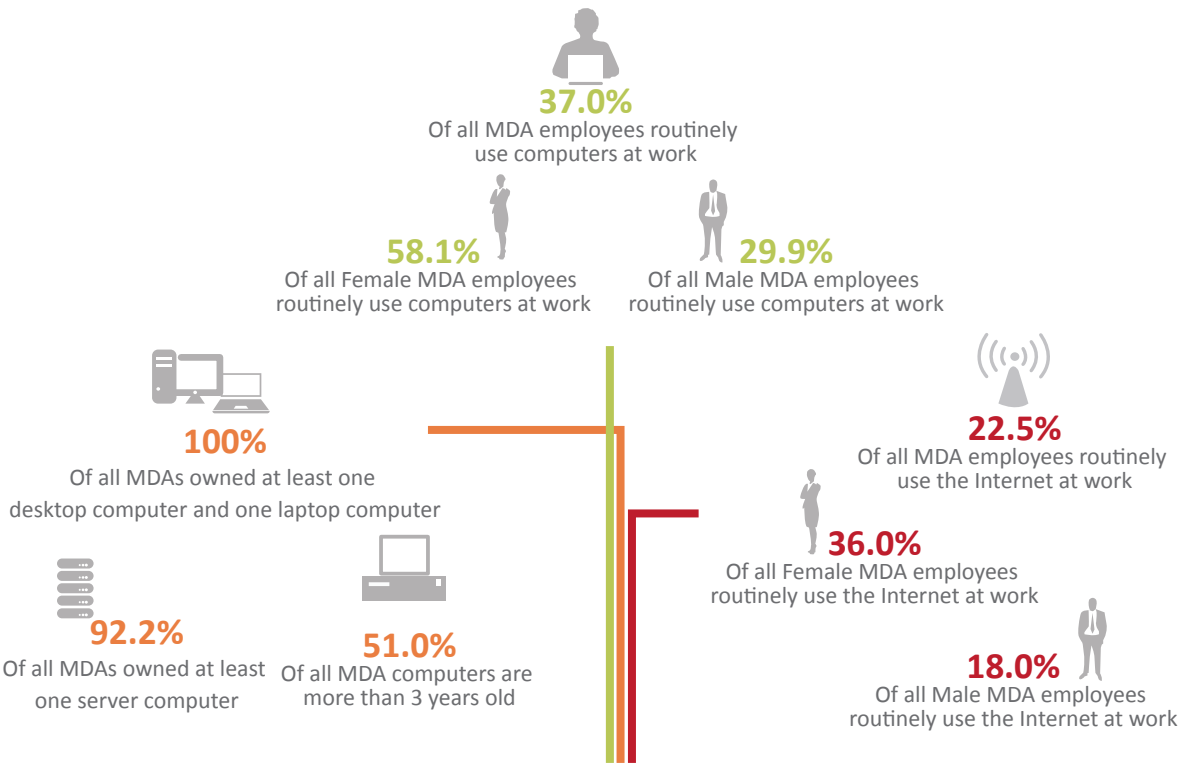


Figure 3.10: MDA computing device penetration and usage statistics at a glance

3.3.2 Computing device penetration

Overall, the penetration of computing devices in government MDAs is high as indicated in Figure 3.11. The penetration of desktop computers and laptops is 100% (all MDAs owned some), followed by projectors (98.7%) and multi-function business printers (96.1%). On the opposite end of the spectrum, Video Conferencing Equipment had least penetration with only 22.1% of MDAs reporting ownership, followed by VOIP phones (37.7%) and Stand-alone Fax Machines (39.0%). Table 3.7 shows the penetration of different computing devices by MDA type.

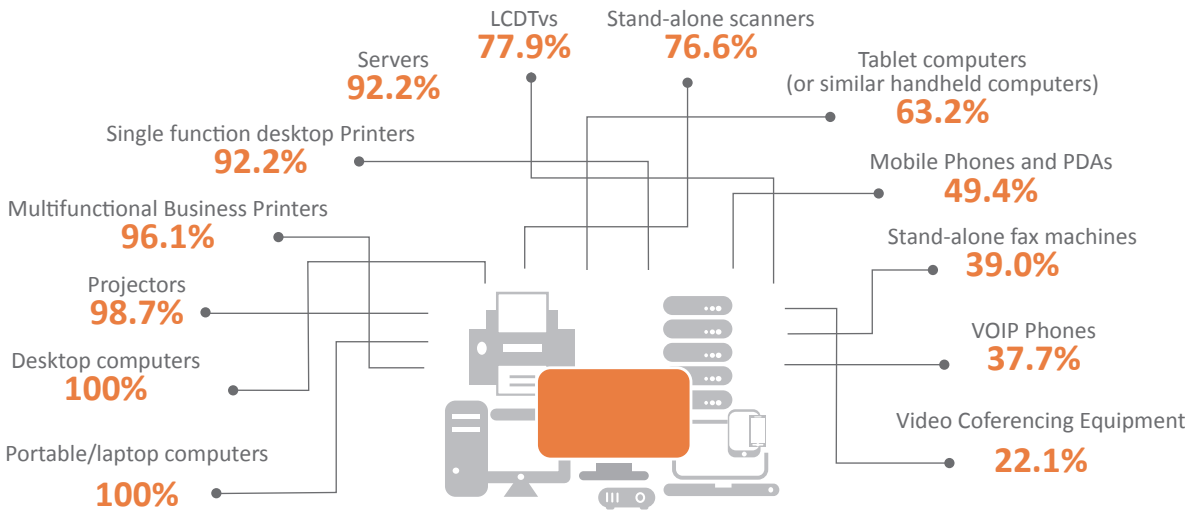


Figure 3.11: Penetration of Computing Devices across MDAs

Table 3.7: Penetration of computing devices by MDA type

	MDA type		
	Proportion of computing devices by:		
	Agencies & Department	Ministry	All MDAs
Desktop computers	100.0%	100.0%	**100.0%**
Portable/laptop computers	100.0%	100.0%	**100.0%**
Projectors	100.0%	94.7%	**98.7%**
Multifunctional Business Printers	96.6%	94.7%	**92.2%**
Servers	91.4%	94.7%	**92.2%**
Single function desktop printers	89.7%	100.0%	**92.2%**
LCD TVs	81.0%	68.4%	**77.9%**
Stand-alone Scanners	74.1%	84.2%	**76.6%**
Tablet computers	65.5%	57.9%	**63.6%**
Mobile Phones and PDAs	48.3%	52.6%	**49.4%**
Stand-alone Fax Machines	31.0%	63.2%	**39.0%**
VOIP Phones	41.4%	26.3%	**37.7%**
Video Conferencing Equipment	19.0%	31.6%	**22.1%**

Figure 3.12 shows the total number of different computing devices owned by all MDAs. The findings indicate that MDAs own more mobile phones and PDAs than any other computing device, followed by VOIP phones and desktop computers.

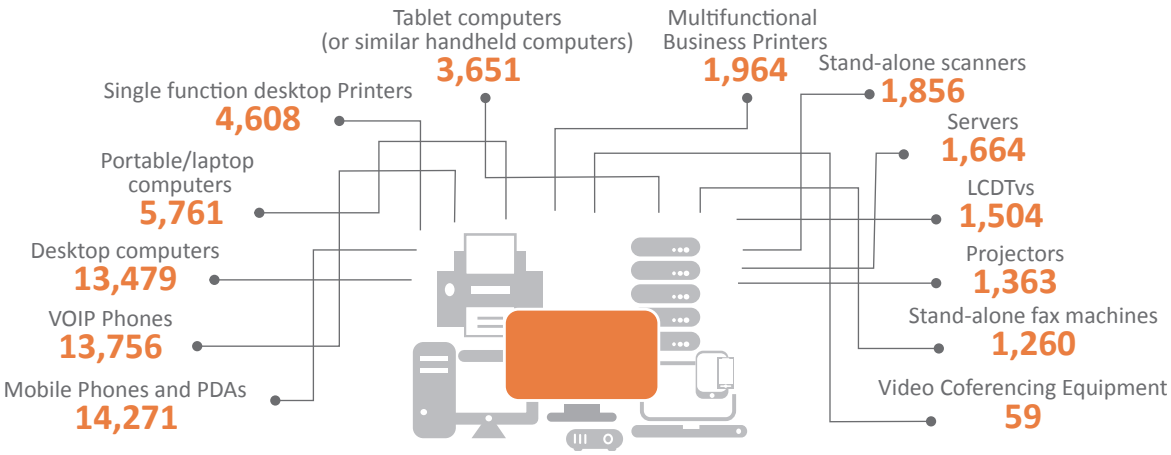


Figure 3.12: Number of different computing devices owned by all government MDAs

Most computers (30.7%) across all MDAs are 3 to 5 years old, followed by those 1 to 3 years old (29.0%) as shown in Figure 3.13. This is an indication that government needs to continuously budget for resources to invest in new computers and to use bulk procurement methods that reduce the unit cost of a computer.

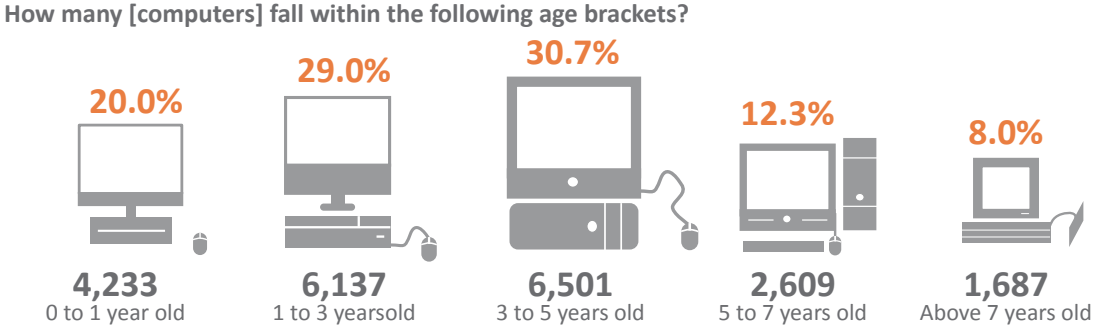


Figure 3.13: Number and Percentage of computers by age across government MDAs

3.3.3 Proportion of employees routinely using computers and Internet

MDAs reported that 37% of all their employees routinely used computers at work and 22.5% of their employees routinely used the Internet. The survey defined routine usage as any usage that occurred at least once a week. From a gender perspective, a higher proportion of female employees routinely used computers (58.1% vs. 29.9% respectively) and the Internet (36.0% vs. 18.0% respectively) compared to male employees of MDAs as shown in Figure 3.14.

Proportion of MDA employees routinely using computers and the Internet:

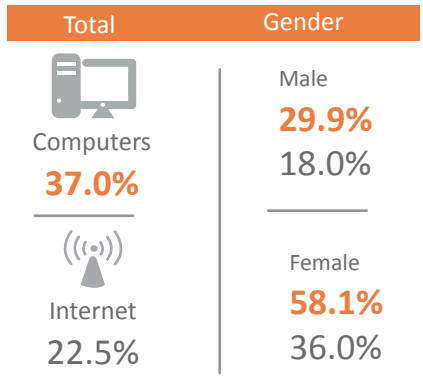


Figure 3.14: Proportion of MDA employees routinely using computers and the Internet

3.3.4 Structured Cabling

Overall, 79.7% of all MDAs indicated awareness of the National IT standards for Structured Cabling for government MDAs. They reported facing a number of challenges in implementing the standards with lack of investment and budgetary constraints cited as the biggest challenge as indicated in Figure 3.15.

Are you aware of the National IT standards for Structured Cabling for government MDAs?

Figure 3.15: Proportion of MDAs aware of National IT Standards for Structured Cabling for government MDAs

Which of the following challenges is your institution facing in implementing the National IT Standards for Structured Cabling for government MDAs?

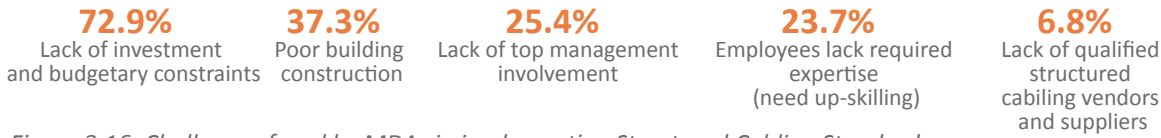


Figure 3.16: Challenges faced by MDAs in implementing Structured Cabling Standards

3.4 Network Connectivity and Internet Access

The survey collected data about MDA network connectivity, their Internet Service Provider (ISP), types of Internet connections, amount of bandwidth procured and perceptions on their Internet service. In addition, the survey explored bandwidth management within the MDA and how MDA employees access the Internet.

3.4.1 Network connectivity and Internet access at a glance

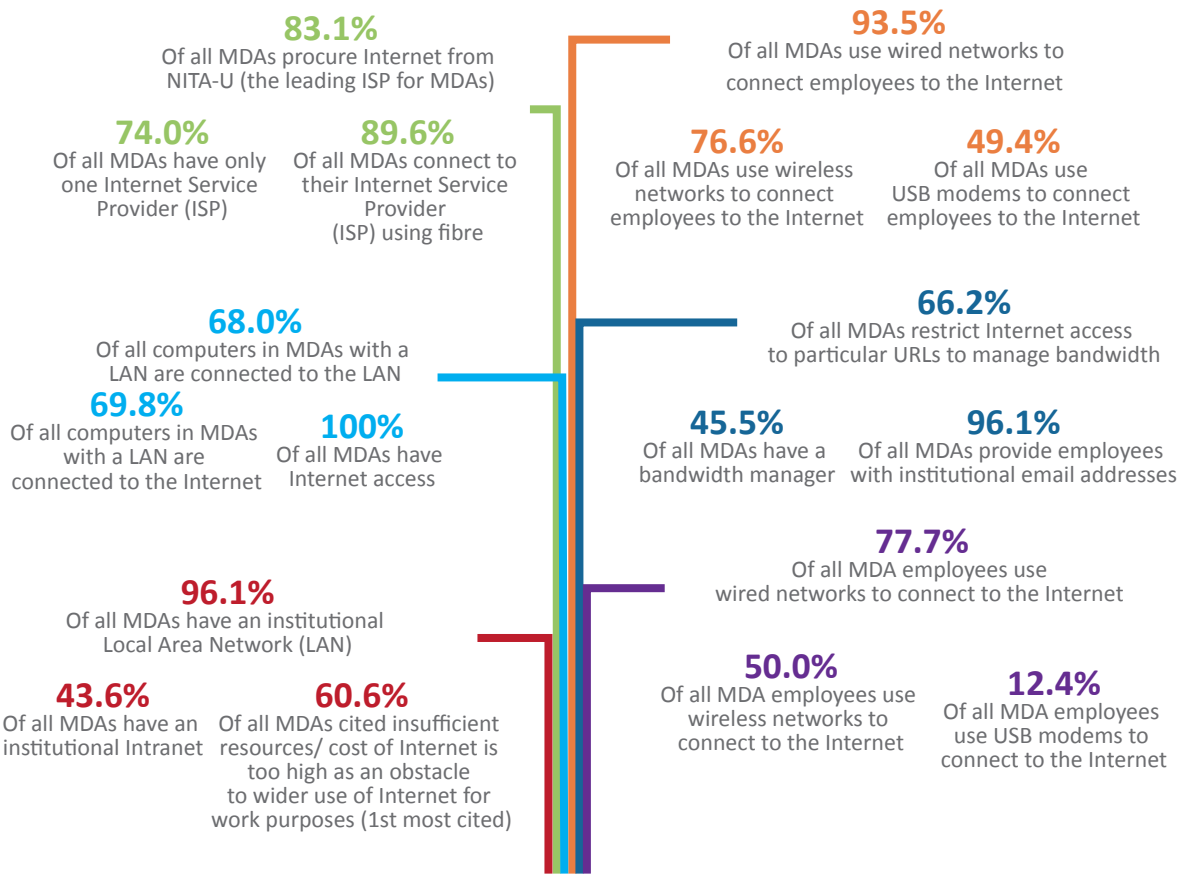


Figure 3.17: MDA network connectivity and Internet access statistics at a glance

3.4.2 Network connectivity

The survey asked MDAs whether they had a Local Area Network (LAN) and an intranet. 96.1% of all MDAs reported having a LAN while only 43.6% reported having an intranet as presented in Figure 3.18. MDAs with a LAN where then asked for the number of computers connected to the LAN and the number of their computers connected to the Internet. Overall, 68% of all computers among MDAs with a LAN were connected to the LAN, while 69.8% of all their computers were connected to the Internet.

Proportion of government MDAs with:

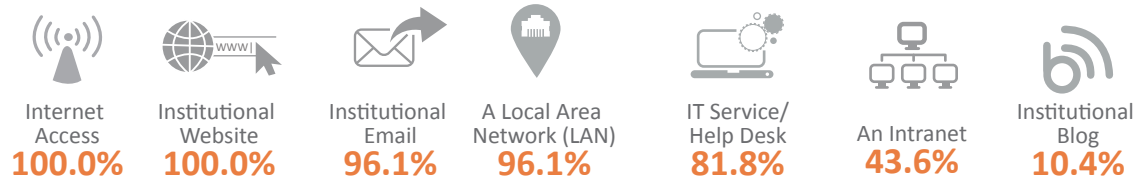


Figure 3.18: Proportion of government MDAs with various IT services

All government MDAs (100%) reported having Internet access and a web presence, while 81.8% reported offering an IT Service/Help Desk where employees could report IT issues for resolution

.

3.4.3 Internet Service Providers

NITA-U is the leading Internet Service Provider (ISP) for government MDAs, covering 83.1% of all MDAs. This coupled with the high incidence of fibre connections (Figure 2.18) indicates that more MDAs are using the national backbone to access the Internet. Uganda Telecom (UTL) follows with 19.5% of MDAs and MTN with 13.0% as indicated in Figure 3.19. Most MDAs (74.0%) have only one ISP, followed by those with two ISPs (20.8%) as shown in Figure 3.19.

Who is your Internet Service Provider? (multiple-select, ranked)

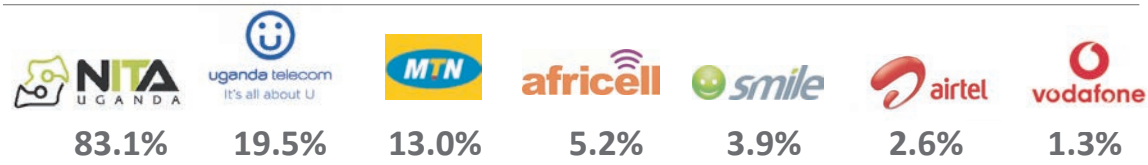


Figure 3.19: Internet Service Providers serving different government MDAs

Number of ISPs serving an MDA

1 ISP	2ISPs	3ISPs	4ISPs
74.0%	20.8%	2.6%	1.3%

Figure 3.20: Number of ISPs from which an MDA simultaneously bought Internet service

The MDAs reported that they procured 1,109 Mbps of Internet bandwidth in total from the different ISPs. NITA accounted for most of this bandwidth with 544 Mbps, followed by UTL and MTN who each accounted for 180 Mbps as summarised in Figure 3.21.

How much Bandwidth do you buy from the Internet Service Provider?(ranked by total, Mbps)

NITA UGANDA	uganda telecom	MTN	airtel	africell	smile	vodafone
544	180	180	55	45	9	6

Figure 3.21: Total bandwidth In Mbps purchased from each ISP monthly by all government MDAs

3.4.4 Type of Internet connection

Externally, MDAs reported using a variety of Internet connections to their ISPs. Most (89.6%) indicated using fibre to connect to their ISPs, followed by mobile broadband connections (18.2%) as presented in Figure 3.22.

What type of internet access/connection does your MDA have to your Internet Service Provider(s)? (multiple-select, ranked)

89.6%	18.2%	16.9%	2.6%	2.6%	2.6%
Fixed Broadband-Fibre Cable	Mobile Broadband (3G, 4G)	Fixed broadband-Wirles Access Points	Fixed broadband-Copper	Fixed broadband-Satellite	Narrrowband (Dial Up/ISDN)

Figure 3.22: Type of Internet connections used by various government MDAs

Internally, MDAs reported using a variety of methods to connect their employees to the Internet. Most MDAs (93.5%) used wired networks, followed by wireless networks (76.6%) as indicated in Figure 3.23. Overall, in terms of numbers, wired networks connected a bigger proportion of MDA employees (77.7%) compared to wireless networks (50.0%).

Methods used to provide employee Internet for work-related purposes? (multiple-select)

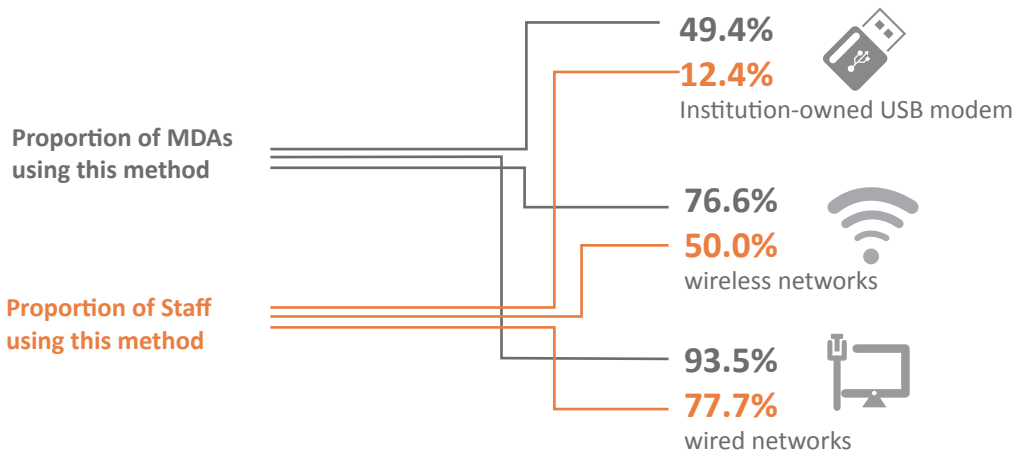


Figure 3.23: Methods used by MDAs to provide staff with Internet access for work-related purposes

3.4.5 Bandwidth management

Most MDAs (66.2%) reported that they restricted access to particular websites (URLs). The primary reason MDAs restricted Internet access was to manage bandwidth (98.0%), followed by minimising malware risks and other security reasons (88.2%) as summarised in Figure 3.24.

Why does the institution restrict access? (multiple-select, ranked)

To managae bandwidth	To minimise risk of malware or security reasons	To improve employee productivity at work	They violate institutional policy
98.0%	88.2%	82.4%	66.7%

Figure 3.24: Reasons why MDAs restricted Internet access to particular URLs

To manage bandwidth, 45.5% of all MDAs indicated that they owned a bandwidth manager. Of these, most owned proprietary bandwidth managers (60.0%), while 34.4% owned open source bandwidth managers.

3.4.6 Institutional email

Most MDAs (96.1%) provided institutional email addresses to their employees. Amongst these, 94.6% required employees to use institutional email addresses for official purposes, but only 62.9% of them enforced this requirement as depicted in Figure 3.25.

Figure 3.25: Provision and use of institutional email amongst MDAs

Amongst MDAs providing institutional email, 74.3% provided remote access for their employees to institutional email systems, documents or applications.

3.4.7 Use of Internet by core activity

Figure 3.26 presents the proportion of MDAs using the Internet by type of core activity. From the survey findings, all MDAs reported using the Internet for communication via email or MDA website (100%), followed by research and analysis (69.3%). The least activity carried out using the Internet was monitoring MDA services reported by 10.7% of MDAs as shown in Figure 3.26.

Figure 3.26: Core activities for which MDAs used the Internet

3.4.8 Obstacles to Internet use

The survey sought information from MDAs that indicated using the Internet about what they perceived as potential obstacles to a wider use of the Internet within their institution for work purposes. Insufficient resources or cost of Internet was too high emerged as the most common obstacle amongst MDAs (60.6%), followed by Insufficient Internet bandwidth (54.5%) as shown in Figure 3.27.

In your opinion, what are the potential obstacles to a wider use of the Internet within your institution for work purposes?

Insufficient resources/cost of Internet is too High	Insufficient Internet bandwidth	Lack of Knowledge/Skills among staff	Lack of computing devices /equipment	Provider slow to respond to queries/ poor customer service	Lack of adequate staff	Sercurity and privacy issues
60.6%	54.5%	33.3%	27.3%	12.1%	9.1%	6.1%

Figure 3.27: Obstacles to wider use of the Internet identified by MDAs

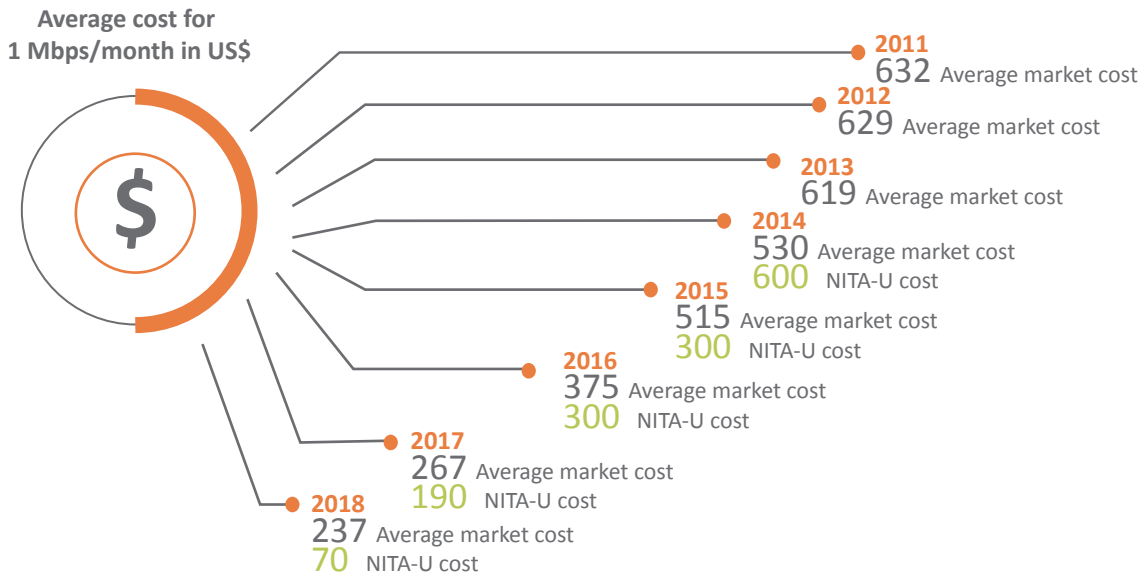


Figure 3.28: Trends in Internet cost between 2011 and 2018

Trends in the cost of Internet access shown in Figure 3.28 and feedback from stakeholder interviews confirm the widespread perceptions about the high cost of Internet. Key informants reported that the cost of one Mbps/month was much higher in Uganda compared to countries in the region, Europe or the US. While many conceded that our bandwidth consumption was still much lower, some attributed the high cost to lack of sufficient competition within the market.

3.4.9 Perceptions

In general, MDAs had positive perceptions about different attributes related to their Internet connections. Most MDAs (97.4%) felt that the reliability of their Internet connection(s) was very good or good, followed by the perception that customer support/service offered when they reported faults was very responsive or responsive (89.6%) as depicted in Figure 3.29. Cost of buying bandwidth received had the least positive perception (68.8%).

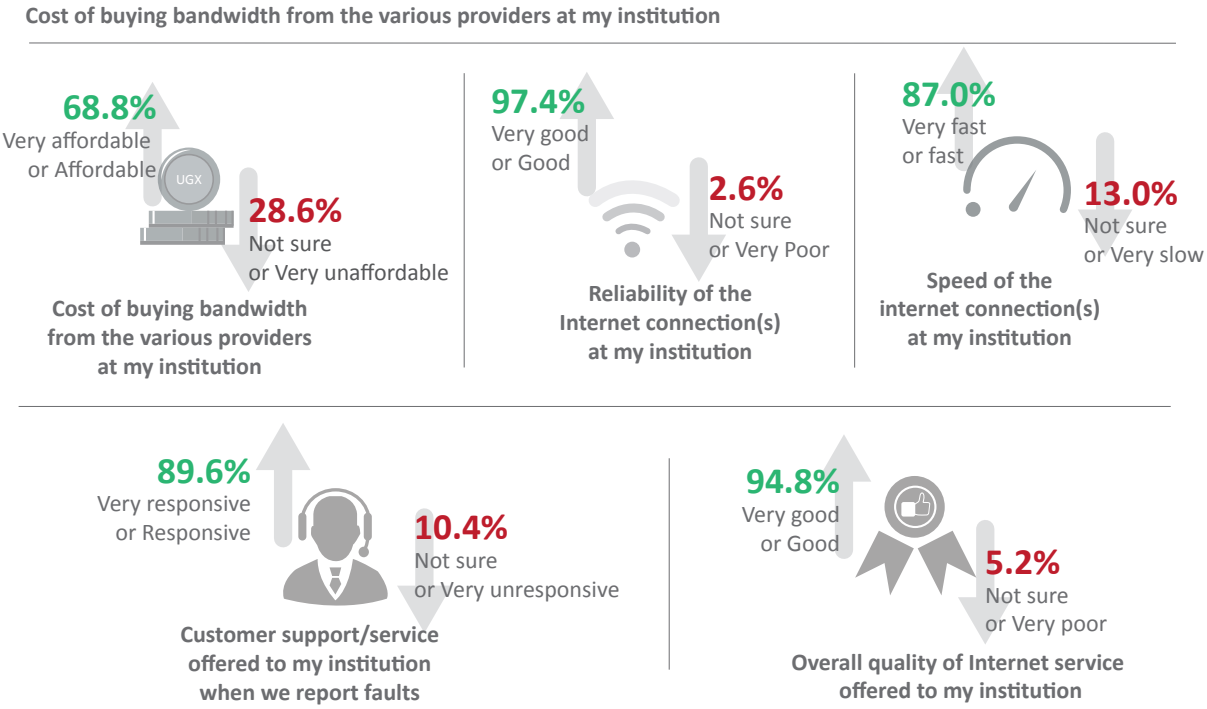


Figure 3.29: MDA perceptions about different attributes of their Internet service

When considered from the standpoint of MDA type, the cost of buying Internet bandwidth received the lowest positive ranking (i.e. very affordable or affordable) compared to the other attributes emphasising that cost of Internet is still an issue across different types of MDA.

User experience with Internet by MDA type: (positive perceptions only)

	Agency & Department	Ministry	All MDAs
Cost of buying bandwidth from various providers at my institution	70.7%	63.2%	**68.8%**
Reliability of the Internet connection at my institution	98.3%	94.7%	**97.4%**
Speed of the internet connection(s) at my institution	89.7%	79.0%	**87.0%**
Customer support offered to my institution when we report faults	93.1%	79.0%	**89.6%**
Overall quality of Internet service offered to my institution	98.3%	84.2	**94.8%**

Figure 3.30: Proportion of MDA type and their perception of different Internet service attributes

3.5 Websites and Social Media

A good web presence and use of social media provide channels that MDAs can use to improve government service delivery. This section highlights survey findings about the online presence of MDAs and their use of social media.

3.5.1 MDA online presence and social media use at a glance

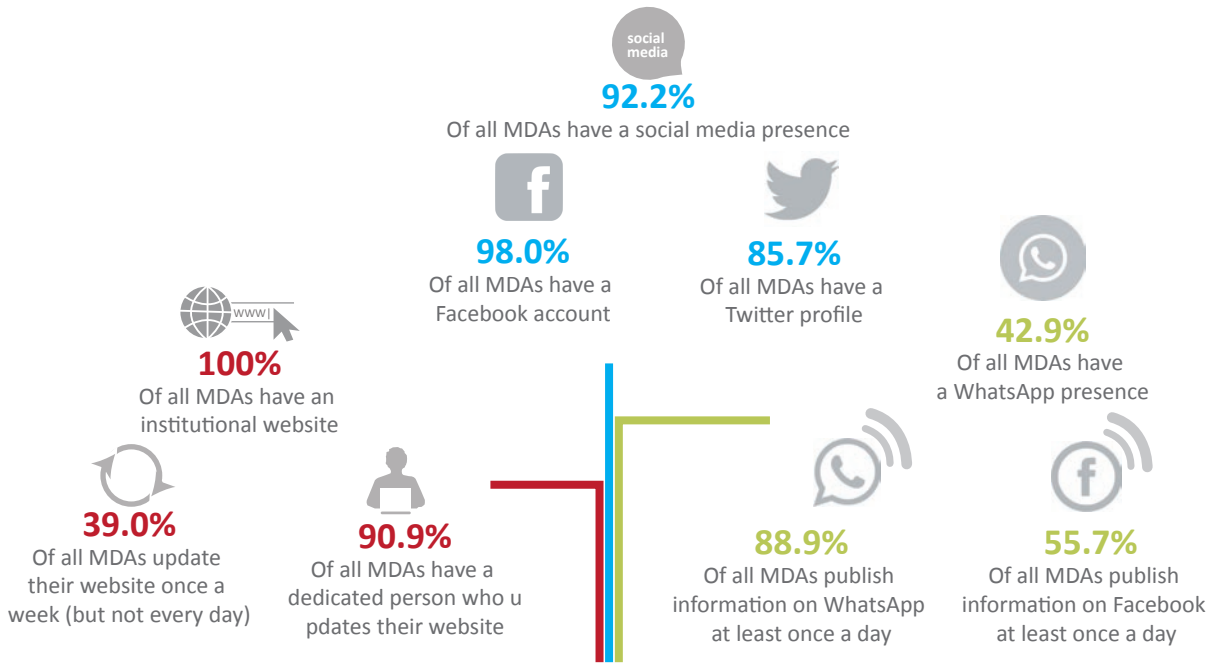


Figure 3.31: MDA online presence and social media use at a glance

3.5.2 Websites

Overall, all government MDAs (100%) reported owning an institutional website, while only 10.4% reported owning an institutional blog. Most MDAs (94.8%) used a Content Management System (CMS) to power their institutional website. Drupal was the most used CMS (32.5%), followed by Joomla (28.6%) as presented in Figure 3.32.

What Content Management System (CMS) powers your MDA website? (ranked)

Drupal	Joomla	Wordpress	Other	None	Microsoft
32.5%	28.6%	26.0%	6.5%	5.2%	1.3%

Figure 3.32: Content Management Systems used to power MDA websites

The frequency of updating an MDA's website provides insight into how up-to-date the information provided to customers is and how likely such customers are to keep returning to visit the MDA's website. Website update frequency also has implications for search engine optimisation (SEO) strategies. Overall, most MDAs (39.0%) updated their websites at least once a week (but not every day), followed by those that updated their websites daily or almost every day (24.7%) as presented in Figure 3.33.

How frequently is your institutional website updated?

Once in a while (randomly)	At least once a month (but not monthly)	At least once a week (but not everyday)	Daily or almost everyday
5.2%	7.8%	39.0%	24.7%

Figure 3.33: Frequency of MDA website update

Most MDAs (90.9%) reported having a dedicated person or resource who updated the institutional website. The survey further asked MDAs that reported having a dedicated web person about the type of resource. Most (54.3%) indicated having at least a fully dedicated employee as the web person, followed by those that used a partially dedicated employee (27.1%) as shown in Figure 3.34.

What type of person/resource maintains the institutional website?

Partially dedicated employee	External agency or third party	Have at leaste one fully dedicated employee
27.1%	18.6%	54.3%

Figure 3.34: Type of person or resource that updated MDA website

3.5.3 Compliance with maintenance requirements

The NITA-U (e-government) Regulations of 2015 require all Government entities to comply with certain minimum requirements in terms of maintenance of websites. In January 2018, the consulting team assessed Government websites' compliance with the said requirements and the findings are summarised in Figure 3.35. Nine out of 10 MDA websites (88.9%) included the national court of arms and/or MDA logo while eight out of 10 MDA websites (79.8%) integrated with MDA social media accounts. Six out of 10 MDA websites (63.6%) were up-to-date in terms of information. This correlates with MDAs that reported updating websites daily and at least once a week (Figure 3.33).

MDA website compliance with e-government regulations (multiple-select, ranked)

National Court of Arms & Logo of the Body	Social Media Integration	Dynamic data (news section)	Vision, Mission, Mandate & Goal	Updated website
88.9%	**79.8%**	**75.8%**	**73.7%**	**63.6%**

Figure 3.35: Compliance of MDA websites with e-government regulations

3.5.4 Social media

In contrast to websites, 92.2% of MDAs reported using any social media. Among these, most MDAs (98%) used Facebook, followed by Twitter (85.7%) as shown in Figure 3.36. The prominence of Facebook and Twitter is not surprising given that Cabinet directed all MDAs to create accounts back in 2013. Perhaps it is surprising that social media use is not yet universal across MDAs despite NITA-U having prepared a social media guide to support MDAs in the effective and secure use of social media.

Which social network(s) is your institution signed up for?

Facebook	Twitter	whatsApp	Other	Google+	Instagram	Linkedin	Flickr	Pinterest
98.0%	**85.7%**	**42.9%**	**10.2%**	**10.2%**	**8.2%**	**8.2%**	**6.1%**	**2.0%**

Figure 3.36: Social media networks used by government MDAs

Social media use amongst MDAs has evolved to become a vital tool for communication between government and the public. Figure 3.37 shows the different objectives amongst MDAs for using social media. Most MDAs (90.1%) used social media to respond to customer opinions, reviews and questions,

followed by publishing institutional information (88.7%) as presented in Figure 3.37. This highlights the growing importance of social media as a platform that MDAs can leverage to convey more information to citizens, improve citizen participation and enhance transparency and accountability.

What is the institutional objective(s) in using social media? (multiple-select, ranked)

Obtain/respond to customer opinions, reviews and question	Publish institutional information	Develop the institution's reputation	Exchange opinions/ knowledge within the institution	Involve customers in institutional policy and service-delivery processes
90.1%	**88.7%**	**81.7%**	**76.1%**	**76.1%**

Figure 3.37: MDA objectives in using social media

The survey asked MDAs that subscribed to different social networks how often they updated their social media channels. In terms of social media update frequency, WhatsApp topped other social networks with 85.2% of MDAs subscribed to WhatsApp reporting that they updated their presence several times a day, followed by Instagram with 71.4% as summarised in Figure 3.38. About half of the MDAs update their Facebook and Twitter platforms on a daily basis (55.7% and 56.4% respectively). This indicates that most MDAs are rather slow when it comes to updating their social media channels contrary to the recommendations of the Government of Uganda Social Media Guide.

How often does your institution publish information and/or interact on social media?

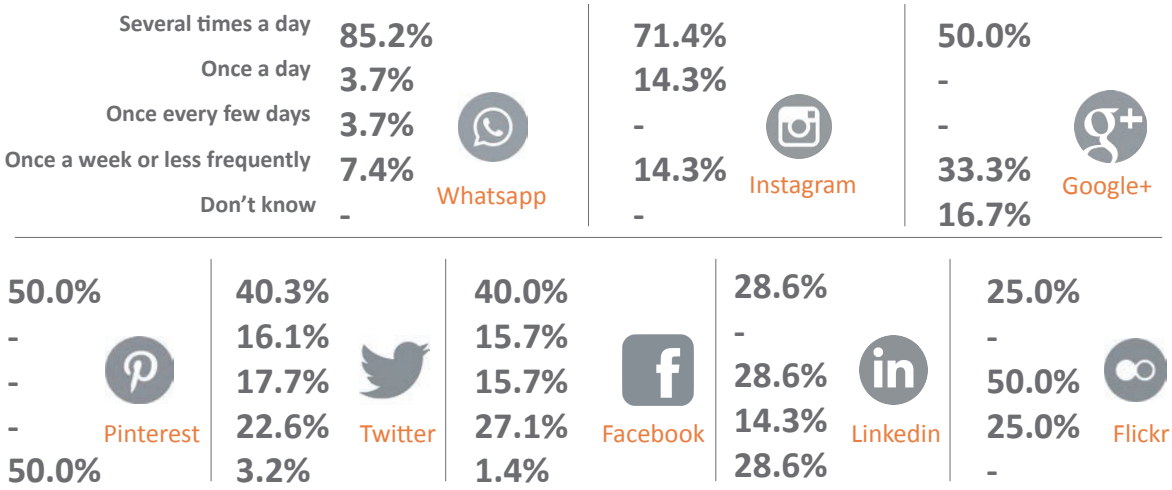


Figure 3.38: Frequency with which MDAs updated social media presence

Most MDAs (90.1%) reported having a dedicated person or resource who managed their social media interaction or presence. The survey further asked MDAs that reported having a dedicated social media person about the type of resource. One in two MDAs (50.0%) indicated having at least one fully dedicated employee, followed by those that had a partially dedicated employee (45.3%) as shown in Figure 3.39.

What type of person/resource maintains the institutional social media interaction/ presence?

External agency or third party	Have at leaste one fully dedicated employee	Partially dedicated employee
4.7%	**50.0%**	**45.3%**

Figure 3.39: Type of person that maintains MDA social media interaction or presence

3.6 E-government Services

Electronic government or e-government is the use of ICT to deliver public services in a convenient, efficient customer-oriented and cost-effective way. The survey defined e-government services as government services offered to citizens and other MDAs using digital platforms. Using digital platforms reduces the need for citizens to walk to government departments to receive such services or for the MDAs deploying staff for field visits to interact with citizens face-to-face, thus saving costs. This section highlights the different service delivery channels used by MDAs, the mobile and web applications that they deploy, challenges that they encounter in implementing such services and new services in the pipeline.

3.6.1 E-government indicators at a glance

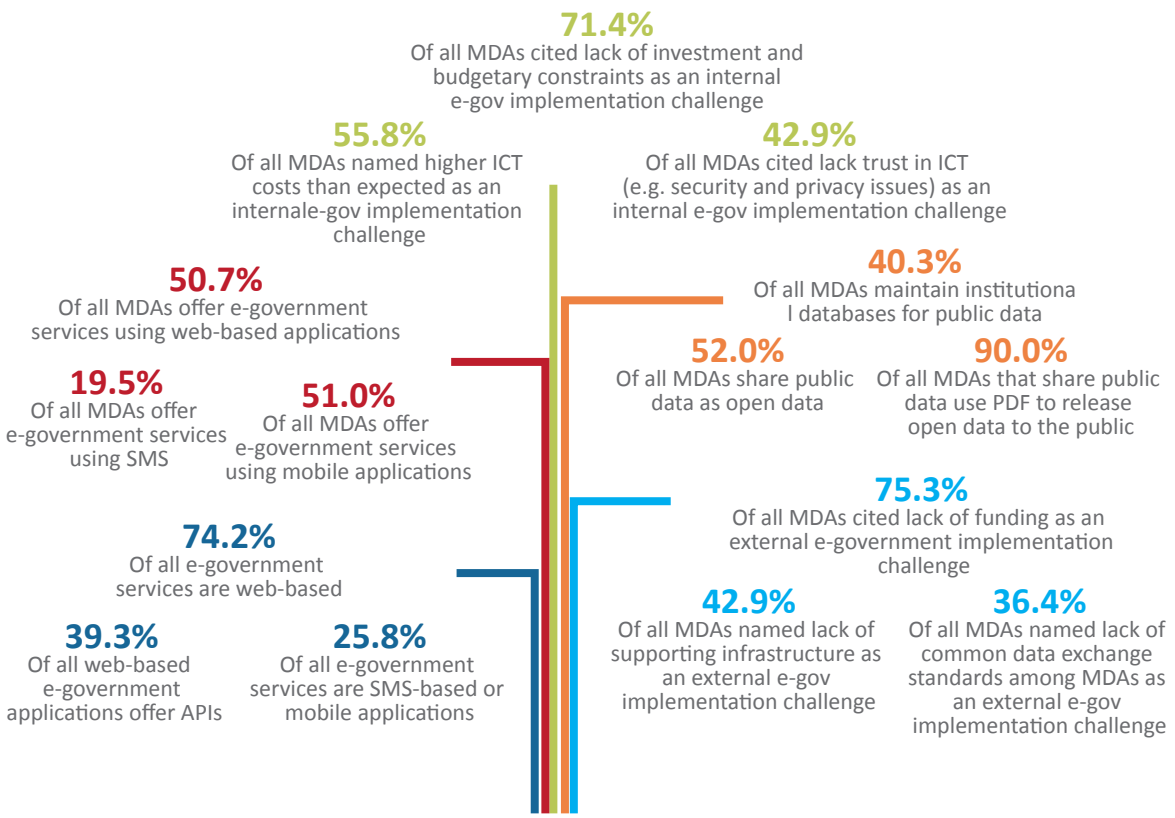


Figure 3.40: MDA e-government statistics at a glance

3.6.2 Service delivery channels

Government MDAs used a variety of delivery channels to provide services to their customers. The most used channel across all MDAs were institutional websites (98.7%), followed by field visits (97.4%) and email (93.5%) as indicated in Figure 3.41. Both field visits and walk-ins involve face-to-face interaction. However, during field visits, MDA employees go out to interact with customers, while for walk-ins it is the reverse, as customers come to the MDA to receive service.

Which delivery channels does your institution currently use to Interact with Citizens and Residents who need your services?

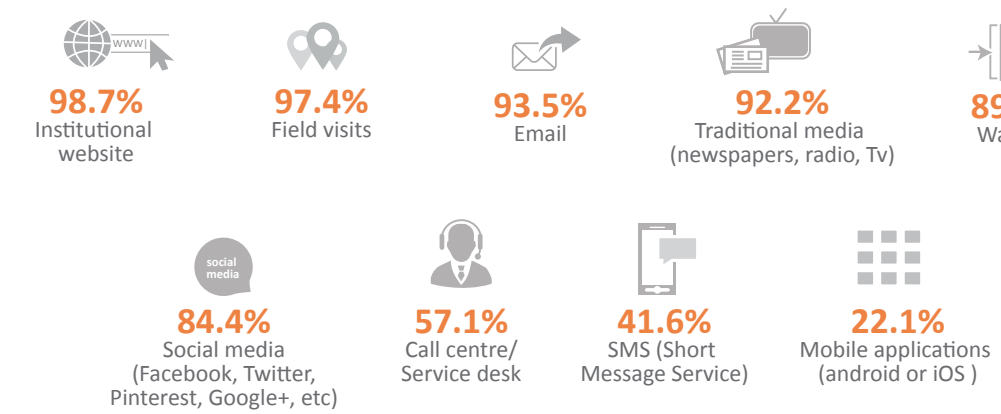


Figure 3.41: Service delivery channels used by different government MDAs

3.6.3 Mobile and web applications

MDAs have embraced the use of digital platforms with more than half of the MDAs (50.7%) offering e-government services using web-based applications. The mobile channel is also growing in importance with 19.5% of MDAs offering e-government services using SMS and 13.0% of MDAs offering e-government services via mobile applications as indicated in Figure 3.42.

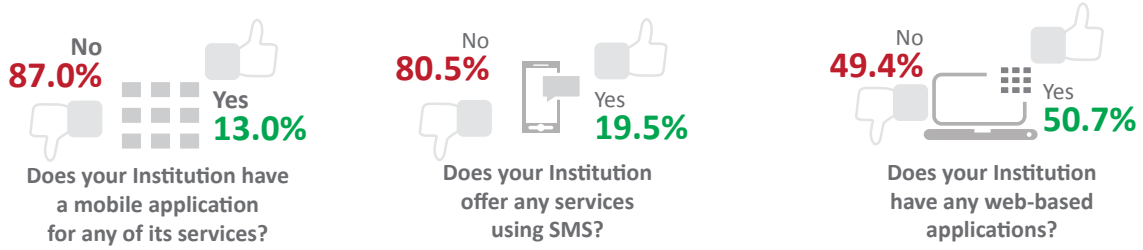


Figure 3.42 Proportion of MDAs offering e-government services using digital platforms

Overall, 74.2% of e-government services were web-based applications while 25.8% were mobile or SMS-based applications. Among the web-based applications offered by MDAs, 39.3% offered Application Programming Interfaces (APIs), providing building blocks for integration with other applications.

In terms of new e-government services, 61.0% of MDAs indicated that they planned to implement new services in the next five years.

3.6.4 Databases and open data

Figure 3.43 shows the proportion of MDAs that maintained institutional databases for public data. From the survey findings, 40.3% of MDAs maintained institutional databases for public data. In addition, MDAs with institutional databases indicated that they shared 37.5% of their databases with other institutions.

Figure 3.43: Proportion of MDAs that maintained institutional databases and shared open data

The survey also asked MDAs whether they shared any data with the public as open data. From the findings, 52.0% of MDAs reported that they shared public data as open data as presented in Figure 3.44. The MDAs that released open data used a variety of file formats. The most common file format used for releasing open data to the public was the Portable Document Format (PDF), used by 90.0% of MDAs that shared open data. This was followed by web pages used by 40.0% of MDAs as indicated in Figure 3.44.

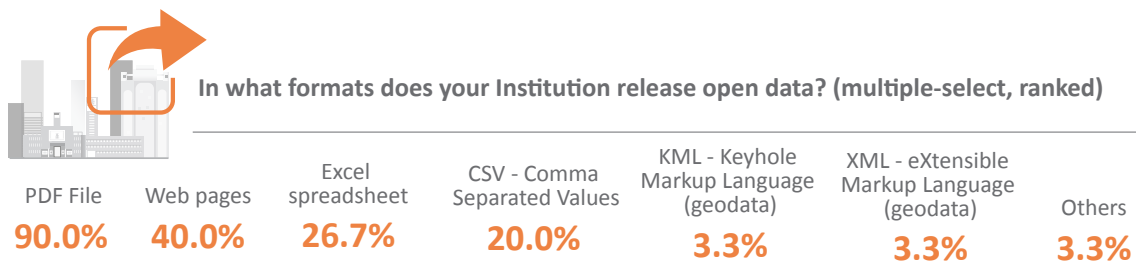


Figure 3.44: Proportion of MDAs that used different file formats amongst MDAs that shared open data

3.6.5 Implementation challenges

In terms of challenges to e-government implementation, only 5.2% of MDAs reported facing no internal institutional or external barriers. Lack of investment and budgetary constraints emerged as a key internal barrier to wider implementation of e-government services, with 71.4% of MDAs citing it. This was followed by higher ICT costs than expected (55.8%) as summarised in Figure 3.45.

What INTERNAL challenges does your institution face in implementing E-Governance initiatives? (multiple-select, ranked)

Lack of investment and budgetary constraints **71.4%**	Higher ICT costs than expected **55.8%**	Lack of trust in ICT (security and privacy) **42.9%**	Internal resistance to use ICT **29.9%**	Lack of top Management involvement **29.9%**
Lack of in-house techincal expertise **26.0%**	Difficulty in intergrating existing (manual/automated) systems with electronic adminstration **26.0%**	Employees lack required skills to use ICT **22.1%**	No perceived benefits of ICT to our institution **13.0%**	

Figure 3.45: Internal challenges that MDAs face in implementing e-government initiatives

The internal challenges cited by MDAs further reinforce the need for increased IT budgetary allocations across all MDAs and providing IT training opportunities for staff at different levels of the MDA.

Figure 3.46 summarises external challenges mentioned by MDAs in implementing e-government initiatives. From the survey findings, 75.3% of MDAs cited to lack of funding as the biggest barrier, followed by lack of supporting infrastructure (42.9%). Minor barriers included lack of political will (13.0%) and lack of qualified ICT suppliers (11.7%) as indicated in Figure 3.46.

What EXTERNAL challenges does your institution face in implementing E-Governance initiatives? (multiple-select, ranked)

lack of funding **75.3%**	Lack of supporting infrastructure **42.9%**	Lack of common data exchange standards amongt MDAs **36.4%**	Relationship with other institutions **27.3%**	Government legislation and regulations **24.7%**
Demand/supply mis-match (citizens prefer personal contact) **22.1%**	Lack of appropriate delivery channels **18.2%**	Lack of political will **13.0%**	Lack of qualified ICT suppliers **11.7%**	

Figure 3.46: External challenges that MDAs face in implementing e-government initiatives

3.7 Software Capabilities

Government MDAs have invested in software through either buying commercial software or developing custom applications. This section highlights survey findings on different aspects of MDA software including operating systems deployed, software applications and licenses and ICT training offered to employees.

3.7.1 Software indicators at a glance

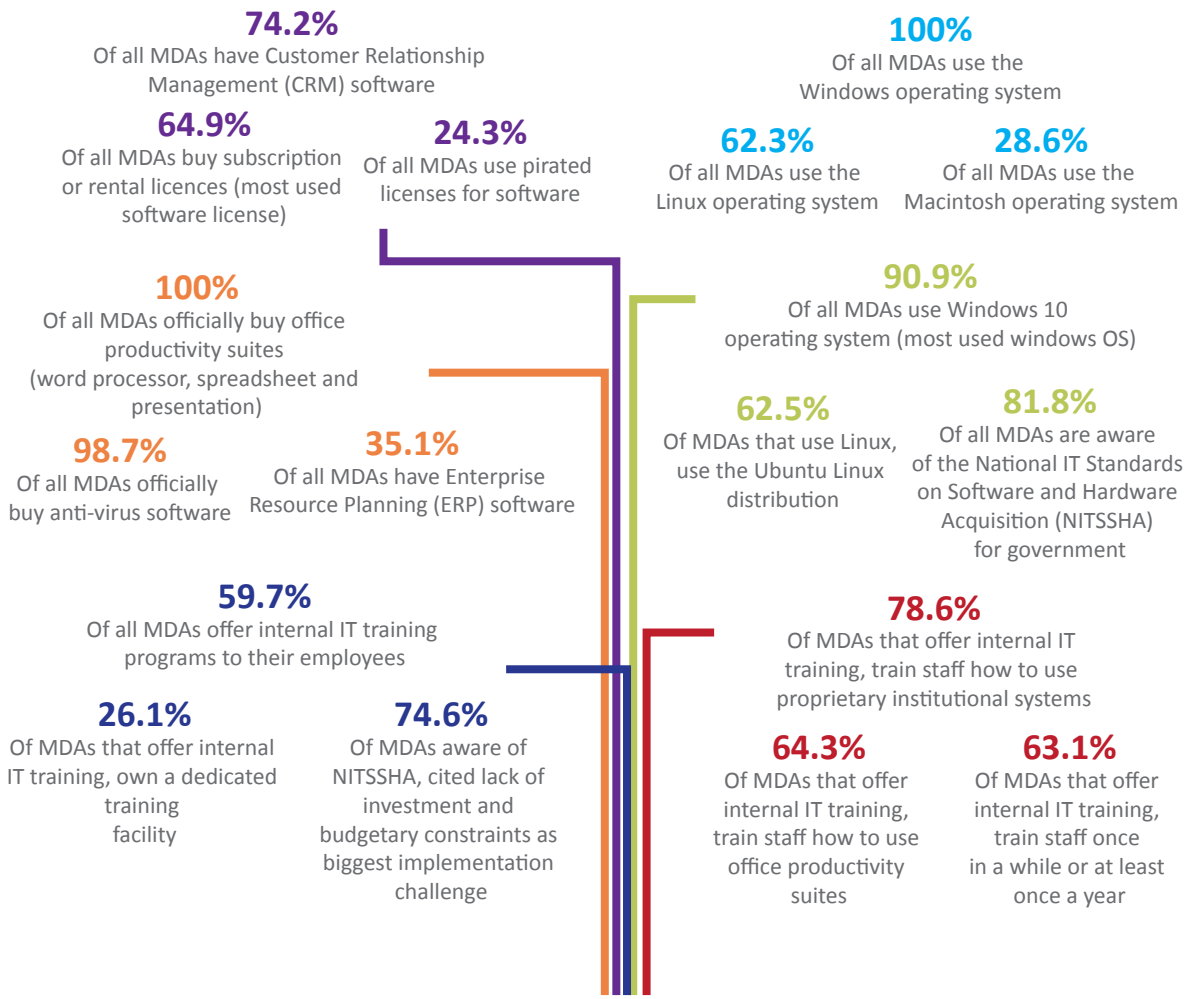


Figure 3.47: MDA software statistics at a glance

3.7.2 Software applications

MDAs procure process automation technologies through commercially available software packages or custom-developed applications. All MDAs (100%) report owning office productivity suites (a group of applications for word processing, spreadsheets and presentations), followed by 98.7% with anti-virus software and 83.1% with email server software as shown in Figure 3.48.

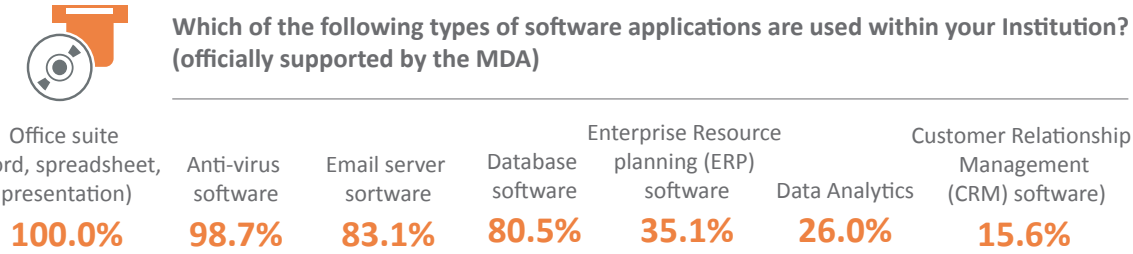


Figure 3.48: Software applications used by government MDAs

Microsoft was the mostly widely used office suite software as reported by 98.7% of all MDAs. For anti-virus software, more MDAs used Kaspersky (64.5%) compared to Microsoft Bit Defender as indicated in Figure 3.49.

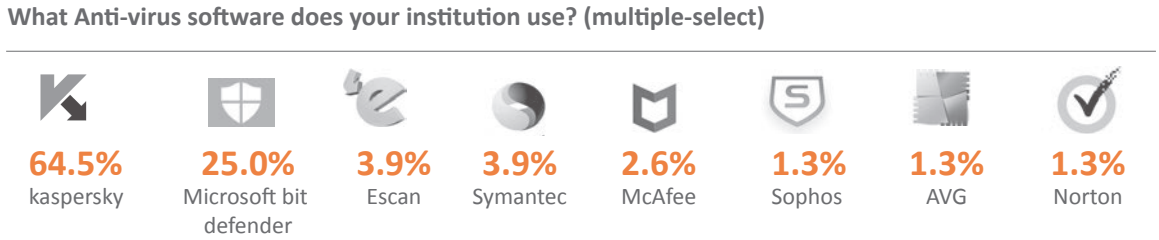


Figure 3.49: Anti-virus software used by MDAs

For database software, most MDAs (82.3%) used Microsoft SQL, followed by Oracle (33.9%) as shown in Figure 3.50.

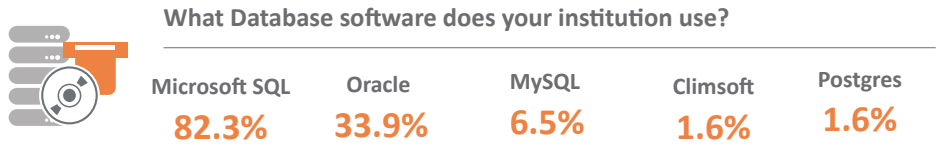


Figure 3.50: Database software used by MDAs

For email services, most MDAs (71.4%) used Microsoft Exchange, followed by Linux or open source variants (22.2%) as indicated in Figure 3.51.

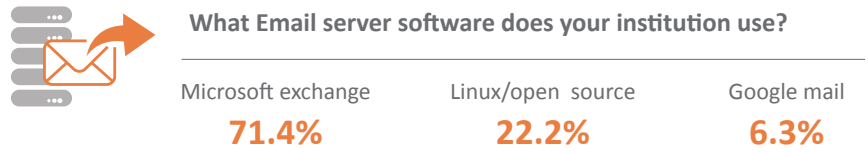


Figure 3.51: Email server software used by MDAs

3.7.3 Software licenses

Figure 3.52 shows the variety of license types under which MDAs procured software. These have implications for IT expenditure in terms of both amount as well as frequency of payments. Overall, most MDAs (64.9%) bought subscription or rental licenses for their software, followed by per copy/workstation/device licenses (55.8%) and open source licenses (53.3%) as presented in Figure 3.52.

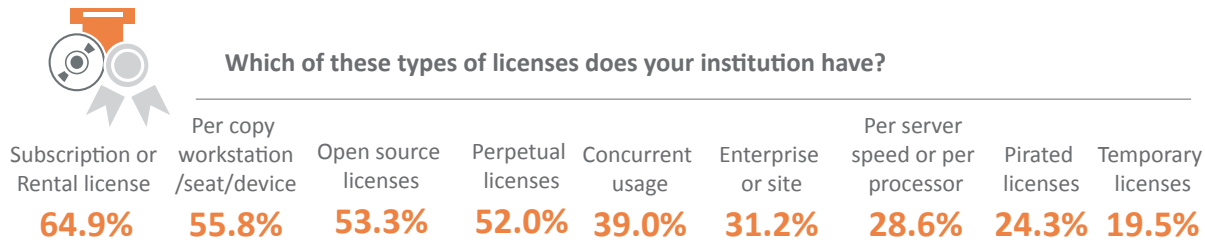


Figure 3.52: Types of software licenses across all government MDAs

3.7.4 Operating systems

Microsoft windows was the most widely used operated system, reported by all MDAs (100%) as highlighted in Figure 3.53. Linux and Macintosh operating system (Mac OS) were used by 62.3% and 28.6% of MDAs, respectively.

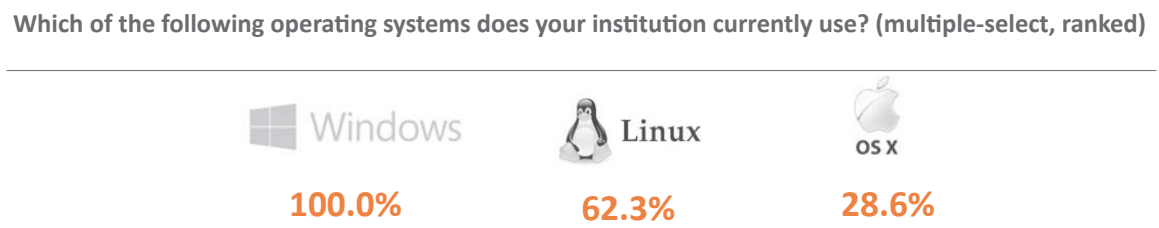


Figure 3.53: Operating systems used by government MDAs

Overall, Windows 10 was the most prevalent version of the Windows operating system installed as reported by 90.9% of all MDAs. This was followed by Windows 7 reported by 85.7% of all MDAs as presented in Figure 3.54.

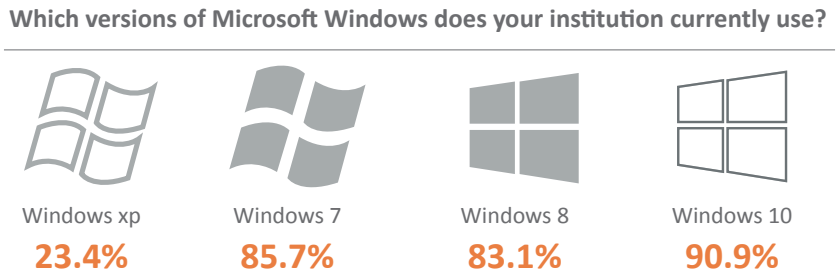


Figure 3.54: Windows operating systems used by government MDAs

Amongst the 62.3% of MDAs that reported using Linux distributions, Ubuntu was the most common distribution as reported by 62.5% of these MDAs, followed by OpenSUSE (27.1%) as indicated in Figure 3.55.

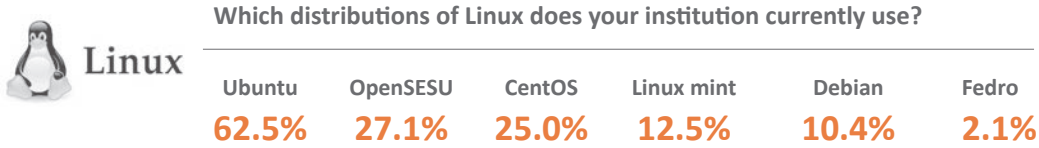


Figure 3.55: Linux distributions used by government MDAs

3.7.5 Software policies

Most MDAs (81.8%) reported being aware of the National IT standards on Software and Hardware Acquisition for government prepared by NITA-U, but fewer MDAs (50.7%) had internal institutional software upgrade strategies, policies or guidelines in place to guide effective software acquisition and use.

The survey asked MDAs aware of the National IT standards on Software and Hardware Acquisition about the challenges they faced in implementing the standards. Amongst these MDAs, lack of investment and budgetary constraints emerged as the biggest challenge (74.6%), followed by insufficient number of staff (28.6%) and lack of top management involvement (28.6%) as presented in Figure 3.56.

Which of the following challenges is your institution facing in implementing the National IT Standards on Software and Hardware Acquisition for government?

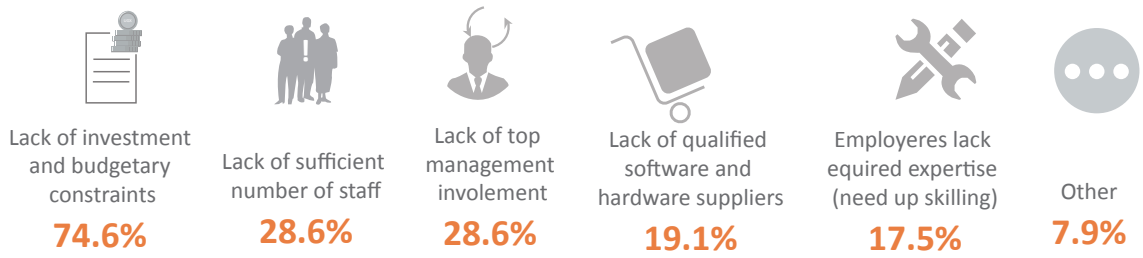


Figure 3.56: MDA challenges in implementing National IT Standards on Software and Hardware Acquisition

3.8 ICT Training

3.8.1 Training opportunities

Overall, about one out of two MDAs (59.7%) offers internal ICT training programs to employees as shown in Figure 3.57. Given that lack of adequate ICT skills is a challenge across MDAs, more MDAs need to offer IT training so employees have the necessary skills to accomplish their tasks and to keep up with emerging technologies. Furthermore, among MDAs that offer ICT training, only 26.1% own a dedicated training lab. This has implications for the type of training model that MDAs can adopt from encouraging and rewarding self-study to outsourcing training to other government or public sector entity.

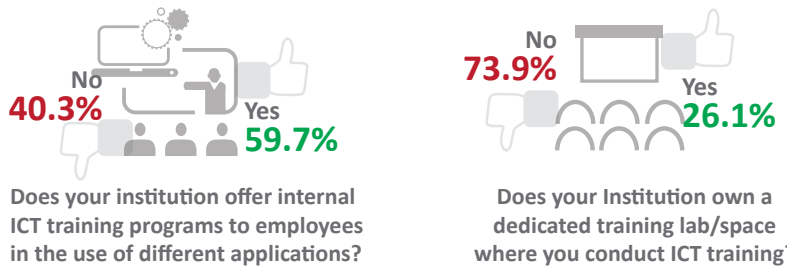


Figure 3.57: Percentage of MDAs that offer IT training and own dedicated training space

3.8.2 Types of training

The type of ICT training programs that MDAs offer cover a number of areas including the use of proprietary institutional systems (78.6%), followed by use of office productivity suites (64.3%) and use of operating systems (42.9%) as shown in Figure 3.58.

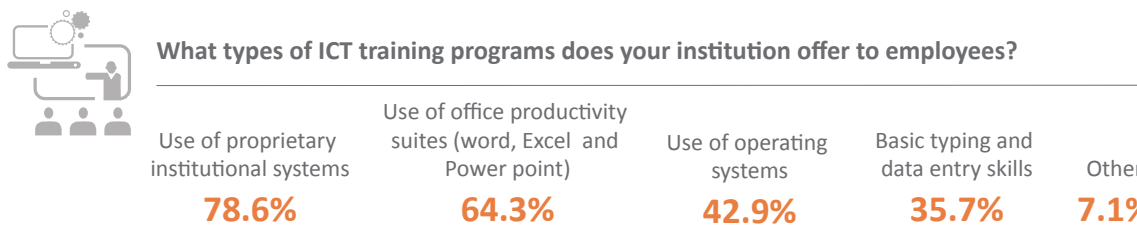
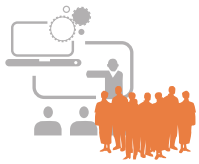


Figure 3.58: ICT training programs offered by MDAs to their employees

There is not much difference between the types of training offered by the different types of MDA as presented in Figure 3.59.



What types of ICT training programs does your institution offer to employees? (multiple-select, ranked)

	Agency	Department	Ministry	Other
Use of proprietary institutional systems	79.0%	100.0%	71.4%	78.6%
Use of office productivity suites (e.g. Word, Excel and PowerPoint)	68.4%	100.0%	42.9%	64.3%
Use of operating systems	42.1%	50.0%	42.9%	42.9%
Basic typing and data entry skills	31.6%	50.0%	42.9%	35.7%
Other	5.2%	0.0%	14.3%	7.1%

Figure 3.59: Proportion of MDAs offering different employee ICT training programs by type of MDA

3.8.3 Frequency of training

Although 45.5% of MDAs have implemented a formal ICT training policy, the frequency of training is still inadequate to keep up with the rapid changes in terms of technology. For example, one out of three MDAs (34.8%) offer ICT training for employees only occasionally or randomly. This is followed by MDAs that offer training at least once a year (28.3%) as summarised in Figure 3.60. All of this has implications in terms of ensuring that MDA staff have the requisite skills to perform as expected and to harness the IT resources in which MDAs invest.

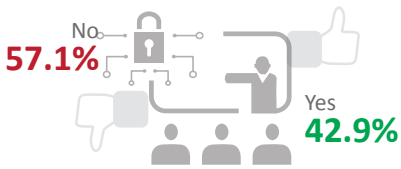
How regular are the ICT training programs offered?

Not sure / don't know	Once in awhile (randomly)	At least once every year	At least once a month every 3 months (but not monthly)	At least once a month (but not weekly)	At least once a week (but not everyday)	Daily or almost everyday
2.2%	**34.8%**	**28.3%**	**23.9%**	**4.4%**	**0.0%**	**6.5%**

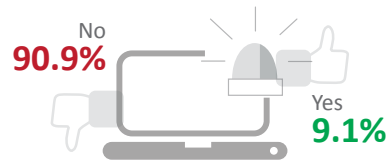
Figure 3.60: Frequency of ICT training programs offered by MDAs

3.8.4 Security awareness

The survey asked MDAs whether they had organised any employee IT security awareness sessions or conducted any emergency testing/training exercises related to disaster recovery/business continuity during the last financial year (FY2016/17). More MDAs (42.9%) conducted IT security awareness sessions for their employees during the last year (FY2016/17) compared to those that conducted any testing/training exercise for disaster recovery/business continuity (9.1%) as shown in Figure 3.61.



Did your institution conduct any IT security awareness sessions for the employees of the organisation during the last year (FY2016/17)?



Did your institution conduct any emergency testing/training exercise for disaster recovery /business continuity during the last year (FY2016/17)

Figure 3.61: MDAs that conduct awareness/training for information security and disaster recovery

Regular and comprehensive security awareness training is paramount because research studies have documented that institutional employees are the weakest link when it comes to organisational IT security. Inadequately trained employees unfamiliar with basic IT security best practices offer countless openings for external parties that want to compromise an MDA's investment in IT security technology and measures. Besides addressing compliance with government regulations, the training can also address the issues related to the use of personal devices like smart phones that employees use to access MDA IT systems.

Unfortunately, among MDAs that reported conducting IT security awareness sessions for their employees, the most active MDA reported 10 sessions while MDAs with the least had 1 session each during the financial year (FY2016/17). In total, all MDAs reportedly conducted only 79 sessions across the whole of government.

The same applies to disaster recovery training for employees to ensure that MDA data is protected from potential disasters and critical functions can be quickly restored or continuously operate through disruptive events. Testing is important to validate MDA business continuity plans and ensure that recovery efforts work correctly as expected. For example, an MDA can make regular backups of critical data, but without testing, it is difficult to tell whether such backups are complete, function properly and can be relied upon to restore full business operations after a disruptive event.

3.9 Cloud

Cloud computing is an emerging IT deployment and delivery model that provides MDAs with access to flexible and convenient on-demand access to a pool of configurable computing resources that can be rapidly provisioned and deployed with marginal service-provider interaction.

3.9.1 Clouding computing indicators at a glance

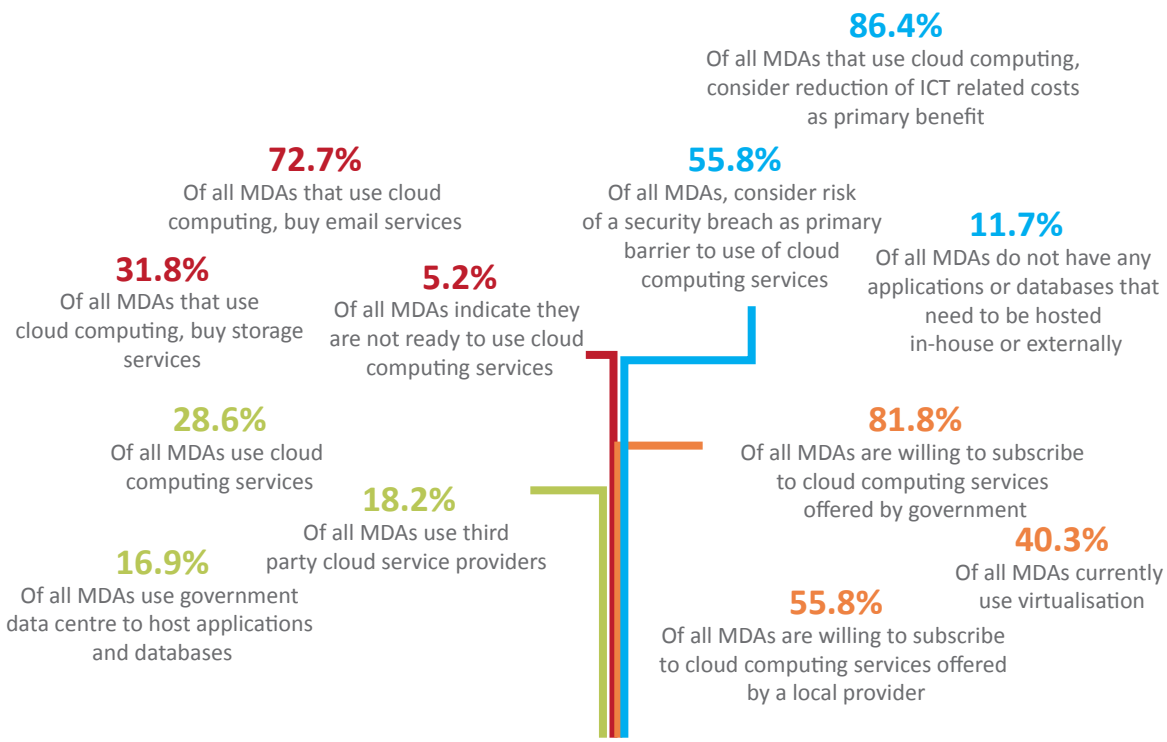


Figure 3.62: MDA cloud computing statistics at a glance

Adoption of cloud computing among MDAs is still low with only 28.6% of MDAs using cloud computing services. Most MDAs (80.5%) reported that they host their applications and databases in-house, followed by use of other cloud service providers (18.2%) as shown in Figure 3.63. 11.7% of all MDAs also indicated that they did not currently have any applications or databases that need hosting.

Where are your institutional applications and databases currently hosted? (multiple-select, ranked)

On-premise physical infrastructure	Other cloud service providers	Government Data Centre (Government cloud)	We do not have applications or databases
80.5%	18.2%	16.9%	11.7%

Figure 3.63: Hosting and cloud services amongst MDAs

3.9.2 Cloud services

Amongst the MDAs that used cloud computing, the most popular cloud computing services was email (72.7%), followed by data storage (31.8%) and software as a service (31.8%) as summarised in Figure 3.64.

Does your institution buy any of the following cloud computing services used over the internet? (multiple-select, ranked)

E-mail	Storage	Software as a service	Infrastructure as a service	Backup as a service	Platform as a service
72.7%	31.8%	31.8%	27.3%	18.2%	13.6%

Figure 3.64: Cloud computing services procured by various government MDAs

3.9.3 Cloud benefits

MDAs that used cloud computing services identified a number of benefits. The greatest benefit was the reduction in ICT related costs (86.4%), followed by the simplicity of deploying cloud-based solutions (77.3%) and increased productivity (77.3%) as highlighted in Figure 3.65.

What do you consider as some of the benefits from using cloud computing services? (multiple-select, ranked)

Reduction of ICT related costs	Increased productivity	Simplicity of (easy and quick) deployment of cloud-based solutions	Flexibility in up-or down-scaling
86.4%	77.3%	77.3%	68.2%

Figure 3.65: Benefits identified by MDAs that used cloud-computing services

3.9.4 Cloud barriers

The survey asked MDAs about the factors that limited their use of cloud services. The risk of a security breach emerged as the biggest barrier (55.8%), emphasising the importance of systems and data security across MDAs. This was followed by the high cost of cloud computing services (40.3%) and uncertainty about the location of hosted data (36.4%) as summarised in Figure 3.66.

What factors prevent or limit your institution from using cloud computing services? (multiple-select, ranked)

Risk of a security breach	High cost of buying cloud computing services	Uncertainity about the location of the data	Uncertainity about applicable law, jurisdiction, dispute resolution mechanism
55.8%	40.3%	36.4%	27.3%

Difficulties in unsubscribing or changing service provider (including concerns with data portability)	Lack of cloud-related expertise in our institution	Problems accessing data or software	Others	Our institution is not ready for cloud computing services
22.1%	20.8%	11.7%	10.4%	5.2%

Figure 3.66: Barriers identified by MDAs that used cloud-computing services

To underscore the importance of data security, MDAs indicated more willingness to subscribe to cloud computing services offered by government (81.2%) compared to services offered by a local provider (55.8%) as summarised in Figure 3.67.

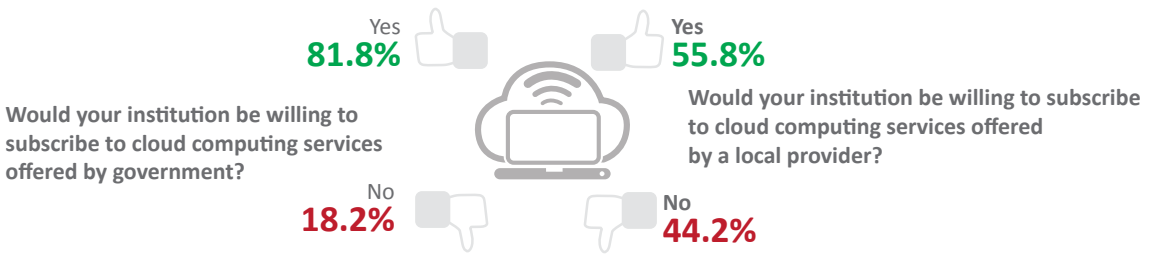


Figure 3.67: Willingness amongst MDAs to subscribe to cloud computing services

This willingness to subscribe to cloud computing services offered by government coupled with the increased use of the national backbone and Internet access provided by NITA-U indicate that MDAs are beginning to appreciate the value of a shared government infrastructure, and maybe a precursor to increased adoption of shared government services.

Figure 3.68 presents the status of virtualisation within MDA computing infrastructure. Survey findings indicate that two out of every five (40.3%) MDAs are currently using virtualisation, while one out of every five (22.1%) MDAs did not yet have any plans to use virtualisation as shown in Figure 3.68.

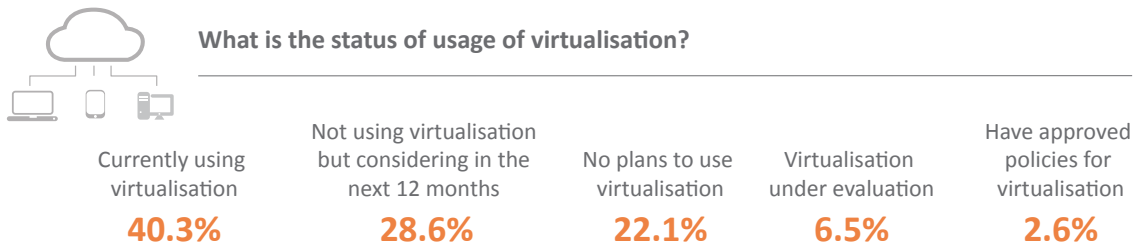


Figure 3.68: Status of virtualisation amongst MDAs

3.10 Information Security

While employee productivity and user activity levels are rising thanks increasing adoption and use of digital technologies within MDAs, information security is an increasingly important priority for government, as MDAs strive to protect sensitive data and their networks from cyber attacks and security breaches. This section highlights survey findings from MDAs around awareness of Cyber laws, security incidents experienced and counter measures adopted as well as training for both security professionals and general users.

3.10.1 MDA information security at a glance

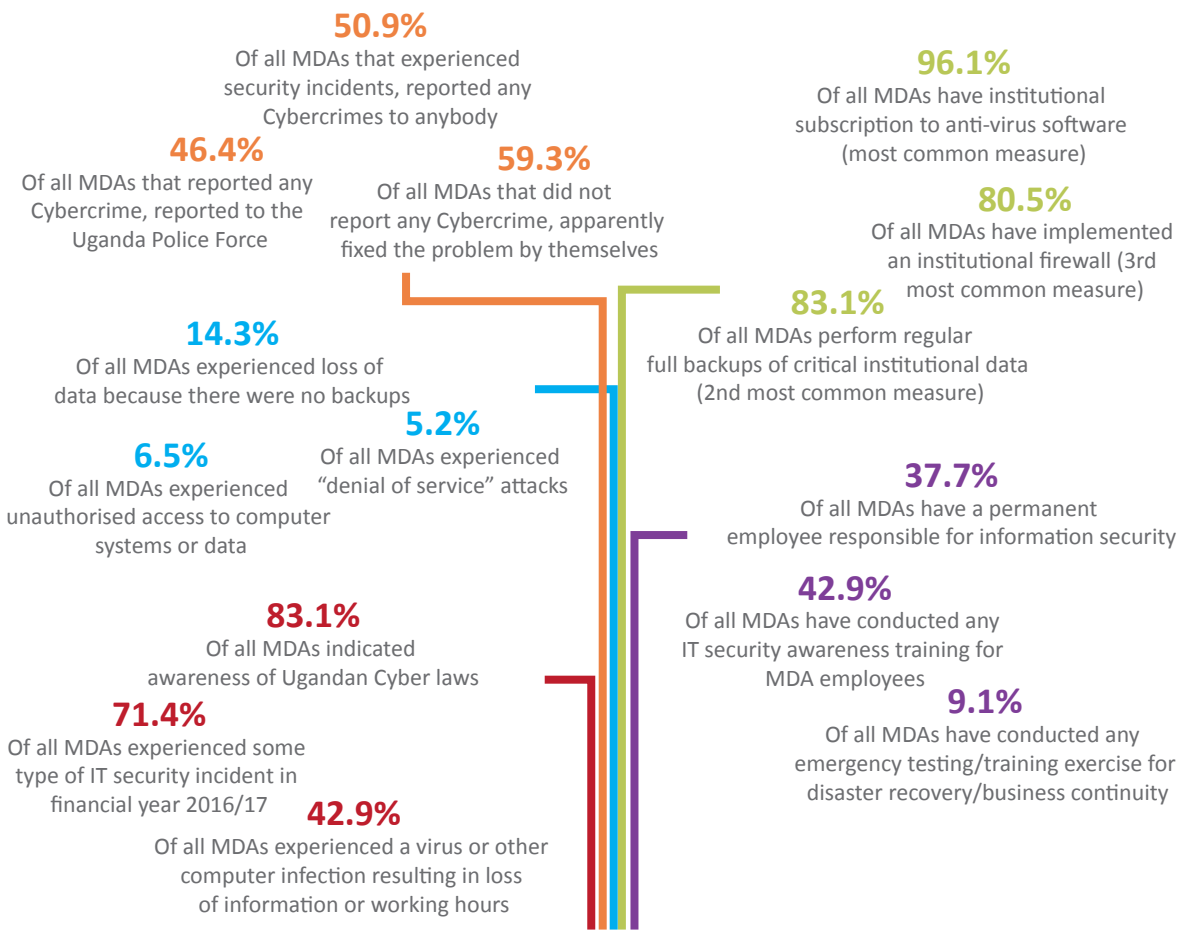


Figure 3.69: MDA information security indicators at a glance

3.10.2 ICT Policies

ICT policies provide the governance and management frameworks that underpin effective deployment and use of IT resources MDAs and their customers. The survey collected data about specific ICT policies that MDAs had developed and implemented to enhance institutional ICT governance. Overall, most MDAs (97.4%) maintained an up-to-date register of important IT assets, 77.3% of MDAs had an Information Security Policy and 77.3% of MDAs had an ICT Policy/Strategy/Masterplan (77.3%) as shown in Figure 3.70. The least developed policy was ICT interoperability frameworks at 13.6%.

Does your institution have any formal policies and procedures addressing any of the following area(s)? (in use and formally approved by management)

Up-to-date register of important it Assets	Information Security Policy	ICT Policy/Strategy/ Master Plan	Acceptable Use of Institutional ICT Resources	ICT Disaster Recovery and /or Business Continuity
97.4%	77.3%	77.3%	68.2%	54.6%

ICT Training	Disposal of ICT equipment and Elecronic Waste Management	Institutional Enterprises Architecture	ICT Interoperability Frame work
45.5%	45.5%	22.7%	13.6%

Figure 3.70: Proportion of MDAs that have implemented different ICT policies and procedures

The range of policies reported by MDAs painted a rosy picture that did not rhyme with findings from stakeholder interviews. The ICT policy framework within MDAs needs further research to establish what policies are in place and the extent of their implementation. It is fathomable that some MDAs have some guidelines in place, which in the interviews they equated to full-scale ICT policies. According to the National Information Security Policy, all MDAs are required to have an Information Security Policy and appropriate business continuity (BC) and disaster recovery (DR) programmes.

How does your Institution dispose of e-waste?

Regular/normal office waste disposal method	Disposal Through sale (as scrap, reusable, etc)	Reuse (internal recycling)	other	Through a recycling agent (external recycling)	Landfill
41.6%	37.7%	16.9%	15.6%	3.9%	2.6%

Figure 3.71: E-waste disposal methods amongst MDAs

Figure 3.71 shows that different ways that MDAs disposed of e-waste. The most common was through the normal office disposal method as reported by 41.6% of all MDAs, followed by disposal through sale (37.7%). Considering the growing reliance on IT systems by MDAs and their contribution to the rising amount of

e-waste, there is need for government to come up with a comprehensive mechanism to safely deal with the harmful secondary materials that emerge from e-waste while also harvesting the valuable secondary resources that can be extracted for further processing.

3.10.3 Cyber laws

Overall, 83.1% of MDAs indicated awareness of any Ugandan laws that governed electronic communications and transactions (sometimes called Cyber laws). Among these, 90.6% correctly cited the Computer Misuse Act, 2011, followed by the Electronic Transactions Act, 2011 (70.3%). Some 9.4% of MDAs could not state any cyber law as highlighted in Figure 3.72.

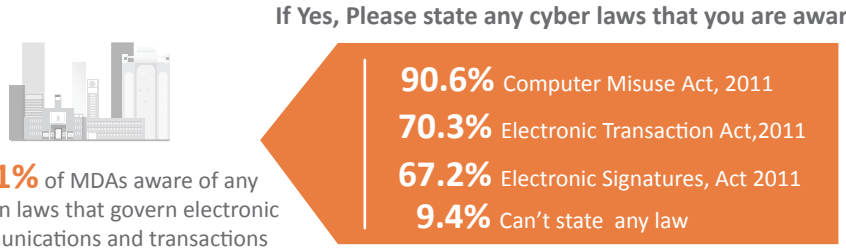


Figure 3.72: Proportion of MDAs aware of Cyber laws and could state them

The survey asked MDAs that correctly cited the Computer Misuse Act, 2011 (70.3%) if they were aware of any offences created by the Act. 82.8% of these answered positively and were then asked to cite any two offences under the Act. Most MDAs cited unauthorised access, such as hacking (68.8%), followed by malicious and offensive communications (35.4%) as shown in Figure 3.73.

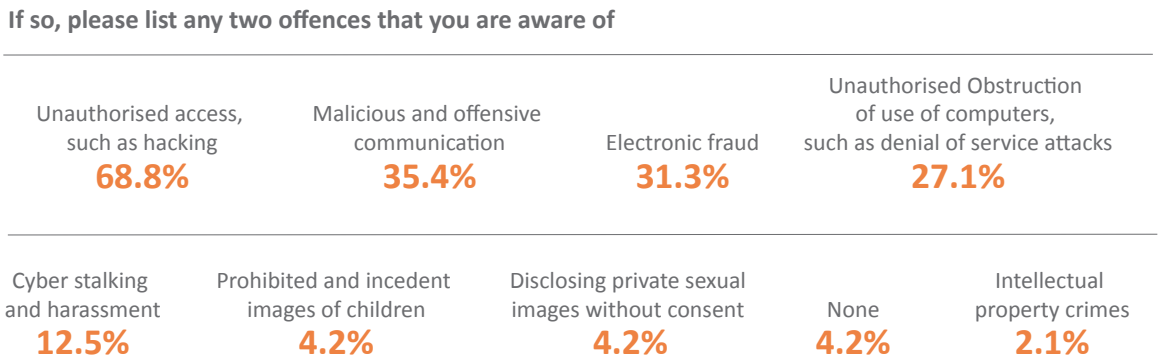


Figure 3.73: Proportion of MDAs aware of Cyber offences created by the Computer Misuse Act, 2011

3.10.4 Security incidents

Overall, 71.4% of MDAs reported having experienced some type of IT security incident during financial year (2016/17). Survey findings indicate that most security incidents related to failure to connect to the internet or other external networks (49.4%) followed by viruses or other computer infections that resulted in loss of information or working hours (42.9%) as presented in Figure 3.74. The least common security incident reported was unauthorised leakage or sharing of institutional information (3.9%).

Which of these ICT security incidents did your institution experience during the last financial year (2016/17) (multiple-select, ranked)

Failure to connect to the internet or other external networks	Virus or other computer infection resulting in loss of information or working hours	Institutional ICT equipment was lost	Phishing or pharming scam with potential for financial loss	Improper use of IT
49.4%	**42.9%**	**23.4%**	**22.1%**	**22.1%**

Loss of data because there were no backups	Unauthorised access to institutional computer systems or data	Attack of the type 'Denial or Service'	Unauthorised leakage or sharing of institutionsl information sent on the internet and/or other privacy violations
14.3%	**6.5%**	**5.2%**	**3.9%**

Figure 3.74: Security incidents experienced by MDAs during the last financial year (2016/17)

Given the fact that all MDAs have Internet access, the proportion of incidents relating to unauthorised access to institutional computer systems or data appears rather low considering that people outside MDAs would like to access sensitive government data within various MDA systems.

71.4% Of all MDAs experienced a security incident during financial year 2016/17

50.9% Of MDAs that experienced a security incident, reported any Cybercrime(s) to anybody

Who did you report the cybercrime to?

46.4%	42.9%	32.1%	14.3%	10.7%	3.6%
Uganda Police (or other law enforcement agency)	NITA-U	Institutionsl Internet Service provider	Other	CERT.Ug or UgCERT	Institutional Financial service provider (bank)

Figure 3.75: Proportion of MDAs that experienced and reported Cybercrimes

Amongst MDAs that experienced security incidents, only half (50.9%) had reported any Cybercrime(s) to any entity. Slightly less than half of these (46.4%) reported to The Uganda Police (or other law enforcement agency), followed by NITA-U with 42.9% as indicated in Figure 3.75.

CERT.ug is the official national point of contact for coordinating response to cyber security threats and sharing advice on cyber security matters by working with a range of pertinent stakeholders. Its appearance towards the bottom of Figure 2.52 is an indication that NITA-U/CERT.ug still have work to do to create more awareness about the existence and functions of CERT.ug across the country.

The survey established that among MDAs that had not reported any cybercrime(s), over half (59.3%) had solved the problem internally as presented in Figure 3.76. The danger with not reporting such incidents to any entity is that it increases the likelihood of such incidents recurring in the future.

If you did not report a cybercrime, what were your reasons? (multiple-select, ranked)

We fixed the problem ourselves Internally	Not applicable	We did not know how to or how to report it	We felt it was a waste of time	Other	We did not know what the crime was
59.3%	29.6%	11.1%	7.4%	3.7%	3.7%

Figure 3.76: Reasons why MDAs had not reported any cybercrime(s)

3.10.5 Security measures

All MDAs reported that they had implemented some security measures within their institutions to minimise the impact of security incidents like accidental loss or unauthorised access to sensitive government data. The most common security measure deployed by MDAs was institutional subscription to anti-virus software reported by 96.1% of MDAs. Four out of 5 by MDAs (83.1%) made regular full backups of critical institutional data as a security measure. Emergency exercises (at least once a year) and 2-factor authentication for employees' remote login to institutional ICT system were the least employed security measures with 18.2% and 32.5% of MDAs reporting their use respectively as summarised in Figure 3.77.

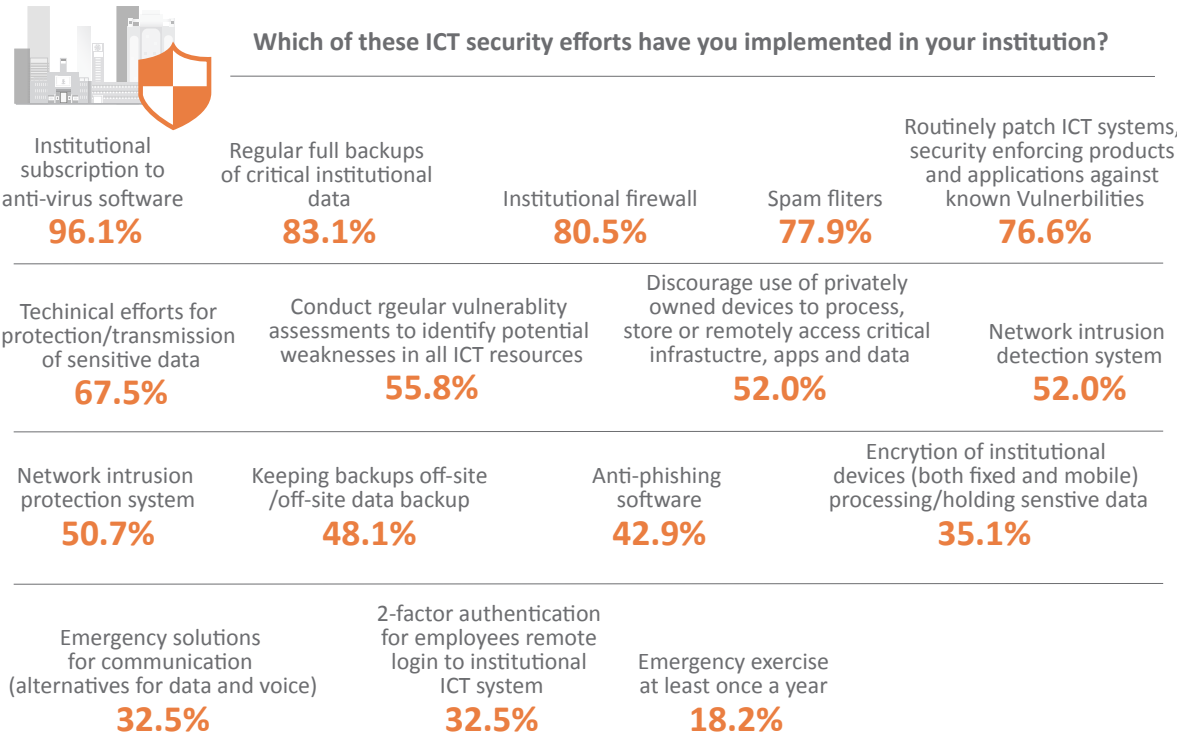


Figure 3.77: Various IT security measures that MDAs have implemented

3.10.6 Dedicated security personnel

The survey also asked MDAs whether they had formally appointed personnel responsible for information security or disaster recovery and/or business continuity. Only 37.7% of MDAs reported having a formal employee responsible for information security, while only 35.1% of MDAs reported having a formal employee responsible for disaster recovery and/or business continuity as shown in Figure 3.78.

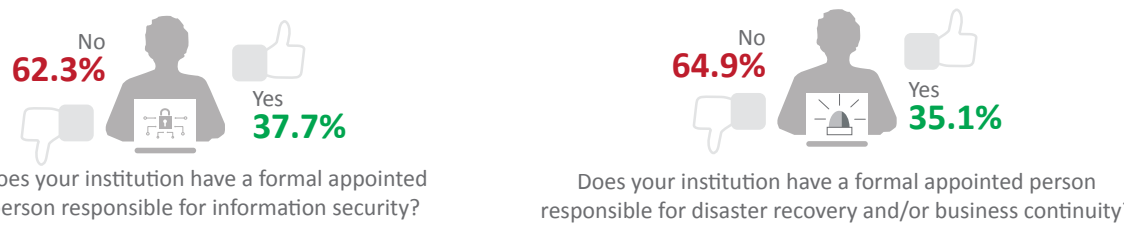


Figure 3.78: MDAs that have dedicated personnel for information security and disaster recovery

3.11 Summary of Findings and Conclusions

The proportion of MDA employees in ICT functions/roles make up only 1.9% of the total work force of MDAs as indicated in Figure 3.79. While there is a slight improvement compared to 2012/13, when 1.6% of all MDA employees were ICT personnel, this proportion is still low given the high priority that government attaches to ICT in terms of improving service delivery and the development of the country as a whole. Issues like the gender bias among ICT personnel (31.2% female vs. 68.8% male), which remains largely unchanged from 2012/13 as well as increased specialisation in key areas like IT security, user experience design and quality assurance need to be urgently addressed through targeted efforts and programmes.

Trends in ICT personnel

	Total	Male	Female
2017/18	**1.9%**	68.9%	31.2%
2012/13	**1.6%**	69.5%	30.5%

Figure 3.79: Trends in ICT personnel across MDAs

Although all MDAs have Internet access and possess various computing devices, the proportion of MDAs employees that routinely use computers is just over one third of the total MDA workforce (37%), while the proportion that routinely use the Internet is less than a quarter (22.5%). The lower proportion of staff that routinely use the Internet should be a cause for concern for government. First, this reflects the shortage of computers and other devices that employees need to adequately perform their work. However, if this were the only issue, then the proportion of employees that routinely use the Internet should be much closer to that which routinely uses computers. The large gap reflects other underlying problems uncovered through interviews and Focus Group Discussions (FGDs) with stakeholders. These include insufficient Internet bandwidth procured by MDAs to serve all employees, poor internal network infrastructure that hinders MDAs to deliver Internet access to all employees (68% of computers in MDAs with a LAN are connected to an MDA LAN) and the lack of adequate ICT skills and knowledge among employees that would enable them to effectively use the Internet.

Regardless of the reasons for the gap, the proportion of MDA staff that routinely use computers and the Internet is still too small to satisfy the ambitions of government to deliver all government services to citizens through using e-government.

Other challenges affecting IT access and usage in MDAs such as aging IT equipment and insufficient budgetary allocations for IT compound the above problems. For example, most MDA computers (51%) are three years old or more and most MDA computers (90.9%) run Microsoft Windows 10, a relatively recent operating system that requires computers that are more powerful in terms of specifications. This highlights the urgent need for government to set aside funds on a regular basis to replenish the aging stock of MDA computers, to procure sufficient Internet bandwidth for MDAs and to invest in nation-wide programmes that impart IT skills to all government employees as they embark on the drive towards moving more government services online.

The primary Internet Service Provider (ISP) for MDAs in Uganda is NITA-U, covering 83.1% of MDAs (Figure 3.19) and delivering most of their bandwidth via fibre on the National Backbone Infrastructure (NBI). Two thirds of MDAs (66.2%) reported that they restrict access to particular websites, primarily as a mechanism to manage bandwidth. In addition, MDAs reported the high cost of the Internet and insufficient bandwidth (60.6% and 54.5% respectively) as the major obstacles to a wider use of the Internet for MDA work. This positions NITA-U to influence the reduction in bandwidth pricing to further improve MDA perceptions about their Internet service (Figure 3.29), which is largely positive.

All MDAs have an institutional website and most MDAs (92.2%) have social media profiles. Both of these have evolved to become vital communication channels with the public. Although MDAs have dedicated personnel to update their websites and to manage their social media presence (54.3% and 50% respectively), the frequency of keeping these channels updated (see Figure 3.33 and Figure 3.38) still lags contrary to the recommendations of the Government of Uganda Social Media Guidelines.

The MDAs have embraced the use of digital platforms to provide government services with half of them (50.7%) offering e-Government services via the web, 19.5% via SMS and 13% using mobile applications (Figure 3.42). In addition, 61% of MDAs plan to implement new e-Government services in the next five years. However, NITA-U needs to support MDAs to create more awareness and use of e-Government services as well as to address implementation challenges. For example, just 17.4% of individuals that had interacted with an MDA were aware of any government or public service available online. Usage is even much lower, with only 5% of those aware of e-Government services having used an online service. Common internal challenges in implementing e-Government services cited by MDAs (Figure 3.45) include lack of investment and budgetary constraints and higher costs than expected (71.4% and 55.8% respectively) while external challenges (Figure 3.46) include lack of funding and lack of supporting infrastructure (75.3% and 42.9% respectively).

Government MDAs have invested in software through either buying commercial software or developing custom applications. All MDAs have office productivity suites (100%) and 98.7% have anti-virus software as indicated in Figure 3.48. While most software licenses are subscription or rental-based, one in four licenses (24.3%) is still pirated, generating IT security and compliance issues.

While MDAs are embracing many emerging technologies, only 28.6% of MDAs have adopted cloud computing services (Figure 3.63). Email is the primary cloud computing service adopted by MDAs, outpacing storage and software services. Most MDAs (86.4%) cite reduced ICT related costs as the primary benefit of cloud computing (Figure 3.65), but concerns about data security and high cost of cloud services were highlighted as barriers (Figure 3.66). Notably, MDAs indicated greater willingness to subscribe to cloud computing services offered by government than subscribe to services offered by a private provider (81.2% and 55.8% respectively).

As MDAs increasingly adopt and use digital technologies, information security becomes ever more important to help protect MDA networks from cyber attacks and security breaches. More than three quarters of MDAs (77.3%) have developed an information security policy (Figure 3.70), but it is unclear how many of them have fully implemented their security policies and monitor compliance on a regular basis. A majority of MDAs - 71.4% - experienced a security incident during financial year 2016/17 (Figure 3.74), however only half of them (50.9%) reported an incident, increasing the likelihood of such security incidents happening again (Figure 3.75). On a positive note, many MDAs have implemented security measures within their networks to minimise the impact of security incidents (Figure 3.77). The MDAs that have appointed dedicated security personnel are 37.7% (Figure 3.78), however, shortage of personnel with sufficient skills is still a major issue (Figure 3.8) and regular comprehensive security awareness training for general MDA employees is largely non-existent (section 3.10.6).

Given the funding limitations faced by MDAs and the competing sector priorities of the national budget, plans by NITA-U to implement shared ICT infrastructure and applications will go a long way in addressing many of the IT challenges identified by MDAs, helping to save scarce resources, enhancing security, and improving the user experience. These efforts should be expedited and key targets related to adoption of existing shared infrastructure and applications clearly spelt out, monitored and on a regular basis reported on.

Chapter 4 Findings from Local Governments

This chapter summarises survey findings on different indicators related to access and usage of various Information Technology (IT) services by Local Government Administrations (LGs) across the country. The indicators are organised in different categories that include computing device penetration, network connectivity and internet access, process automation capabilities, websites and social media, cloud services, information security and ICT policies. Figure 4.1 highlights some of the key MDA IT indicators.

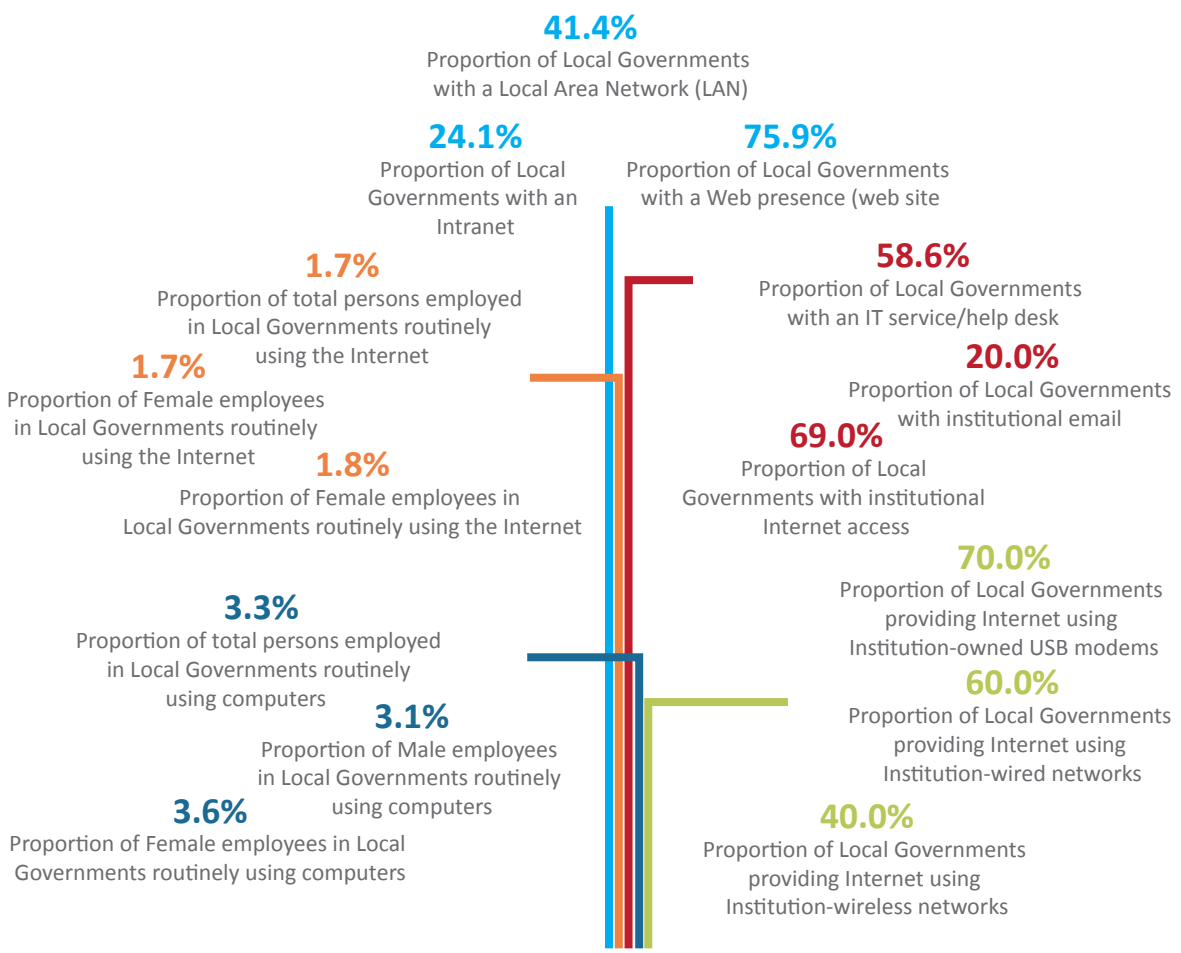


Figure 4.1: Summary of key Local Government IT indicators

4.1 Overview

The Enumeration Areas (EAs) selected for the survey covered 33 district administrations that provided the sample for Local Government administrations (LGs). Of these, 28 provided full data; a response rate of 84.8%, while two provided partial data. In this section, we describe the general characteristics of LGs that are pertinent to access and use of Information Technology (IT) across the country as beginning with Table 4.1 to Table 4.4.

Table 4.1: Percentage of LGs with access to different IT services

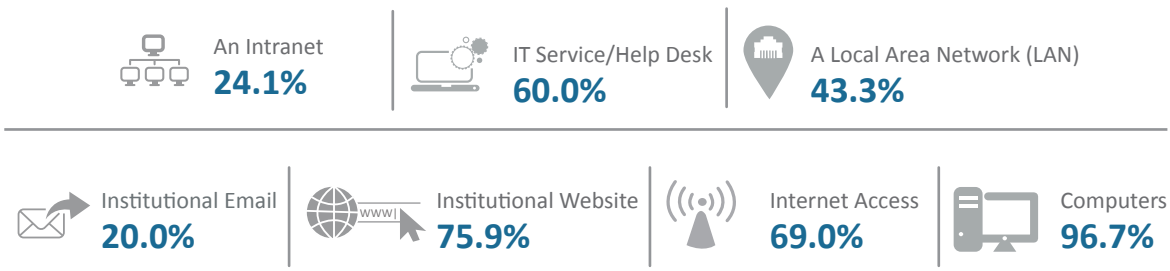


Table 4.2: Percentage of LG employees routinely using computers and the Internet

Proportion of persons employed in LGs routinely using:

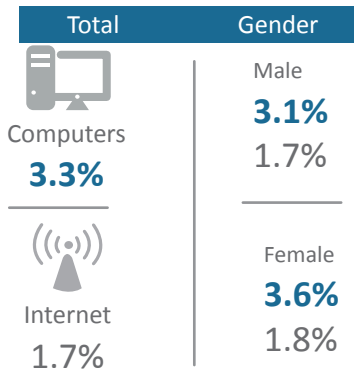


Table 4.3: Percentage of LGs and their staff with access to the Internet by type of access

Proportion of LGs providing Internet access for work-related purposes via:

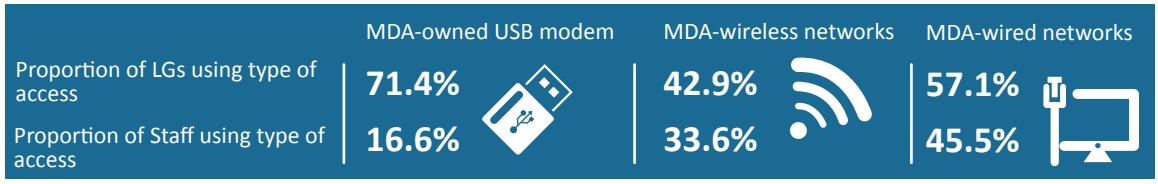


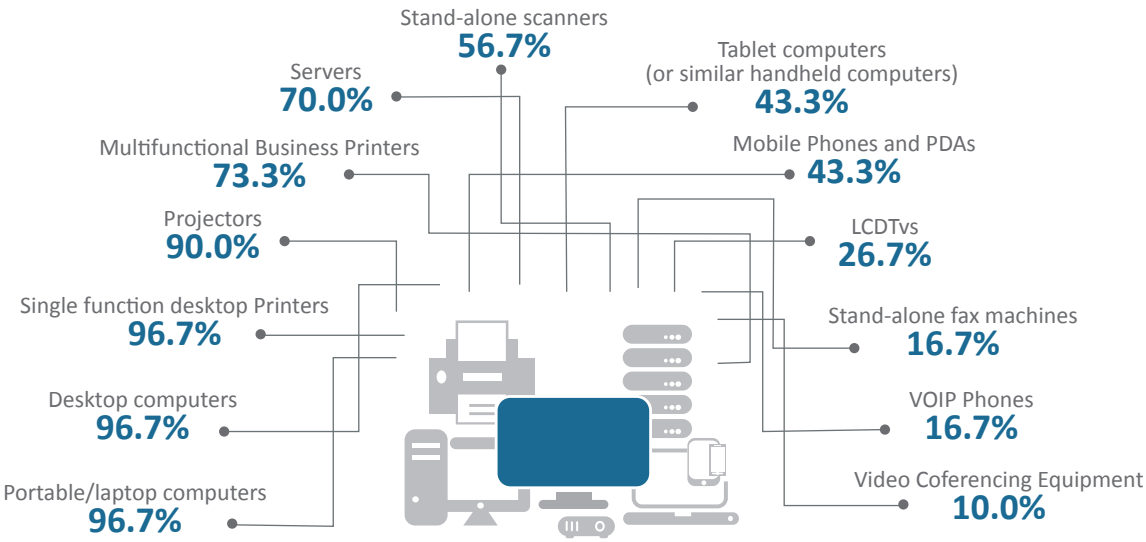
Table 4.4: Percentage of LG computers connected to a LAN and the Internet

	Connected to a LAN	Connected to Internet
Proportion of LG computers:	**17.8%**	**15.1%**

4.2 Device Penetration

4.2.1 Computing device penetration

Figure 4.2 shows the penetration of various computing devices across Local Governments. The penetration of desktop computers, laptops and single function printers is highest, with 96.7% of Local Governments owning some. The penetration of VOIP phones and video conferencing equipment is lowest across Local Governments (at 16.7% and 10.0% respectively) as highlighted in Figure 4.2.



What types of IT equipment are in use across your Local Government? (ranked)

Figure 4.2: Penetration of Computing Devices across Local Governments

Most computers (37.4%) across Local Governments are 1 to 3 years old, followed by those 3 to 5 years old (25.7%) as shown in Figure 4.3.

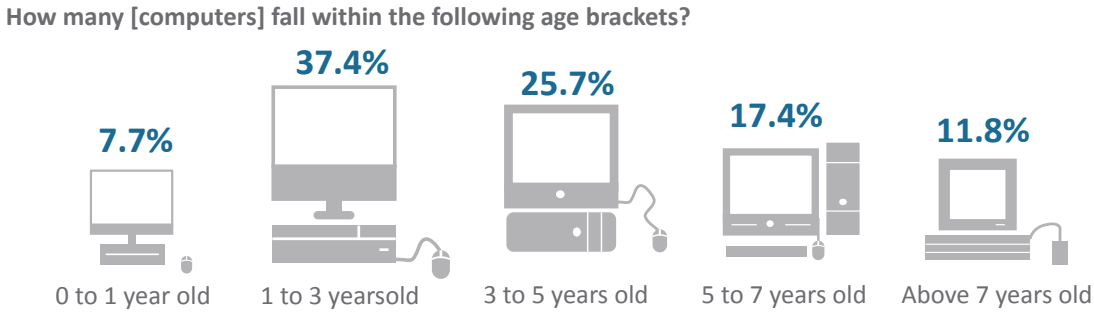


Figure 4.3: Percentage of computers by age across Local Governments

4.2.2 Proportion of employees routinely using computers and Internet

Local governments reported that only 3.3% of all their employees routinely used computers at work and 1.7% of their employees routinely used the Internet. The survey defined routine usage as any usage that occurred at least once a week. From a gender perspective, more female employees routinely used computers compared to male employees (3.6% vs. 3.1% respectively). Conversely, for the Internet, more male employees routinely used the Internet compared to their female colleagues (1.8% vs. 1.7% respectively) as presented in Figure 4.4.

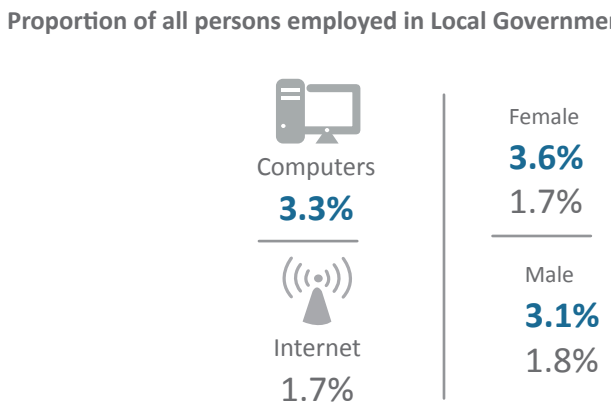


Figure 4.4: Proportion of Local Government employees routinely using computers and the Internet

4.3 Network Connectivity and Internet Access

4.3.1 Network connectivity

Two out of five Local Governments (43.3%) reported having a Local Area Network (LAN), while one out of five Local Governments (24.1%) reported having an Intranet as shown in Figure 4.5. About seven out of 10 Local Governments reported having Internet access (69.0%) and a web presence (75.9%).

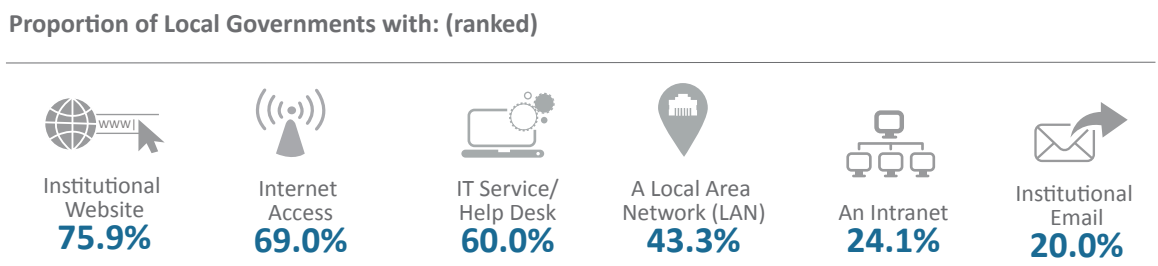


Figure 4.5: Proportion of government MDAs with various IT services

The survey asked Local governments that reported having LANs about the number of computers connected to the LAN as well as to the Internet. In total, 17.8% of their computers were connected to their LAN, while 15.1% of all their computers were connected to the Internet. Additionally, only one in three (33.3%) Local Governments with a LAN indicated awareness of the National IT Standards for Structured Cabling for government MDAs.

All Local Governments (100%) that did not have Internet access, cited the high cost of Internet equipment as the biggest barrier (100%), followed by the high cost of the Internet service (88.9%) as summarised in Figure 4.6. This highlights the need for both national and Local Governments to budget and allocate more resources towards improving their network infrastructure.

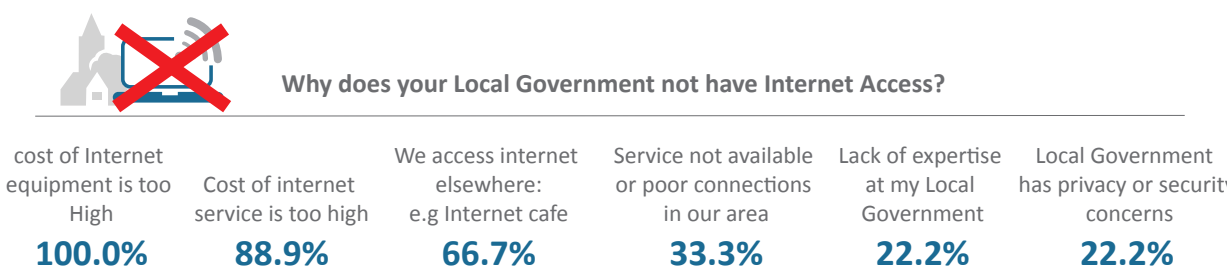


Figure 4.6: Reasons for not having Internet access among Local Governments

4.3.2 Internet Service Providers

Africell, Airtel and MTN (with 38.1% each) were the leading Internet Service Providers (ISPs) for Local Governments, followed by NITA-U (20%) as indicated in Figure 4.7. Most Local Governments (52.4%) had only one ISP, followed by those with two ISPs (38.1%).

Who is your Internet Service Provider? (multiple-select, ranked)

Figure 4.7: Internet Service Providers serving different Local Governments

4.3.3 Type of Internet connection

Figure 3.8 shows the different types of connections that Local Governments have to their ISPs. Most Local Governments (81.0%) have mobile broadband connections to their ISPs, followed by wireless access points (42.9%) as presented in Figure 4.8.

What type of internet access/connection does your Local Government have to your Internet Service Provider(s)? (multiple-select, ranked)

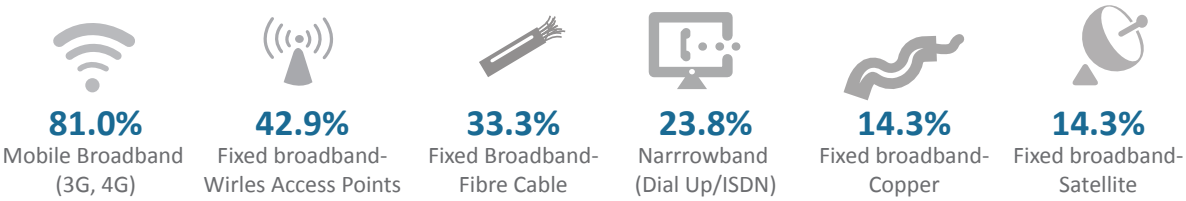


Figure 4.8: Type of Internet connections used by various Local Governments

Within the institutions, Local Governments use a variety of methods to provide Internet access to their employees. Most Local Governments (71.4%) use institutional-owned USB modems to provide their employees with Internet access, followed by wired networks (57.1%) as indicated in Figure 4.9. Despite this, wired networks served a higher proportion of staff (45.5%) compared to the USB modems (16.6%) across Local Governments.

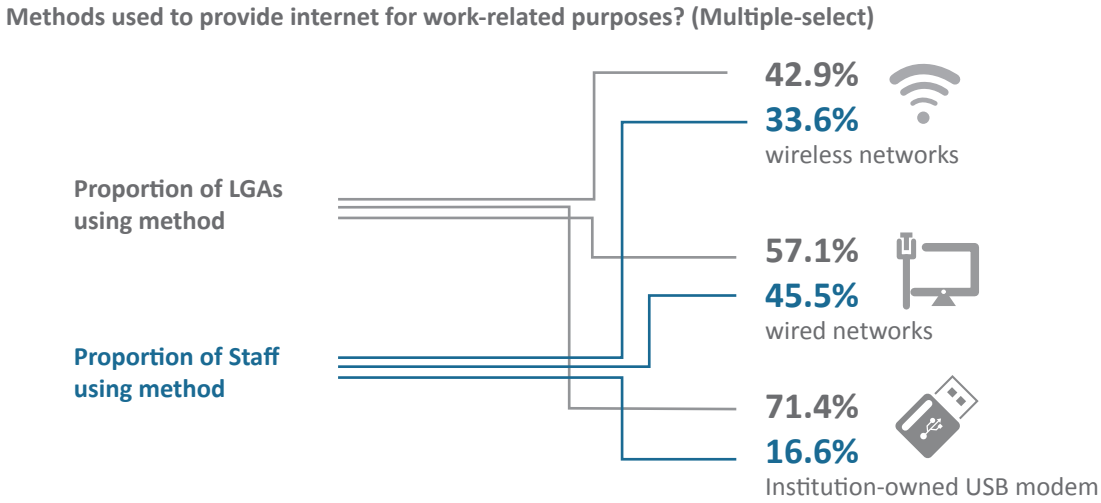


Figure 4.9: Methods used by Local Governments to provide staff Internet access

4.3.4 Institutional email

One in five Local Governments (19.1%) provided institutional email addresses to their employees. All Local Governments providing institutional email required employees to use institutional email addresses for official purposes and enforced this requirement as presented in Figure 4.10. In addition, all Local Governments that reported providing institutional email, also provided remote access to their institutional email system, documents or applications for employees.

Figure 4.10: Provision and use of institutional email amongst Local Governments

4.3.5 Core activities for Internet use

Local Governments reported using the Internet for a number of core institutional activities, where communication (100%) was considered most critical, followed by processing payments/billing systems (75%) and research and analysis (45%) as shown in Figure 4.11.

What are those core activities for which your Local Government requires the use of the internet?

Communication	processing payments/ billing system	Research and analysis	Using online applications for work processes
100.0%	**75.0%**	**45.0%**	**40.0%**

Figure 4.11: Core activities for which Local Governments used the Internet

4.3.6 Obstacles to Internet use

The survey asked Local Governments that used the Internet about what they perceived as potential obstacles to a wider use of the Internet within their institution for work purposes. Insufficient resources or cost of Internet being too high emerged as the most cited obstacle (85%), followed by lack of knowledge and skills among staff (50%) as shown in Figure 4.12.

In your opinion, what are the potential obstacles to a wider use of the Internet within your Local Government for work purposes?

Insufficient resources/ cost of Internet is too High	Lack of Knowledge/ Skills among staff	Lack of computing devices/equipment	Network coverage/ poor connectivity	Power issues
85.0%	**50.0%**	**40.0%**	**35.0%**	**10.0%**

Figure 4.12: Obstacles to wider use of the Internet identified by Local Governments

4.3.7 Perceptions

In general, Local Governments have negative perceptions about different attributes related to their Internet connections. Most MDAs (80%) were unsure or felt that the cost of buying bandwidth from ISPs was very unaffordable, followed by perceptions that the reliability of Internet connections was poor (65%) and the speed of Internet connections very slow (65%) as depicted in Figure 4.13.

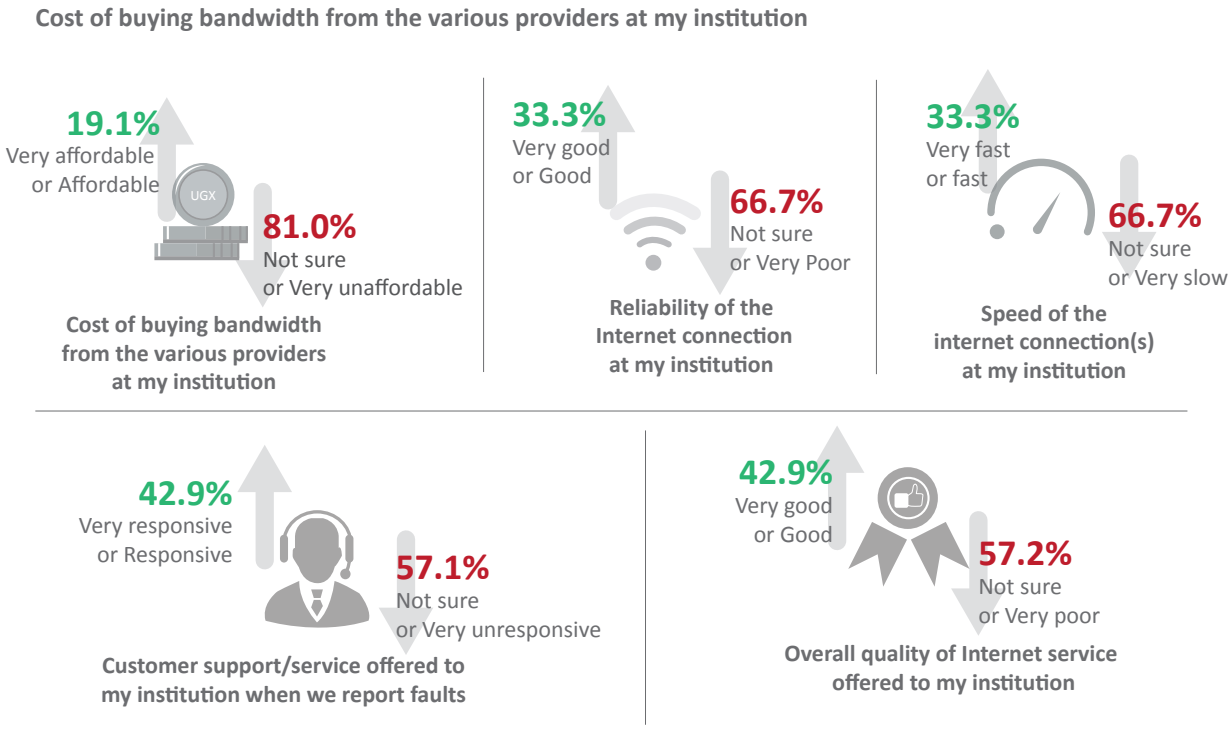


Figure 4.13: Local Government perceptions about different attributes of their Internet service

4.4 Websites and Social Media

4.4.1 Service delivery channels

Figure 4.14 shows the variety of delivery channels used by Local Governments to reach and serve their constituents. Overall, 96.7% of all Local Governments reported using field visits, where employees went out to visit and interact with constituents. These were followed by use of customer walk-ins (93.3%) as indicated in Figure 4.14. The use of mobile applications and call centres as service delivery channels is still low in Local Governments at 23.3% for both.

Which delivery channels does your Local Government currently use to Interact with Citizens and Residents who need your services?

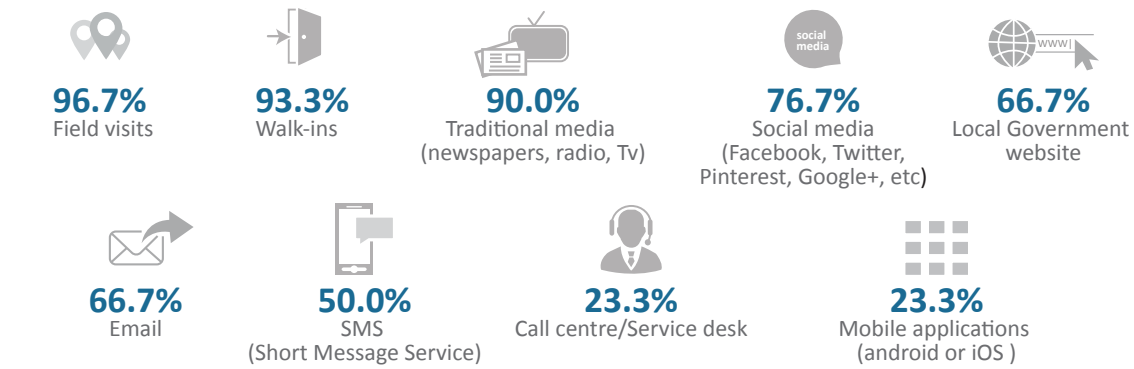


Figure 4.14: Service delivery channels used by Local Governments

4.4.2 Websites

Three out of four Local Governments (73.3%) reported owning an institutional website. Most Local Governments (81.8%) use a Content Management System (CMS) to power their institutional website. They predominantly use Joomla (18.2%) or WordPress (18.2%) as their CMS.

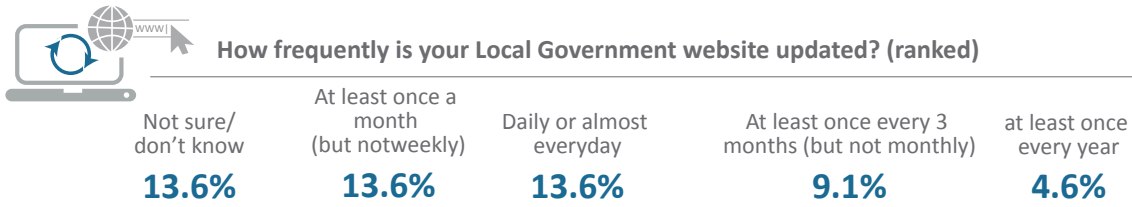


Figure 4.15: Frequency of Local Government website update

The survey sought to establish how often Local Governments updated their websites. Overall, Local Governments updated their institutional websites with varying frequencies. Some reported updating their websites daily or almost every day (13.6%), while others indicated updating their websites at least once a month, but not weekly (13.6%), as shown in Figure 4.15.

To update the institutional website, most Local Governments (68.2%) reported having a dedicated person or resource with 53.3% having at least one fully dedicated employee as the web person, followed by those that used a partially dedicated employee (40%) as shown in Figure 4.16.

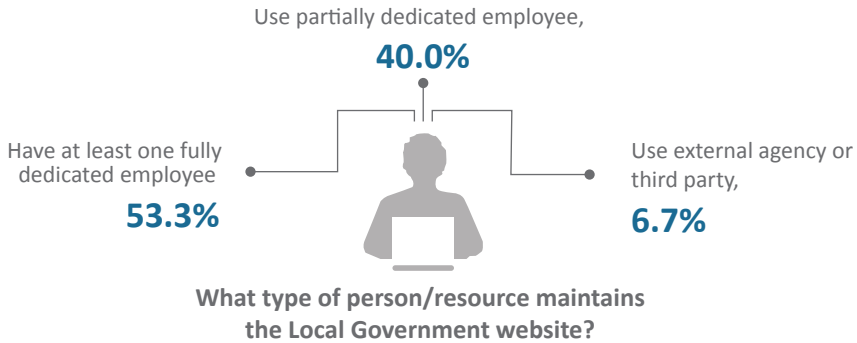


Figure 4.16: Type of person that updated Local Government website

4.4.3 Social media

One in two (56.7%) Local Governments reported having a social media presence. Most Local Governments (94.1%) used Facebook, followed by WhatsApp (70.6%) as highlighted in Figure 4.17.

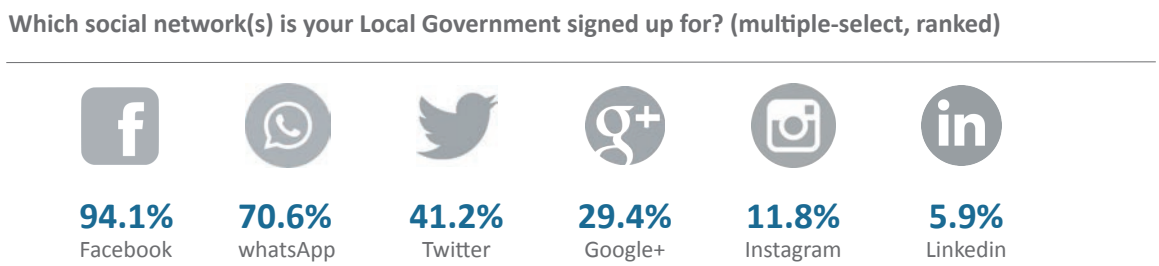


Figure 4.17: Social media networks used by Local governments

Figure 4.18 indicates that Local Governments that signed up for social media have similar objectives for using social media. They all want to publish institutional information (100%), develop their reputations (100%) and exchange opinions/knowledge within the institutions (100%) and as shown in Figure 4.18.

Figure 4.18: Local Government objectives in using social media

Most Local Governments (82.4%) reported having a dedicated person or resource who maintained the institutional social media interaction or presence. The survey further asked MDAs that reported having a dedicated social media person about the type of resource. Most (64.3%) indicated having at least one fully dedicated employee, followed by those that had a partially dedicated employee (28.6%) as shown in Figure 4.19.

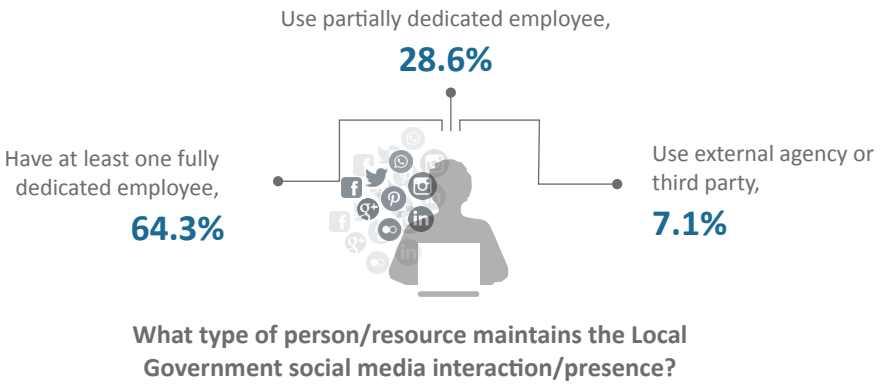


Figure 4.19: Type of person that maintained Local Government social media interaction or presence

4.5 Software Capabilities

4.5.1 Software applications

Local Governments have invested in software applications to automate various business processes. Most Local Governments (93.1%) owned office productivity software (word processor, spreadsheet and presentation), followed by Anti-Virus software (82.8%) and database software (44.8%) as indicated in Figure 4.20.

Which of the following types of software applications are used within your Local Government (officially supported)? (ranked)

Office suite (word, spreadsheet, presentation)	Anti-virus software	Database software	Email server software	Data Analytics	Enterprise Resource planning (ERP) software	Customer Relationship Management (CRM) software
90.0%	**80.0%**	**43.3%**	**26.7%**	**26.7%**	**10.0%**	**10.0%**

Figure 4.20: Software applications used by Local Governments

In terms of office productivity software, all Local Governments (100) reported using Microsoft Office. For anti-virus software, most Local Governments used Kaspersky (44.4%), followed by Microsoft Bit Defender (40.7%) as presented in Figure 4.21.

What Anti-virus software does your Local Government use?

kaspersky	Microsoft bit defender	AVG
44.4%	**40.7%**	**25.9%**

Figure 4.21: Anti-virus software used by Local Governments

For database software, most Local Governments (86.7%) used Microsoft SQL, followed by Oracle (13.3%) as shown in Figure 4.22. All Local Governments with email services reported using Microsoft Exchange.

What Database software does your Local Government use?

Microsoft SQL	Oracle
86.7%	**13.3%**

Figure 4.22: Database software used by Local Governments

4.5.2 Software licenses

The survey asked Local Governments about the type of software license types they bought. The most common type were open source licenses (41.4%), followed by subscription or rental licenses (31%) and perpetual licenses (31%) and as shown in Figure 4.23.

Which of these types of licenses does your Local Government have? (mulltiple-select, ranked)

Open source licenses	Subscription or Rental license	Perpetual licenses	Concurrent usage	Per copy workstation /seat/device	Temporary licenses	Pirated licenses	Per server speed or per processor	Enterprise or site
40.0%	**30.0%**	**30.0%**	**30.0%**	**23.3%**	**20.0%**	**16.7%**	**13.3%**	**10.0%**

Figure 4.23: Types of software licenses across Local Governments

4.5.3 Operating systems

In terms of operating systems, Microsoft Windows was the most widely used operating system as reported by 96.6% of Local Governments. Linux and Mac OS were used by 20% and 10% of Local Governments respectively as highlighted in Figure 4.24.

Which of the following operating systems does your Local Government currently use? (multiple-select, ranked)

Windows	Linux	OS X
96.7%	**20.0%**	**10.0%**

Figure 4.24: Operating systems used by Local Governments

Which versions of Microsoft Windows does your Local Government currently use? (multiple-select)

Windows xp	Windows 7	Windows 8	Windows 10
51.7%	**89.7%**	**75.9%**	**55.2%**

Figure 4.25: Windows operating systems used by Local Governments

For Microsoft operating systems, Windows 7 was the most common operating system as reported by 89.7% of Local Governments, followed by Windows 8 (75.9%) as presented in Figure 4.25. All Local Governments that used Linux, reported using the Ubuntu distribution as shown in Figure 4.26.

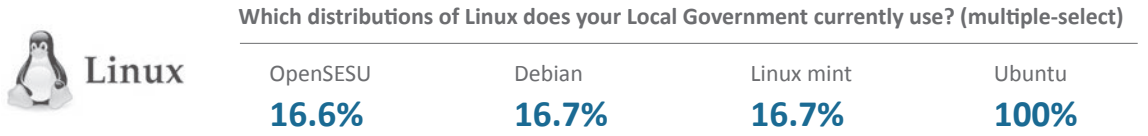


Figure 4.26: Linux distributions used by government LGs

4.5.4 Software policies

According to the survey findings, 73.3% of Local Governments were not aware of the National IT standards on Software and Hardware Acquisition for government prepared by NITA-U. In addition, 76.7% of Local Governments did not have any internal institutional software upgrade strategies, policies or guidelines in place to guide effective software acquisition and use.

The survey asked Local Governments aware of the National IT standards on Software and Hardware Acquisition about the challenges they faced in implementing the standards. Amongst the 26.7% that showed awareness, lack of investment and budgetary constraints emerged as the biggest challenge (87.5%), followed by insufficient number of staff (62.5%) and employees lacking required expertise (62.5%) as presented in Figure 4.27.

Figure 4.27: Local Government challenges in implementing National IT Standards on Software and Hardware Acquisition

4.5.5 ICT Training

One in three Local Governments (30%) reported offering internal ICT training programs to their employees in the use of different software applications. Most ICT training programs (100%) covered use of office productivity suites (word processing, spreadsheets and presentations) and basic typing and data entry skills (88.9%) as summarised in Figure 4.28. In addition, most of the ICT training programs were offered randomly (44.4%) or once a year (22.2%) as indicated in Figure 4.29.

What types of ICT training programs does your Local Government offer to employees? (multiple-select, ranked)

Use of office productivity suites (word, Excel and Power point)	Basic typing and data entry skills	Use of operating systems	Use of proprietary institutional systems
100.0%	**88.9%**	**55.6%**	**33.3%**

Figure 4.28: ICT training programs offered by Local Governments to their employees

How regular are the ICT training programs offered?

Once in awhile (randomly)	At least once every year	At least once a month every 3 months (but not monthly)	At least once a month (but not weekly)	Daily or almost everyday
44.4%	**22.2%**	**11.1%**	**11.1%**	**11.1%**

Figure 4.29: Frequency of ICT training programs offered by Local Governments

4.6 Cloud

Figure 4.30 indicates whether Local Governments had applications or databases and where they are hosted. The survey revealed that 66.7% of Local Governments hosted their applications and databases in-house using on-premise physical infrastructure. This was followed by use of the government data centre (17.2%) as shown in Figure 3.30. 20% of all Local Governments also indicated that they did not have any applications or databases that needed hosting.

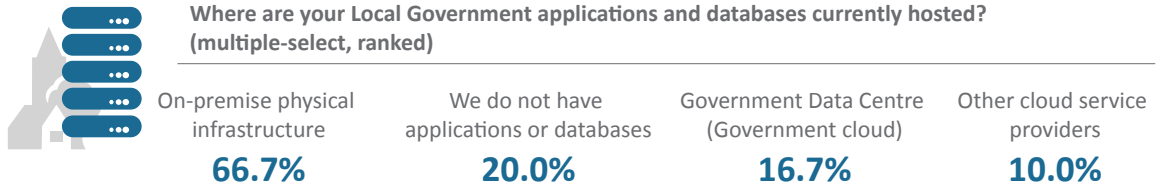


Figure 4.30: Hosting and cloud services amongst Local Governments

4.6.1 Cloud services

The survey asked Local Governments that reported using the government data centre or other cloud service providers about the cloud services that they bought from their providers. Email and storage (both 28.6%) were the most procured cloud services as indicated in Figure 4.31.

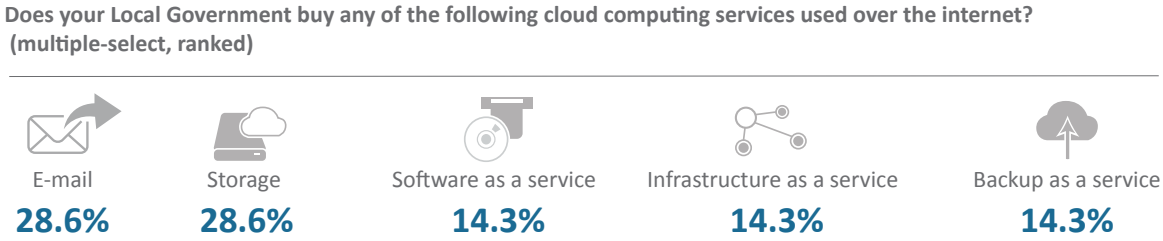


Figure 4.31: Cloud computing services procured by various Local Governments

4.6.2 Cloud benefits

Local Governments that used cloud services identified a number of benefits. These included the reduction in ICT related costs (71.4%), increased productivity (71.4%) and Flexibility in up- or down-scaling services (71.4%) as presented in Figure 4.32.

What do you consider as some of the benefits from using cloud computing services? (multiple-select, ranked)

Reduction of ICT related costs	Increased productivity	Flexibility in up-or down-scaling	Simplicity of (easy and quick) deployment of cloud-based solutions
71.4%	**71.4%**	**71.4%**	**57.1%**

Figure 4.32: Benefits identified by Local Governments that used cloud-computing services

4.6.3 Cloud barriers

The high cost of cloud computing services was most common barrier to using cloud computing services as reported by 66.7% of Local Governments. Lack of cloud-related expertise and problems accessing data or software was cited by 60% and 23.3% respectively as presented in Figure 4.33.

What factors prevent or limit your Local Government from using cloud computing services? (multiple-select, ranked)

High cost of buying cloud computing services	Lack of cloud-related expertise in our institution	Problems accessing data or software	Risk of a security breach	Uncertainity about applicable law, jurisdiction, dispute resolution mechanism
66.7%	**60.0%**	**23.3%**	**20.0%**	**16.7%**

Uncertainity about the location of the data	Difficulties in unsubscribing or changing service provider (including concerns with data portability)	Our institution is not ready for cloud computing services
13.3%	**10.0%**	**10.0%**

Figure 4.33: Barriers to cloud computing identified by Local Governments

4.7 Information Security

4.7.1 ICT Policies

The survey collected data from Local Governments about specific ICT policies and plans they had formally developed, approved and implemented within their operations. Most Local Governments (85.7%) reported maintaining an up-to-date register of important IT assets, followed by having an Acceptable Use Policy (AUP) for Institutional ICT Resources (80%) as shown in Figure 4.34.

Does your Local Government have any formal policies and procedures addressing any of the following area(s) (in use and formally approved by management)? (multiple-select, ranked)

Up-to-date register of important it Assets	Acceptable Use of Institutional ICT Resources	Information Security Policy	ICT Policy/Strategy/ Master Plan	Disposal of ICT equipment and Elecronic Waste Management
85.7%	**80.0%**	**60.0%**	**60.0%**	**60.0%**

ICT Training	ICT Disaster Recovery and /or Business Continuity	Institutional Enterprises Architecture	ICT Interoperability Frame work
40.0%	**20.0%**	**20.0%**	**20.0%**

Figure 4.34: ICT policies formally approved and in use by different Local Governments

4.7.2 Cyber laws

Two out of three Local Governments (61.9%) indicated awareness of any Ugandan laws that governed electronic communications and transactions (sometimes called Cyber laws). Amongst these, only 38.5% correctly cited the Computer Misuse Act, 2011 as indicated in Figure 4.35.

61.9% of of LGs aware of any Ugandan laws that govern electronic communications and transactions

If Yes, Please state any cyber laws that you are aware of

- **38.5%** Computer Misuse Act, 2011
- **23.1%** Electronic Transaction Act,2011
- **23.1%** Electronic Signatures, Act 2011
- **38.5%** Can't state any law

Figure 4.35: Proportion of Local Governments aware of Cyber laws and could state them

The survey asked Local Governments that correctly cited the Computer Misuse Act, 2011 if they were aware of any offences created by the Act. All of these (100%) answered positively and were subsequently asked to cite any two offences they knew. Unauthorised access, such as hacking was the most cited offence (80%), followed by malicious and offensive communications (40%) and disclosing private sexual images without consent (40%) as presented in Figure 4.36.

If so, please list any two offences that you are aware of

Unauthorised access, such as hacking	Malicious and offensive communication	Disclosing private sexual images without consent	Electronic fraud
80.0%	**40.0%**	**40.0%**	**20.0%**
Cyber stalking and harassment	Unauthorised Obstruction of use of computers, such as denial of service attacks	Intellectual property crimes	Prohibited and incedent images of children
20.0%	**0.0%**	**0.0%**	**0.0%**

Figure 4.36: Local government awareness of Cyber offences created by Computer Misuse Act

4.7.3 Security incidents

Amongst all Local Governments, 95.2% of them reported having experienced some type of ICT security incident during financial year 2016/17. The most common security incident related to virus or other computer infections reported by 61.9% of Local Governments. This was followed by failure to connect to the internet or other external networks reported by 52.4% of as summarised in Figure 4.37.

Which of these ICT security incidents did your Local Government experience during the last financial year (2016/17)

Virus or other computer infection resulting in loss of information or working hours **61.9%**	Failure to connect to the internet or other external networks **52.4%**	Institutional ICT equipment was lost **33.3%**	Loss of data because there were no backups **23.8%**
Phishing or pharming scam with potential for financial loss **19.1%**	Improper use of IT **19.1%**	Financial loss due to fraudulent use of Institutional payment tools or credentials **14.3%**	Unauthorised access to institutional computer systems or data **9.5%**
Unauthorised leakage or sharing of institutionsl information sent on the internet and/or other privacy violations **9.5%**	Attack of the type 'Denial or Service **4.8%**		

Figure 4.37: Type of security incidents experienced by Local Governments during financial year 2016/17

95.2% of LGs that reported experiencing a security incident during last financial year (2016/17)

35.0% Of these, had reported any cybercrime(s) to anybody?

Who did you report the cybercrime to? (multiple-select, ranked)

71.4% Uganda Police (or other law enforcement agency)	**28.6%** Institutionsl Internet Service provider	**14.3%** Other

Figure 4.38: Proportion of Local Governments that reported cybercrimes to anybody

Amongst those Local Governments that indicated experiencing any security incidents, only 35% had reported any cybercrime(s) to anybody. Most of them (71.4%) reported cybercrime(s) to Uganda Police (or other law enforcement agency), followed by their ISP with 28.6% as indicated in Figure 4.38. For those that had not reported any cybercrime(s), most indicated that they had solved the problem internally or did not know what the crime was as presented in Figure 4.39.

If you did not report a cybercrime, what were your reasons? (multiple-select, ranked)

We fixed the problem ourselves Internally	We did not know what the crime was	We did not know how to or how to report it	Not applicable	We felt it was a waste of time
38.5%	**38.5%**	**23.1%**	**7.7%**	**7.7%**

Figure 4.39: Reasons why Local Governments did not reported any cybercrime(s)

4.7.4 Security measures

Local governments implemented a number of security measures to minimise the impact of security incidents. The most common security was making full backup of critical institutional data (47.6%), followed by technical efforts to protection sensitive data and subscription to anti-virus software (both 42.9%) as shown in Figure 4.40.

Which of these ICT security efforts have you implemented in your Local Government?

Regular full backups of critical institutional data **47.6%**	Institutional subscription to anti-virus software **42.9%**	Techinical efforts for protection/transmission of sensitive data **42.9%**	Conduct regular vulnerablity assessments to identify potential weaknesses in all ICT resources **38.1%**	Keeping backups off-site/off-site data backup **38.1%**
Spam fliters **33.3%**	Discourage use of privately owned devices to process, store or remotely access critical infrastuctre, apps and data **33.3%**	Institutional firewall **28.6%**	2-factor authentication for employees remote login to institutional ICT system **28.6%**	
Routinely patch ICT systems, security enforcing products and applications against known Vulnerbilities **23.8%**	Encrytion of institutional devices (both fixed and mobile) processing/holding senstive data **23.8%**	Emergency solutions for communication (alternatives for data and voice) **23.8%**		
Emergency exercise at least once a year **23.8%**	Network intrusion detection system **19.1%**	Network intrusion protection system **14.3%**	Anti-phishing software **14.3%**	

Figure 4.40: Type of security measures implemented by Local Governments

4.7.5 Awareness and training

The survey asked Local Governments whether they had organised any IT security awareness sessions or any emergency testing/training exercises related to disaster recovery/business continuity for staff during financial year 2016/17. More Local Governments (33.3%) reported that they had conducted IT security awareness sessions for their employees during the year (FY2016/17) compared to those that reported conducting any testing/training exercise for disaster recovery/business continuity (9.5%) as shown in Figure 4.41.

Did your Local Government conduct any emergency testing/training exercise for disaster recovery/ business continuity during the last year (FY2016/17)?

Did your Local Government conduct any IT security awareness sessions for the employees of the organisation during the last year (FY2016/17)?

Figure 4.41: Local Governments that conducted awareness/training for information security and disaster recovery

4.8 Summary of Findings and Conclusions

With government's decentralisation policy, Local Governments (LGs) are expected to offer a wide range of services to citizens. The LGs need to adopt more use of computers and the Internet to enable faster and more efficient service delivery as expected under their mandate. Survey findings indicate that the proportion of LG employees that routinely use computers is only 3.3%, while the proportion of employees that routinely use the Internet is 1.7%. Corresponding figures for MDAs are 37% and 22.5% as indicated in Figure 4.42, highlighting the long journey that LGs have yet to make up before they can fully embrace and mainstream e-government services to reach more of their constituents.

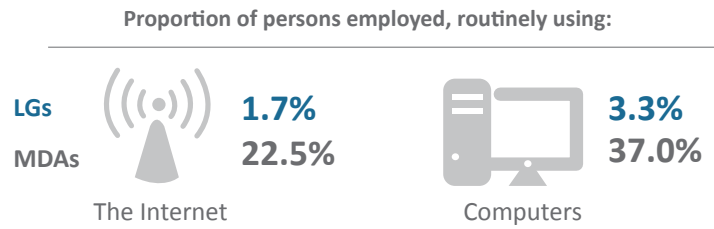


Figure 4.42: Comparison of computer and Internet use between MDAs and LGs

Similarly, ICT infrastructure among LGs is in short supply with only 24.1% of LGs having an intranet and 43.3% having a Local Area Network (LAN). About one third of LGs (31%) lack institutional Internet access and 24.1% do not have an institutional website. Commercial ISPs are the main Internet providers for LGs (Figure 4.7) with most of the bandwidth provided via mobile broadband connections (Figure 4.8). NITA-U only covers only 19.1% of LGs compared to 83.1% of MDAs. The reach of the National Backbone Infrastructure (NBI), which currently covers only 60 out 113 districts, may partly explain this situation.

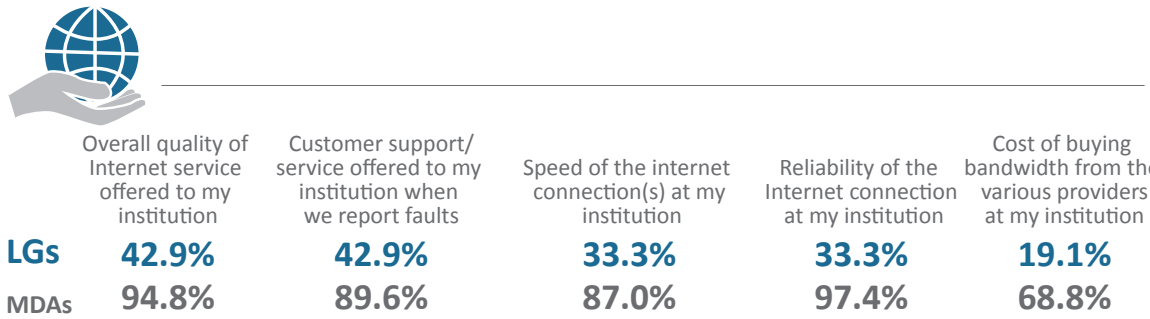


Figure 4.43: Comparison of perceptions about Internet service between MDAs and LGs

Just like MDAs, LGs also cited high cost as the biggest barrier to wider use of the Internet for work purposes given their meagre budgets (Figure 4.12). The Lack of IT expertise is also a major barrier, with many LG employees lacking the necessary knowledge and skills to use IT, as well as the lack of computers and other digital equipment. Correspondingly, LGs largely have negative perceptions when it comes to their Internet service compared to MDAs as shown in Figure 4.43.

Three of every four Local Governments (73.3%) own an institutional website while one in two (56.7%) use social media compared to 100% and 92.2% of MDAs respectively. Most LGs have invested in commercial software like office productivity suites and anti-virus software, but most are yet to invest in automating their core business processes, such as human resource management and document management. The LGs use a variety of software licenses, including pirated versions of software. Given the large number of districts, government should consider acquiring volume licenses for LGs and MDAs for a wider range of software as a mechanism to bring down the total cost of software ownership and to eliminate pirated software that comes with malware consequences.

In terms of ICT policies and other governance frameworks, three out of five LGs (60%) have an ICT Policy or Master Plan as well as an Information Security Policy. While having the policy documents represents progress, implementation within LGs is still a major challenge with stakeholder interviews indicating that most of these ICT policies are yet to be implemented at the local government level due to funding and staffing limitations.

A higher proportion of LGs (95.2%) reported experiencing security incidents in FY 2016/17 compared to MDAs (71.4%). The most common type of incidents among LGs were virus or computer infection related (61.9%) as summarised in Figure 4.37. Other crosscutting incidents related to loss of institutional ICT equipment and loss of data for lack of backups. Both of these can be addressed by providing some guidelines for government institutions to adhere to as well as encouraging the use of shared infrastructure like storage that can be used for remote backups to complement the various security measures that have been implemented by LGs (Figure 4.40).

IT training for LG staff is critically lacking, both in terms of basic IT skills and knowledge as well as to build up their general security awareness. Only one in three (30%) LGs provides any form of internal IT training for their staff compared to three in four (78.6%) MDAs, although for both, staff training is largely rare and random (Figure 4.29 vs. Figure 3.58).

Just like with the MDAs, funding limitations particularly for IT were a recurrent theme amongst LGs both from the survey and from interviews with stakeholders. Programmes that can help reduce the cost of investing in new IT resources or infrastructure can facilitate more adoption and use of IT within Local Governments.

Chapter 5 Household and Individual Characteristics

In this chapter, we describe the general characteristics of the sampled population across both households and individuals.

5.1 Household Characteristics

The survey collected data on a number of household characteristics. This section summarises those characteristics that are most pertinent to access and use of Information Technology (IT) within the household.

How many people live in this household?

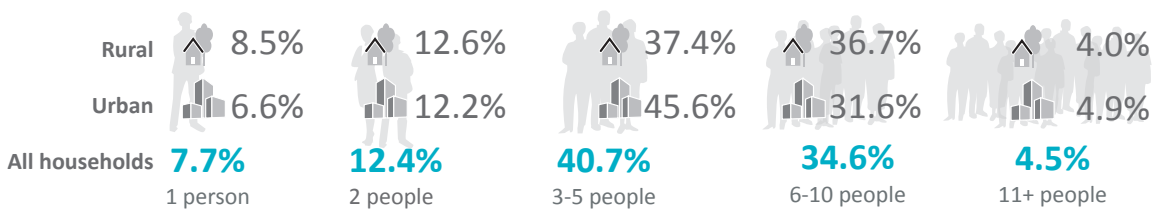


Figure 5.1: Household size by location

5.1.1 Household size

Overall, the national average household size was five persons per household, in line with the national average household size according to the recent 2016/17 Uganda National Household Survey (UNHS) conducted by Uganda Bureau of Statistics (UBOS). The smallest household was one person, while the largest was 30 persons. Most households ranged between 3 to 5 persons as summarised in Figure 5.1 and Table 5.1.

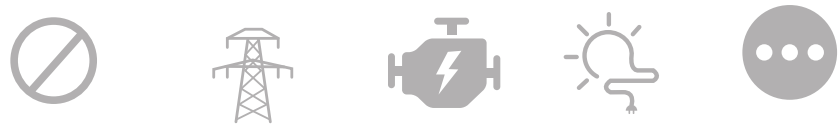
Table 5.1: Distribution of household size by location

	1 person	2 people	3-5 people	6-10 people	11+ people	Total (%)
Rural	8.5%	12.6%	37.4%	36.7%	4.0%	**59.5%**
Urban	6.6%	12.2%	45.6%	31.6%	4.9%	**40.5%**
All households	7.7%	12.4%	40.7%	34.6%	4.5%	**100.0**

5.1.2 Electricity

Over 40% of households did not have access to electricity as highlighted in Figure 5.2 and Table 5.2 below. Only 28.9% of all households had access to the electricity grid, closely followed by solar energy (26.3%). From a location perspective, more urban households (37.7%) had access to the electricity grid compared to rural households (23.0%). In contrast, more households that were rural (29.3%) had access to solar compared to households that were urban (21.9%).

Does this house have electricity? (multiple-select)



	None	Main Electricity Grid	Generator	Solar	Others
Rural	43.1%	23.0%	-	29.3%	4.8%
Urban	40.9%	37.7%	0.4%	21.9%	0.8%
All households	**42.2%**	**28.9%**	**0.2%**	**26.3%**	**3.2%**

Figure 5.2: Proportion of households with access to different sources of power by location

Table 5.2: Distribution of households by location and electricity source

	Rural	Urban	Total
Electricity (grid)	23.0%	37.7%	28.9%
Generator	0.0%	0.4%	0.2%
Solar	29.3%	21.9%	26.3%
Other	4.8%	0.8%	3.2%
No power	**43.1%**	**40.9%**	**42.2%**

5.2 Individual Characteristics

The survey collected data on a number of individual demographic characteristics that included gender, age, level of education and main economic activity. This section summarises those characteristics that are most pertinent to access and use of Information Technology (IT) amongst individuals.

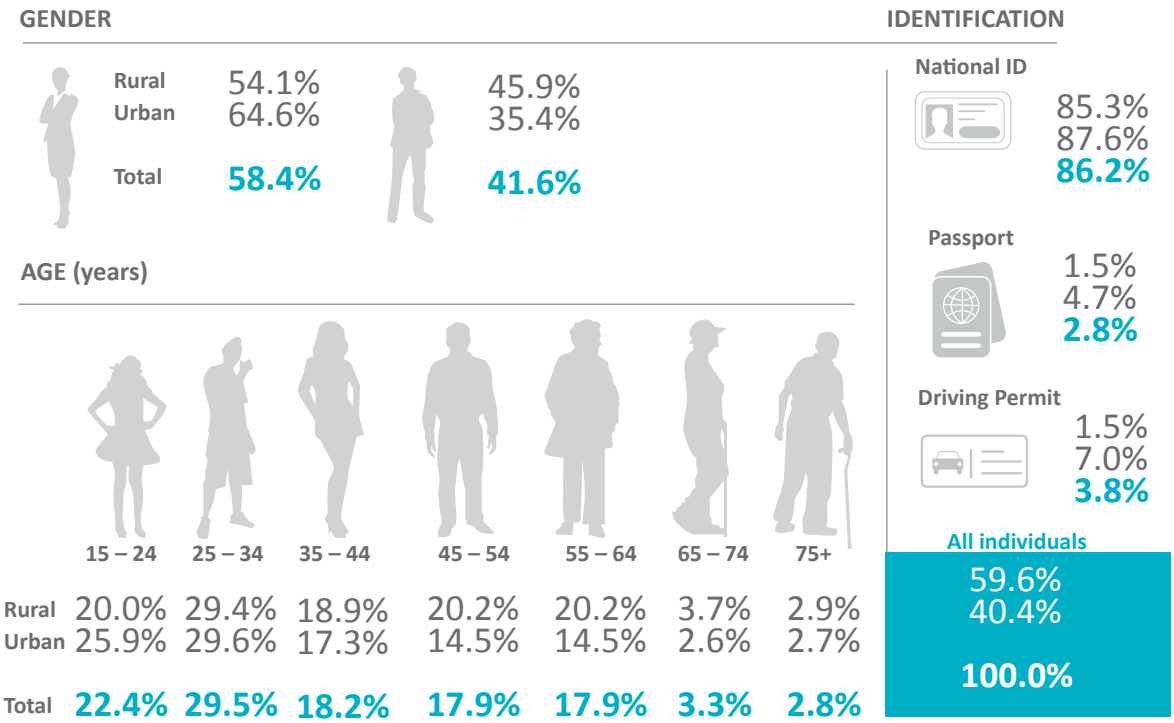
5.2.1 Age and gender

The ratio of female to male respondents was 58 to 42 as indicated in Table 5.3. Given that the UNHS 2016/17 indicates that the female proportion of the population is 52%, the survey had a bias towards women. This is explained by the fact that the survey targeted households during the day and women are more likely to be at home compared to men.

The 25–34 age group accounted for most individuals (29.5%), followed by the 15–24 age group (22.4%) 35–44 age group (18.2%).

The proportion of individuals with a National Identification Card was 86.2%, much higher than other identification documents like the Passport (3.8%) or Driving Permit (2.8%).

Table 5.3: Distribution of individuals by location, gender, age and ID



5.2.2 Education and IT programmes

Most individuals had completed Primary (P1–P7) as the highest level of schooling while about 20% of the population had no formal education as summarised in Table 5.4. More individuals in rural areas (46.4%) had completed the Primary-level education compared to their counterparts in urban areas (37.7%). For higher-levels of education, this trend was reversed.

Amongst active students (4.6%), the proportion pursuing any form of IT training at the tertiary level was 13.4%. Most of these (64.5%) lived in urban areas and were pursuing a Certificate in an IT programme. Bachelor in IT (17.2%), BSc. in Computer Science (14.5%) and Diploma in IT/Computer Science (3.8%) round up the other IT programmes pursued by students.

Amongst students with a tertiary qualification, only 3.8% had their qualification in IT. For most of these (55.9%), the IT qualification was a Bachelor of IT.

Table 5.4: Distribution of individuals by location, level of education completed and IT programmes

EDUCATION

	None	Primary (P1-P7)	Secondary: O-Level (S1-S4)	Secondary: A-Level (S5-S6)	Tertiary: Diploma/ Certificate	Tertiary: BSC/BA	Tertiary: Masters	Students
Rural	26.2%	46.4%	20.7%	2.9%	3.5%	0.3%	0.0%	**3.7%**
Urban	11.4%	37.7%	35.4%	5.9%	6.4%	3.1%	0.1%	**5.8%**
Total	**20.2%**	**42.9%**	**26.7%**	**4.1%**	**4.7%**	**1.5%**	**0.1%**	**4.6%**

STUDYING IT PROGAMMES

	Studying IT	Certificate in an IT programme	Diploma in IT/ Computer Science	BSc. In Computer Science	Bachelor in IT
Rural	0.0%	0.0%	0.0%	0.0%	0.0%
Urban	22.4%	64.5%	3.8%	14.5%	17.2%
Total	**13.4%**	**64.5%**	**3.8%**	**14.5%**	**17.2%**

GRADUATES IN IT

	Qualification in IT	Certificate in an IT programme	BSc. In Computer Science	Bachelor in IT	All individuals
	0.0%	0.0%	0.0%	0.0%	59.6%
	4.4%	16.0%	28.2%	55.9%	40.4%
	3.8%	**16.0%**	**28.2%**	**55.9%**	**100.0%**

5.2.3 Economic activity

Most individuals (41.6%) were self-employed in Agriculture, followed by self-employed in other areas (16.9%) as highlighted in Table 5.5. In terms of location, individuals in rural areas were more self-employed in Agriculture (52.3%) compared to individuals in urban areas (26/0%). Conversely, individuals in urban areas were more self-employed in other areas compared to individuals in rural areas. 16.4% were unemployed, while 11.7% were engaged in unpaid housework to round up the top categories.

Table 5.5: Distribution of individual's main activity during last 6 months by location

	Paid employee permanent	Paid employee casual/temporary/ contract/seasonal	Employer	Self-employed (Agriculture)	Self-employed (Other)	Unpaid house work
Rural	0.6%	1.8%	0.3%	52.3%	13.2%	9.5%
Urban	5.4%	7.9%	0.1%	26.0%	22.3%	14.9%
Total	**2.5%**	**4.3%**	**0.2%**	**41.6%**	**16.9%**	**11.7%**

	Household worker	Unemployed	Student	Retired /Too old/Too sick	Disabled /handicapped	Other	All individuals
Rural	0.0%	17.7%	3.7%	0.4%	0.1%	0.5%	59.6%
Urban	0.4%	14.5%	5.8%	1.2%	0.1%	1.4%	40.4%
Total	**0.2%**	**16.4%**	**4.6%**	**0.7%**	**0.1%**	**0.8%**	**100.0%**

Chapter 6 Findings from Households

This chapter presents findings on IT access and usage at the household level including telephones, computers and other IT devices as well as the Internet. Figure 6.1 highlights some of the key household IT indicators.

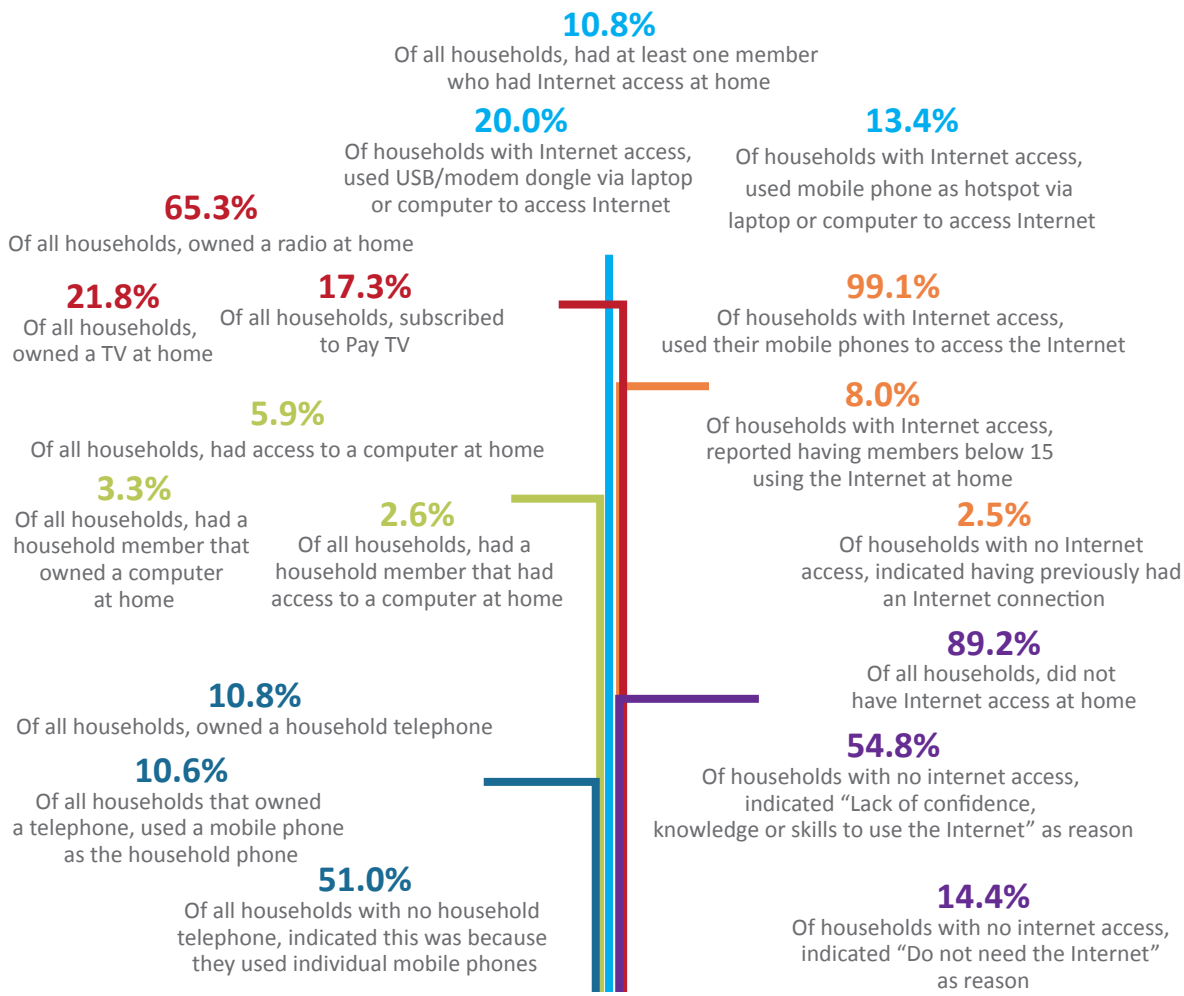


Figure 6.1: Summary of Household IT indicators

6.1 Telephones

The survey defined a household phone as any phone, fixed or wireless (including mobile phones), set aside (left at home) specifically for general household usage.

6.1.1 Access and type

The proportion of households with household telephones was 10.8% as indicated in Figure 6.2. The proportion of households in urban areas with telephones was 11.1% compared to 10.6% in rural areas.

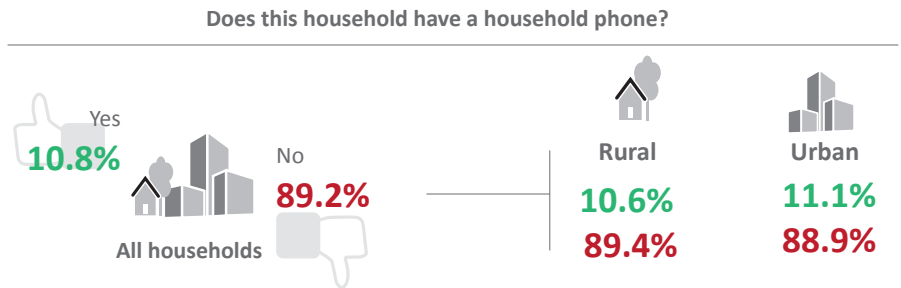


Figure 6.2: Proportion of households with household telephone

Among households with household phones, 98.1% used mobile phones as the household phone, 1.5% used fixed wireless handsets while 0.4% used fixed landlines as summarised in Figure 6.3.

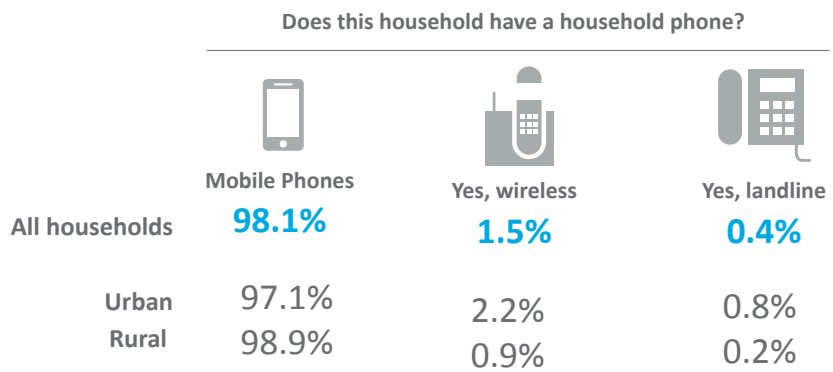


Figure 6.3: Proportion of households with different types of household phones by location

6.1.2 Service provider

MTN provided most household telephones with 38.3%, followed by Airtel with 31.2% and UTL with 30.5% of households that owned telephones as presented in Figure 6.4.

What is the name of the (household phone) service provider?

	MTN	airtel	uganda telecom It's all about U
All households	**38.3%**	**31.2%**	**30.5%**
Urban	14.4%	43.2%	42.3%
Rural	100.0%	0.0%	0.0%

Figure 6.4: Service provider for household telephone by location

6.1.3 Cost of service

On average, a household spent UGX 13,400 per month on a household phone (calling, line rental, etc.). Most households (50.7%) spent between UGX 10,000 and 20,000 per month as indicated in Figure 6.5.

Approximately how much does your household spend on Household Phone(s) in a month (calling, line rental, etc.)?

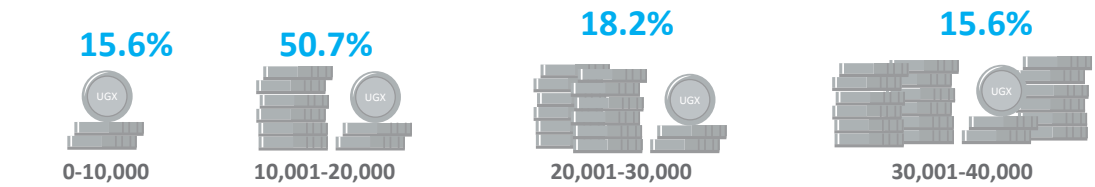


Figure 6.5: Monthly expense of household telephones

6.1.4 Households without telephones

The majority of households (89.2%) did not have access to household telephones as presented in Figure 6.2. Of these, only 2.1% had previously owned a household telephone as indicated in Figure 6.6.

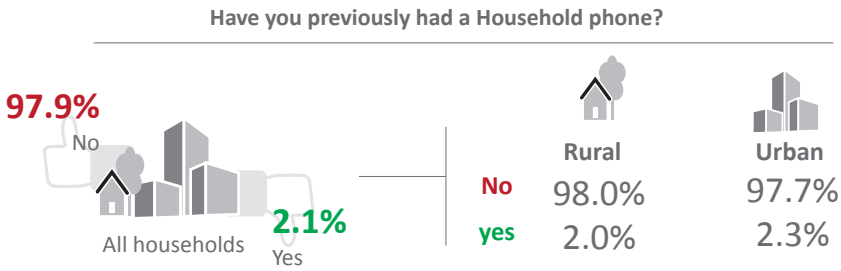


Figure 6.6: Households that previously owned household telephones

The study explored reasons for not owning a household telephone. Use of individual mobile phones (51.0%) was the major reason for households not owning a household phone, followed by those reporting that they cannot afford one (38.2%). 13.9% indicated that it was not necessary to have a household phone as summarised in Figure 6.7.

Why does the household not have a Household Phone?

	We use individual mobile phones	Cannot afford one	Not necessary to have household phones	Fixed phones are not available where i live	Other	Too long wait for a fixed line
All households	**51.0%**	**38.2%**	**13.9%**	**1.2%**	**1.1%**	**0.5%**
Urban	60.1%	33.7%	10.1%	1.6%	0.7%	0.5%
Rural	44.8%	41.2%	16.5%	0.9%	1.3%	0.6%

Figure 6.7: Factors preventing households from owning household phones by location

6.2 Computers and other IT devices

6.2.1 Ownership and Access

The survey asked respondents if any member of the household owned a computer at home or had access to a computer at home (for example a laptop from their job that they could use at home). Figure 6.8 shows that 5.9% of all households had access to a computer at home. 3.3% of all households had a household member that owned a computer at home while 2.6% of all households had a member that had access to a computer that they used at home.

Household ownership and access to computers

	Household with a computer at home	Member owns a computer at home	Member has access to computer at home
All households	**5.9%**	**3.3%**	**2.6%**
Urban	3.8%	1.3%	2.5%
Rural	8.9%	6.2%	2.7%

Figure 6.8: Proportion of households with a computer

Among all households had access to a computer at home (5.9%), 60.8% were urban, while 39.3% were rural.

Respondents were also asked about other IT assets that included radio and TV. About three out of every five (65.3%) households reported owning a radio compared to one out of five (21.8%) that reported owning a TV. From a location perspective, the variation between households in rural and urban areas was not as pronounced for radio (63.8% vs. 67.5%) compared to that for TV, where 14.0% of households in rural areas owned a TV compared to 33.3% of households in urban areas as presented in Figure 6.9.

Households with computers and other IT assets

	Radio	Tv	Pay Tv	Working Laptop	Working tablet (or similar handheld device)	Working Desktop Computer	Digital Tv set-top box
All households	**65.3%**	**21.8%**	**17.3%**	**1.8%**	**1.5%**	**1.3%**	**0.3%**
Urban	67.5%	33.3%	28.3%	3.9%	3.1%	2.7%	0.6%
Rural	63.8%	14.0%	9.8%	0.4%	0.4%	0.4%	0.0%

Figure 6.9: Different IT assets owned by households by location

6.2.2 Pay TV

17.3% of all households subscribed to a Pay TV provider. With regard to providers, Star times had the most household subscribers with 44.3%, followed by GoTv with 30.2%, Zuku with 10.0% and Azam TV with 9.3% as presented in Figure 6.10.

Which Pay TV does this household subscribe to?

	StarTimes	GOtv	zuku	azamTV	DStv	Others	SIT Digital Cable Television
All households	**44.3%**	**30.2%**	**10.0%**	**9.3%**	**5.9%**	**3.9%**	**0.1%**
Urban	44.7%	25.4%	9.9%	11.7%	7.0%	4.6%	0.2%
Rural	43.5%	39.6%	10.2%	4.5%	3.6%	2.5%	0.0%

Figure 6.10: Proportion of households that subscribed to different Pay TV providers by location

6.3 Internet Access

The study investigated whether any household member had access to the Internet at home regardless of whether they used it. Having at least one or more household members with Internet access at home indicated that a particular household had Internet access.

6.3.1 Access

Figure 6.11 shows that 10.8% of all households indicated that at least one household member had access to the Internet at home. With regard to location, 16.8% of households in urban areas reported having Internet access compared to 6.6% of households in rural areas.

Does any member of this household have access to the Internet at home regardless of whether it is used?

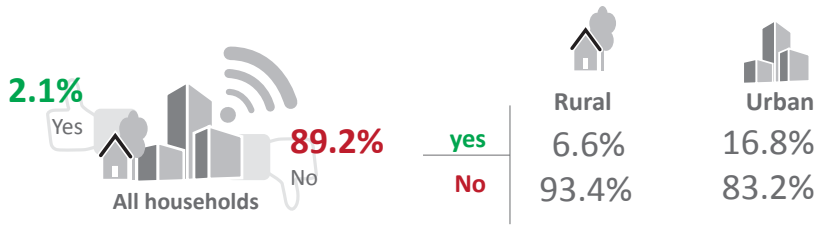


Figure 6.11: Proportion of households with Internet access

Amongst the one in ten (10.8%) households that have Internet access at home, 85.8% indicated having members that used the Internet at home. Of these, 99.1% reported having members that used their mobile phones to access the Internet at home, while 8.0% reported having members below 15 years of age that used the Internet at home as shown in Figure 6.12.

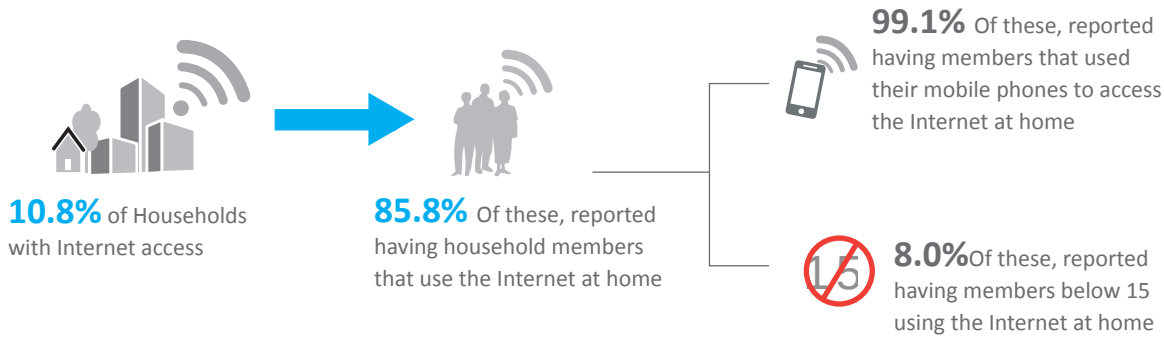


Figure 6.12: Proportion of households with members using the Internet at home

In terms of other methods of Internet access, 19.9% of households with Internet access indicated members used a USM/modem dongle, 13.4% indicated use of a mobile phone as hotspot while 2.3% indicated using a router linked to fixed telephone line (ADSL), all via a laptop or computer to access the internet. Figure 6.12 summarises Internet access methods by location.

Types of devices used to access Internet via laptop or computer (multiple-select,

	Use USB modem	Use mobile phone as a hotspot	Use router linked to ADSL
All households	**19.9%**	**13.4%**	**2.3%**
Urban	28.9%	18.3%	2.4%
Rural	9.1%	7.6%	2.1%

Figure 6.13: Proportion of households with different Internet access methods by location

6.3.2 Cost

The average household expenditure on Internet access was UGX 17,000 per month. On average, households in urban areas spent more (UGX 20,000) per month on Internet access compared to households in rural areas that (UGX 12,000). Figure 6.14 shows household monthly expenditure on Internet access organised into price ranges by location.

Approximately how much does the household spend monthly for the Internet (subscription & use)?

	100,000+	50,001-100,000	40,001-50,000	30,001-40,000	20,001-30,000	10,001-20,000	5,001-10,000	1,501-5,000	0-1,501
All households	**0.9%**	**4.9%**	**3.1%**	**3.5%**	**12.7%**	**18.1%**	**20.6%**	**20.9%**	**15.9%**
Urban	1.3%	5.0%	4.9%	4.8%	15.3%	20.1%	9.9%	24.8%	13.9%
Rural	0.4%	4.6%	0.0%	1.2%	8.1%	14.7%	39.0%	14.1%	17.9%

Figure 6.14: Household expenditure on Internet per month by location

6.3.3 Service provider

Overall, MTN was the largest Internet access provider for households (45.8%), followed by Airtel (43.4%) and Africell (4.4%) as shown in Figure 6.15. Households in rural areas used Airtel more (49.6%) as a provider compared to households in urban areas (39.9%) while households in urban areas used MTN more (46.6%) as a provider compared to households in rural areas (44.4%).

What is the name of your Internet Service Provider?

	MTN	airtel	africell	vodafone	uganda telecom It's all about U
All households	**45.8%**	**43.4%**	**4.4%**	**1.0%**	**0.1%**
Urban	46.6%	39.9%	6.5%	1.5%	0.1%
Rural	44.4%	49.6%	0.6%	0.0%	0.0%

Figure 6.15: Household Internet service providers by location

6.3.4 Households with no Internet access

Most households (89.2%) did not have Internet access at home. The survey collected reasons for not having a working Internet connection at home. Lack of confidence, knowledge or skills (54.8%) was the major reason for not having Internet access at home, followed by those that indicated Do not need the Internet (14.4%) and the cost of equipment was too high (8.3%). The results summarised in Figure 6.16 mirror the findings of the UNHS 2016/17 when it comes to reasons for not using the Internet.

What is the main reason why the household does not have a working Internet Connection?

Lack of confidence, Knowledge or skills to use the internet	Do not need the internet	Cost of internet equipment is too high	Service not available or poor connections in our area
54.8%	**14.4%**	**8.3%**	**6.6%**
63.3%	7.4%	11.3%	3.5%
49.5%	18.8%	6.5%	8.6%

Cost of internet service is too high	Have acces to internet elsewhere	Internet service is availanle but it does not correspond to household needs	cultural reasons	Privacy or sercurity concerns
5.2%	**0.9%**	**0.5%**	**0.4%**	**0.3%**
6.8%	1.5%	0.6%	0.4%	0.5%
4.2%	0.5%	0.5%	0.4%	0.1%

Figure 6.16: Factors preventing households from having household internet connection by location

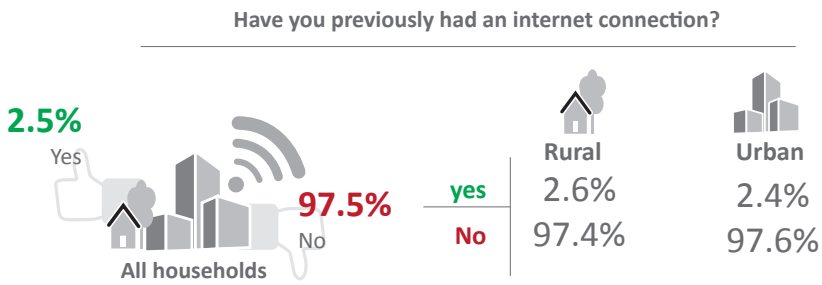


Figure 6.17: Households with no Internet connection but previously did by location

6.4 Summary of Findings and Conclusions

The proportion of households with a household telephone is 10.8% (Figure 6.2). Paradoxically, this number is both high and low because of the success of the mobile phone. It is high because among households with a telephone, 98.1% use a mobile phone as the household phone. Thus, the widespread coverage of mobile networks has enabled many households to have a household phone, even with the poor fixed telephone network. Conversely, it is low because the success of the mobile phone has propagated individual ownership of phones. Among households with no household phone, the primary reason for lack of a household telephone is that members of the household use individual mobile phones, eliminating the need for a household telephone as reported by 51% of the households (Figure 6.7).

Only 5.9% of households reported having access to a computer at home. This is composed of 3.3% of households with a member that owned a computer accessible at home and 2.6% of households with a member that had access to a computer they could use at home (for example a laptop from their job that they could use at home). The former figure rhymes with the 3% of households that indicated owning a computer at home in the recent 2016/17 UNHS. In terms of other IT assets, 65.3% of households owned a radio while 21.8% of households owned a television (Figure 6.9).

In terms of Internet access, 10.8% of households have at least one household member with access to the Internet at home (Figure 6.11). Internet access at home has a location bias with more urban households (16.8%) having Internet access compared to rural households (10.8%). Within the household, the mobile phone is the predominant way of accessing the Internet (Figure 6.12) either directly or as a hotspot through which other devices maybe connected.

Amongst the bulk of households without Internet access (89.2%), lack of confidence, knowledge or skills was the major reason for not having Internet access at home as reported by 54.8% of households. Other reasons included lack of need for Internet and the high cost of internet devices, as presented in Figure 6.16.

Chapter 7 Findings from Individuals

This chapter summarises survey findings on individual access and usage of different Information Technology (IT) devices and services including mobile phones, computers and Internet access. Figure 7.1 highlights some of the key individual IT indicators.

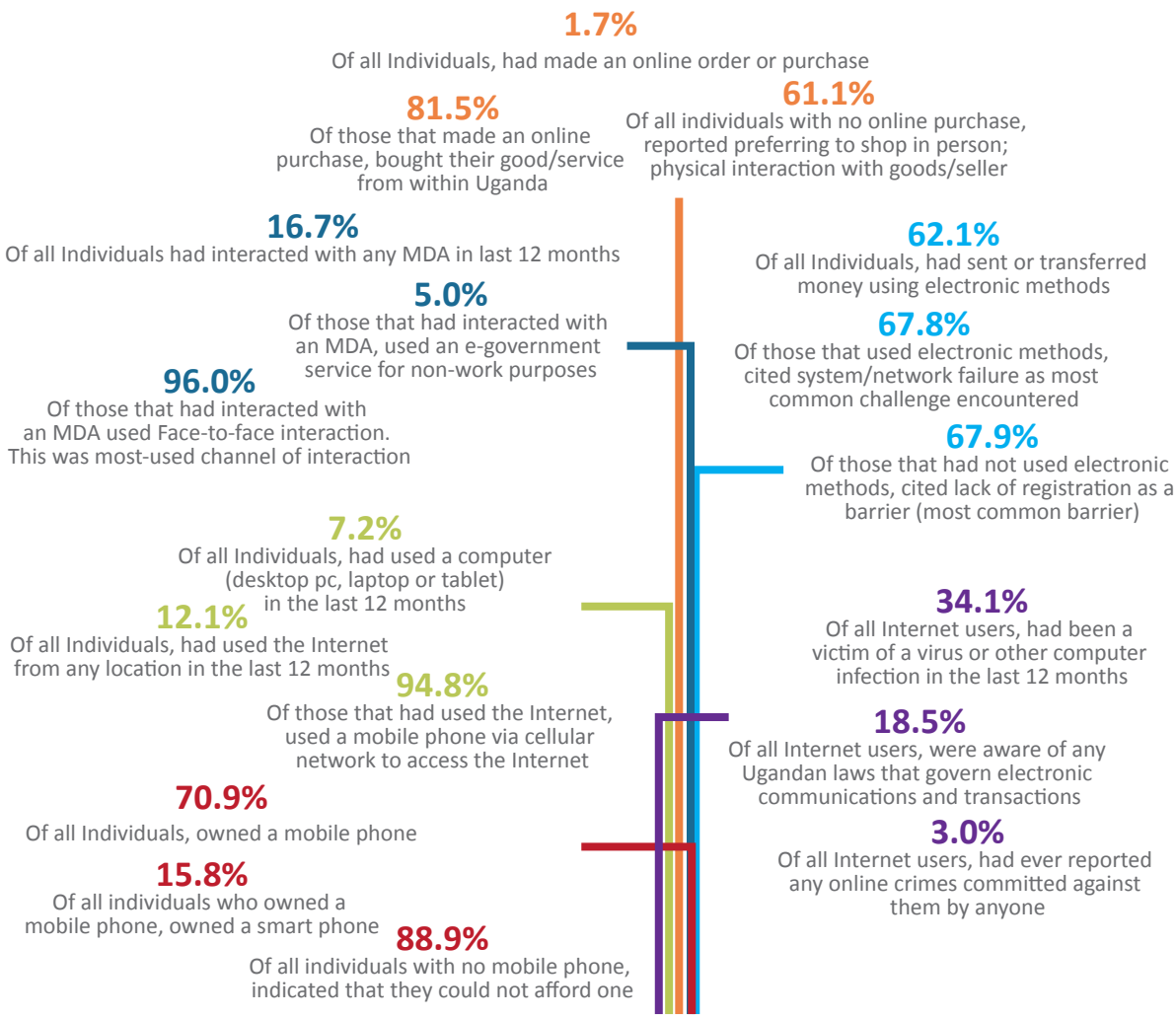


Figure 7.1: Summary of individual IT indicators

7.1 Mobile Phones

7.1.1 Individual mobile phones at a glance

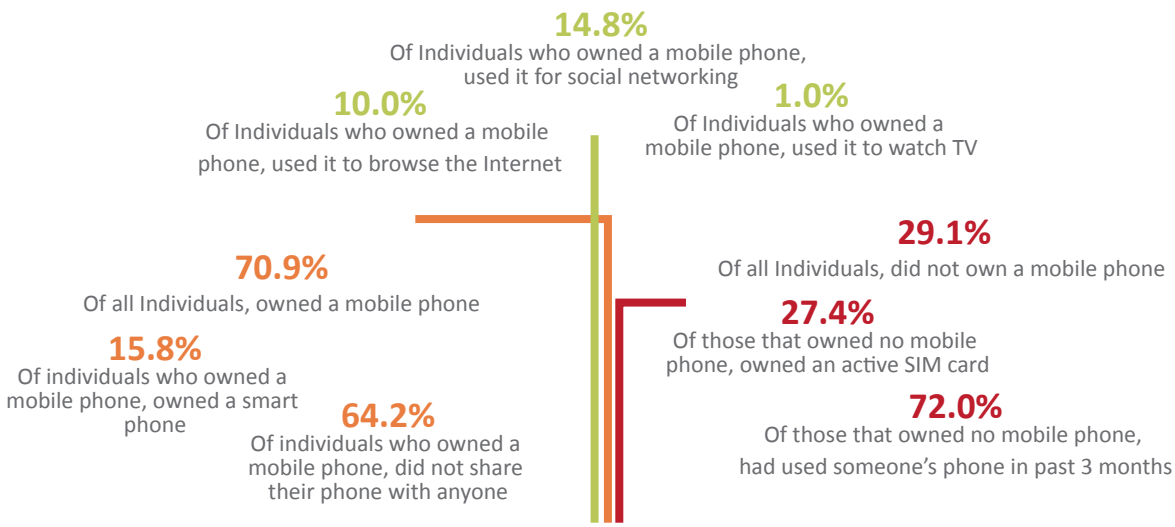


Figure 7.2: Individual mobile phone statistics at a glance

7.1.2 Phone ownership

Overall, 70.9% of all individuals owned a mobile phone. By location, more individuals in urban areas (78.5%) owned a mobile phone compared to individuals in rural areas (65.7%). By gender, 81.6% of male individuals owned a mobile phone compared to 63.2% of female individuals as highlighted in Figure 7.3.

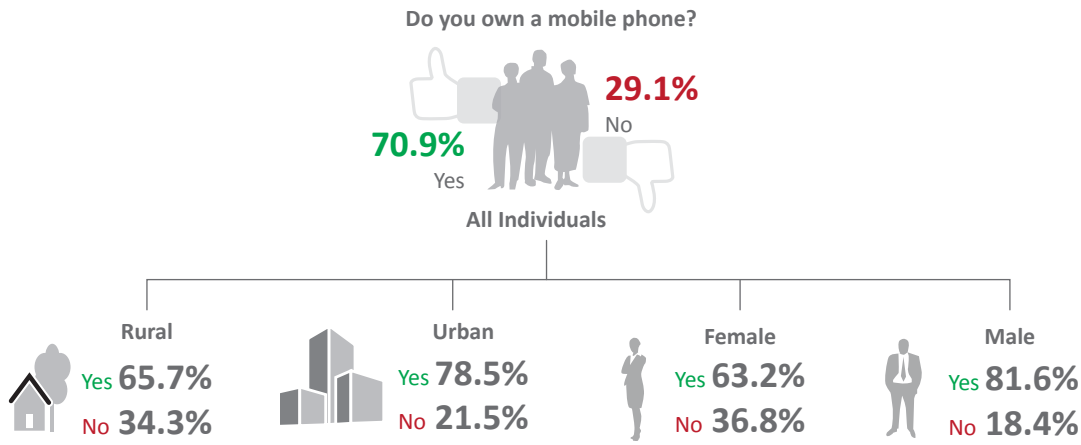


Figure 7.3: Proportion of individuals that owned a mobile phone by location and gender

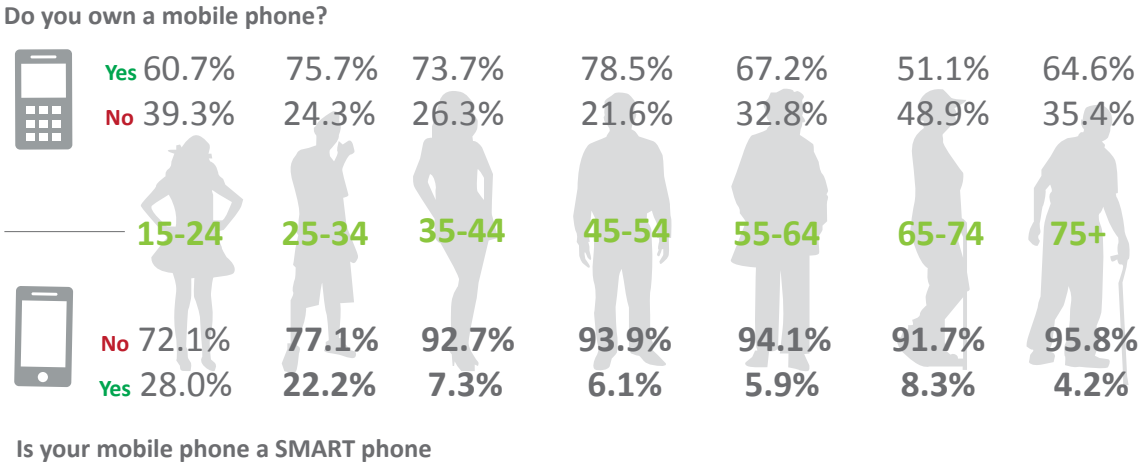


Figure 7.4: Proportion of individuals that owned a mobile phone/smart phone by age range

Individuals predominantly owned one mobile phone handset with 91.7% of individuals reporting owning a single handset, 7.0% owned two handsets while 1.2% owned three handsets.

Trends in mobile phone ownership amongst individuals summarised in Figure 7.5 indicate that from the last survey carried out by UCC, growth in rural areas has outpaced that in urban areas while growth across gender is comparable.

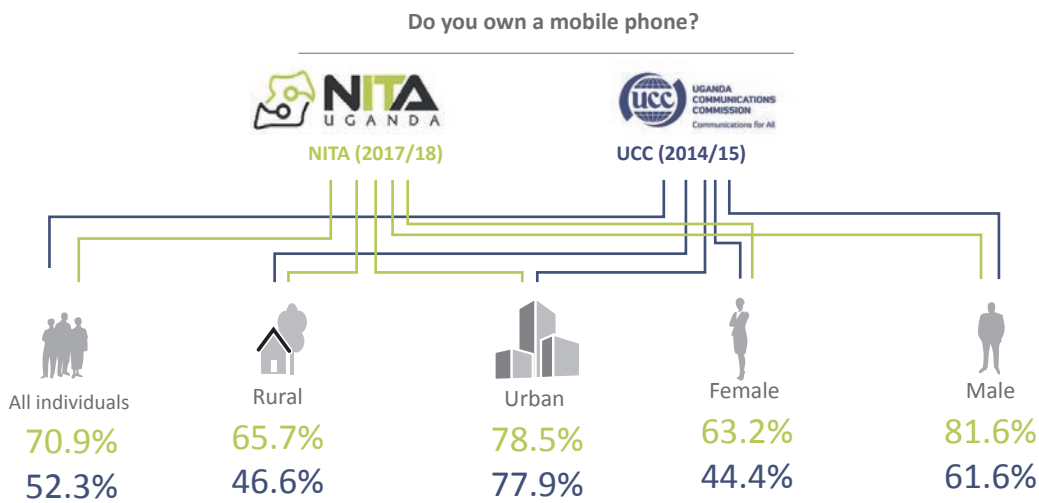


Figure 7.5: Trends in mobile phone ownership

15.8% of individuals that owned mobile phone indicated that it was a smart phone as presented in Figure 7.6. Surprisingly, a higher proportion of female individuals owned smart phones (18.1%) compared to male individuals (13.4%). By age, younger individuals owned a higher proportion of smart phone compared to older individuals as shown in Figure 7.4.

The survey defined a smartphone as a mobile phone that performs many of the functions of a computer, typically having a touchscreen interface, Internet access, and an operating system capable of running downloaded applications.

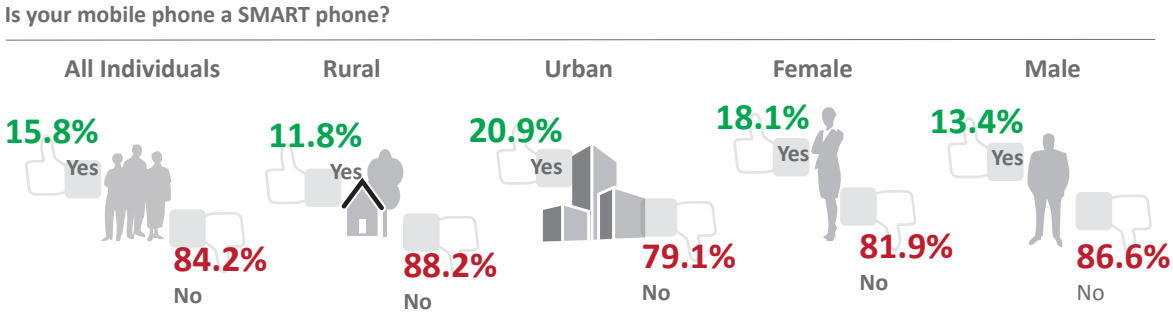


Figure 7.6: Proportion of Smart phones among mobile phone owners by location and gender

Within individuals that owned a smart phone (15.8%), 41.1% were Rural and 58.9% were Urban from a location perspective while, 40.5% were male and 59.5% were female from a gender perspective.

7.1.3 Cost of service

Overall, Individuals spent an average of UGX 14,500 per month on voice calls for their mobile phone. By location, individuals in rural areas on average spent UGX 13,200 per month compared to individuals in urban areas that spent UGX 15,650 per month. By gender, male individuals on average spent UGX 16,900 per month compared to female individuals that spent UGX 12,300. In terms of expenditure range, most individuals (39.9%) spent between UGX1,500 and 5,000 per month as indicated in Figure 7.7 by gender and Figure 7.8 by location.

Can you tell me how much you spent last month for mobile phone (voice) usage?

	0-1,501	1,501-5,000	5,001-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-100,000	100,000+
All indivivduals	**3.8%**	**39.9%**	**17.9%**	**19.1%**	**12.4%**	**1.4%**	**2.3%**	**2.4%**	**0.8%**
Male	3.6%	33.0%	20.2%	21.6%	11.4%	1.7%	4.0%	3.2%	1.4%
Female	4.0%	45.4%	16.1%	17.1%	13.2%	1.1%	1.0%	1.8%	0.4%

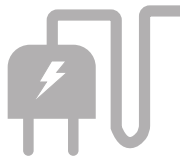
Figure 7.7: Individual monthly expenses for mobile phone voice usage by gender

Can you tell me how much you spent last month for mobile phone (voice) usage?

	0-1,501	1,501-5,000	5,001-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-100,000	100,000+
All indivivduals	3.8%	39.9%	17.9%	19.1%	12.4%	1.4%	2.3%	2.4%	0.8%
Rural	4.0%	41.7%	17.1%	18.5%	12.9%	1.3%	2.2%	1.8%	0.4%
Urban	3.6%	37.8%	18.9%	19.7%	11.8%	1.5%	2.4%	3.1%	1.3%

Figure 7.8: Individual monthly expenses for mobile phone voice usage by location

7.1.4 Phone charging



Where do you charge your mobile phone (battery) mostly?

	Home	Shop	Other	Work Place? School
Alindividuals	55.3%	35.9%	5.9%	2.9%
Urban	62.4%	27.6%	7.9%	2.0%
Rural	49.5%	42.7%	4.2%	3.6%

Figure 7.9: Places individual mobile phone owners charged their phones by location

Most individuals (55.3%) that owned mobile phones reported charging them mostly at home. By location, 62.4% of individuals in urban areas reported charging their phone at home compared to 49.5% of individuals in rural areas. In contrast, more individuals located in rural areas charged their phones at a shop (42.7%) compared to individuals in urban areas (27.6%) as summarised in Figure 7.9.

By gender, more female individuals (60.0%) charged their mobile phones at home compared to male individuals (50.1%). In contrast, more male individuals charged their phones at a shop (41.5%) compared to female individuals (30.8%) as summarised in Figure 7.10.

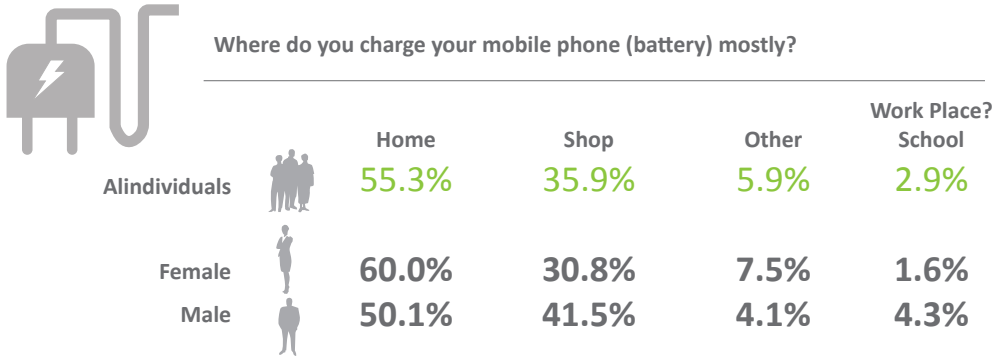


Figure 7.10: Places individual mobile phone owners charged their phones by gender

7.1.5 Phone usage

The study collected information on the usage of mobile phones amongst individuals. The findings in Figure 7.11 shows that overall, making and receiving calls was the most common function (99.7%), followed by sending and receiving mobile money (70.1%) as well as sending and receiving text messages (64.3%).

By location, individuals in urban areas used their mobile phones more for the different functions compared to individuals in rural areas. For particular functions like taking photos and video clips, social networking, playing games, browsing the Internet and international calls, usage by individuals in urban areas more than doubled usage by individuals in rural areas as presented in Figure 7.11. This maybe partly explained by the higher proportion of smart phones amongst individuals in urban areas compared to individuals in rural areas indicated in Figure 7.6.

By gender, male individuals used their mobile phones more for the different functions compared to female individuals as summarised in Figure 7.12.

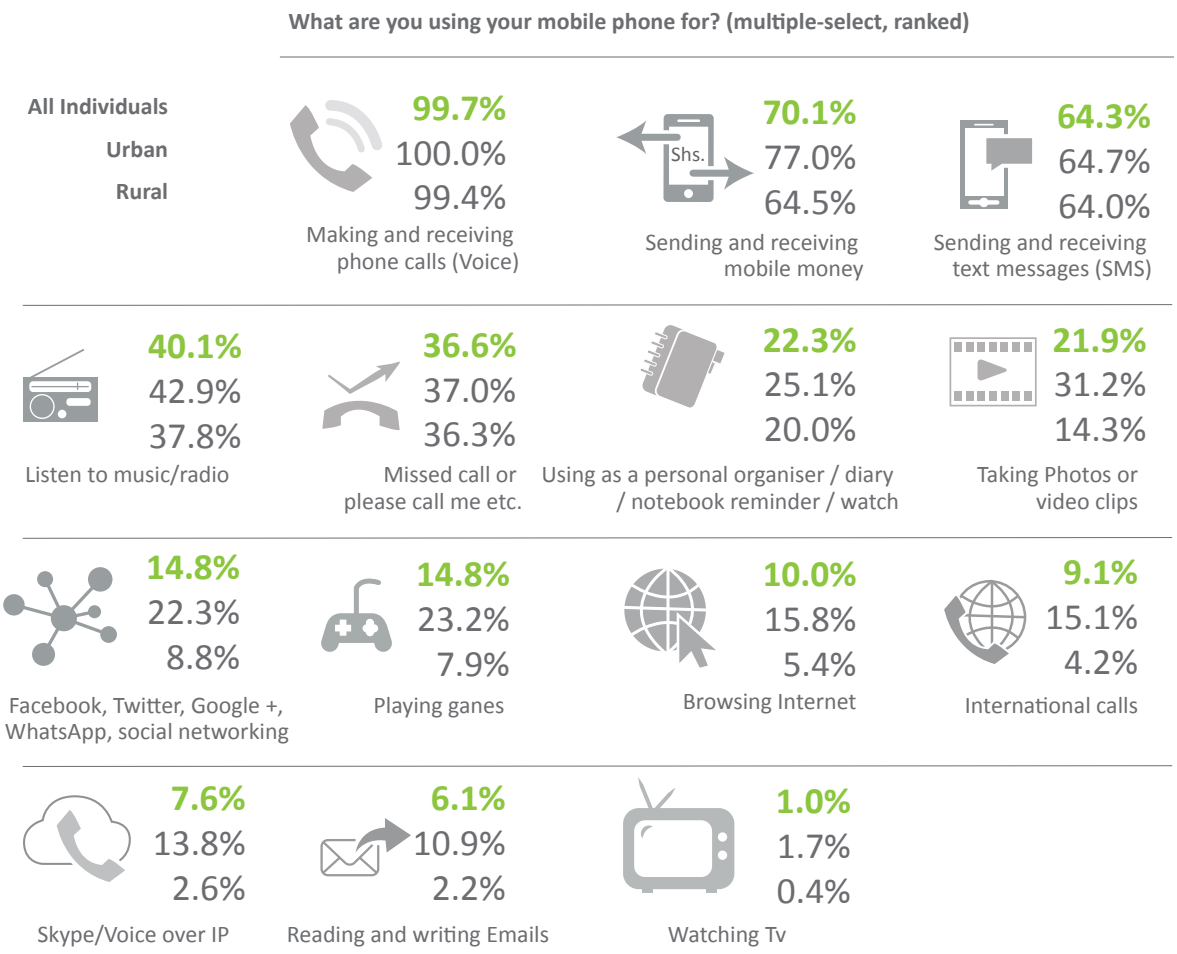


Figure 7.11: Mobile phones services that individuals used by location

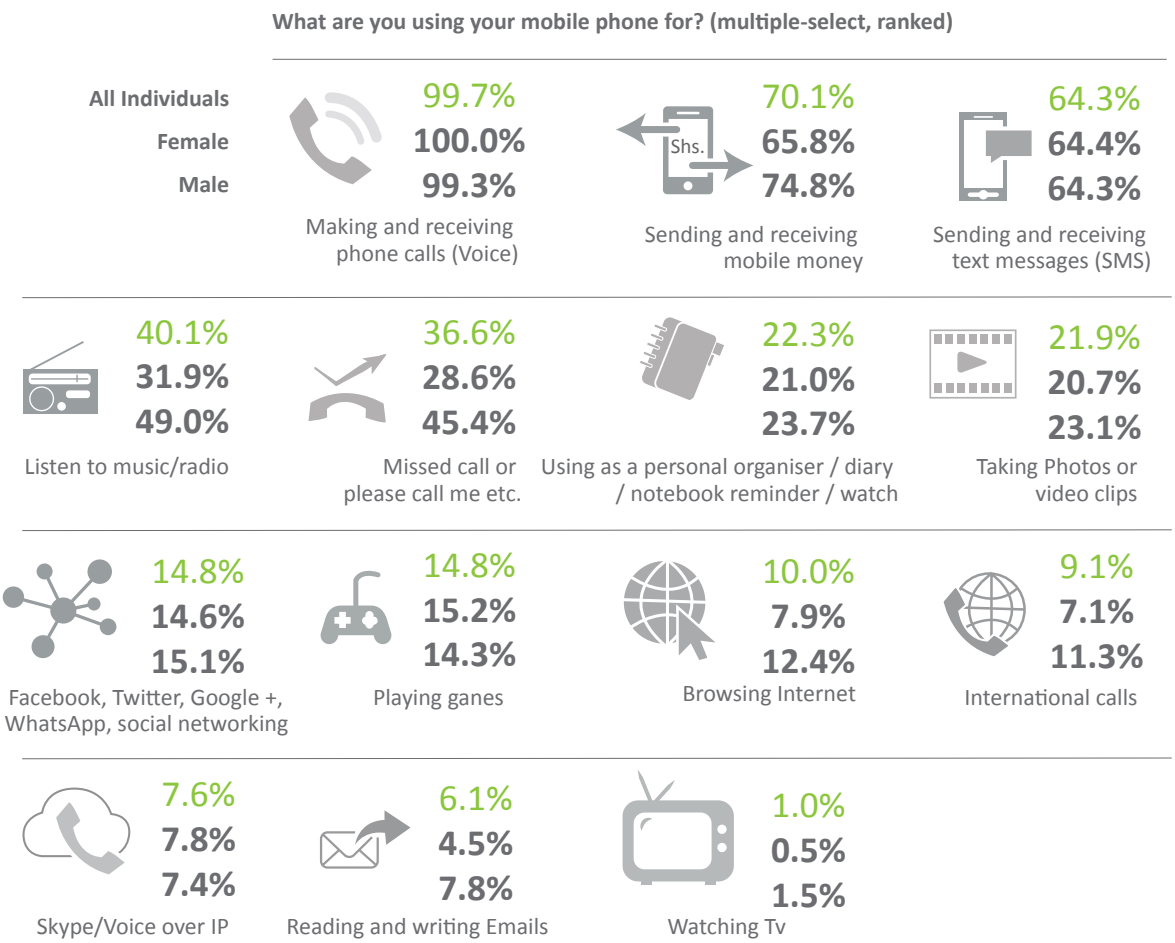


Figure 7.12: Mobile phones services that individuals used by gender

Most individuals (64.2%) did not share their mobile phones with others as shown in Figure 7.13. By location, more individuals in urban areas (70.2%) did not share their phones compared to individuals in rural areas (59.4%). By gender, more female individuals (69.4%) did not share their mobile phones compared to male individuals (58.6%).

Do you share your mobile phone with others?

	All Individuals	Rural	Urban	Male	Female
No	64.2%	59.4%	70.2%	58.6%	69.4%
Yes, Daily	8.8%	9.2%	8.2%	11.2%	6.6%
Yes, Once a week	9.6%	13.3%	5.0%	11.1%	8.1%
Yes, Several times a week	2.8%	2.4%	3.4%	3.3%	2.4%
Yes, Several times amonth	1.0%	0.5%	1.7%	0.7%	1.3%
Yes, Occasionally	13.6%	15.3%	11.6%	15.1%	12.2%

Figure 7.13: Intensity of mobile phone sharing amongst individuals by location and gender

7.1.6 Provider and satisfaction

The study collected information on the number of SIM cards owned by individuals presented in Figure 7.14. Overall, most individuals (55.3%) owned one SIM card, followed by those that owned two SIM cards (40.3%). By location, more individuals in rural areas (64.1%) owned one SIM card compared to individuals in urban areas (44.5%). By gender, 56.8% of female individuals owned one SIM card compared to 53.7% of male individuals.

How many active SIM cards do you have?

	All Individuals	Rural	Urban	Male	Female
1 SIMs	55.3%	64.1%	44.5%	53.7%	56.8%
2 SIMs	40.3%	33.0%	49.3%	39.1%	41.4%
3 SIMs	3.4%	2.5%	4.5%	5.3%	1.7%
4+ SIMs	1.0%	0.4%	1.7%	1.9%	0.1%

Figure 7.14: Number of active SIM cards amongst individuals that owned mobile phones

MTN was the most used provider, with 73.7% of individuals owning an MTN SIM card, followed by Airtel with 61.4% and Africell with 7.3% as summarised in Figure 7.15. By location, individuals in urban areas had more SIM cards compared to individuals in rural areas across all providers. By gender, more male individuals (81.1%) had MTN SIM cards compared to female individuals (66.9%), while more female individuals (69.8%) had Airtel SIM cards compared to male individuals (52.3%) as presented in Figure 7.16.

From which mobile phone provider(s)? (multiple-select, ranked)

	MTN	airtel	africell	uganda telecom	Smart	Others	vodafone	K2 TELECOM
All Individuals	**73.7%**	**61.4%**	**7.3%**	**1.2%**	**0.3%**	**0.2%**	**0.1%**	**0.1%**
Urban	77.7%	68.2%	7.8%	1.5%	0.7%	0.2%	0.2%	0.1%
Rural	70.4%	55.8%	7.0%	1.0%	0.1%	0.1%	0.0%	0.0%

Figure 7.15: Mobile providers for individuals that owned phones by location

From which mobile phone provider(s)? (multiple-select, ranked)

	MTN	airtel	africell	uganda telecom	Smart	Others	vodafone	K2 TELECOM
All Individuals	73.7%	61.4%	7.3%	1.2%	0.3%	0.2%	0.1%	0.1%
Female	**66.9%**	**69.3%**	**4.2%**	**0.7%**	**0.3%**	**0.1%**	**0.0%**	**0.1%**
Male	**81.1%**	**52.3%**	**10.7%**	**1.8%**	**0.4%**	**0.2%**	**0.2%**	**0.0%**

Figure 7.16: Mobile providers for individuals that owned phones by gender

Overall, 69.3% of individuals that owned mobile phones were very satisfied or satisfied with the service from their current mobile phone provider. By location, more individuals in urban areas (80.6%) were more satisfied with their current mobile phone provider compared to individuals from rural areas (60.2%). By gender, more female individuals (75.2%) were more satisfied with their current provider compared to male individuals (62.9%) as shown in Figure 7.17.

How satisfied are you with the service from your current mobile phone service provider(s)?

	All Individuals	Rural	Urban	Male	Female
Very satisfied or satisfied	69.3%	60.2%	80.6%	62.9%	75.2%
Not Sure to Very dissatisfied	30.0%	38.8%	19.3%	35.9%	24.7%
Do not know	0.7%	1.0%	0.2%	1.2%	0.2%

Figure 7.17: Individual satisfaction with current mobile phone provider by location and gender

7.1.7 Individuals with no mobile phones

Overall, 29.1% of in individuals reported that they did not own any mobile phones. The survey explored reasons for not owning a mobile phone. I cannot afford it (88.9%) was the major reason for not owning a mobile phone, followed by no electricity at home to charge a mobile phone (36.6%) and my phone is broken (16.7%). The results are summarised in Figure 7.18.

Why don't you have a mobile phone? (multiple-select, ranked)

	I cannot afford it	No electricity at home to charge the mobile	My phone is broken	No mobile coverage where i live	My phone got stolen	I don't have anyone to call
All individuals	88.9%	36.6%	16.7%	8.0%	7.3%	5.1%
Urban	82.7%	24.0%	18.7%	0.5%	8.9%	3.6%
Rural	91.4%	41.7%	15.9%	11.0%	6.6%	5.7%

Figure 7.18: Individual reasons for not owning a mobile phone by location

By location, more individuals in rural areas indicated that they could not afford a mobile phone (91.4%) compared to individuals in urban areas (82.7%). The urban-rural gap was widest amongst individuals that reported no electricity at home to charge a mobile phone (24.0% and 41.7% respectively) and individuals that reported no mobile coverage where they lived (0.5% and 11.0% respectively) as indicated in Figure 7.18.

By gender, more female individuals indicated that they could not afford a mobile phone (90.5%) compared to male individuals (84.3%). The female-male gap was widest amongst individuals that reported my phone is broken (15.5% and 20.3% respectively) and individuals that reported no mobile coverage where they lived (4.8% and 17.1% respectively) as indicated in Figure 7.19.

Why don't you have a mobile phone? (multiple-select, ranked)

	I cannot afford it	No electricity at home to charge the mobile	My phone is broken	No mobile coverage where i live	My phone got stolen	I don't have anyone to call
All individuals	88.9%	36.6%	16.7%	8.0%	7.3%	5.1%
Female	90.5%	36.9%	15.5%	4.8%	7.4%	5.7%
Male	84.3%	35.6%	20.3%	17.1%	6.8%	3.2%

Figure 7.19: Individual reasons for not owning a mobile phone by gender

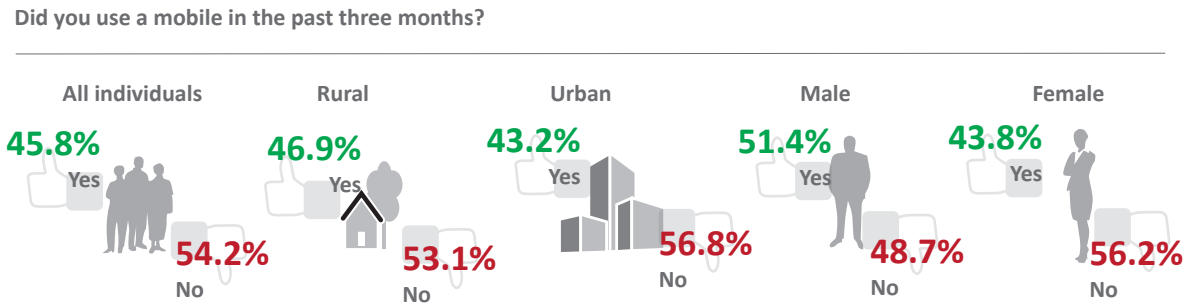


Figure 7.20: Individuals with no mobile phones but had used one in past three months by location and gender

Overall, 45.8% of individuals that did not own a mobile phone indicated that they had used one in the past 3 months as shown in Figure 7.20. By location, more individuals in rural areas (46.9%) that owned no phone had used one compared to individuals in urban areas (43.2%). By gender, more male individuals (51.4%) that owned no phone had used one compared to female individuals (43.8%).

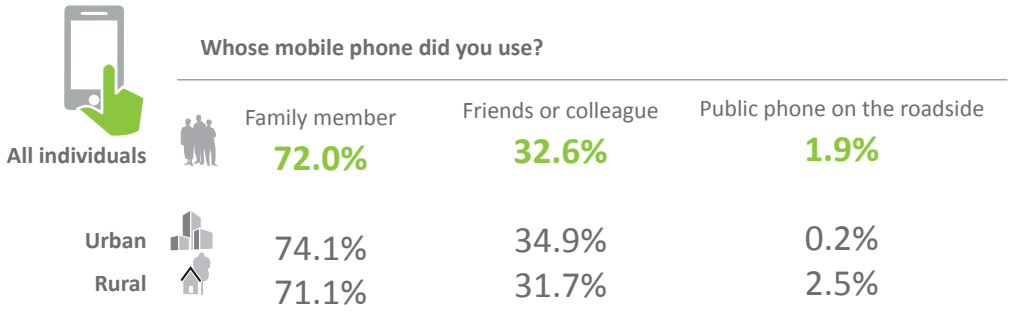


Figure 7.21: Phone sharing by individual who owned no mobile phones by location

Figure 7.21 shows that amongst individuals that owned no phone but had used one in past 3 months, most (72.0%) had used a family member's phone, followed by a friend or colleague's phone (32.6%). By gender, more female individuals (76.2%) had used a family member's phone compared to male individuals (61.8%) while more male individuals (48.3%) had used a friend or colleague's phone compared to female individuals (25.9%) as summarised in Figure 7.22.

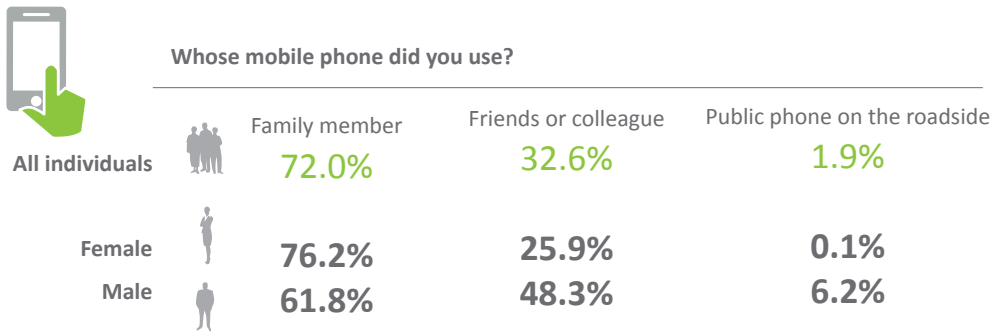


Figure 7.22: Phone sharing by individual who owned no mobile phones by gender

Amongst individuals that owned no mobile phones, 27.4% of them owned at least one active SIM card as indicated in Figure 7.23. Considering location, more individuals (42.4%) in urban areas with no mobile phones owned active SIM cards compared to individuals in rural areas (21.6%). Considering gender, more female individuals (30.0%) with no mobile phones owned active SIM cards compared to individuals in rural areas (21.2%).

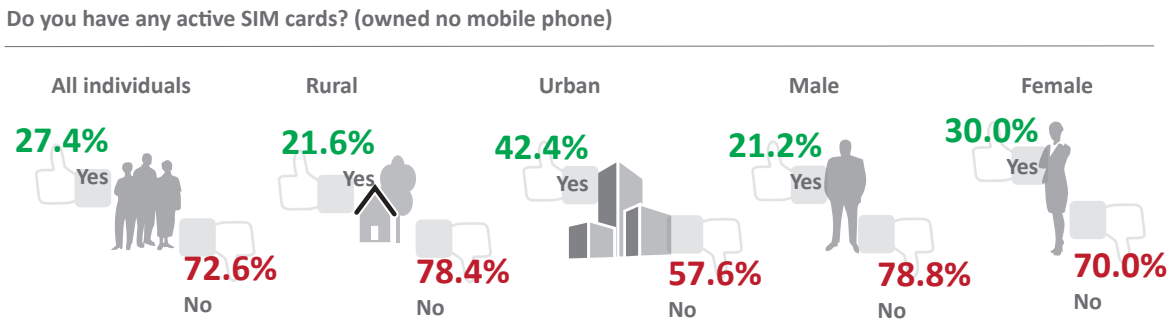


Figure 7.23: Ownership of SIM cards amongst individuals with no mobile phones by location and gender

Figure 7.24 and Figure 7.25 show plans to get a mobile phone in future amongst individuals that owned no mobile phones by location and gender respectively. Most individuals (36.2%) planned to get a mobile phone in the next 6 months, followed by those planning to get a mobile phone within the next year (30.3%). Generally, more urban and male individuals planned to get a mobile phone in the next 12 months compared to rural and female individuals respectively.

Do you plan to get a mobile phone in the future? If yes, when?

	No	Within the next 6 months	Within the next year	Within the next 2 year
Rural	15.4%	37.1%	24.4%	23.1%
Urban	14.2%	33.8%	45.3%	6.7%
All individuals	**15.1%**	**36.2%**	**30.3%**	**18.5%**

Figure 7.24: Optimism about buying a mobile phone among individuals without a mobile phone by location

Do you plan to get a mobile phone in the future? If yes, when?

	No	Within the next 6 months	Within the next year	Within the next 2 year
Male	**18.8%**	**33.5%**	**28.3%**	**19.4%**
Female	**13.5%**	**37.3%**	**31.1%**	**18.2%**
All individuals	15.1%	36.2%	30.3%	18.5%

Figure 7.25: Future optimism to buy a mobile phone among individual with no mobile phone by gender

7.2 Computers and Internet

At the individual level, the survey sought information on the use of computers in the last 12 months, the type of computers and the activities carried out on those computers. The survey also collected information on the use of the Internet, the location at which individuals used the Internet as well as reasons for not using the Internet.

7.2.1 Individual computer and Internet use at a glance

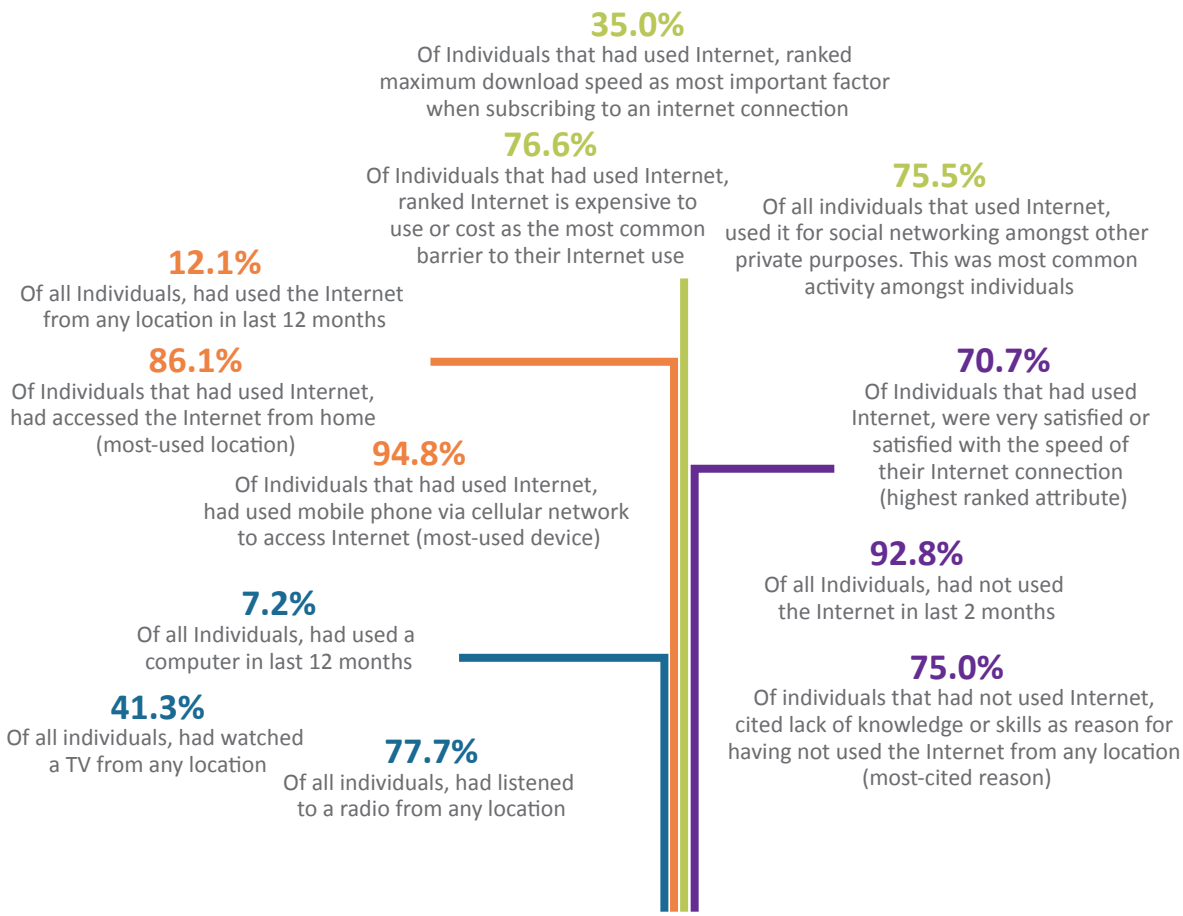


Figure 7.26: Individual computer and Internet access statistics at a glance

7.2.2 Computing devices

Figure 7.27 shows that overall, 7.2% of individuals had used a computer in the last 12 months irrespective of location. Considering location, more individuals in urban areas (13.4%) had used a computer compared to individuals in rural areas (3.0%). Considering gender, more male individuals (9.8%) had used a computer compared to female individuals (5.4%).

The survey collected information on the type of IT equipment that individuals had used in the last 12 months. Figure 7.28 indicates that 85.1% of individuals had used a mobile phone, followed by 5.7% that had used a desktop computer, 5.6% that had used a music/video player and 4.7% that used a portable/laptop computer. By location, 10.5% of individuals in urban areas had used a desktop computer compared to 2.5% of individuals in rural areas. Similarly, more individuals in urban areas had used portable or laptop computers and tablet or handheld computers (9.6% and 4.0% respectively) compared to individuals in rural areas (1.4% and 1.0% respectively).

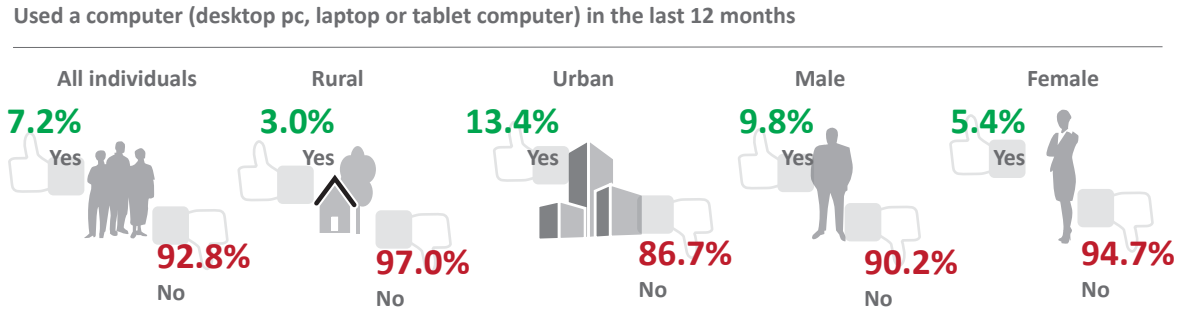


Figure 7.27: Individuals that had used a computer in last 12 months by location and gender

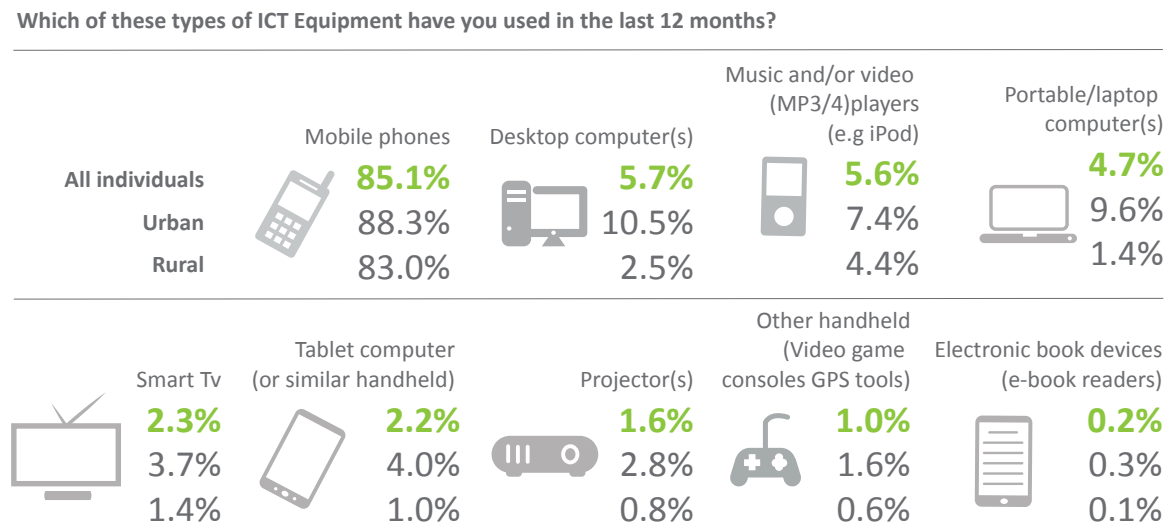


Figure 7.28: Type of IT equipment used by individuals in last 12 months by location

Considering gender, presented in Figure 7.29, 8.0% of male individuals had used a desktop computer compared to 4.1% of female individuals. Similarly, more male individuals had used a portable or laptop computer and a tablet or handheld computer (6.6% and 3.3% respectively) compared to female individuals (3.4% and 1.5% respectively).

Which of these types of ICT Equipment have you used in the last 12 months?

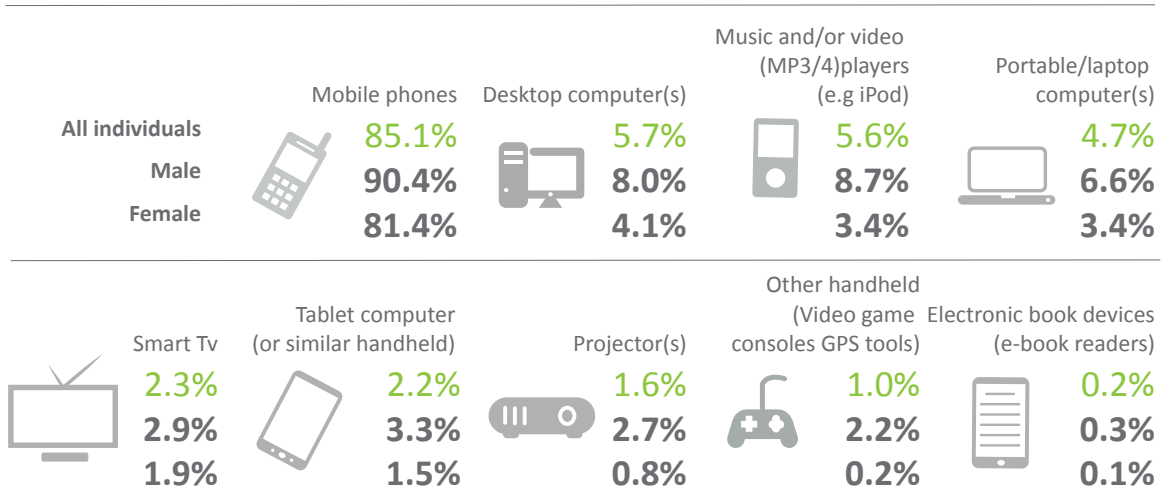


Figure 7.29: Type of IT equipment used by individuals in last 12 months by gender

7.2.3 Radio and TV

Overall, 77.7% of all individuals listened to a radio. By location, more individuals in urban areas (80.1%) listened to a radio compared to individuals in rural areas (76.2%). By gender, 90.5% of male individuals listened to radio compared to 68.7% of female individuals as highlighted in Figure 7.30.

Those that listened to radio were asked from which location they listened to radio mainly. Findings in Figure 7.31 show that overall, 79.3% listened to radio at home while 9.0% listened to radio at a friend's, relative or neighbours home. Using a mobile phone to listen to radio accounted for 5.9% while 4.3% reported that they listened to the radio mainly at work. Urban-rural disaggregation did not show much variation except for listening to radio at work, done by more individuals in rural areas (5.9%) compared to individuals in urban areas (2.0%) and listening to radio in public places, done by more individuals in urban areas (2.0%) compared to individuals in rural areas (0.6%).

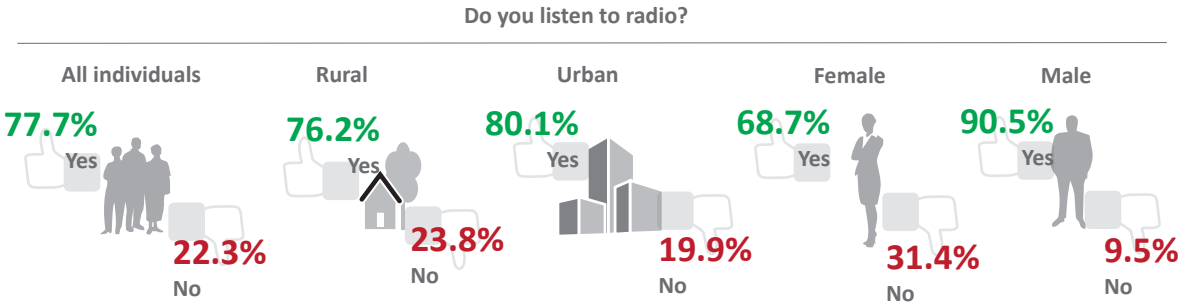


Figure 7.30: Proportion of individuals that listened to radio by location and gender

Where do you listen to radio mainly? (ranked)

	At home	At friends, relative or neighbours home	Using my mobile phone	At work/ Office	Public place (bar, resturant community hall)	Other	While travelling (car, taxi, bus)
All indivivduals	**79.3%**	**9.0%**	**5.9%**	**4.3%**	**1.2%**	**0.3%**	**0.1%**
Urban	80.5%	8.4%	6.5%	2.0%	2.0%	0.5%	0.1%
Rurla	78.5%	9.4%	5.5%	5.9%	0.6%	0.1%	0.0%

Figure 7.31: Places where individuals listened to radio by location

Considering gender, more female individuals (83.1%) listened to radio at home compared to male individuals (75.3%) as shown in Figure 7.32. Other locations that showed female-male variation were listening to radio using a mobile phone, done by more male individuals (6.9%) compared to female individuals (4.9%) and listening to radio at work, also done by more male individuals (7.5%) compared to female individuals (1.3%).

Where do you listen to radio mainly

	At home	At friends, relative or neighbours home	Using my mobile phone	At work /Office	Public place (bar, resturant community hall)	Other	While travelling (car, taxi, bus)
All indivivduals	79.3%	9.0%	5.9%	4.3%	1.2%	0.3%	0.1%
Female	**83.1%**	**9.2%**	**4.9%**	**1.3%**	**1.3%**	**0.2%**	**0.0%**
Male	**75.3%**	**8.8%**	**6.9%**	**7.5%**	**1.0%**	**0.4%**	**0.1%**

Figure 7.32: Places where individuals listened to radio by gender

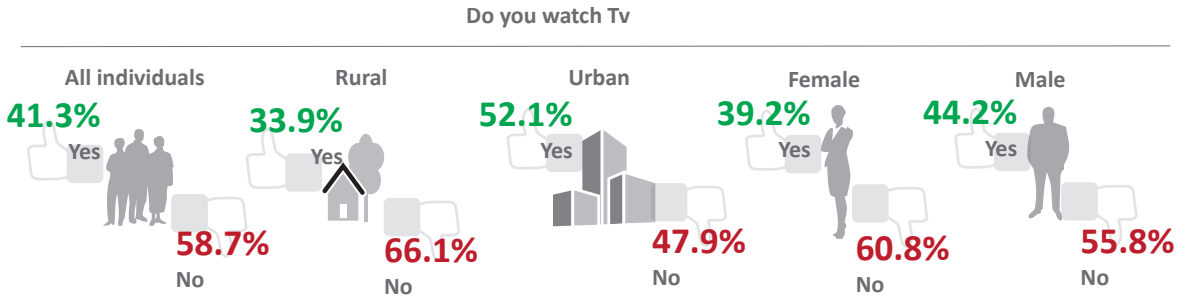


Figure 7.33: Proportion of individuals that watched TV by location and gender

A lower proportion of individuals watched TV (41.3%) compared to those that listened to radio (77.7%). By location, more individuals in urban areas (52.1%) watched TV compared to individuals in rural areas (33.9%). By gender, 44.2% of male individuals watched TV compared to 39.2% of female individuals as highlighted in Figure 7.33.

Most individuals (98.6%) watched TV on a regular TV set, distantly followed by watching TV on a computer/laptop (0.5%) and using app on mobile phone (0.4%).

The survey asked those that watched TV about the location from which they watched TV mainly. Findings in Figure 7.34 indicate that overall, 46.8% watched TV at home while 25.6% watched TV from public places like bars and community halls. Watching TV from a friend's, relative or neighbours home accounted for 24.4% while 1.6% reported that they watched TV mainly at work. Considering location, more individuals in urban areas (60.1%) watched TV at home compared to individuals in rural areas (33.0%). In contrast, more individuals in rural areas watched TV in public places and at a friend's, relative or neighbours home (35.2% and 29.2% respectively) compared to individuals in urban areas (16.5% and 19.7% respectively).

Where do you watch television mainly?

	At home	Public place (bar, resturant community hall)	At friends, relative or neighbours home	At work/Office	Tv Club	Other
All indivivduals	**46.8%**	**25.6%**	**24.4%**	**1.6%**	**1.2%**	**0.4%**
Urban	60.1%	16.5%	19.7%	2.7%	0.8%	0.3%
Rural	33.0%	35.2%	29.2%	0.4%	1.7%	0.5%

Figure 7.34: Places where individuals watched TV by location

Considering gender, more female individuals (57.1%) watched TV at home compared to male individuals (34.0%) while more male individuals (37.1%) watched TV in public places compared to female individuals (16.4%) as shown in Figure 7.35.

Where do you watch television mainly?

	At home	Public place (bar, resturant community hall)	At friends, relative or neighbours home	At work/Office	Tv Club	Other
All indivivduals	46.8%	25.6%	24.4%	1.6%	1.2%	0.4%
Female	57.1%	16.4%	24.1%	1.9%	0.1%	0.4%
Male	34.0%	37.1%	24.7%	1.1%	2.6%	0.4%

Figure 7.35: Places where individuals watched TV by gender

7.2.4 Internet access and access locations

Figure 7.36 indicates that overall, 12.1% of individuals had used the Internet for any purpose in the last 12 months irrespective of location. By location, more individuals in urban areas (19.5%) had used the Internet compared to individuals in rural areas (7.1%). By gender, more male individuals (15.8%) had used the Internet compared to female individuals (9.5%).

Have you used the Internet from any location in the last twelve (12) months?

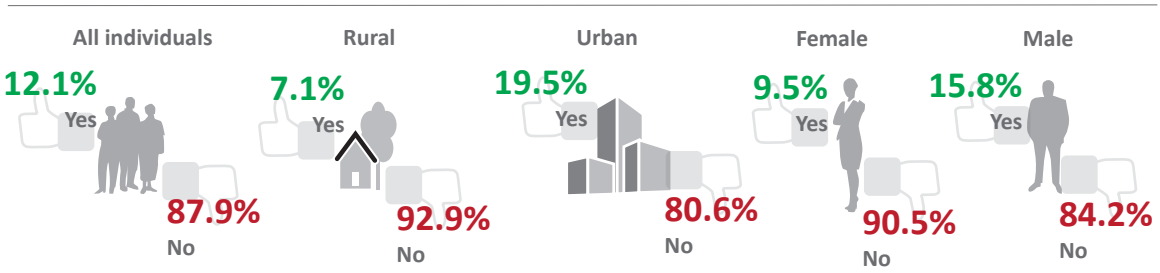


Figure 7.36: Proportion of individuals that had used the Internet by location and gender

By age group, most individual Internet users were in the age groups of 15 to 24 (22.3%) and 25 to 34 (16.4%) as indicated in Figure 7.37.

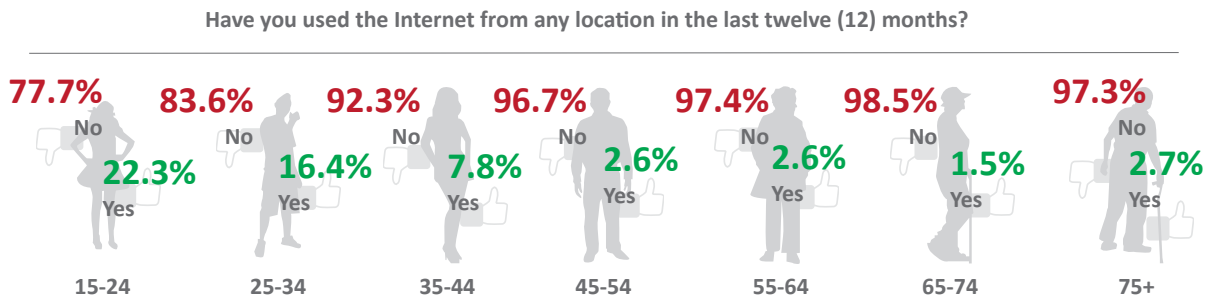


Figure 7.37: Proportion of individuals that had used the Internet by age range

From which locations have you used the Internet? (multiple select, ranked)

	At home	Another persons home(friend, relative or neighbour)	On the move, via a mobile cellular Telephone	At my workplace (but not home)	At Commercial Internet access facility	At school or education facility	At Community Internet access facility
All indivivduals	**86.1%**	**40.7%**	**30.2%**	**29.2%**	**18.9%**	**15.9%**	**8.1%**
Urban	87.5%	30.9%	34.4%	27.4%	22.9%	19.7%	11.1%
Rural	83.5%	59.0%	22.4%	32.4%	11.5%	8.9%	2.7%

Figure 7.38: Different locations that individuals used to access the Internet by location

From those that reported using the Internet, the survey asked about the locations from which they used the Internet. Most individuals predominantly accessed the Internet at home (86.1%), followed by at another person's home (40.7%) and on the move (30.2%) as summarised in Figure 7.38.

From which locations have you used the internet?

	At home	Another persons home(friend, relative or neighbour)	On the move, via a mobile cellular Telephone	At my workplace (but not home)	At Commercial Internet access facility	At school or education facility	At Community Internet access facility
All indivivduals	86.1%	40.7%	30.2%	29.2%	18.9%	15.9%	8.1%
Male	**83.6%**	**46.5%**	**33.1%**	**36.4%**	**22.2%**	**17.4%**	**10.6%**
Female	**89.0%**	**33.9%**	**26.8%**	**20.6%**	**14.9%**	**14.2%**	**5.3%**

Figure 7.39: Different locations that individuals used to access the Internet by gender

Male individuals tended to access the Internet more across the different locations compared to female individuals except at home, where more female individuals (89.0%) accessed the Internet compared to male individuals (83.6%) as shown in Figure 7.39. The gender Internet access gap in terms of location is largest at the workplace perhaps highlighting the fact that most female individuals tend to stay and work at the home compared to male individuals that go out to look for work.

From those that reported using the Internet, the survey asked about the different devices that individuals had used to access the Internet. Most individuals had used a mobile phone via the mobile cellular network to access the Internet (94.8%), followed by a desktop computer (27.9%) and a mobile phone via the mobile cellular network (20.6%) as summarised in Figure 7.40.

The urban-rural gap in terms of devices used to access the Internet was negligible among individual that had used a mobile phone via the mobile cellular network to access the Internet (95.4% and 93.5%). However, twice or more individuals in urban areas compared to individuals in rural areas had used a desktop computer or portable computer to access the Internet.

Which of the following devices have you used to access the Internet in the past 12 months? (multiple-select, ranked)

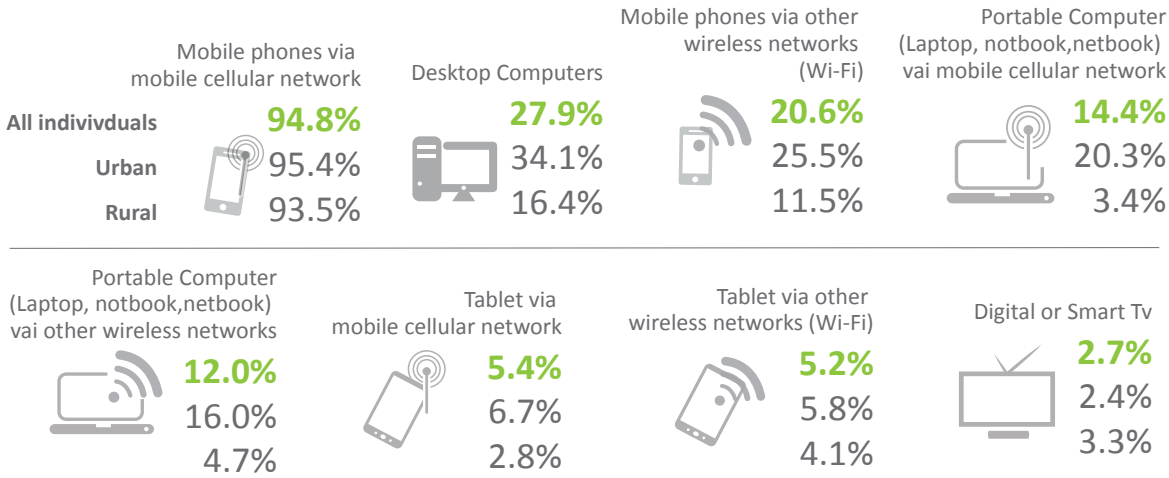


Figure 7.40: Different devices that individuals used to access the Internet by location

Considering gender, more female individuals (96.5%) used a mobile phone via the mobile cellular network to access the Internet compared to male individuals (93.3%) while for other devices used to access the Internet the advantage was reversed. The male-female gap was widest for individuals that used a desktop computer to access the Internet (31.5% and 23.6% respectively), followed by mobile phone via Wi-Fi (23.9% and 16.7% respectively) and portable computer via Wi-Fi (14.8% and 8.8% respectively) as presented in Figure 7.41.

Which of the following devices have you used to access the Internet in the past 12 months? (multiple-select, ranked)

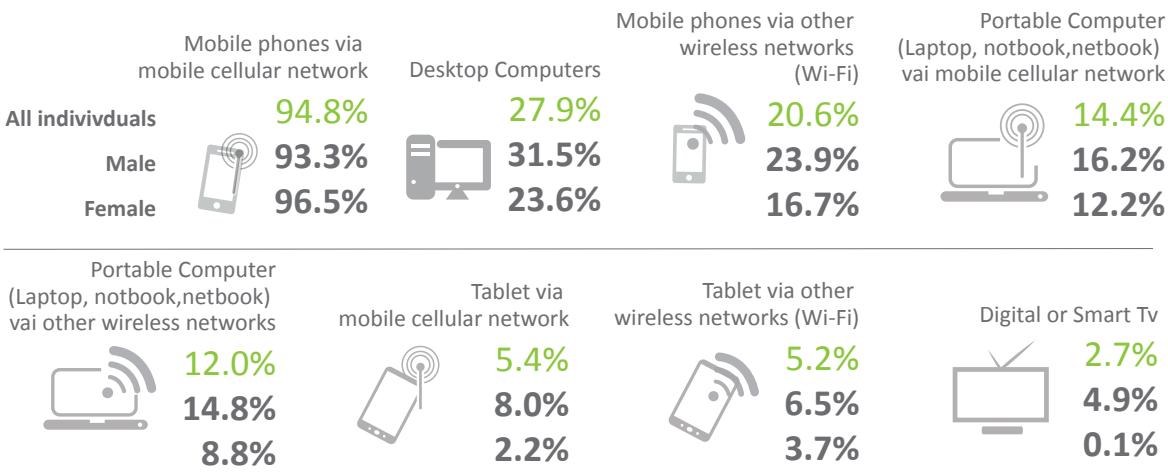


Figure 7.41: Different devices that individuals used to access the Internet by gender

7.2.5 Internet subscription influences

The survey collected information about what influences Internet subscription options. Findings in Figure 7.42 shows that overall, 35.0% considered maximum download speed as the most important factor when subscribing to an internet connection, followed by price of subscription (30.9%) and whether internet was part of the bundle (15.6%). Considering location, maximum download speed and price of subscription were more important to individuals in urban areas (37.4% and 31.5% respectively) compared to individuals in rural areas (30.7% and 29.9% respectively). In contrast, Internet being part of a bundle and customer service offered were more important to individuals in rural areas (25.1% and 4.0% respectively) compared to individuals in urban areas (10.4% and 1.2% respectively).

When subscribing to an internet connection, what is the main factor you consider? (ranked)

	Maximum download speed	Price of subscription	Its part of a bundle	Maximum amount you can dowload/ upload	Customer service offered	Cost of equipment
All indivivduals	**35.0%**	**30.9%**	**15.6%**	**11.5%**	**2.2%**	**0.7%**
Urban	34.7%	31.5%	10.4%	16.2%	1.2%	0.6%
Rural	30.7%	29.9%	25.1%	2.7%	4.0%	0.9%

Figure 7.42: Individual factors considered when subscribing to an internet connection by location

Considering gender, maximum download speed and price of subscription were more important to male individuals (38.8% and 35.6% respectively) compared to female individuals (30.6% and 25.3% respectively) as presented in Figure 7.43. In contrast, Internet being part of a bundle and maximum amount you can download/upload were more important to female individuals (23.8% and 17.2% respectively) compared to male individuals (8.7% and 6.7% respectively).

When subscribing to an internet connection, what is the main factor you consider? (ranked)

	Maximum download speed	Price of subscription	Its part of a bundle	Maximum amount you can dowload/ upload	Customer service offered	Cost of equipment
All indivivduals	35.0%	30.9%	15.6%	11.5%	2.2%	0.7%
Female	**30.6%**	**25.3%**	**23.8%**	**17.2%**	**1.3%**	**0.4%**
Male	**38.8%**	**35.6%**	**8.7%**	**6.7%**	**2.9%**	**0.9%**

Figure 7.43: Individual factors considered when subscribing to an internet connection by gender

7.2.6 Barriers to use of Internet

The survey asked individuals that had used the Internet to identify factors that limited their use of the Internet (barriers). Overall, Internet is expensive to use or cost emerged as the most cited barrier (76.6%), followed by Internet is slow or speed (49.2%) and lack of network/connectivity in my area (41.4%) as indicated in Figure 7.44.

Considering location, besides privacy or security concerns that more individuals in urban areas (17.7%) identified as barriers compared to individuals in rural areas (11.2%), for the rest of the barriers, there were more individuals in rural areas compared to individuals in urban areas.

What limits your use of the Internet? (multiple-select, ranked)

	Internet is expensive to use	Internet is very slow	Lack of network/ connectivity in my area	Difficulty to set or change parameters for internet access
All indivivduals	**76.6%**	**49.2%**	**41.4%**	**37.7%**
Urban	72.6%	45.3%	41.5%	27.2%
Rural	83.8%	56.4%	41.1%	57.3%

	No interesting content for me	Inconvenience of using small screen	Few people to communicate with	Lack of local language content	Privacy or Security concerns
All indivivduals	**32.2%**	**30.2%**	**25.9%**	**24.7%**	**15.4%**
Urban	21.7%	22.5%	20.1%	9.0%	17.7%
Rural	51.6%	44.4%	36.5%	53.8%	11.2%

Figure 7.44: Barriers to individual Internet use by location

In terms of gender, the female-male gap was widest for few people to communicate with via the Internet, cited by more female individuals (33.1%) as a barrier compared to male individuals (19.8%). This was followed by lack of network/connectivity options in my area, cited by more male individuals (46.6%) compared to female individuals (35.2%). The contrast between other barriers is summarised in Figure 7.45.

What limits your use of the Internet? (multiple-select, ranked)

	Internet is expensive to use	Internet is very slow	Lack of network/ connectivity in my area	Difficulty to set or change parameters for internet access
All indivivduals	76.6%	49.2%	41.4%	37.7%
Female	**79.0%**	**52.2%**	**35.2%**	**41.6%**
Male	**74.5%**	**46.7%**	**46.6%**	**34.5%**

	No interesting content for me	Inconvenience of using small screen	Few people to communicate with	Lack of local language content	Privacy or Security concerns
All indivivduals	32.2%	30.2%	25.9%	24.7%	15.4%
Female	**34.3%**	**33.8%**	**33.1%**	**22.3%**	**17.1%**
Male	**30.4%**	**27.2%**	**19.8%**	**26.8%**	**14.0%**

Figure 7.45: Barriers to individual Internet use by gender

7.2.7 Type of activities and confidence

Figure 7.46 shows the different purposes that individuals used the Internet for and the frequency.

For which activities did you use the Internet for private purposes in the last twelve (12) months from any location? (multiple select, ranked by Never)

	Social networking or video-sharing websites (Facebook, Twitter, LinkedIn, Pinterest, Google+)?	Instant messaging or accessing chat sites, newsgroups or online discussions (WhatsApp)	Downloading movies, images, music, watching TV or video, or listening to radio or music	Reading or downloading online newspapers or magazines, electronic books
Never	24.5%	1.6%	44.7%	55.9%
Occasionally	6.3%	33.7%	40.6%	29.1%
weekly	18.4%	11.6%	10.5%	9.8%
Daily	25.3%	23.2%	4.3%	5.2%

Sending or receiving email	Seeking health information (on disease, injury, services)	Playing or downloading video games or computer games	Getting information about goods or services	Education or learning activities (formal)
61.1%	61.8%	65.3%	66.1%	68.0%
22.0%	30.3%	22.5%	24.4%	17.8%
9.7%	5.3%	7.1%	7.4%	8.0%
7.1%	2.6%	5.2%	2.1%	6.2%

Making telephone calls over the Internet/VoIP (e.g. Skype,)	Looking for a job or sending/submitting a job application online	Look for free education content, such as free courses, online encyclopedia, Wikipedia, and other learning resources	Uploading self/user-created context to website to be shared (text,images, photos, etc.)
72.8%	73.7%	74.0%	75.3%
17.8%	20.0%	20.4%	19.7%
4.0%	4.4%	3.2%	3.3%
5.4%	1.9%	2.5%	1.7%

Get information for school or university related work/ Researching atopic	Downloading software	Using storage space on the Internet to save documents, pictures, music,video, other files (Google Drive, U. Dropbox, …	Managing personal/ own homepage	Collaborate on online documents (Google docs,Dropbox)
76.5%	77.3%	77.7%	77.8%	84.7%
12.6%	14.0%	13.3%	14.6%	10.6%
8.1%	6.3%	5.7%	4.2%	3.1%
2.9%	2.4%	3.3%	3.5%	1.5%

Participate in distance learning for an academic degree or job training	Internet banking (includes electronic transaction with a bank forpayment, transfers)	Purchasing or ordering goods or services (place online order, even ifpayment is offline)	Blogging (maintaining or adding content to a blog)
86.5%	90.8%	91.7%	91.7%
8.6%	6.5%	6.7%	6.3%
4.0%	2.3%	1.2%	1.5%
0.9%	0.4%	0.4%	0.3%

Figure 7.46: Purpose and frequency of Internet use among individuals

75.5% of all individuals that used the Internet used it for social networking and this was the most used activity amongst individuals, followed by instant messaging with 68.4% and downloading or streaming media with 55.3%.

Overall, most Internet users (90.8%) had signed up to an online social networking site. By gender, more female individuals (93.9%) had signed up for social networking comapred to male individuals (88.1%) as indicated in Figure 7.47.

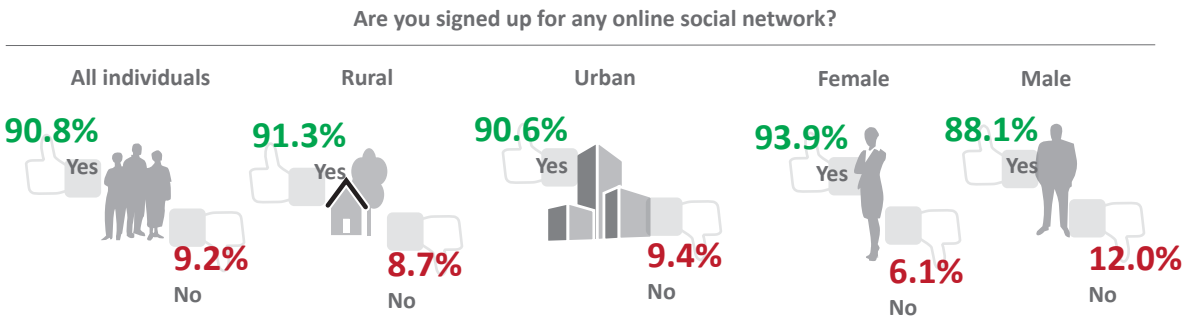


Figure 7.47: Proportion of Internet users signed up for social networks by location and gender

Figure 7.48 shows the different social networks to which individual Internet users had signed up. Facebook accounted for most users with 92.9%, followed by WhatsApp with 55.1% and Twitter with 13.1%. Considering location, more individuals in urban areas had signed up for the different social networks compared to individuals in rural areas. Besides Facebook, the urban-rural gap for other social networks is twice or more in proportion in favour of urban when comparing between individuals in urban areas and individuals in rural areas signed up for different networks.

Considering gender, besides Facebook and WhatsApp, the male-female gap for other social networks is twice or more in proportion in favour of male when comparing between male individuals and female individuals signed up for different social networks as summarised in Figure 7.49.

Which social network are you signed up for? (multiple-select, ranked)

	Facebook	WhatsApp	Twitter
All indivivduals	**92.9%**	**55.1%**	**13.1%**
Urban	94.9%	67.3%	17.6%
Rural	89.2%	33.6%	5.0%

	Google+	Instargram	Snapchat	Linkedin
All indivivduals	**8.3%**	**7.8%**	**5.4%**	**3.2%**
Urban	11.7%	11.7%	8.1%	4.3%
Rural	2.9%	1.1%	0.6%	1.4%

	Other	Flickr	Tumblr	Pinterest
All indivivduals	**2.9%**	**0.7%**	**0.5%**	**0.2%**
Urban	4.2%	1.1%	0.8%	0.3%
Rural	0.4%	0.0%	0.0%	0.0%

Figure 7.48: Proportion of Internet users signed up with different social networks by location

Which social network are you signed up for? (multiple-select, ranked)

	Facebook	WhatsApp	Twitter
All indivivduals	92.9%	55.1%	13.1%
Female	**92.6%**	**51.3%**	**7.7%**
Male	**93.1%**	**58.6%**	**17.9%**

	Google+	Instargram	Snapchat	Linkedin
All indivivduals	8.3%	7.8%	5.4%	3.2%
Female	**6.9%**	**4.2%**	**2.6%**	**1.3%**
Male	**9.5%**	**11.1%**	**7.9%**	**5.0%**

	Other	Flickr	Tumblr	Pinterest
All indivivduals	2.9%	0.7%	0.5%	0.2%
Female	**1.3%**	**0.1%**	**0.0%**	**0.0%**
Male	**4.3%**	**1.2%**	**1.0%**	**0.3%**

Figure 7.49: Proportion of Internet users signed up with different social networks by gender

Social network users were asked how they accessed their social networks and the results are summarised in Figure 7.50. Most social network users (92.0%) accessed their social networks using mobile phones and devices. By location, there was not much variation in terms of how social network users in urban areas compared to social network users in rural areas. By gender, more female social network users accessed their social networks using mobile phones compared to male social network users while more male social network users accessed their social networks using both mobile and PC/laptop compared to female social network users.

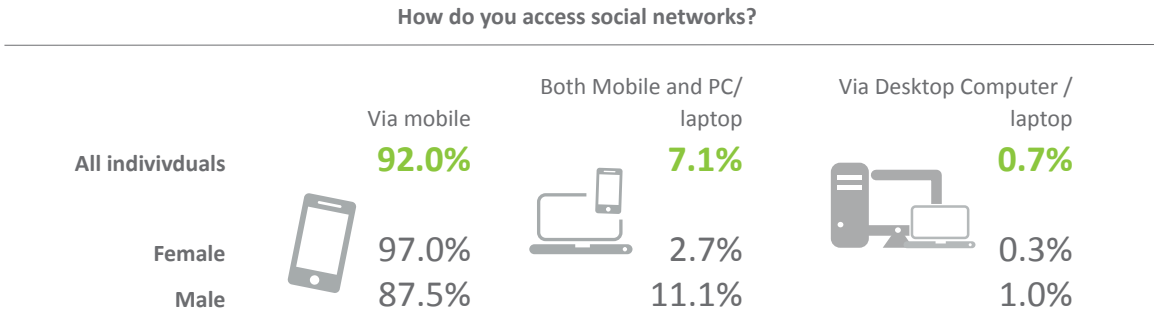


Figure 7.50: How Individual Internet users access social networks by gender

Internet users were asked how confident they felt in using the Internet to perform common tasks like communicating via email with others, using an Internet search engine as well as instant messaging applications or chat sites. Figure 7.51 shows the results. Most individuals (39.6%) were very confident or confident in using instant messaging applications or chat sites, followed by using an Internet search engine (34.5%) and using an Internet search engine (32.1%)

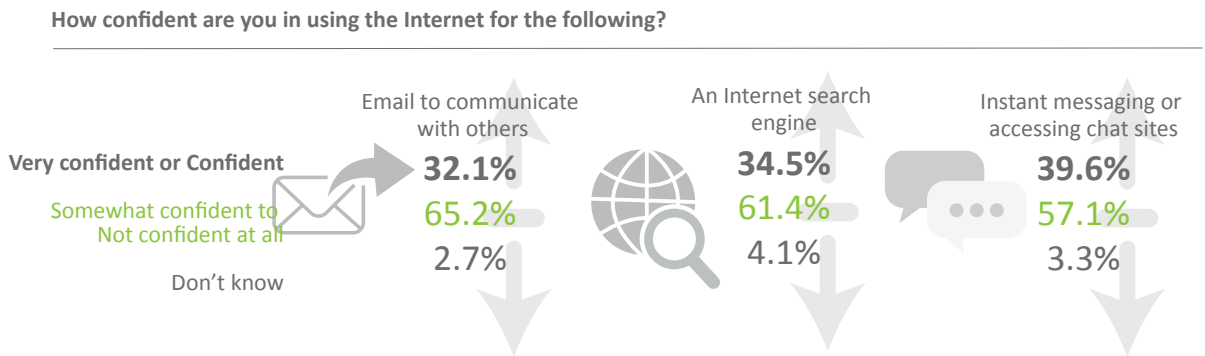


Figure 7.51: Usage confidence for common Internet tasks amongst individuals

The survey asked individuals that had used the Internet about satisfaction to various attributes of their Internet service. The attributes explored included speed, cost and reliability of the connection as well as after sales customer support and perception on value for money spent as highlighted in Figure 7.52. Overall, the highest proportion of individuals (70.7%) were either very satisfied or satisfied with the speed of Internet service while the lowest proportion (54.9%) were either very satisfied or satisfied with the cost of Internet service. This corroborates an earlier finding where cost emerged as the most cited barrier to Internet use (see Figure 7.44).

Satisfaction in relation to various characteristics of your Internet service

	Speed of Internet service	Cost of Internet service	Reliability of Internet service	Customer support after sales	Value for money spent	Overall perception of Internet service
Very satisfied or Satisfied	**70.7%**	**54.9%**	**69.9%**	**57.7%**	**58.8%**	**69.8%**
Not sure to Very dissatisfied	28.1%	43.5%	27.0%	37.7%	37.6%	25.0%
Don't know	1.2%	1.6%	3.1%	4.7%	3.6%	5.3%

Figure 7.52: Satisfaction with various attributes of Individual Internet service

7.2.8 Non-users of the Internet

The survey collected reasons for not using the Internet amongst individuals that reported not using the Internet. Lack of knowledge or skills (75.0%) was the major reason for not using the Internet, followed by those that don't know what the Internet is (57.5%) and those that do not need the Internet (49.5%) as shown in Figure 7.53.

Disaggregating the results by location, there was a rural-urban gap across all reasons for not using the Internet. The gap was widest for "Do not need the Internet" (57.6% and 35.6% respectively) and "Don't know what Internet is" (65.0% and 44.7% respectively).

What are the reasons why you do not use the Internet? (multiple-select, ranked)

	Do not know how to use it (lack of knowledge or skills)	Don't know what Internet is	Do not need the Internet (not useful, not interesting, lack of local content)	Cost of Internet service is too high (service charges, etc.)
All individuals	**75.0%**	**57.5%**	**49.5%**	**45.5%**
Urban	67.0%	44.7%	35.6%	37.6%
Rural	79.7%	65.0%	57.6%	50.1%

	Cost of internet equipment or devices too high	Privacy or security concerns	Internet service is not available or is poor in my area	Cultural reasons	Not allowed to use the Internet
All individuals	**36.0%**	**24.2%**	**23.5%**	**7.6%**	**7.3%**
Urban	28.2%	19.7%	16.7%	6.3%	5.3%
Rural	40.6%	26.9%	27.5%	8.3%	8.5%

Figure 7.53: Reasons for Individuals that did not access the Internet by location

Disaggregating the results by gender, there was a female-male gap across some reasons for not using the Internet. The gap was widest for Privacy or security concerns (27.4% and 19.4% respectively) and Do not need the Internet is (52.4% and 45.1% respectively). Not allowed to use the Internet and Cultural reasons were also more prominent amongst female non-Internet users (8.9% and 8.9% respectively) compared to male non-Internet users (5.0% and 5.5% respectively) as shown in Figure 7.54.

What are the reasons why you do not use the Internet? (multiple-select, ranked)

	Do not know how to use it (lack of knowledge or skills)	Don't know what Internet is	Do not need the Internet (not useful, not interesting, lack of local content)	Cost of Internet service is too high (service charges, etc.)
All individuals	75.0%	57.5%	49.5%	45.5%
Female	**75.8%**	**57.9%**	**52.4%**	**45.9%**
Male	**73.8%**	**57.0%**	**45.1%**	**44.9%**

	Cost of internet equipment or devices too high	Privacy or security concerns	Internet service is not available or is poor in my area	Cultural reasons	Not allowed to use the Internet
All individuals	36.0%	24.2%	23.5%	7.6%	7.3%
Female	**36.8%**	**27.4%**	**22.8%**	**8.9%**	**8.9%**
Male	**34.8%**	**19.4%**	**24.5%**	**5.5%**	**5.0%**

Figure 7.54: Reasons for Individuals that did not access the Internet by gender

7.3 E-Government Services

The survey collected information on individual interaction with government ministries, departments and agencies (MDAs) and the use online government services in the last 12 months. The survey also collected information on the channel of interaction with the MDA, type of service and user satisfaction, as well as suggestions for new online services.

7.3.1 Individual e-government use at a glance

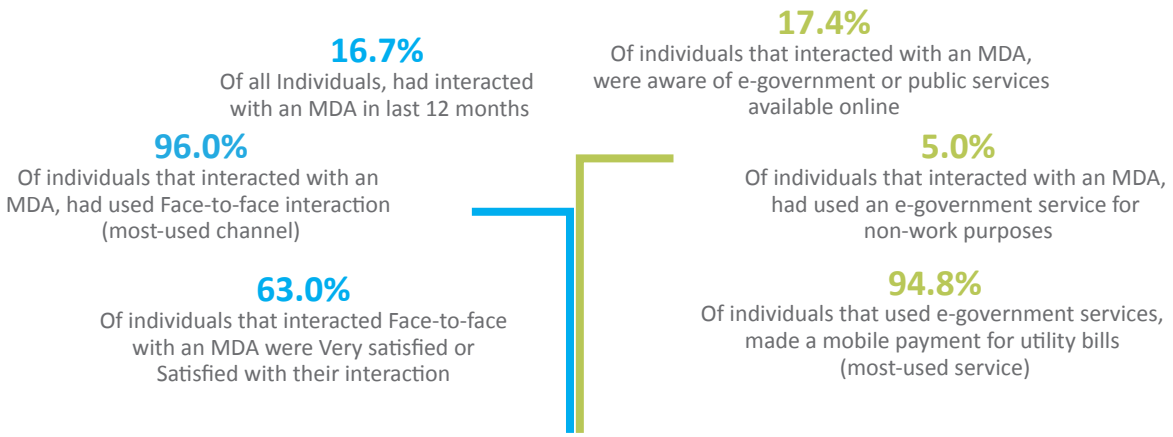


Figure 7.55: Individual interaction with MDAs and use of e-government services at a glance

7.3.2 Interaction with MDAs

Figure 7.56 shows that overall, 16.7% of all individuals had interacted with any government MDA in the last 12 months. By location, more individuals in urban areas (18.8%) had interacted with an MDA compared to individuals in rural areas (15.3%). By gender, more male individuals (18.0%) had interacted with an MDA compared to female individuals (15.8%).

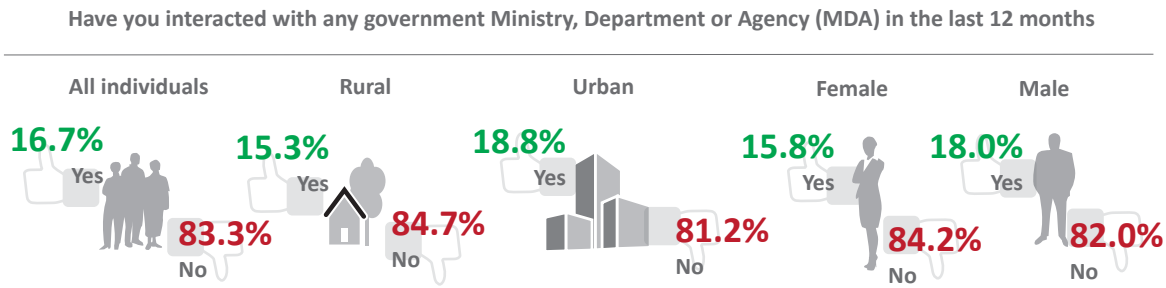


Figure 7.56: Individual interaction with government MDA over last 12 months by location and gender

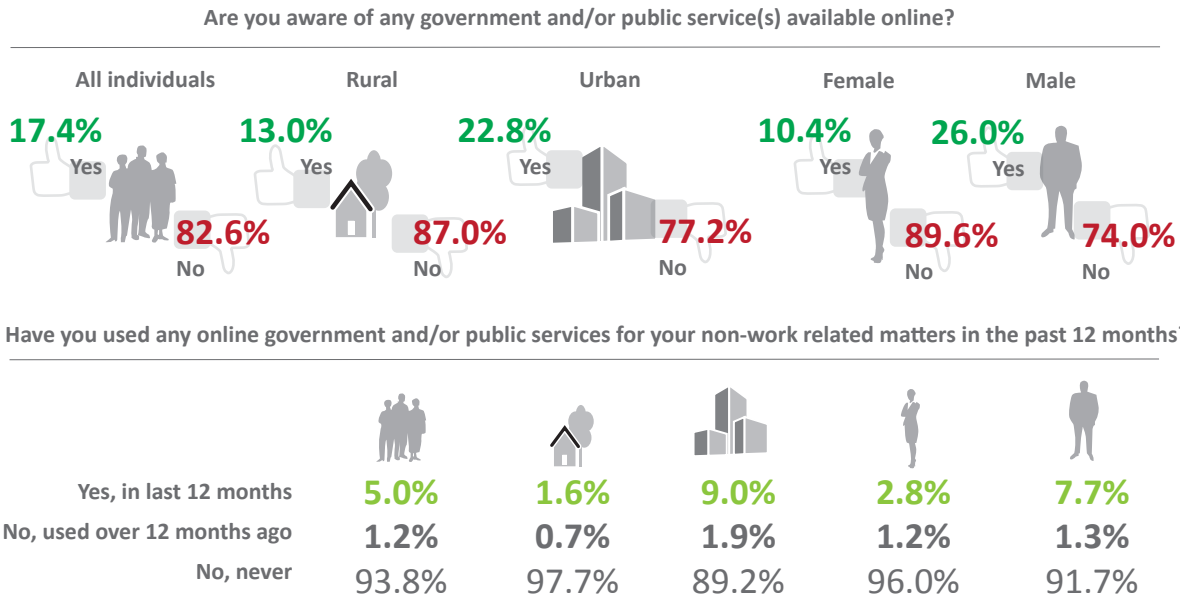


Figure 7.57: Individual awareness and use of e-government services for non-work related matters in the past 12 months

The survey asked individuals that had interacted with MDAs about their awareness and use of online government or public services as summarised in Figure 7.57. 17.4% of individuals that interacted with an MDA were aware of any government or public service available online and 5.0% of individuals that interacted with an MDA had used any online service for non-work related purposes.

Considering awareness by location, more individuals in urban areas (22.8%) were aware of any online service compared to individuals in rural areas (13.0%). Considering awareness by gender, more male individuals (26.0%) were aware of any online service compared to female individuals (10.4%).

Considering use by location, more individuals in urban areas (9.0%) had used any online service compared to individuals in rural areas (1.6%). Considering use by gender, more male individuals (7.7%) had used any online service compared to female individuals (2.8%).

Figure 7.58 shows the different channels used by individuals that interacted with MDAs. Face-to-face was the most interaction channel (96.0%), followed by telephone (16.6%), institutional website (2.3%) and SMS (2.2%). By location, individuals in urban areas used the different interaction channels more compared to individuals in rural areas. The telephone as an interaction channel had the widest urban-rural gap (20.2% and 13.5% respectively), followed by use of institutional website (4.1% and 0.8% respectively) and email (3.6% and 0.4% respectively) as interaction channels.

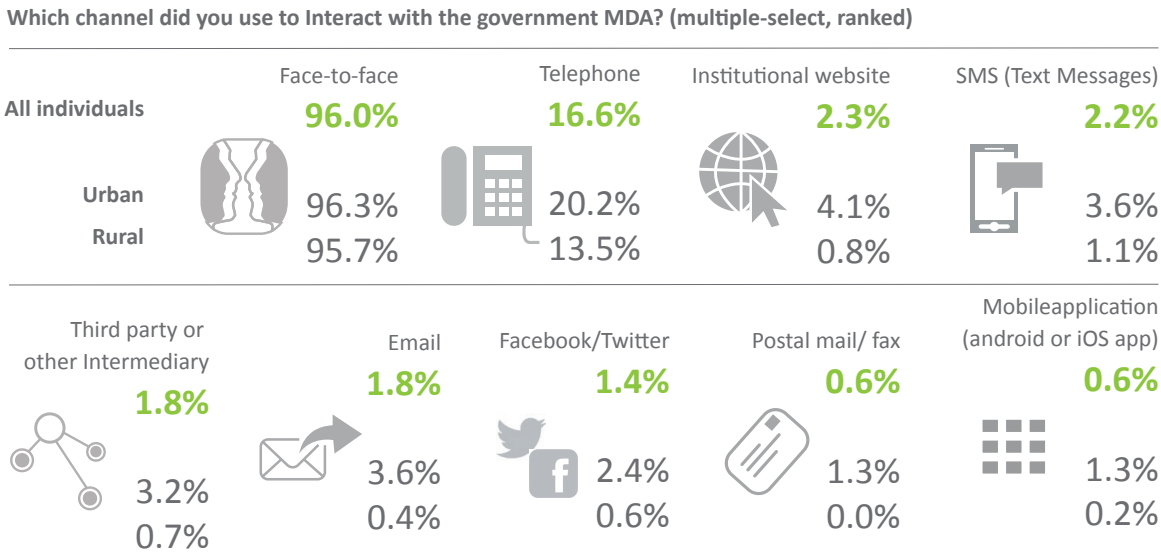


Figure 7.58: Interaction channels used by individuals that interacted with MDAs by location

By gender, male individuals used the different interaction channels more compared to female individuals. More female individuals (98.0%) interacted face-to-face with MDAs compared to male individuals (93.5%). The telephone as an interaction channel had the widest male-female gap (29.6% and 6.0% respectively), followed by use of SMS (4.3% and 0.6% respectively) and third party or other intermediary (3.5% and 0.5% respectively) as summarised in Figure 7.59.

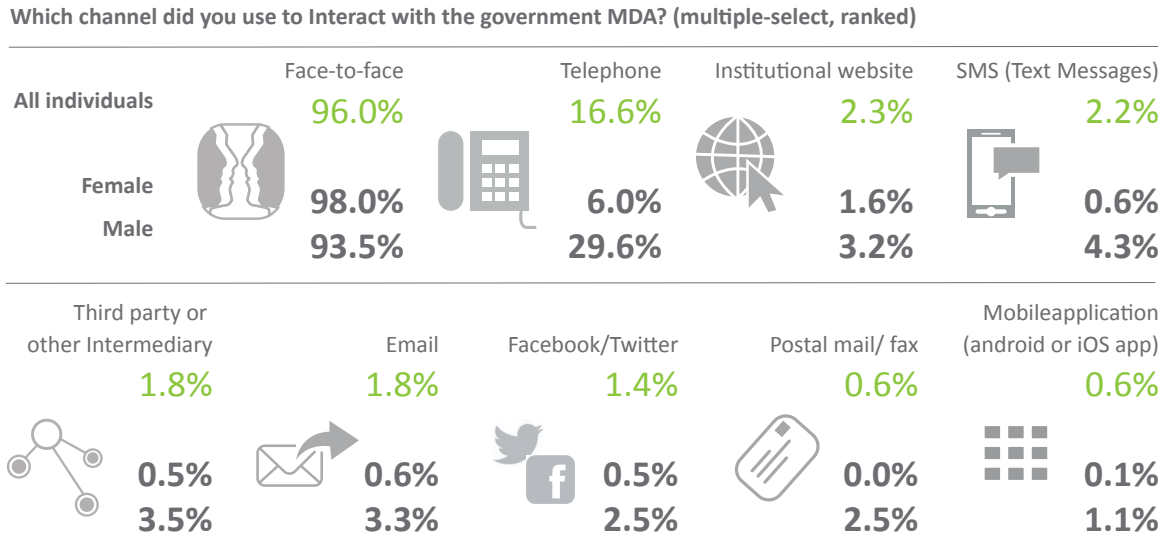


Figure 7.59: Interaction channels used by individuals that interacted with MDAs by gender

Despite being the most common interaction channel with MDAs, face-to-face did not rank highest in terms of satisfaction. The channel with the highest satisfaction rating (individuals indicated very satisfied or satisfied) was use of mobile application (100%), followed by postal/mail (96.1%) and telephone (86.2%) as summarised in Figure 7.60. Paradoxically, online channels like mobile applications and the telephone garnered the highest satisfaction on one side, while other online channels like email, institutional website and Facebook/twitter received the lowest satisfaction on the opposite end. This may have something to do with real time responsiveness while providing up-to-date information.

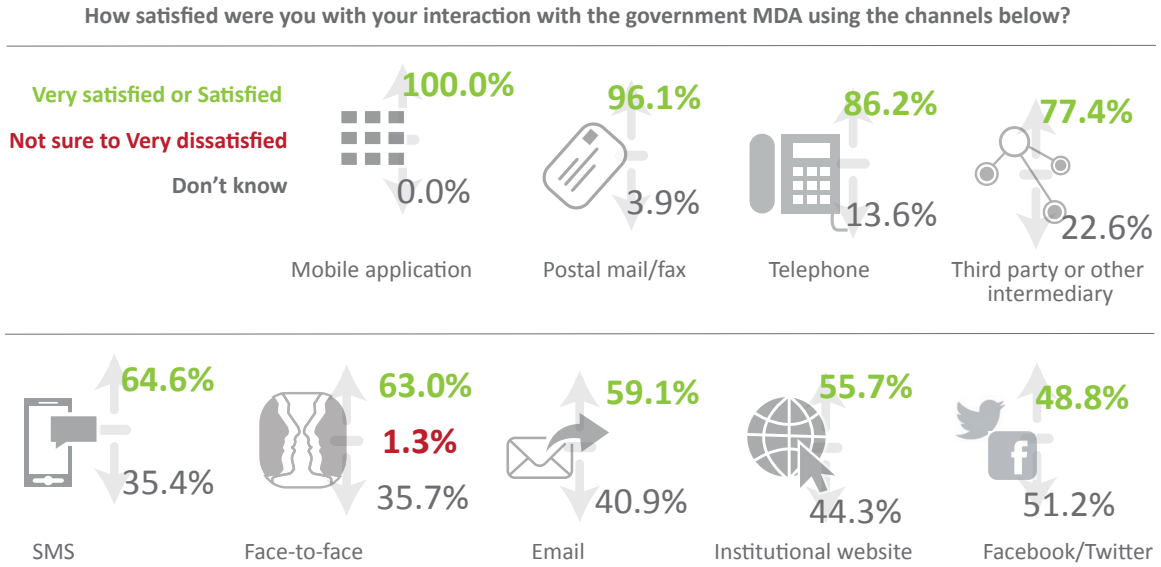


Figure 7.60: Individual satisfaction with different MDA interaction channels

7.3.3 Services used

The survey collected information from individuals that had both interacted with an MDA and used any online government service about the different services that they had used. The results are summarised in Figure 7.61 and Figure 7.62. Mobile payments for utility bills (water or electricity) were the most used online service (62.6%), followed by registration for Tax Identification Number (TIN) with 49.0% and online payment of taxes (35.4%). Considering location highlighted in Figure 7.61, more individuals in urban areas had generally used more online services compared to individuals in rural areas. There were specific services where individuals in rural areas were more active compared to urban individual like Know your UNEB results (50.0% and 29.8% respectively), application for trading licenses (41.7% and 12.0% respectively), Application for Student Loan (12.7% and 11.3% respectively) and Land Title Verification (11.3% and 0.8% respectively). Such services tend to be located in specific locations and would require individuals in rural areas to move long distances in order to access the service.

Which of the following e-government and/or public service(s) have you used in the past 12 months for none-work related matters? (multiple-select, ranked)

	Mobile Payment for utility bills (water/electricity)	Registration for TIN	Online payment for taxes	UNEB e-Services (registration status, results and Time tables)	Know your UNEB Examinations results
All individuals	**62.6%**	**49.0%**	**35.4%**	**33.5%**	**33.5%**
Urban	65.9%	52.3%	38.4%	34.9%	29.8%
Rural	47.8%	34.2%	21.8%	26.8%	50.0%

	NSSF eStatement	Business Name Search and reservation	**Business Name Search and reservation**	Online registration for UNEB Examinations	Application for trading license	Application for Student Loan
All individuals	**28.8%**	**28.6%**	**25.6%**	**22.1%**	**17.3%**	**15.9%**
Urban	29.7%	28.4%	29.6%	24.4%	12.0%	19.4%
Rural	24.8%	29.3%	7.5%	11.3%	41.7%	0.0%

	Electoral Commission voter locator	Online reporting of Gender Based Violence	Online filling of tax returns	Online Declaration of income, assets & liabilities for civil servants	Application for Student Loan
All individuals	**15.8%**	**13.5%**	**13.0%**	**12.3%**	**11.6%**
Urban	16.8%	14.0%	15.8%	15.0%	11.3%
Rural	11.3%	11.3%	0.0%	0.0%	12.7%

	Online Declaration of income, assets & liabilities for civil servants	Land Title Verification
All individuals	**7.6%**	**2.7%**
Urban	9.3%	0.8%
Rural	0.0%	11.3%

Figure 7.61: E-government services that individuals had used by location

Which of the following e-government and/or public service(s) have you used in the past 12 months for none-work related matters? (multiple-select, ranked)

	Mobile Payment for utility bills (water/electricity)	Registration for TIN	Online payment for taxes	UNEB e-Services (registration status, results and Time tables)	Know your UNEB Examinations results
All individuals	62.6%	49.0%	35.4%	33.5%	33.5%
Female	**14.4%**	**33.2%**	**8.2%**	**19.7%**	**1.7%**
Male	**84.0%**	**56.1%**	**47.5%**	**39.6%**	**47.6%**

	NSSF eStatement	Business Name Search and reservation	**Business Name Search and reservation**	Online registration for UNEB Examinations	Application for trading license	Application for Student Loan
All individuals	28.8%	28.6%	25.6%	22.1%	17.3%	15.9%
Female	**11.9%**	**3.6%**	**24.8%**	**1.7%**	**15.1%**	**12.4%**
Male	**36.3%**	**39.7%**	**26.0%**	**31.2%**	**18.3%**	**17.5%**

	Electoral Commission voter locator	Online reporting of Gender Based Violence	Online filling of tax returns	Online Declaration of income, assets & liabilities for civil servants	Application for Student Loan
All individuals	15.8%	13.5%	13.0%	12.3%	11.6%
Female	**3.6%**	**0.0%**	**8.2%**	**0.0%**	**12.4%**
Male	**21.3%**	**19.5%**	**15.1%**	**17.7%**	**11.2%**

	Online Declaration of income, assets & liabilities for civil servants	Land Title Verification
All individuals	7.6%	2.7%
Female	**0.0%**	**0.8%**
Male	**11.0%**	**3.9%**

Figure 7.62: E-government services that individuals had used by gender

Considering gender highlighted in Figure 7.62, more male individuals generally used more online services compared to female individuals. The male-female gap was widest for services like Mobile Payment for utility bills (84.0% and 14.4% respectively), Know your UNEB Examinations results (47.6% and 1.7% respectively), as well as Online payment for taxes (47.5% and 8.2% respectively).

7.3.4 Barriers to e-government

The survey asked individuals that had used e-government services to identify their biggest frustrations when accessing e-government services (barriers). Overall, time delays emerged as the most cited frustration (38.9%), followed by high costs (23.1%) and too much paper work (8.7%) as shown in Figure 7.63. By location, more individuals in rural areas (42.4%) identified time delays as a frustration compared to individuals in rural areas (33.6%). More individuals in urban areas identified other barriers compared to individuals in rural areas.

What is the biggest frustration you face in accessing government services? (ranked)

	Time Delays	Costs too much	Other	Too much paper work	Information getting lost	Keeping track of my request
All individuals	**38.9%**	**23.1%**	**18.4%**	**8.7%**	**6.0%**	**4.9%**
Urban	33.6%	23.8%	16.9%	10.8%	8.8%	6.2%
Rural	42.4%	22.6%	19.3%	7.3%	4.2%	4.1%

Figure 7.63: Individual frustration with accessing government services by location

Figure 7.64 highlights individual frustrations with using e-government services by gender. More female individuals in (42.8%) identified as time delays as a frustration compared to male individuals (33.3%). More male individuals identified other barriers compared to female individuals.

What is the biggest frustration you face in accessing government services? (ranked)

	Time Delays	Costs too much	Other	Too much paper work	Information getting lost	Keeping track of my request
All individuals	38.9%	23.1%	18.4%	8.7%	6.0%	4.9%
female	**42.8%**	**22.1%**	**18.6%**	**7.1%**	**5.7%**	**3.7%**
Male	**33.3%**	**24.4%**	**18.1%**	**11.0%**	**6.5%**	**6.7%**

Figure 7.64: Individual frustration with accessing government services by gender

7.3.5 New ideas and services

The survey asked individuals that had interacted with any e-government services how to improve existing services and ideas for new services. Figure 7.65 shows that Design services with citizens emerged as a leading way to improve e-government services (39.8%), followed by Reduce the cost/make it cheaper (32.4%) as ways to improve government service delivery. By location, more individuals in rural areas were concerned about designing services with citizens and reducing cost of services compared to individuals in urban areas.

By gender, more female individuals were concerned about designing services with citizens and reducing cost of services compared to male individuals as depicted in Figure 7.66.

How can government service delivery to citizens be improved? (ranked)

	Design services with citizens	Reduce the cost/ make it cheaper	Other	Share more data between institutions/systems	Put more services online (on the Internet)
All individuals	**39.8%**	**32.4%**	**12.8%**	**11.6%**	**3.4%**
Urban	35.3%	31.3%	16.9%	12.0%	4.6%
Rural	42.8%	33.1%	10.1%	11.4%	2.6%

Figure 7.65: Ideas to improve government service delivery by location

How can government service delivery to citizens be improved? (ranked)

	Design services with citizens	Reduce the cost/ make it cheaper	Other	Share more data between institutions/systems	Put more services online (on the Internet)
All individuals	39.8%	32.4%	12.8%	11.6%	3.4%
Female	**37.9%**	**31.9%**	**12.8%**	**15.4%**	**2.0%**
Male	**42.4%**	**33.0%**	**12.8%**	**6.4%**	**5.4%**

Figure 7.66: Ideas to improve government service delivery by gender

In which sector do you face the most frustration when trying to access services?

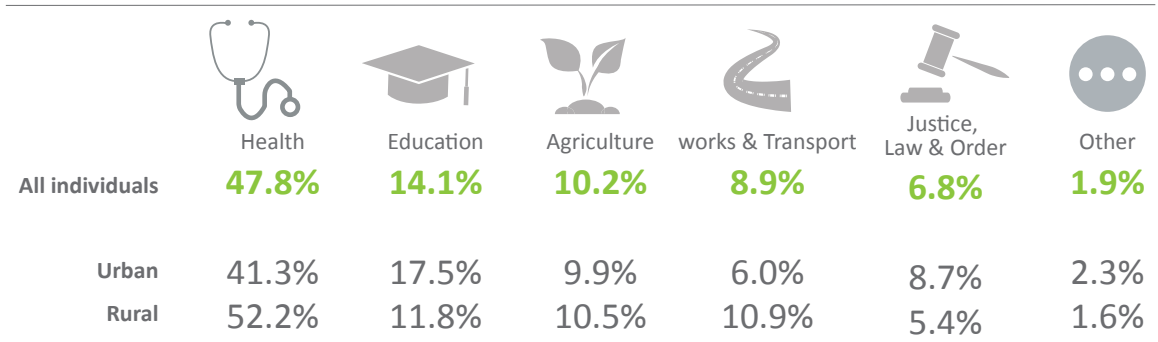


Figure 7.67: Sectors in which individuals are frustrated accessing services by location

In which sector do you face the most frustration when trying to access services?

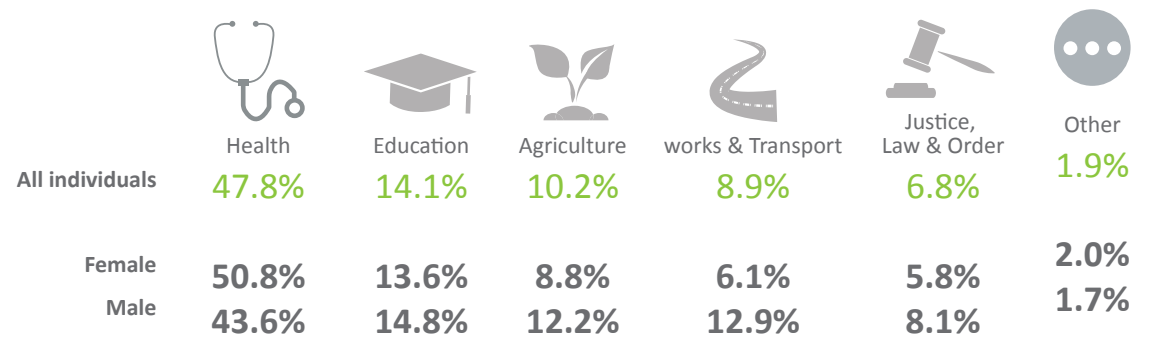


Figure 7.68: Sectors in which individuals are frustrated accessing services by gender

When individuals who interacted with MDAs were asked about the most frustrating sectors when trying to access government services, the health sector emerged as the most frustrating (47.8%), followed by education (14.1%) and agriculture (10.2%) sectors as shown in Figure 7.67 and Figure 7.68.

By location, health and works & transport sectors were more frustrating for individuals in rural areas compared to individuals in urban areas. Conversely, education and the justice, law and order sector (JLOS) were more frustrating for individuals in urban areas compared to individuals in rural areas.

By gender, the health sector was more frustrating for female individuals (50.8%) compared to male individuals (43.6%). All of the other sectors were more frustrating for male individuals compared to female individuals as indicated in Figure 7.68.

Which of the following HEALTH information services do you recommend to put online first? (ranked)

	Nearest health facility	Antenatal Care and Family Planning	Others	HIV Counselling	Child nutrition & immunization
All individuals	**49.4%**	**17.3%**	**14.2%**	**11.8%**	**7.3%**
Urban	38.2%	9.4%	13.8%	25.4%	13.2%
Rural	54.8%	21.2%	14.3%	5.3%	4.4%
Female	47.6%	23.1%	8.9%	12.8%	7.7%
Male	52.3%	8.3%	22.4%	10.3%	6.7%

Figure 7.69: Digital health information individuals wanted by location and gender

Which of the following EDUCATION information services do you recommend to put online first?

	Available Scholarships & Student Loans	Syllabus, Curriculum, Reading Materials	Others	UNEB Exam Results	Registration Status Of Schools
All individuals	**55.8%**	**20.2%**	**16.9%**	**4.0%**	**3.1%**
Urban	52.1%	27.9%	9.7%	6.2%	4.2%
Rural	59.6%	12.2%	24.5%	1.7%	2.0%
Female	49.3%	25.3%	20.7%	4.6%	0.2%
Male	64.0%	13.8%	12.2%	3.2%	6.9%

Figure 7.70: Digital education information individuals wanted by location and gender

When asked about information to put online first, most individuals that indicated health as the most frustrating sector when trying to access services selected information about nearest health facility (49.4%), followed by information about ante-natal care and family planning services (17.3%) as presented in Figure 7.69.

When asked about information to put online first, most individuals that indicated education as the most frustrating sector when trying to access services indicated information on available scholarships & student loans (55.8%), followed by information on syllabus, curriculum, reading materials (20.2%) as presented in Figure 7.70.

Which of the following AGRICULTURE information services do you recommend to put online first?

	Markets & prices	Prevention of pests & diseases	Location of veterinary shops & extension services	Other	Weather & growing seasons
All individuals	**65.0%**	**14.7%**	**7.6%**	**6.7%**	**6.0%**
Urban	49.2%	14.2%	13.0%	10.0%	13.5%
Rural	73.2%	14.9%	4.8%	5.0%	2.2%
Female	56.5%	19.0%	8.5%	8.8%	7.2%
Male	72.9%	10.7%	6.8%	4.7%	4.9%

Figure 7.71: Digital agricultural information individuals wanted in by location and gender

Which of the following WORKS & TRANSPORT information services do you recommend to put online first? (ranked)

	Report potholes and other road obstacles	Info on road closures and diversions	Info on permits and fines	Other	Real-time traffic information
All individuals	**71.9%**	**10.6%**	**7.2%**	**5.3%**	**5.0%**
Urban	58.7%	20.7%	1.8%	4.8%	14.0%
Rural	76.6%	7.0%	9.1%	5.5%	1.8%
Female	69.0%	19.0%	2.2%	5.2%	4.6%
Male	73.6%	5.7%	10.1%	5.4%	5.2%

Figure 7.72: Digital works & transport information individuals wanted in by location and gender

When asked about information to put online first, most individuals that indicated agriculture as the most frustrating sector when trying to access services selected information about markets and prices (65.0%), followed by information about prevention of pests and diseases (14.7%) as presented in Figure 7.71.

When asked about information to put online first, most individuals that indicated works & transport as the most frustrating sector when trying to access services indicated information to report potholes and other road obstacles (71.9%), followed by information on road closures and diversions (10.6%) as presented in Figure 7.72.

When asked about information to put online first, most individuals that indicated JLOS as the most frustrating sector when trying to access services indicated information to report corrupt government officials (50.2%), followed by information to report domestic violence (18.4%) as presented in Figure 7.73.

Which of the following Justice, Law & Order Sector (JLOS) information services do you recommend to be put online first? (ranked)

	Report Corrupt Govt. officials	Report domestic violence	Report Human Rights cases	Report complaints to Police	Other	Info on Court Schedules & Rulings
All individuals	**50.2%**	**18.4%**	**13.6%**	**10.3%**	**5.6%**	**2.0%**
Urban	50.4%	9.0%	21.4%	11.0%	6.0%	2.1%
Rural	49.9%	30.0%	3.8%	9.3%	5.0%	2.0%
Female	46.6%	18.8%	18.3%	9.8%	6.5%	0.0%
Male	53.6%	18.0%	9.0%	10.7%	4.7%	4.0%

Figure 7.73: Digital JLOS information individuals wanted in by location and gender

7.3.6 MYUG

The survey collected information from all respondents about their awareness and usage of the MYUG Wi-Fi service. Overall, 4.1% of all individuals had heard about the MYUG service. Of these, only 11.7% had actually used the service as presented in Figure 7.74. Although more male individuals had heard about the MYUG Wi-Fi service, a higher proportion of female individuals had used the service in the last three months compared to male individuals.

Within individuals that had used the MYUG Wi-Fi service (11.7%), 7.4% were Rural and 92.6% were Urban from a location perspective while, 58.3% were male and 41.7% were female from a gender perspective.

The survey asked all individuals that reported having used the MYUG Wi-Fi service how often, they used the service. Most individuals (42.1%) indicated their use was occasional. Female individuals reported more active usage of the service on a daily-basis (23.6%) compared to male individuals (5.0%) as summarised in Figure 7.75.

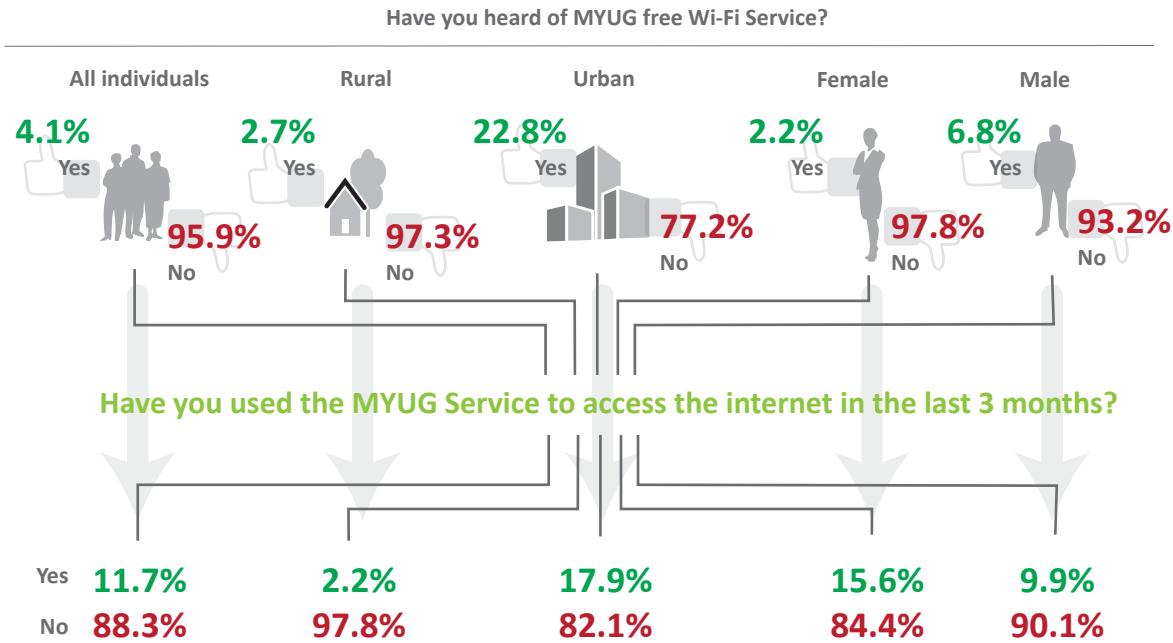


Figure 7.74: Individuals awareness and usage of MYUG Wi-Fi in last 3 months by location and gender

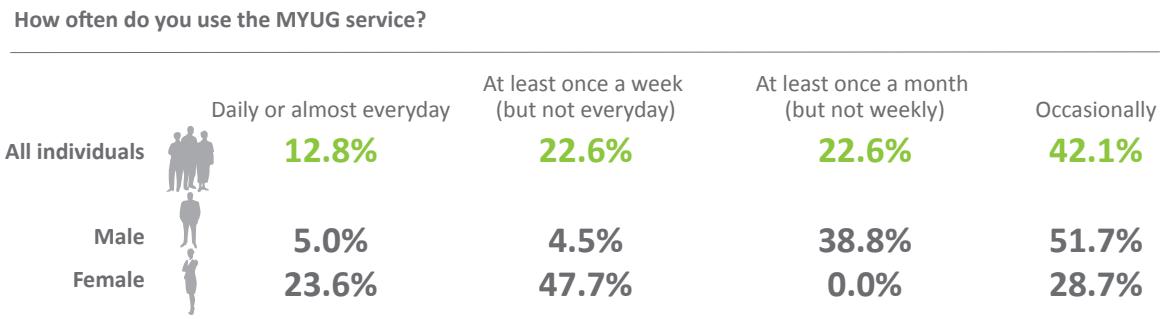


Figure 7.75: Individual frequency of use among MYUG Wi-Fi users

The survey also asked all individuals that reported having used the MYUG Wi-Fi service to rate the speed of their MYUG connection and their overall experience with using the service. Most users (73.3%) rated the speed of service as moderate to very slow as shown in Figure 7.76. Despite this, the majority of users (59.9%) rated their overall experience with the service as very satisfied or satisfied as indicated in Figure 7.77.

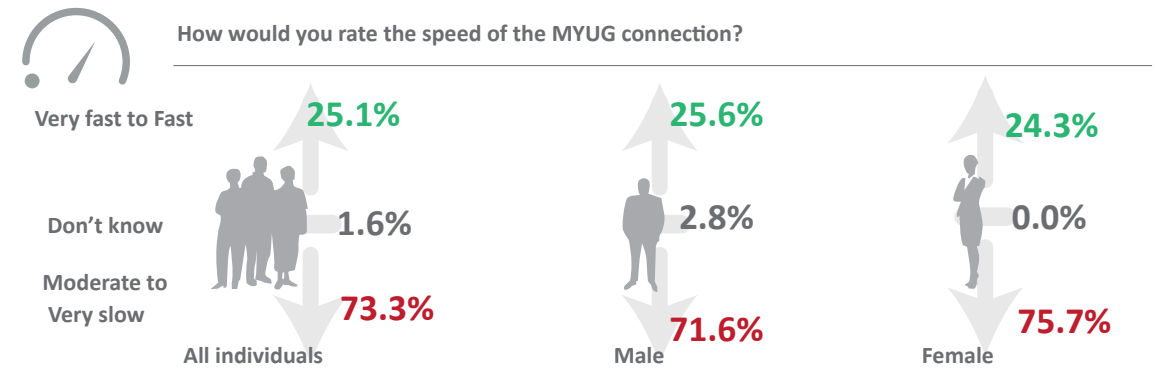


Figure 7.76: Individual perception of speed of MYUG Wi-Fi connection amongst users

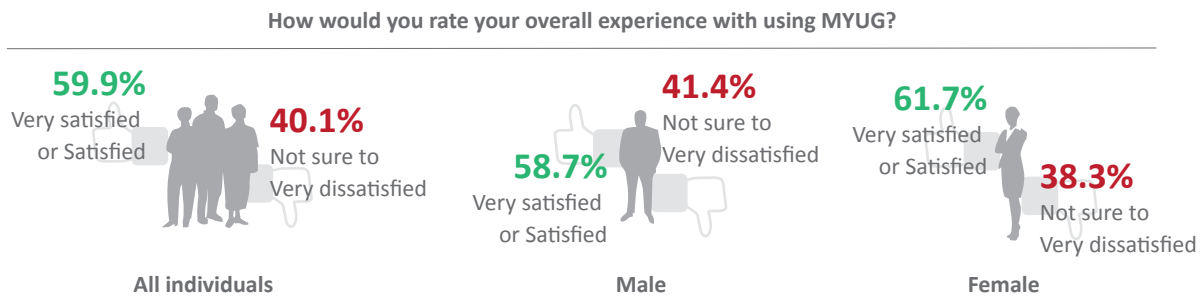


Figure 7.77: Individual perception of overall experience of using MYUG Wi-Fi service amongst users

7.4 E-Commerce

The survey collected information on individual e-commerce experience. Attributes included type of good and services purchased or sold along, frequency and cost of transactions, methods of payment, awareness of online consumer rights, as well as challenges encountered.

7.4.1 E-commerce indicators at a glance

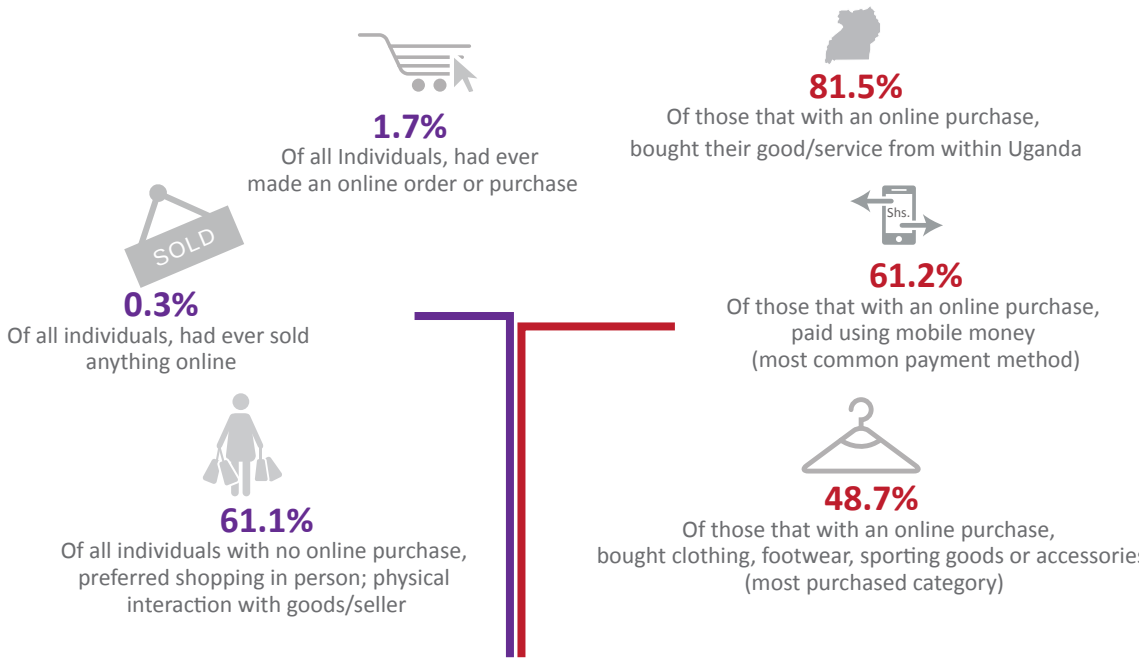


Figure 7.78: Individual e-commerce statistics at a glance

7.4.2 Purchase and Frequency

Overall, 1.7% of all individuals had ever made an online purchase (even if payment was offline). By location, more individuals in urban areas (2.9%) had ever made an online purchase compared to individuals in rural areas (1.0%). By gender, 3.6% of male individuals had ever made an online purchase compared to 0.3% of female individuals as highlighted in Figure 7.79.

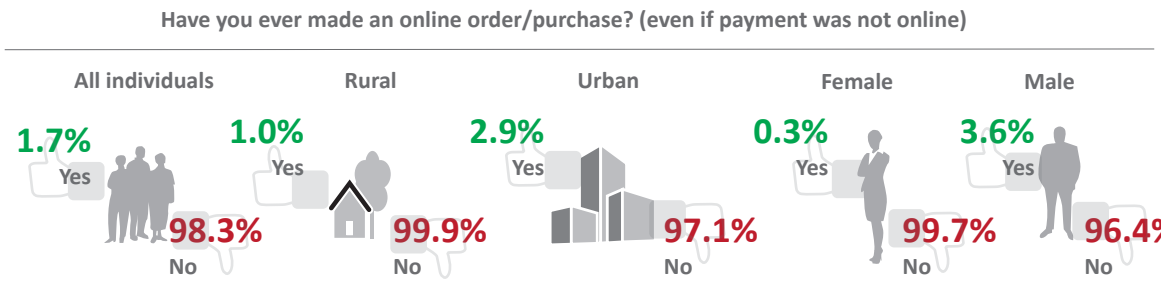


Figure 7.79: Proportion of individuals that had ever made any online purchase by location and gender

Only 0.3% of all individuals reported having ever sold anything online. These were predominantly urban (0.5%) compared to rural (0.1%).

The survey asked all individuals that had ever made an online purchase about their most recent purchase. Figure 7.80 shows that 31.5% of all individuals with an online purchase had their most recent purchase made during the last 3 months. These individuals were disproportionately urban (48.6%) as opposed to rural (1.4%).

When was the last time you made an online order/purchase? (even if payment was not online)

	All individuals	Rural	Urban	Female	Male
During the last 3 months	31.5%	1.4%	48.6%	28.7%	31.9%
Between 3 and 6 months ago	33.9%	58.4%	20.0%	26.6%	34.8%
Between 6 months to one year ago	21.8%	38.8%	12.1%	19.8%	22.1%
More than one year ago	12.8%	1.3%	19.3%	25.0%	11.3%

Figure 7.80: Recent individual online purchases by location and gender

The survey also asked all individuals that had ever made an online purchase about the frequency of their online purchases. Figure 7.81 indicates that most individual transactions (32.9%) were at least once a month (but not weekly), followed by at least once every 3 months (but not monthly) with 25.3% and once in a while or randomly with 23.4%.

How often do you make online or mobile purchases?

	Not sure / don't know	Once in a while (randomly)	At least once every year	At least once every 3 months (but not monthly)	At least once a month (but not weekly)	At least once a week (but not everyday)	Daily or almost everyday
All individuals	**1.1%**	**23.4%**	**10.1%**	**25.1%**	**32.9%**	**6.5%**	**1.0%**
Urban	1.7%	32.4%	11.5%	9.1%	34.4%	9.4%	1.5%
Rural	0.0%	7.7%	7.6%	53.1%	30.3%	1.3%	0.0%

Figure 7.81: Individual frequency of online purchases by location

7.4.3 Type of good and services

Most online purchases (81.5%) that individuals made went to domestic sellers, located within Uganda, followed by sellers located beyond Africa (15.3%) as shown in Figure 7.82.

Where is the location of the seller/platform/website that you place orders with most often?

81.5%	0.5%	1.5%	15.3%	1.2%
in Uganda	in East Africa	Other Parts of Africa	Other Parts Beyond Africa	Don't recall

Figure 7.82: Source of online purchases made by individuals

With most online purchases, individuals bought clothing, footwear, sporting goods or accessories (48.7%), followed by cars/automobiles, spare parts and accessories (25.5%) and travel products (25.0%) as captured in Figure 7.83.

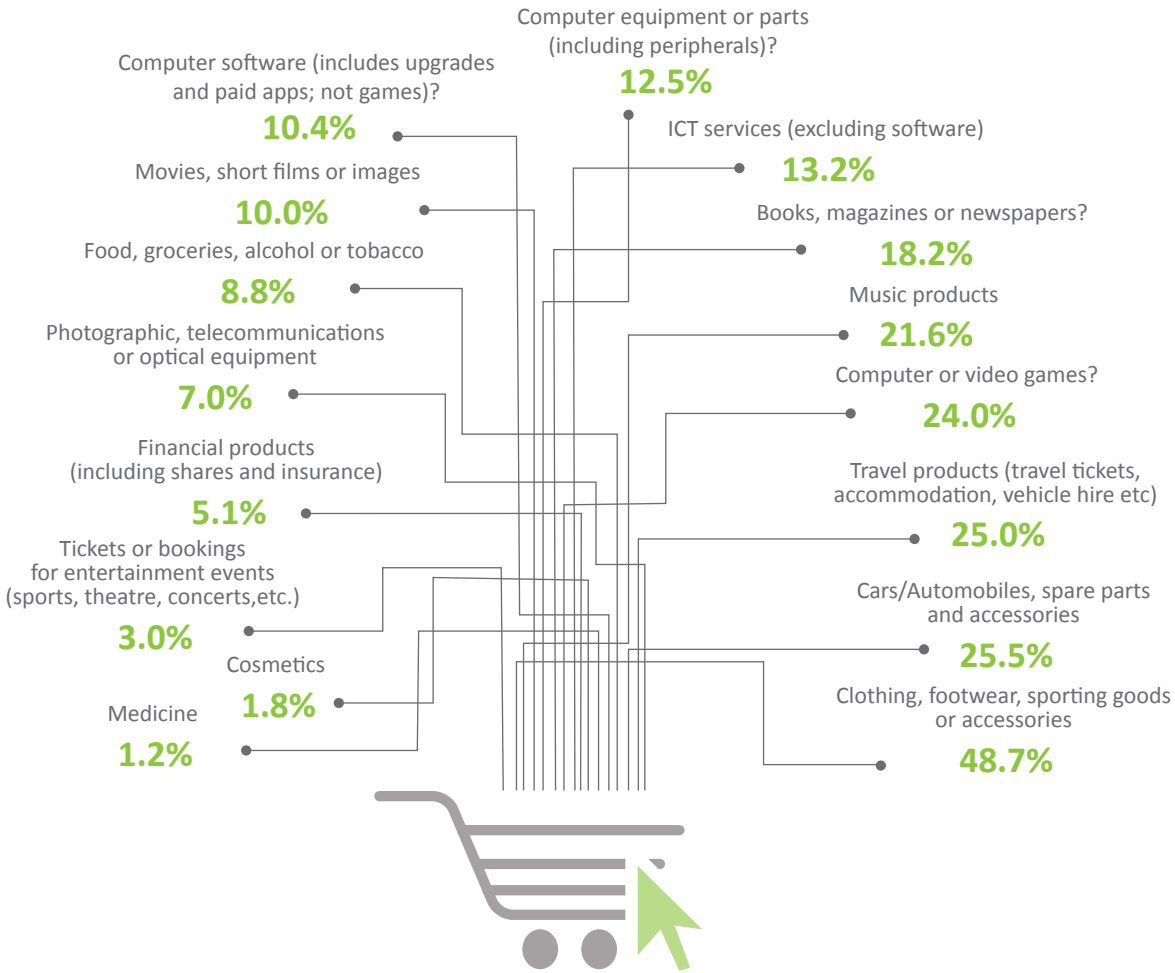


Figure 7.83: Type of goods and services purchased by individuals using e-commerce

7.4.4 Payments

In terms of cost, on average, most e-commerce users (50.2%) spent less than UGX 325,000 per online transaction as indicated in Figure 7.84. In terms of payment method, most e-commerce users paid for their online purchases using mobile money as highlighted in Figure 7.85. Interestingly, more rural individuals (5.7%) indicated using of credit cards compared to their urban counterparts (2.6%). We suspect that this finding skewed by the small number of individuals that used credit cards for e-commerce.

On average, how much do you spend per transaction on online orders or purchases?

	less than UGX 325,000	UGX 325,001 to 650,000	UGX 650,001 to 1.3million	UGX 1.3 million or more	Don't recall
All individuals	**50.2%**	**31.7%**	**10.9%**	**5.4%**	**1.9%**
Urban	40.3%	51.9%	2.3%	4.8%	0.8%
Rural	55.8%	20.2%	15.8%	5.7%	2.5%

Figure 7.84: Amount of money spent per transaction by individuals using e-commerce

How do you pay for the goods you buy online?

	Mobile money	Paid cash on pickup or delivery	Debit card	Credit card	Electronics Funds Transfer (EFT)	Other
All individuals	**61.2%**	**22.2%**	**6.7%**	**3.7%**	**3.5%**	**2.8%**
Rural	87.9%	4.1%	1.3%	5.7%	0.0%	1.0%
Urban	46.0%	32.4%	9.7%	2.6%	5.4%	3.9%

Figure 7.85: Payment methods used by individuals using e-commerce by location

7.4.5 Online rights and challenges

The survey asked e-commerce users about awareness of their rights when they bought goods or services online. While 45.2% of e-commerce users indicated awareness of such rights as highlighted in Figure 7.86, at most 79.3% of those indicating such awareness could clearly state any right. The right to clear information from the online sellers was most known amongst e-commerce users (79.3%), followed by the right to refund for delays or non-delivery (74.4%) and lastly the right to redress in case of faulty goods (45.0%) as depicted in Figure 7.87.

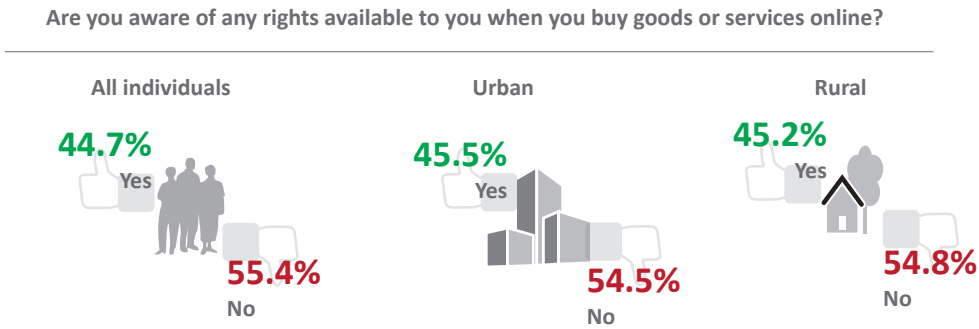


Figure 7.86: Individual awareness of user rights for e-commerce

If, Yes. Please state any two rights that you are aware of (ranked)

	Right to clear information from the online sellers	Right to refund for delayed or non-delivery	Right to redress in case of faulty goods	Other
All individuals	**79.3%**	**74.4%**	**45.0%**	**1.3%**
Urban	71.7%	98.0%	28.3%	2.0%
Rural	92.9%	32.1%	75.0%	0.0%

Figure 7.87: Individual knowledge of actual user rights relating to e-commerce

Amongst individuals that had bought goods or services online (e-commerce users), 31.4% reported never having encountered any challenge when buying goods or services online. Conversely, 68.6% reported encountering a variety of challenges that are summarised in Figure 7.88. Deliveries arrived late, beyond promised time was the most reported e-commerce challenge (41.8%), followed by goods looked different on arrival, not what I expected (25.1%) and goods did not arrive at all (6.6%).

What challenges have you encountered when buying goods or services online?

	Deliveries arrived late, beyond promised time	Good looked different on arrival, not what I expected	Goods did not arrive at all	Was overcharged or incurred additional or unexpected fee	Goods arrived faulty or damaged
All individuals	**41.8%**	**25.1%**	**6.6%**	**6.4%**	**4.0%**
Urban	39.0%	36.0%	7.3%	8.2%	5.8%
Rural	46.8%	5.8%	5.5%	3.2%	0.8%

Figure 7.88: Challenges encountered by individual e-commerce users

7.4.6 Non e-commerce users

The majority of individuals (98.3%) had never made an online order or purchase. The survey collected their reasons for not purchasing any goods or services online and these are summarised in Figure 7.89. Preference to shop in person was the major reason (70.6%), followed by lack of awareness (64.4%).

What are the reasons why you do not purchase goods/services online? (multiple-select, ranked)

	Prefer to shop inperson; physical interaction with goods/sellery	Lack of awareness	Not interested	Trust concerns	Privacy corcerns	Security of payment details
All individuals	**70.6%**	**64.4%**	**45.6%**	**38.4%**	**33.5%**	**29.2%**
Rural	76.4%	72.0%	53.5%	44.6%	38.7%	32.7%
Urban	61.1%	52.0%	32.6%	28.4%	25.0%	23.6%

Figure 7.89: Individual reasons for not purchasing any online goods/services by location

7.5 E-Payments

The survey collected information on individual electronic payment (e-payments) experiences. Attributes explored included instruments and channels of payment, frequencies and destinations, goods and services purchased as well as challenges encountered.

7.5.1 E-payment indicators at a glance

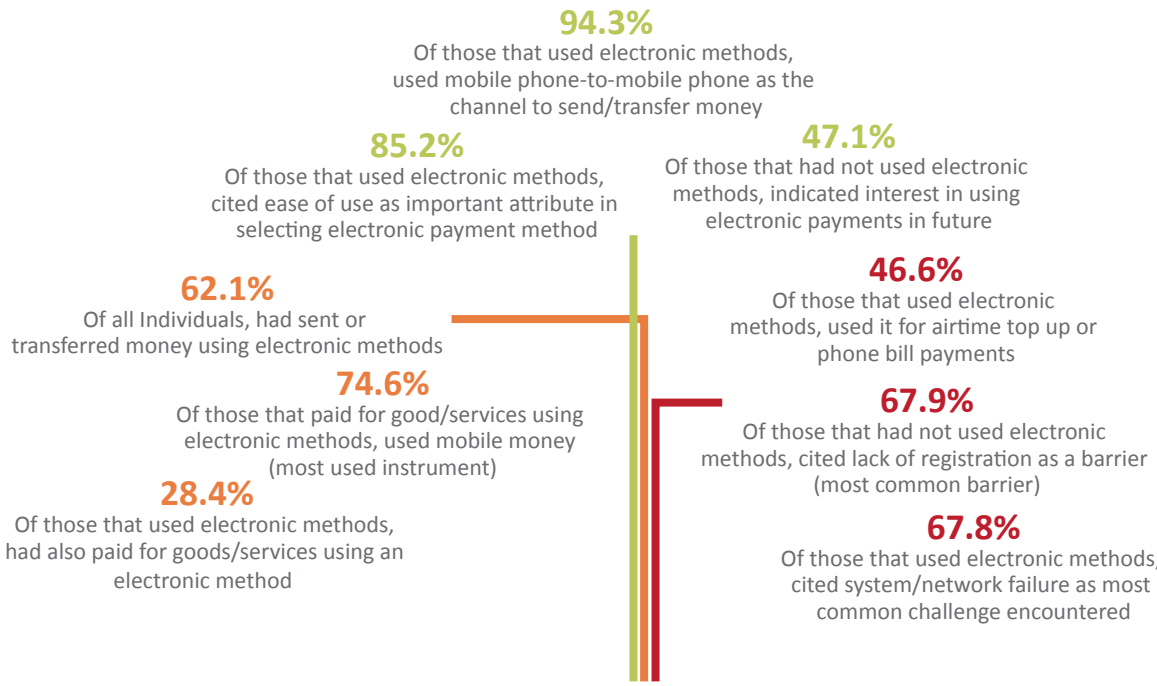


Figure 7.90: Individual e-payment statistics at a glance

7.5.2 Access

Figure 7.91 indicates that overall, 62.1% of individuals had sent or transferred money using an electronic method. Considering location, more individuals in urban areas (69.2%) had sent or transferred money using an electronic method compared to individuals in rural areas (57.2%). Considering gender, more male individuals (72.6%) had sent or transferred money using an electronic method compared to female individuals (54.6%). Considering age groups, more individuals between 45-54 years (79.2%) had sent or transferred money using an electronic method compared other age groups. Age-groups showed a declining trend in usage of electronic methods with declining years as depicted in Figure 7.92.

Considering all individuals that had used an electronic method as a group, there were more individuals between 25-34 (29.5%) compared to those between 45-54 (22.8%) as summarised in Figure 7.93.

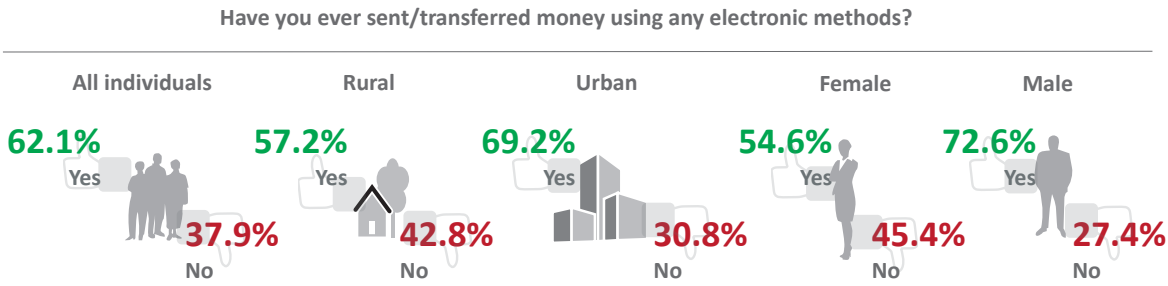


Figure 7.91: Individuals use of electronic payment methods by location and gender

Within individuals that had sent or transferred money using an electronic method (62.1%), 55% were Rural and 45% were Urban from a location perspective while, 48.7% were male and 51.3% were female from a gender perspective.

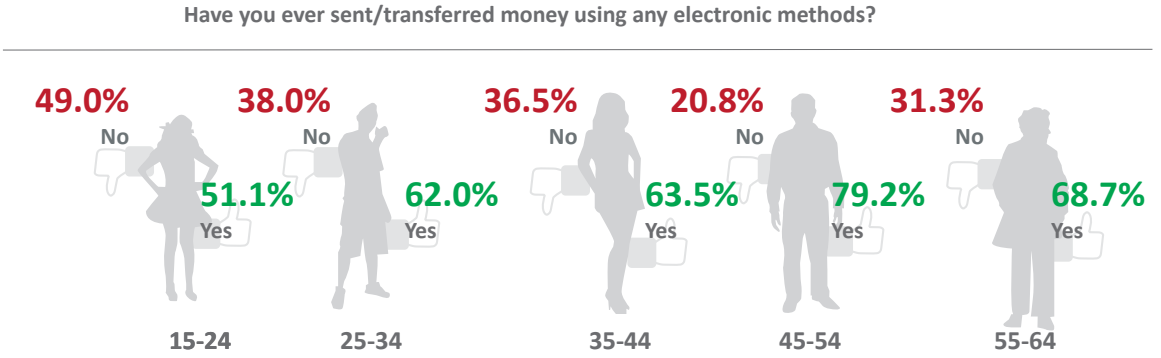


Figure 7.92: Individuals use of electronic payment methods by age group

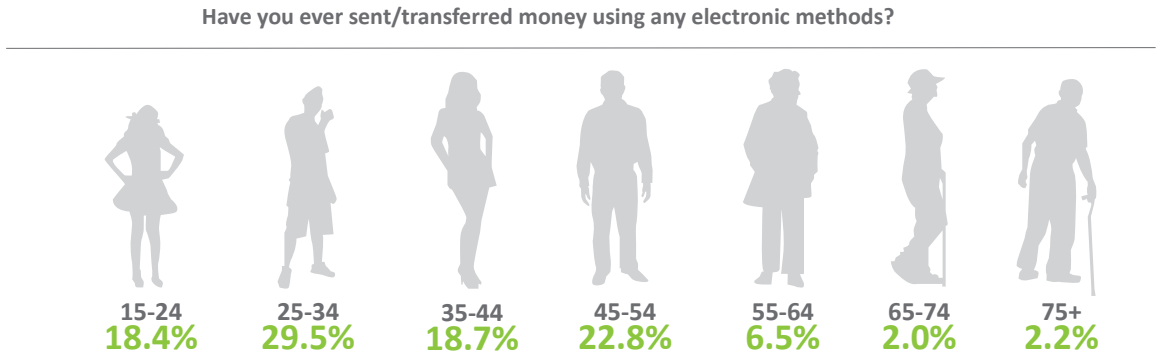


Figure 7.93: Proportion of age-groups that had used electronic payment methods

The survey asked individuals that had sent or transferred money using an electronic method about their transaction frequency. Most e-payment users (32.9%) made a transaction at least once a month (but not weekly), followed by at least once a week (but not every day) with 25.6% as shown in Figure 7.93. By location, more individuals in urban areas (32.0%) made a transaction at least once a week (but not every day) compared to individuals in rural areas (20.4%). On the other hand, more individuals in rural areas (35.8%) made a transaction at least once a month (but not weekly) compared to individuals in urban areas (29.2%).

How often do you send/transfer any money using electronic methods?

	Daily or almost everyday	At least once aweek (but not everyday)	At least once amonth (but not weekly)	At least once every 3 months (but not monthly)	At least once every year	Once in a while (randomly)	Not sure / don't know
All individuals	**3.2%**	**25.6%**	**32.9%**	**13.3%**	**4.6%**	**19.0%**	**1.6%**
Rural	1.6%	20.4%	35.8%	12.8%	6.5%	20.4%	2.5%
Urban	5.0%	32.0%	29.2%	13.8%	2.2%	17.2%	0.6%

Figure 7.94: Frequency of electronic transactions among individuals by location

In terms of destination, most e-payment users (99.6%) sent money within Uganda irrespective of location as shown in Figure 7.95.

Have you sent money to any of the following destinations?

	Within Uganda	To other parts of East Africa	To other Parts of Africa (Beyond East Africa)	To other Parts of the world (Beyond Africa)	Don't recall
All individuals	**99.6%**	**0.5%**	**0.2%**	**0.2%**	**0.1%**
Urban	99.3%	1.4%	0.3%	0.3%	0.3%
Rural	99.9%	0.4%	0.1%	0.1%	0.0%

Figure 7.95: Destinations to which individuals had made electronic payments by location

7.5.3 Channels and instruments

Figure 7.96 indicates the different channels used to send or transfer money using electronic methods. Overall, the most dominant method amongst e-payment users was mobile phone-to-mobile phone transfers (94.3%). This was followed by bank-to-mobile phone transfers (8.0%) and by mobile phone-to-bank transfers (2.9%). Considering location, more individuals in urban areas (98.3%) undertook mobile phone-to-mobile phone transfers compared to individuals in rural areas (91.0%). The reverse was true for bank-to-mobile phone transfers with more individuals in rural areas (10.9%) compared to individuals in urban areas (4.5%).

What channels did you use to send/transfer the money using electronic methods?

	Mobile phone to mobile phone	Bank to mobile phone	Mobile phone to bank	Bank to bank
All individuals	**94.3%**	**8.0%**	**2.9%**	**2.4%**
Urban	98.3%	4.5%	5.0%	3.4%
Rural	91.0%	10.9%	1.1%	1.5%

Figure 7.96: Individual channels for transferring money using electronic payment methods by location

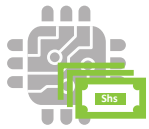
Considering gender, more female individuals (98.0%) sent mobile phone-to-mobile phone transfers compared to male individuals (90.3%). On the other hand, more male individuals used the other channels compared to female individuals as portrayed in Figure 7.97.

In terms of instruments used to make electronic payments, mobile money emerged as the most used instrument by e-payment users (74.6%), followed by Point of Sale (POS) outlets (3.9%) and mobile banking via USSD or mobile app (1.5%) as shown in Figure 7.98.

What channels did you use to send/transfer the money using electronic methods?

	Mobile phone to mobile phone	Bank to mobile phone	Mobile phone to bank	Bank to bank
All individuals	94.3%	8.0%	2.9%	2.4%
Female	98.0%	5.2%	1.9%	1.1%
Male	90.3%	11.0%	3.9%	3.7%

Figure 7.97: Channels for transferring money using electronic methods by gender



Which of the following instruments do you use to make electronic payments?

	Mobile phone	Point of sale	Mobile banking (USSD/mobile app)	Credit cards (visa/master card)	E-banking	Debit cards (visa/master card)
All individuals	**74.6%**	**3.9%**	**1.5%**	**1.1%**	**0.9%**	**0.7%**
Urban	70.9%	4.0%	1.9%	1.7%	1.5%	1.4%
Rural	77.6%	3.9%	1.3%	0.5%	0.4%	0.2%

Figure 7.98: Instruments used to make electronic payments by location

7.5.4 Goods and services

Individuals used e-payments for different purposes summarised in Figure 7.99. Sending/receiving money from someone (91.2%) was the most common purpose, followed by airtime top up or phone bill payments (46.6%) and paying utilities (12.6%).

What do you pay for/receive using electronic payment methods? (multiple-select, ranked)

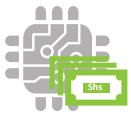
	Sending /receiving money from someone	Airtime top up or phone bill payments	Utilities (Umeme, national water, etc.)	Pay TV (DSTv, Azam, StarTimes, GoTV, Zuku, etc.)
All individuals	**91.2%**	**46.6%**	**12.6%**	**11.4%**
Urban	83.7%	51.2%	19.0%	20.2%
Rural	97.3%	42.9%	7.4%	4.2%

School fees Payments	Salary payments	Purchases at Point of Sale (e.g. at supermarket or petrol station)	Transport payments (Uber, taxi, etc.)	Taxes and Fees Payments (URA, KCCA, etc.)
9.3%	**4.2%**	**3.3%**	**3.2%**	**1.1%**
11.3%	5.7%	4.0%	2.0%	1.8%
7.6%	3.0%	2.8%	4.2%	0.6%

Online shopping or purchases	Insurance Payments	Receive pension
1.0%	**0.1%**	**0.1%**
1.6%	0.2%	0.2%
0.6%	0.0%	0.0%

Figure 7.99: Goods and services purchased using electronic payments by location

Disaggregating results by location, more individuals in rural areas (97.3%), sent/received money from someone compared to individuals in urban areas (83.7%). More individuals in urban areas used e-payments for the other purposes compared to individuals in rural areas.



What do you pay for/receive using electronic payment methods? (multiple-select, ranked)

	Sending /receiving money from someone	Airtime top up or phone bill payments	Utilities (Umeme, national water, etc.)	Pay TV (DSTv, Azam, StarTimes, GoTV, Zuku, etc.)	School fees Payments	Salary payments	Purchases at Point of Sale (e.g. at supermarket or petrol station)	Transport payments (Uber, taxi, etc.)	Taxes and Fees Payments (URA, KCCA, etc.)	Online shopping or purchases	Insurance Payments	Receive pension
All individuals	91.2%	46.6%	12.6%	11.4%	9.3%	4.2%	3.3%	3.2%	1.1%	1.0%	0.1%	0.1%
Female	88.7%	42.6%	13.6%	12.0%	6.4%	2.7%	1.7%	1.6%	0.8%	0.7%	0.1%	0.0%
Male	93.8%	50.8%	11.6%	10.7%	12.3%	5.8%	5.0%	5.0%	1.5%	1.4%	0.1%	0.1%

Figure 7.100: Individual purchase of goods and services using electronic payments by gender

7.5.5 User experience challenges

The survey examined user experience challenges of using e-payment methods. The attributes explored included speed, safety, cost as well as ease of use of an e-payment method and the results are summarised in Figure 7.101. Most e-payment users (85.2%) ranked ease of use of payment method as very important or important, followed by safety of payment method (84.6%) and speed of payment method (81.7%).

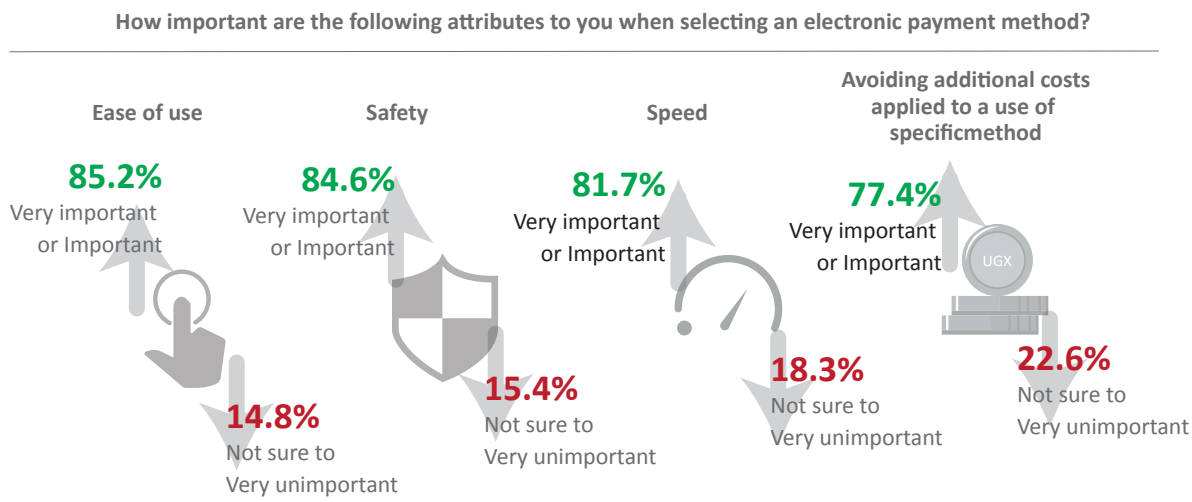
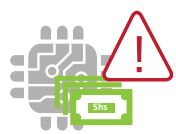


Figure 7.101: User experience with electronic payment methods

The survey also asked individuals that had used e-payments about challenges they had encountered while using e-payments. Overall, system or network failures was identified as most common challenge (67.8%), followed by the high cost of transactions (49.6%) and agents that lacked sufficient funds to pay out (46.8%) as presented in Figure 7.102.

Considering location, more individuals in rural areas encountered more challenges with e-payments compared to individuals in urban areas. The rural-urban gap was widest for agents lack sufficient funds to pay out (59.0% and 31.9% respectively), followed by high cost of transactions (58.6% and 38.6% respectively).



What are some of the challenges that you have encountered in using electronic payments?

	System or network failures	High cost of transactions	Agents lack sufficient funds to pay out	Delayed completion of transaction	Sending money to the wrong recipient	Money I sent was not received by recipient
All individuals	**67.8%**	**49.6%**	**46.8%**	**36.0%**	**16.6%**	**13.6%**
Urban	61.4%	38.6%	31.9%	26.9%	12.9%	10.8%
Rural	73.1%	58.6%	59.0%	43.4%	19.6%	15.9%

Figure 7.102: Individual challenges encountered in using electronic payments by location

7.5.6 Non e-payment users

Overall, 37.9% of all individuals indicated that they had never sent/transferred money using any electronic method. The survey explored what these non e-payment users perceived as barriers that prevented them from using e-payments. Non e-payment users identified "Not registered to use e-payments" (67.9%) as the major barrier, followed by lack of knowledge to use e-payments (65.7%) and preference to transact with cash (53.3%). The results are summarised in Figure 7.103.

Disaggregating the results by location, there was a rural-urban gap across all barriers that hinder the use of e-payments. The gap was widest for not registered to use e-payments (75.6% and 52.1% respectively) and preference to transact with cash (59.1% and 41.4% respectively).

Disaggregating the results by gender, there was variation between female and male individuals. More female individuals cited not registered to use e-payments, the high costs as well as the low transaction limits of e-payments as barriers. Conversely, more male individuals cited preference for cash and lack of knowledge on how to use e-payments as barriers. The findings are summarised in Figure 7.104.

What do you consider as some of the barriers to using electronic payment methods? (multiple-select, ranked)

	Not registered	Do not know how to use it	I prefer to transact with cash	It's expensive or costs are high	I feel insecure using it with my money	No barriers	The transaction limits are low
All individuals	**67.9%**	**65.7%**	**53.3%**	**44.0%**	**33.6%**	**18.7%**	**17.6%**
Urban	52.1%	54.7%	41.1%	40.4%	23.5%	12.3%	9.1%
Rural	75.6%	71.1%	59.1%	45.7%	38.5%	21.8%	21.8%

Figure 7.103: Barriers amongst non-electronic payment users by location

Amongst the 37.9% of individuals that indicated, they had never sent/transferred money using any electronic method, 47.1% indicated interest in the future use of e-payments as summarised in Figure 7.105.

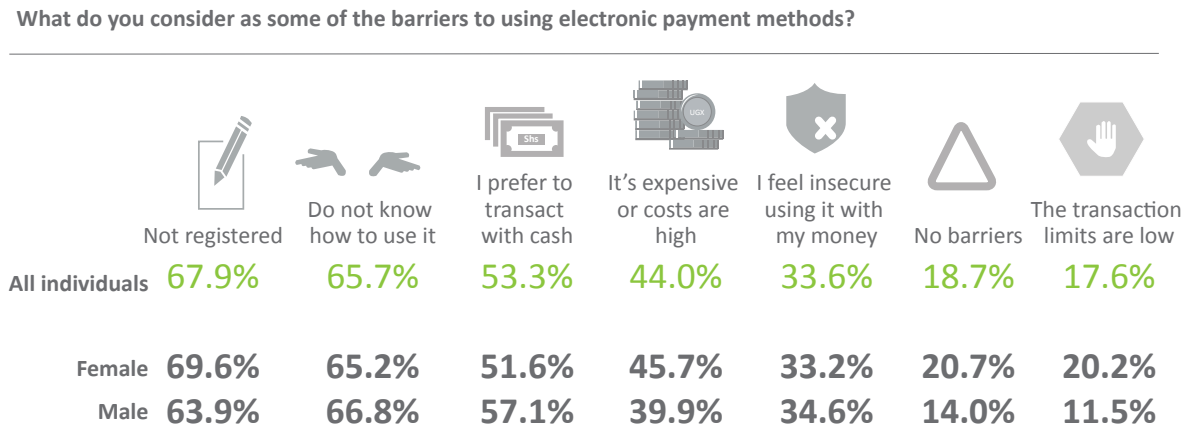


Figure 7.104: Barriers amongst non-electronic payment users by gender

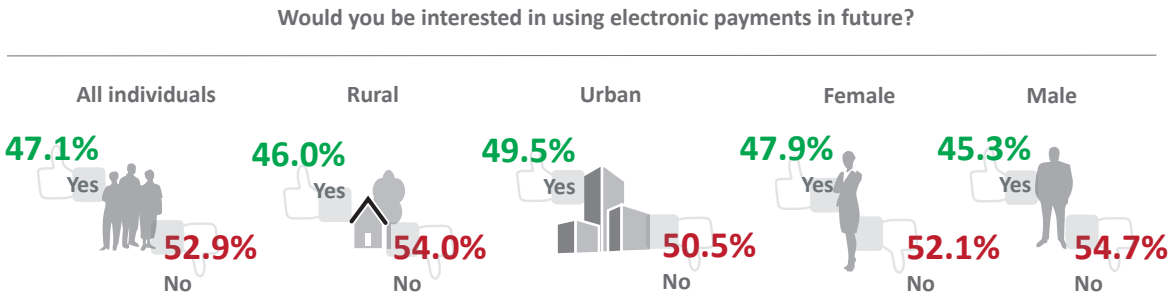


Figure 7.105: Interest of using electronic payments in future among non-users by location and gender

7.6 Online Risks and Incidents

The survey collected information on online risks and incidents amongst individuals that had used the Internet in the last 12 months. The survey probed knowledge of Ugandan cyber laws, online risks and incidents, reporting of online crimes as well as measures undertaken by individuals to improve their online security.

7.6.1 Individual online risks and incidents at a glance

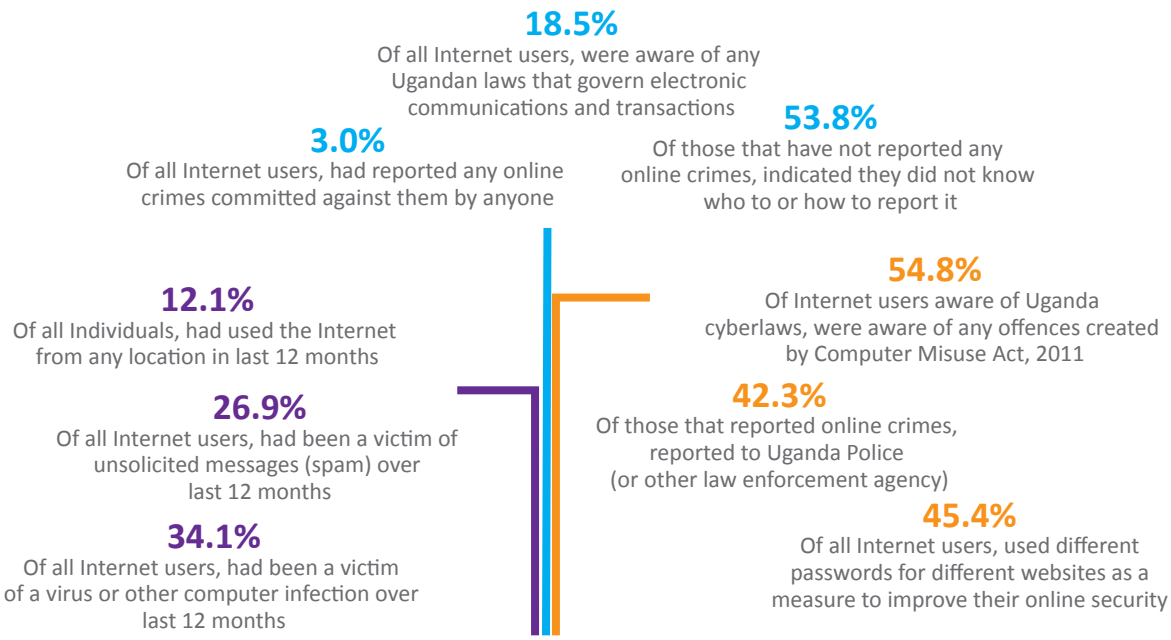


Figure 7.106: Indicators of individual experiences with online risks and incidents

7.6.2 Awareness of cyber laws

Figure 7.107 shows that overall, only 19.0% of individuals that had used the Internet considered themselves very at risk or at risk from cybercrime. By location, more individuals in urban areas (21.0%) considered themselves very at risk or at risk compared to individuals in rural areas (15.4%). By gender, more male individuals (21.6%) considered themselves very at risk or at risk compared to female individuals (16.0%).

Awareness of Uganda cyber laws amongst individuals was also low, with only 18.5% of individuals that had used the Internet indicating awareness of any Ugandan laws governing electronic communications and transactions as presented in Figure 7.108. Considering location, more individuals in urban areas (23.8%) indicated awareness of Ugandan cyber laws compared to individuals in rural areas (8.6%). Considering gender, more male individuals (21.4%) indicated awareness of Ugandan cyber laws compared to female individuals (15.0%).

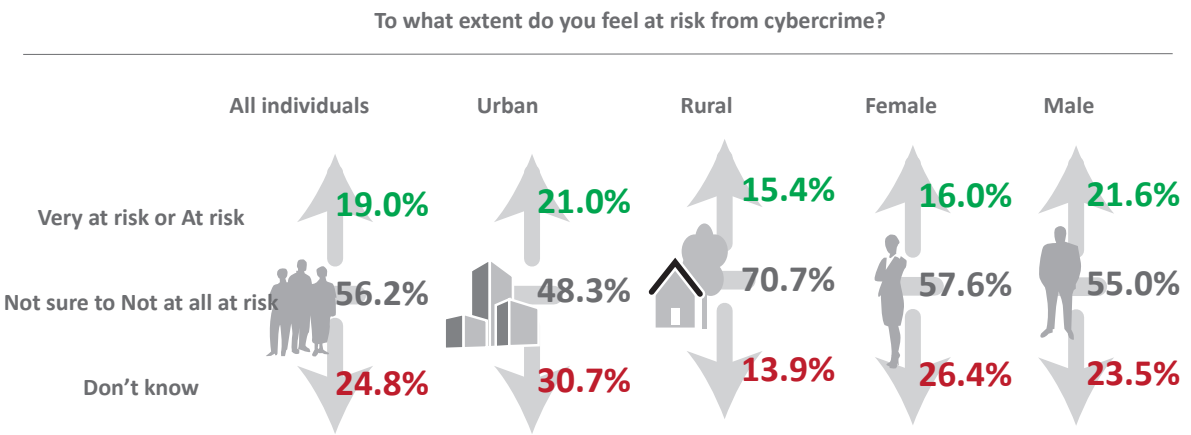


Figure 7.107: Perception of risk to cybercrime amongst individuals who use the Internet

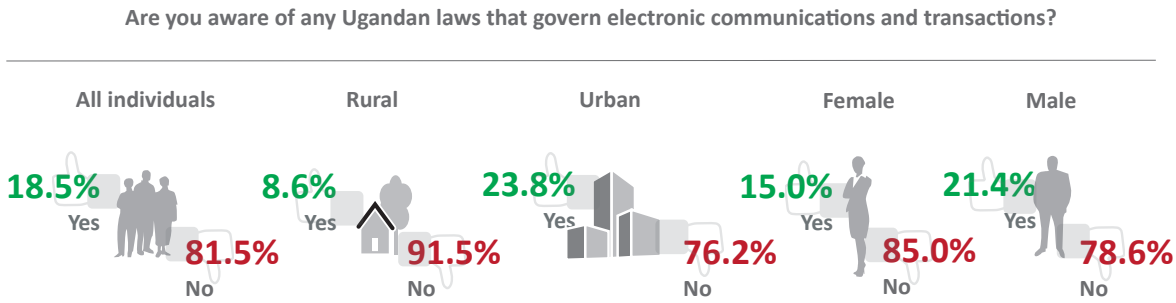


Figure 7.108: Individual Internet users aware of Ugandan cyber laws

Amongst individuals that indicated awareness of Ugandan cyber laws, 73.5% of them could not correctly cite any Ugandan cyber law as shown in Figure 7.109. More individuals in urban areas (74.6%) could not cite any cyber law compared to individuals in rural areas (67.8%). Amongst those that indicated awareness, 17.9% of them correctly cited the Computer Misuse Act, 2011, the most known Ugandan cyber law amongst individuals, followed by the Electronic transactions Act, 2011 (6.4%) and the Electronic Signatures Act, 2011 (2.8%).

Disaggregating the results by location, more individuals in rural areas (32.2%) correctly cited the Computer Misuse Act, 2011 compared to individuals in urban areas (15.1%). For the Electronic transactions Act, 2011 and the Electronic Signatures Act, 2011; more individuals in urban areas (7.3% and 3.0% respectively) correctly cited these compared to individuals in rural areas (1.8% and 1.8% respectively).

If Yes, Please state any cyber laws that you are aware of (multiple-select, ranked)

	Can't state any law	Computer Misuse Act, 2011	Electronic Transactions Act, 2011	Electronic Signatures, Act 2011
All individuals	**73.5%**	**17.9%**	**6.4%**	**2.8%**
Urban	74.6%	15.1%	7.3%	3.0%
Rural	67.8%	32.2%	1.8%	1.8%

Figure 7.109: Individual Internet users aware of and could cite Ugandan cyber laws by location

Figure 7.110 shows that 54.8% of individuals that indicated awareness of Ugandan cyber laws, were also aware of cyber offences created by the Computer Misuse Act, 2011. By location, more individuals in rural areas (64.7%) indicated awareness of cyber offences compared to individuals in urban areas (52.8%). By gender, more female individuals (59.7%) indicated awareness of cyber offences compared to male individuals (51.8%).

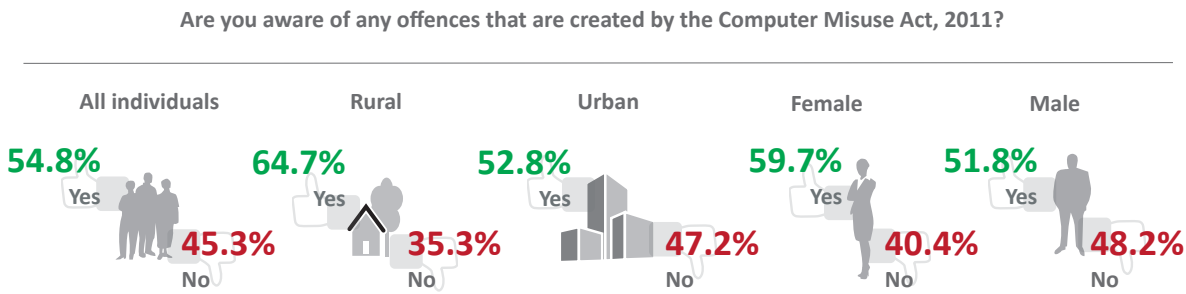


Figure 7.110: Individual Internet users aware of Ugandan Cyber laws and offences under Computer Misuse Act by location and gender

Figure 7.111 shows that 54.6% of individuals that indicated awareness of cyber offences, correctly identified unauthorised access, such as hacking as a cyber offense. This was the most known cyber offense, followed by malicious and offensive communications (52.8%) and electronic fraud (28.0%). Interestingly, some cyber offences like unauthorised access, such as hacking and electronic fraud were more known by individuals in rural areas (88.7% and 40.5% respectively) compared individuals in urban areas (46.5% and 25.1% respectively).

	If Yes, list any two offences that you are aware of				
	Unauthorised access, such as hacking	Malicious and offensive communications	Electronic fraud	Disclosing private sexual images without consent	Can't state any offence
All individuals	**54.6%**	**52.8%**	**28.0%**	**25.8%**	**13.3%**
Urban	46.5%	59.3%	25.1%	30.6%	9.3%
Rural	88.7%	25.5%	40.5%	5.6%	30.1%

Cyber stalking and harassment	Other	Intellectual property crimes	Prohibited and indecent images of children	Unauthorised obstruction of use of computers
8.6%	**7.8%**	**5.1%**	**2.0%**	**1.9%**
10.7%	9.7%	6.3%	2.5%	0.0%
0.0%	0.0%	0.0%	0.0%	9.7%

Figure 7.111: Individual awareness of cyber offences under Computer Misuse Act by location

7.6.3 Cyber crimes

The survey collected information on cyber incidents and crimes experienced by Internet users over the last 12 months. Figure 7.112 and Figure 7.113 summarise individual vulnerability to cyber dependent crimes or crimes that can be committed only using IT. Most individuals that used the Internet had been the victim of a virus or other computer infection (34.1%), followed by receiving unsolicited messages or spam (26.9%) and online account attacks (24.2%).

Over the last 12 months, have you been a victim of a successful...?

	Virus or other computer infection	Receiving unsolicited messages/spam	Online account attack	Phishing or pharming scam	Abuse of personal information sent on the Internet and/or other privacy violations	Financial loss due to fraudulent payment card use
All individuals	**34.1%**	**26.9%**	**24.2%**	**15.5%**	**8.8%**	**4.7%**
Urban	29.5%	29.6%	34.8%	17.3%	10.5%	4.9%
Rural	42.6%	21.9%	4.6%	12.1%	5.6%	4.4%

Figure 7.112: Individuals victims of cyber dependent crimes over last 12 months by location

By location, more individuals in rural areas (42.6%) reported being a victim of a virus or other computer infection compared to individuals in urban areas (29.5%). For other cyber dependent crimes, the opposite was true as indicated in Figure 7.112. By gender, more female individuals (31.3%) reported being a victim of online account attacks compared to male individuals (18.1%). %). For all other cyber dependent crimes, the opposite was true as indicated in Figure 7.113.

Over the last 12 months, have you been a victim of a successful...?

	Virus or other computer infection	Receiving unsolicited messages/spam	Online account attack	Phishing or pharming scam	Abuse of personal information sent on the Internet and/ or other privacy violations	Financial loss due tofraudulent payment card use
All individuals	34.1%	26.9%	24.2%	15.5%	8.8%	4.7%
Female	15.3%	15.3%	31.3%	9.8%	7.1%	1.5%
Male	50.0%	36.7%	18.1%	20.3%	10.2%	7.4%

Figure 7.113: Individuals victims of cyber dependent crimes over last 12 months by gender

Figure 7.114 shows individual vulnerability to cyber enabled crimes or crimes that do not depend on IT but have been transformed in scale and form by the use of IT. One in ten (10.9%) individuals that used the Internet had been the victim of an online sexual offence, followed by online stalking (10.8%) and online fraud or theft (7.6%).

Considering location, more individuals in urban areas reported being a victim of a cyber enabled crime compared to individuals in rural areas while considering gender, more male individuals reported being a victim of a cyber enabled crime compared to female individuals.

Over the last 12 months, have you been a victim of…?

	Online sexual offences	Online stalking	Online fraud or theft	Online harassment or bullying
All individuals	**10.9%**	**10.8%**	**7.6%**	**6.1%**
Urban	12.4%	13.0%	8.8%	7.6%
Rural	8.0%	6.7%	5.3%	3.3%
Female	8.7%	10.2%	3.5%	6.0%
Male	12.7%	11.2%	11.0%	6.1%

Figure 7.114: Individuals victims of cyber enabled crime over last 12 months by location and gender

7.6.4 Reporting cybercrime

The survey collected information on individuals against whom cyber offences had been committed, whether or not they reported them and to whom they reported if they did. Figure 7.115 shows that only 20.1% of individuals that used the Internet were aware that they could report cyber offences committed against them to law enforcement under the Computer Misuse Act, 2011. By location, more individuals in rural areas (27.3%) were aware that they could report cyber offences compared to individuals in urban areas (16.2%). By gender, more female individuals (25.4%) were aware that they could report cyber offences compared to male individuals (15.6%).

Figure 7.116 shows that only 3.0% of individuals that used the Internet had ever reported cyber offences committed against them to anyone. By location, more individuals in urban areas (3.4%) had reported cyber offences against them compared to individuals in rural areas (2.4%). By gender, more male individuals (4.6%) had reported cyber offences against them compared to female individuals (1.2%). This is despite that fact that more female individuals were aware that they could report such offences as highlighted in Figure 7.115.

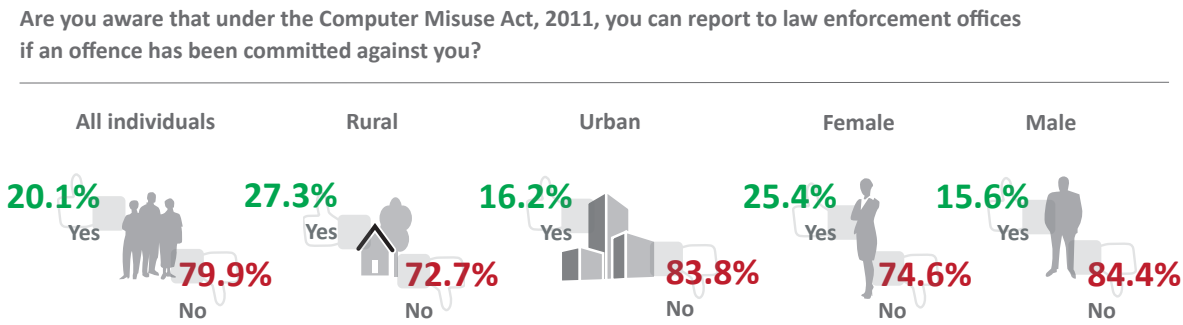


Figure 7.115: Individual awareness of ability to report cyber offences to law enforcement by location and gender

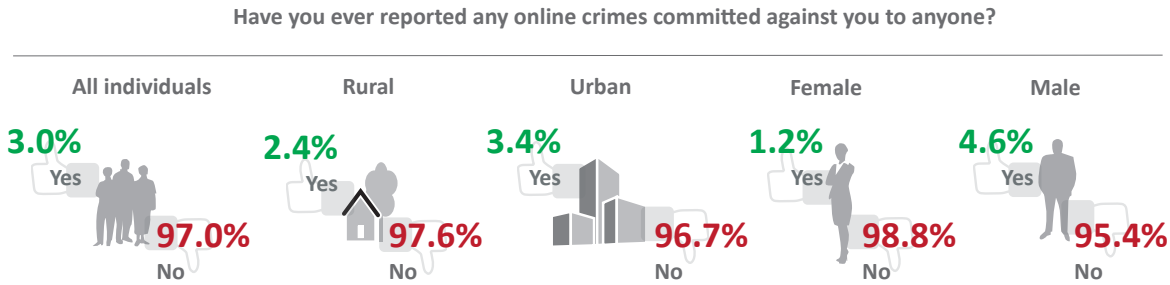


Figure 7.116: Individuals that had reported cybercrimes committed against them by location and gender

Amongst individual Internet users that had reported cyber offences against them, most (42.3%) had reported to the Uganda Police Force, followed by reports to their Internet Service Provider (27.9%) and reports to their Financial Service Provider (24.3%) as summarised in Figure 7.117.

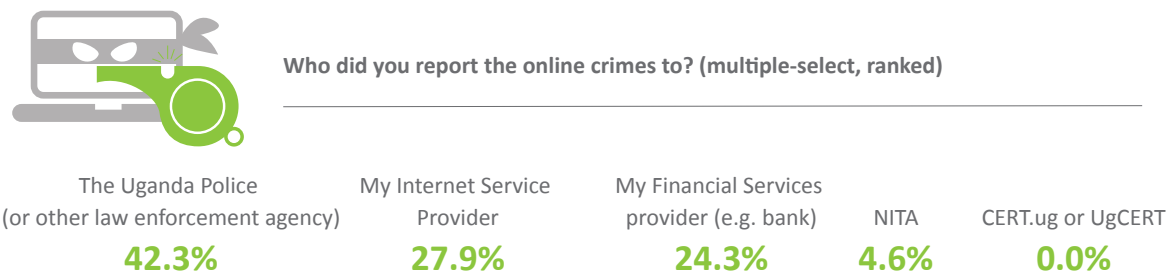


Figure 7.117: Entities to whom individuals reported cybercrimes

The survey asked individual Internet users that indicated they had not reported cybercrimes against them for reasons why they had not reported. Most (66.5%) indicated that they did not know what the crime was, followed those that did not know who to or how to report the cybercrime (53.8%) and those that felt it was a waste of time (40.6%) as summarised in Figure 7.118.

If you have never reported any cybercrimes, what is your main reason? (multiple-select, ranked)

I did not know what the crime was	I did not know who to or how to report it	I felt it was a waste of time	I fixed the problem myself	Not applicable
66.5%	**53.8%**	**40.6%**	**29.7%**	**28.4%**

Figure 7.118: Reasons why individuals did not report cybercrimes

7.6.5 Security measures

The survey collected information about security measures that individual Internet users had taken to improve their online security in the last 12 months, which are summarised in Figure 7.119. About one third (33.2%) of all Internet users had taken no security measures whatsoever in the last 12 months. More individuals in rural areas (40.8%) had taken no security measures compared to individuals in urban areas (29.0%).

For those that had taken measures, most (45.4%) indicated that they used different passwords for different websites, followed by changing passwords regularly (38.2%) and those used up-to-date antivirus software (19.5%) as summarised in Figure 7.119.

What measures have you taken to improve your online security over the last 12 months?

Use different passwords for different websites	Change passwords regularly	I have taken no measures	Use up-to-date antivirus software	Use a firewall	Reduced banking and shopping online
45.4%	**38.2%**	**33.2%**	**19.5%**	**5.9%**	**3.0%**
50.9%	50.6%	29.0%	23.7%	7.4%	4.5%
35.3%	15.2%	40.8%	11.6%	3.1%	0.3%

Figure 7.119: Security measures by individuals to improve their online security in last 12 months by location

7.7 Summary of Findings and Conclusions

This section presents the main conclusions emerging from the survey findings, which inform the policy recommendations suggested to address the existing gaps on access and usage of IT systems, infrastructure and services by MDAs, LGs and citizens. For purpose of clarity, this summary has been arranged along the research objectives – i) the current status of availability, access and usage, affordability and satisfaction of IT infrastructure, equipment and services among government organizations, and citizens; ii) the level of awareness of and satisfaction with IT services; iii) the existing gaps on access and usage of IT systems, applications, infrastructure and services; and iv) citizens' needs for e-Services in the sectors of Health, Education, JLOS, and Agriculture.

7.7.1 Access, Usage and Affordability of IT

The proportion of households with a household telephone is 10.8%. Paradoxically, this number is both high and low because of the success of the mobile phone. It is high because among households with a telephone, 98.1% use a mobile phone as the household phone. Thus, the widespread coverage of mobile networks has enabled many households to have a household phone, even with the poor fixed telephone network. Conversely, it is low because the success of the mobile phone has propagated individual ownership of phones. Among households with no household phone, the primary reason for lack of a household telephone is that members of the household use individual mobile phones, eliminating the need for a household telephone as reported by 51% of the households (Figure 6.7).

Only 5.9% of households reported having access to a computer at home. This is composed of 3.3% of households with a member that owned a computer accessible at home and 2.6% of households with a member that had access to a computer they could use at home (for example a laptop from their job that they could use at home). The former figure rhymes with the 3% of households that indicated owning a computer at home in the recent 2016/17 UNHS. In terms of other IT assets, 65.3% of households owned a radio while 21.8% of households owned a television.

In terms of Internet access, 10.8% of households have at least one household member with access to the Internet at home. Internet access at home has a location bias with more urban households (16.8%) having Internet access compared to rural households (10.8%). Within the household, the mobile phone is the predominant way of accessing the Internet either directly or as a hotspot through which other devices maybe connected. Amongst the bulk of households without Internet access (89.2%), lack of confidence, knowledge or skills was the major reason for not having Internet access at home as reported by 54.8% of households. Other reasons included lack of need for Internet and the high cost of internet devices.

Findings from the survey indicate that 7.2% of individuals had used a computer (Figure 7.27) and 12.1% had used the Internet (Figure 7.36) in the last 12 months. Both portray urban-rural and male-female biases. Individuals primarily accessed the Internet at home (86.1%) and on mobile phones via the mobile cellular network (94.8%). This has major implications for e-Government content creation and consumption in the sense that content should be easily accessible via different screen sizes including small mobile phone screens.

The household survey revealed that while seven out of every 10 individuals owns a mobile phone, there is a location bias with more urban residents owning mobile phones compared to rural dwellers (78.5% vs 65.7% respectively), and a gender bias with more males owning mobile phones compared to females (81.6% vs. 63.2%), as depicted in Figure 7.3. Among individuals that own mobile phone, 15.8% have smart phones. A bigger proportion of female individuals (18.1%) own smartphones compared to male individuals (13.4%), while younger individuals own a higher proportion of smart phones compared to older individuals (Figure 7.4).

In terms of cost, most individuals on average spent UGX 14,500 per month on their phone (Figure 7.7). Interviewees argued that the success of mobile phone combo bundles is because the average mobile phone user does not have much to spend on their mobile phone at once and their subscription is 'pay as you go', allowing them to top-up in very small amounts. For e-Government services that need to include a user charge, exploring this model may be worth the effort. Among individuals that do not own a mobile phone, the cost of the mobile phone is the biggest barrier (88.9%), followed by the challenges of charging the phone battery (36.6%) as summarised in Figure 7.18 and Figure 7.19.

The access, usage and affordability of ICT, especially the internet by Ugandans has been on the upward trend for the last few years. The findings show that at least one in nine internet users was signed up for a social networking site – and this was true of rural and urban areas, males and females. This is complemented by efforts driven from a national level which have seen, since 2013, the use of social media as a tool used by MDAs and LGs – albeit to different degrees of intensity.

Facebook, WhatsApp, and Twitter were the most popularly subscribed social networks. A large majority of all social network users - 92% - accessed these networks using mobile phones and devices. Accordingly, MDAs and local governments need to robustly leverage these platforms to offer swift and cost effective services. Given the internet access rates found by the survey, it is apparent that the Ugandan public has great scope for raising the use of online services from the current dismal level.

As a country, Uganda aspires to utilise ICT to solidify economic development, strengthen democratic norms and values, while improving the quality of life of her citizens, and mainstreaming e-Government. However, various factors stand in the way of improving access and affordability for a large proportion of citizens.

Moreover, despite the progressive legal and regulatory provisions, such as those contained in the National ICT Policy, the Telecommunication Policy (2016), the Rural Communications Development Fund and the Broadband Strategy to ensure ICT access for all, ICT access and affordability are still a challenge for certain sections of the population like the poor, rural populations, women, PWDs and the youth. In terms of gender, even among the women, access, utilisation is significantly especially among rural women who cited the high cost of accessing a handset, cost of airtime, low usage skills, and poor spread of electricity.

Cost emerged as the most cited barrier to internet access, with 76.6% of individuals interviewed considering that the internet was expensive to use, followed by slow speed, and lack of network connectivity in some areas.

Similarly, a great majority of local administrations felt that the cost of buying bandwidth from ISPs was unaffordable. Additionally, access, utility and affordability is also affected by the lack of skills, personnel and poor security practices among MDAs and Local Governments. The lack of adequate ICT infrastructure, where only 24% of Local Governments reporting having an intranet and 41% having a Local Area Network (LAN), also affects the utilisation of ICT by LGs.

Survey findings indicate that the proportion of LG employees that routinely use computers is only 3.3%, while the proportion of employees that routinely use the Internet is 1.7%. Corresponding figures for MDAs are 37% and 22.5% as indicated in Figure 3.14, highlighting the long journey that LGs have yet to make up before they can fully embrace and mainstream e-government services to reach more of their constituents.

Two thirds of MDAs (66.2%) reported that they restrict access to particular websites, primarily as a mechanism to manage bandwidth. In addition, MDAs reported the high cost of the Internet and insufficient bandwidth (60.6% and 54.5% respectively) as the major obstacles to a wider use of the Internet for MDA work.

While the core activity of LG and MDAs is to deliver services to citizens, internet access is least used to monitor such activities. The primary use of the internet is for communication via email or MDA website, followed by research and analysis (69.3%).

7.7.2 Awareness of and Satisfaction With IT services

Many MDAs have embraced the use of digital platforms to provide government services with half of them (50.7%) offering e-Government services via the web, 19.5% via SMS and 13% through the use of mobile applications (Figure 3.42). In addition, 61% of MDAs plan to implement new e-Government services in the next five years. However, awareness and usage of these services remains low. For example, just 17.4% of individuals that had interacted with an MDA were aware of any government or public service available online. Usage is even much lower, with only 5% of those aware of e-Government services having used an online service (Figure 7.55). Even in urban areas, only one in five individuals was aware of any online service, while in rural areas it was one in ten. Common internal challenges in implementing e-Government services cited by MDAs (Figure 3.45) include lack of investment and budgetary constraints and higher costs than expected (71.4% and 55.8% respectively) while external challenges (Figure 3.46) include lack of funding and lack of supporting infrastructure (75.3% and 42.9% respectively).

The survey findings show that there are various factors that influence the level of users' satisfaction with telephone and internet services. These are mostly related to cost, quality and availability of services, and value for money spent.

Whereas as in rural areas the quality of the internet connectivity is a bigger issue for satisfaction with services than it is for urban areas, cost emerged as a prominent factor for all users, emerging more prominently ahead of other factors that overall subtracted from users' satisfaction, such as speed of internet service, value for money spent, and customer support.

For designers of online services, it is crucial to understand the main frustrations that individuals face when they use online services face: time delays, high costs, and too much paper work. Paradoxically, these are precisely the problems which online service provision is aimed at eradicating. Hence, if they manifest as key challenges for citizens that use online services, then the uptake of such services shall remain dismal.

When subscribing to the Internet, individuals consider maximum download speed (35%) more important than the price of the subscription (30.9%) as shown in Figure 7.42. Individual internet users cited the high cost of using the Internet (76.6%), the slow speed (49.2%) and poor connectivity in some areas (41.4%) as the three top barriers to using the Internet (Figure 7.42 and Figure 7.43). Non-users of the Internet cited lack of knowledge or skills (75%), not knowing what the Internet is (57.5%) and lack of need (49.5%) as the main reasons for non-use (Figure 7.53 and Figure 7.54).

All of these call for policy interventions and strategies to address factors that make use of the Internet much cheaper, that improve IT awareness, knowledge and skills among individuals about both the potential benefits and the potential pitfalls of technology and to stimulate the private sector to build more high speed networks that cover more areas, particularly in rural areas.

7.7.3 Gaps in Access and Usage of IT Systems, Applications, Infrastructure and Services

Only 1.9% of the total work force of MDAs are in ICT functions/roles (a slight improvement compared to 2012/13, when 1.6%). This proportion is still low given the high priority that government attaches to ICT in terms of improving service delivery and the development of the country as a whole. Issues like the gender bias among ICT personnel (31.2% female vs. 68.8% male), which remains largely unchanged from 2012/13 as well as increased specialisation in key areas like IT security, user experience design and quality assurance need to be urgently addressed through targeted efforts and programmes.

The MDAs suffer a gap in the number of their employees that use the internet and IT devices, given that the proportion of MDAs employees that routinely use computers is just over one third of the total MDA workforce (37%), while the proportion that routinely use the Internet is less than a quarter (22.5%). The lower proportion of staff that routinely use the Internet should be a cause for concern for government. This access and usage gap reflects insufficient Internet bandwidth procured by MDAs to serve all employees, poor internal network infrastructure that hinders MDAs to deliver Internet access to all employees (68% of computers in MDAs with a LAN are connected to an MDA LAN) and the lack of adequate ICT skills and knowledge among employees that would enable them to effectively use the Internet.

Regardless of the reasons for the gap, the proportion of MDA staff that routinely use computers and the Internet is still too small to satisfy the ambitions of government to deliver all government services to citizens through using e-government. Other challenges affecting IT access and usage in MDAs such as aging IT equipment and insufficient budgetary allocations for IT compound the above problems.

Lack of awareness and trust as well as privacy concerns need to be addressed to encourage more Ugandans to partake of e-commerce. The popularity of mobile money payments needs to be leveraged to grow confidence in other electronic payments such as at points of sale and mobile banking. Growing consumers'

confidence in using e-payments and e-commerce generally, will also require that barriers such as system or network failures and high cost of transactions are addressed.

Awareness of laws governing electronic communications and transactions is – only 18.5% of internet users. While 17.9% of respondents had knowledge of the existence of the Computer Misuse Act, knowledge about its provisions was extremely low. In addition, there was particularly low knowledge about other cyber laws such as the Electronic Transactions Act, 2011 and the Electronic Signatures Act, 2011.

As MDAs increasingly adopt and use digital technologies, information security becomes ever more important to help protect MDA networks from cyber attacks and security breaches. More than a quarter of the MDAs (77.3%) have developed an information security policy, but it is unclear how many of them have fully implemented their security policies and monitor compliance on a regular basis. A majority of MDAs - 71.4% - experienced a security incident during financial year 2016/17 however only half of them (50.9%) reported an incident to anyone, increasing the likelihood of such security incidents happening again. On a positive note, many MDAs have implemented security measures within their networks to minimise the impact of security incident. The MDAs that have appointed dedicated security personnel are 37.7%, however, shortage of personnel with sufficient skills is still a major issue and regular comprehensive security awareness training for general MDA employees is largely non-existent.

Digital security practices are very low, such as use of different websites for different websites, very low, as is reporting on online crimes, because of lack of knowledge on where to report. Many times there is no knowledge of what constitutes an online crime.

Individual awareness of risks from cybercrime is still low, with only 19% of Internet users considering themselves to be at any risk (Figure 7.107). In addition, only 18.5% of Internet users are aware of any Ugandan laws governing electronic communications and transactions (Figure 7.108). This is despite many individuals having been the victim of both cyber dependent crimes (can only be committed using IT) and cyber enabled crimes (IT increases their scale and form, but can be committed without use of IT) over the previous 12 months (Figure 7.112 and Figure 7.114). Among Internet users, only 20.1% are aware that they can report cybercrimes to law enforcement and other agencies under the Computer Misuse Act 2011 while only 3% have ever reported cybercrimes committed against them to anyone, making their recurrence more likely. All of this portrays poor digital security awareness among individuals in an increasingly connected world that makes it easier for cyber criminals to target unsuspecting victims. This makes it imperative that NITA-U in collaboration with other agencies explore potential avenues to build the security awareness of Internet users in an ongoing manner, bearing in mind that cybercrime is growing in complexity.

More than a third had experienced a virus or other computer infection attack in last 12 months. And yet regarding security measures, one third of all Internet users (33%) had taken no security measures whatsoever in the last 12 months.

ICT infrastructure among LGs is in short supply with only 24.1% of LGs having an intranet and 43.3% having a Local Area Network (LAN). About one third of LGs (31%) lack institutional Internet access and 24.1% do not have an institutional website. Commercial ISPs are the main Internet providers for LGs (Figure 3.7) with most of the bandwidth provided via mobile broadband connections (Figure 3.8). NITA-U only covers only 19.1% of LGs compared to 83.1% of MDAs, which could partly be explained by the fact that the National Backbone Infrastructure (NBI) does not cover all districts.

Just like MDAs, LGs also cited high cost as the biggest barrier to wider use of the Internet for work purposes given their meagre budgets The Lack of IT expertise is also a major barrier, with many LG employees lacking the necessary knowledge and skills to use IT, as well as the lack of computers and other digital equipment. Correspondingly, LGs largely have negative perceptions when it comes to their Internet service compared to MDAs.

Three of every four Local Governments (73.3%) own an institutional website while one in two (56.7%) use social media compared to 100% and 92.2% of MDAs respectively. Most LGs have invested in commercial software like office productivity suites and anti-virus software, but most are yet to invest in automating their core business processes, such as human resource management and document management.

A higher proportion of LGs (95.2%) reported experiencing security incidents in FY 2016/17 compared to MDAs (71.4%). The most common type of incidents among LGs were virus or computer infection related (61.9%). Other crosscutting incidents related to loss of institutional ICT equipment and loss of data for lack of backups. Both of these can be addressed by providing some guidelines for government institutions to adhere to as well as encouraging the use of shared infrastructure like storage that can be used for remote backups to complement the various security measures that have been implemented by LGs.

IT training for LG staff is critically lacking, both in terms of basic IT skills and knowledge as well as to build up their general security awareness. Only one in three (30%) LGs provides any form of internal IT training for their staff compared.

While there are minimum specifications as well as guidelines for the acquisition of IT hardware and software for government MDAs, inadequate funding and uncoordinated planning appear to be crosscutting barriers that call for new innovative ways of tackling the problem.

Additionally, non-compliance to some laws has hampered access and usage of ICT in the country. For instance, NITA-U developed guidelines for the development and management of Government websites to ensure accessibility to all among other things. However, majority of the government websites are still inaccessible to people with disabilities, and are in English, which many Ugandans cannot read.[47] Moreover, no assessment has been undertaken to establish the compliance of MDA and LG websites to the guidelines.

47 *https://cipesa.org/?wpfb_dl=201*

7.7.4 Citizen Needs for E-Services

While many MDAs are embracing the use of e-government services, to ease on the access and provision of services by the citizens, there is still plenty of room for improvement including at a LG level.

Since the establishment of the single portal, government has through various MDAs been implementing some of the recommendations of the e-Government readiness assessment. There has been evolution of government online services from basic information provision, to permit some level of interactivity and transactions. Though most of this is unidirectional, citizens can apply for visas, file taxes, reserve a business name, among others.

In terms of online services provision, while a number of services were centrally hosted on the e-citizen portal, some links were unresponsive such as the hospital locator, UNEB's "Make a complaint" services, Uganda wildlife's Booking/reservations link, Student loan application status, and Judiciary's "Court bailiff finder. This points to the need for a thorough review and quality check of the services hosted on the portal to ensure their availability.

From the survey findings, the health sector emerged as one of the most frustrating, particularly for women, when trying to access government services. They pointed out difficulty in sourcing information such as their nearest health facility as well as information on antenatal care and family planning. The education and agriculture sectors also ranked high among citizens as frustrating sectors, followed by the education and agriculture sectors.

Although mobile money usage is known to be high in Uganda and an increasing number of goods and services providers allow for mobile payments, less than 2% of individuals had ever made an online order or purchase. The main reasons for these low numbers were lack of skills and trust in online payments was manifest. And yet, 81% of those that had made an online purchase had bought the goods or services from within Uganda - with three in five using mobile money payment method.

Mobile payment for utility bills is the most used e-Government service (62.6%), followed by online registration for Tax Identification Number (TIN) as indicated in Figure 7.61. Individual e-Government users named time delays (38.9%) and high costs (23.1%) as two of the major barriers to using e-Government services (Figure 6.63). The health sector is mentioned as one sector where individuals have the most frustration when trying to access government services, followed by education and agriculture. The above provides pointers to potential areas of consideration when developing new e-Government services. For example, how can we leverage people's prior knowledge of making mobile payments? How can we minimise time delays as users interact with e-Government services? How can we break up large payments into smaller recurrent portions that users pay as they interact with e-Government services over time?

E-commerce is still a novelty in Uganda with only 1.7% of individuals having ever made an online purchase, even offline payments are considered for the purchase. Among these e-commerce users, only one in three (31.5%) had made a purchase during the three months preceding the survey. The good news is that most e-commerce transactions are local (81.5%) and tend to involve clothing, footwear, sporting goods or accessories (Figure 7.83). Most e-commerce users are not aware of their rights (Figure 7.87) and had ever faced challenges after making an online purchase (Figure 7.88). Non e-commerce users highlighted a number of impediments to e-commerce, including their preference for physical interaction with goods before purchase (70.6%), trust and privacy concerns, as well as the security of payment.

E-payments have become mainstream in Uganda thanks to mobile money. Three out of five individuals (62.1%) have sent or transferred money locally (within Uganda) using an electronic method, likely a mobile phone-to-mobile phone transfer involving mobile money. Individuals use e-payments for different purposes, the most common being to send or receive money (91.2%) and to buy airtime (46.6%) as shown in Figure 7.99. The latter transaction attracts no charges while the former does. Substantial transaction charges were one of the biggest complaints that emerged from interviews and discussions with various stakeholders, who described this as one of the drawbacks of using mobile money coupled with the agents' liquidity issues. Interviewees were more likely to complain about charges to pay for utility bills and for good and services and were less likely to complain about charges to withdraw or send money. These corresponded with findings from the survey, where individuals identified system or network failures (67.8%), high transaction costs (49.6%) and agents' lack of liquidity (46.8%) as the top three obstacles in using e-payments (Figure 7.102).

On the other hand, non-users of electronic payments cited not being registered, lack of knowledge to use e-payments and preference to use cash as the top three barriers. All of these provide useful guide to NITA-U as it strives to build and deploy a central and shared payment infrastructure that can be used to power transactions within various e-Government services.

Chapter 8 Recommendations

Uganda aspires to utilise ICT to solidify economic development, strengthen democratic norms and values, while improving the quality of life of her citizens. To achieve her goal of mainstreaming e-government, Uganda still has more work to do to increase nation-wide access and use of IT. Below are key recommendations that have emerged from the study findings and conclusions summarised in the previous chapters.

8.1 Organisational

8.1.1 Government working through NITA-U needs to design strategies to increase the level of IT skills and knowledge among staff within MDAs and LGs. This may include the development of a government-wide IT training and skills development programme that equips government employees with basic digital literacy skills (both cognitive and technical) on a regular basis to keep them abreast of the rapidly changing trends in the use of IT. Beyond this, the programme can also offer training in other critical areas like information security awareness as well as disaster recovery and business continuity that are critical as government embarks on the drive towards moving more government services online.

8.1.2 Consequently, government through her agencies needs to plan for adequate resourcing and training for IT personnel involved in the development and support of applications and services.

8.1.3 Government needs to recognise that it is in competition both nationally and globally for competent ICT staff and therefore has to come up with strategies to recruit, develop and retain staff with key ICT skills. This may involve revamping and implementing recommendations of the Report on the institutionalising of the ICT function in MDAs and LGs in consultation with the Ministry of Public Service to create a government-wide ICT Career Structure that includes training and development programs for ICT personnel in key skills areas (for example information security and systems architecture). Besides NITA-U spearheading the institutionalisation of the ICT function in MDAs, it should also oversee the operationalisation of ICT policies within the MDAs. Another possibility could be for tech-savvy officials, regardless of their designations, being appointed as chief information officers in MDAs, in an endeavour to create awareness of the benefits of ICT in public bodies.

8.1.4 In addition, as government and her agencies strive to use the Internet to provide e-government and other services, they should recognise that the Internet as an ecosystem is in constant evolution and as such, there are always new capabilities to acquire in order to use it to its full potential and new risks to mitigate. Consequently, government needs to explore the wide range of recommendations that relate to the ICT workforce as highlighted by a number of stakeholders that we interviewed. In addition, pertinent government agencies need to collaborate to develop and maintain a government-wide Strategic ICT Workforce Plan that draws on the work done by multiple MDAs in terms of resourcing and training IT personnel. NITA-U can then update the plan annually based on inputs from other MDAs and recommend options to the Cabinet ICT Committee on how to deal with identified skills shortages through recruitment, training and development. With the combination of a common Career Structure and a Workforce Plan, it should become easier to plan to smooth peaks and valleys of demand for different ICT skills across individual MDAs.

8.1.5 Government through her agencies needs to develop strategies to reduce over-reliance on ICT contractors and consultants over a defined period and instead increase the number of competent and motivated ICT staff across different levels within MDAs and LGs. This can also help encourage government and her agencies to consider and implement actions required both government-wide and at MDA-level to attract, develop and retain competent ICT personnel.

8.1.6 On the other hand, Government should consider entering more public–private partnership (PPPs) in the roll-out of ICT projects and services, in areas such as innovation and e-services development. In this line, Government through NITA-U should adopt a deliberate policy that grows the capacity of local service providers to compete favourably for government ICT-related contracts, for certain types of partnerships and contracts, the policy should favour competent locally-based entities to foreign-based ones.

8.1.7 In order to create more buy-in, government through NITA-U needs to better equip MDA and LG leaders on how to harness the potential benefits of ICT to improve the effectiveness and efficiency of their organisations. One approach can involve organising regular events where these leaders interact with both local and foreign invited guest speakers, private sector CEOs or the leaders of other government MDAs that have successes to share from implementing ICT projects within their own organisations.

8.1.8 Capacity development at LGs remains low yet they are crucial to services delivery to citizens and can also be a driver for the wider adoption of ICT use, including of e-services, across the country. Accordingly, NITA-U should help LGs develop and implement ICT policies and require them to maintain functional websites that are regularly updated with information of public interest. Incrementally, NITA-U should help to create capacity in LGs to offer a growing array of online services to citizens. Furthermore, NIRA-U should offer cheaper internet to the LGs and endeavour to extend its services and infrastructure to all districts.

8.1.9 Government through NITA-U and other appropriate agencies needs to build mechanisms that identify, monitor and reward better performance and professionalism for both government agencies and their ICT staff. For example, on one hand, NITA-U can set up annual awards to recognise the performance of MDAs and LGs in various ICT categories ranging from MDA websites to e-government services. On the other hand, NITA-U can recognise the outstanding professionalism of ICT staff in particular skills areas that they would like to stimulate like information security and software development. NITA-U may host such awards in collaboration with key industry associations with whom they already collaborate and could coordinate or be separate from the Annual Communication Innovation Awards (ACIA) held annually by UCC.

8.1.10 Gaps in terms of IT access and use exist across a number of domains. These include gender gaps (male vs. female), location gaps (urban vs rural) as well as establishment gaps (MDAs vs LGs). Most IT access and usage indicators tend to favour male individuals, urban locations and MDAs respectively. There is need for more research to better understand and address these divides. Government through her agencies should undertake more research around the complexities of these divides and design policies and strategies from an informed position to eliminate the growing digital divides.

8.2 Computers, Software and the Internet

8.2.1 Government needs to leverage her collective buying power in areas where true economies of scale are achievable. Good examples here include the procurement of bandwidth, new computers and software. Government through NITA-U can explore how to improve procurement arrangements for ICT commodity products and services, as well as volume sourcing arrangements for key items of software. This may include arrangements that aggregate demand or use of electronic auctions, where appropriate. These arrangements should be subject to Ministerial approval, including MDA and LG opt-in, in line with government's existing approval arrangements for coordinated procurements.

8.2.2 Government working through NITA-U needs to ensure that all MDAs and LGs procure their Internet bandwidth from NITA-U. This aggregation of demand makes government the single biggest consumer of bandwidth, creating true economies of scale that can help drive down the unit cost of bandwidth on a regular basis. Such dwindling prices can set a precedent and guide for the private sector as the Internet user base expands across the country, helping to bring down end-user data prices.

8.2.3 Government through NITA-U should explore avenues to simplify and consolidate the management and procurement of commonly purchased software across government agencies. The goal should be to allow the different government MDAs and LGs to act as one buyer as opposed to multiple distinct buyers in order to save public resources on government's total software bill. In addition, NITA-U needs to champion and ensure that other MDAs follow leading practices in adequately managing their software licenses and facilitate cross sharing of best practices across MDAs.

8.2.4 In addition, government through NITA-U needs to implement the strategic management of key government ICT suppliers. The definition of who is a key supplier does not only have to relate to the total price of contracts, but can also include the critical nature of what they supply to government. Strategic management in this case can entail gathering intelligence of general industry performance, health and trends to inform proactive government stances in dealing with increasing supplier dominance and other sector issues.

8.2.5 Government working through NITA-U needs to extend the coverage of the National Backbone Infrastructure (NBI) to all parts of the country and to create a drop-off point within each district. In addition, NITA-U needs to connect all MDAs and Local Governments (at least at District level) via fibre by 2020 in line with the National Broadband Strategy.

8.2.6 Government working through NITA-U needs to define minimum bandwidth requirements per employee to help MDAs and LGs to better appreciate how much more bandwidth they need for optimal productivity. Besides facilitating MDAs to better budget for institutional bandwidth needs, these can also act as a meaningful metric with which MDAs can compare to each other.

8.2.7 As e-government service delivery starts to catch on, government needs to budget and set-aside funds on a regular basis to replenish aging IT equipment within MDAs and LGs, particularly computers. This is important to avoid accumulating an aging fleet of IT equipment given the quick cycles of technology development that rapidly make equipment obsolete.

8.2.8 At the individual level, the cost of computing devices and data bundles continues to hinder IT access and use. Government through a multi-agency collaborative approach needs to design strategies to lower the cost of end-user devices and communication costs. These may include efforts geared towards reducing or eliminating taxes as well as increasing competition among service providers.

8.2.9 Despite its urban-bias, the MYUG free Wi-Fi service is one of the most appreciated NITA-U services among individuals. Government through NITA-U should explore additional ways to leverage more government infrastructure to provide more internet access points and to work with service providers to develop “zero-rating” programs that enable people to access certain e-government services or applications without having such usage counting towards their individual data bundles. This will encourage individuals to use e-government services without fear of additional fees, and when coupled with MYUG services or other free-access programs, creates an opportunity to bring Internet access to individuals who otherwise could not afford to pay for desired e-government services.

8.3 E-Government Services

8.3.1 Government needs to identify ways to increase citizens and business use of e-government services. Government and her agencies need to invest more in creating awareness about the benefits of using e-government services. In addition, government should identify ways to increase use of e-government services by improving on factors identified by people to use e-government services in this study such as time and money savings as well as simplicity.

8.3.2 Furthermore, government can identify and encourage collaboration with private sector and civil society players to create an e-government ecosystem that can drive the provision and encourage more use of e-government services. A good example to explore is the network of private service centres that has emerged to support public use of URA's digital services often near URA offices.

8.3.3 User registration tends to be a precursor for most online services and individuals mentioned this as a barrier for some services like e-payments. Given the success of the national ID registration process coupled with the registration of mobile SIMs, government through NITA-U and the National Identification and Registration Authority (NIRA) should devise methods of leveraging the resulting national user database to support electronic registration, identification and authentication for other services like banking, healthcare and taxation. Government will need to balance the benefits that can accrue like efficient transactions at lesser cost, with potential drawbacks like making it cheaper and easier for bad actors to interfere with transactions. For example, as such personal data becomes more important, government needs to afford individual data owners the capacity to query and easily report mistakes or make updates. It would be nice for an individual to know the details of the SIMs registered under their National Identification Number (NIN), but there is no easy way to access such information now.

8.3.4 NITA-U has embarked on work to develop a Government Enterprise Architecture (GEA) and an E-Government Interoperability Framework (E-GIF). Both of these will facilitate inter-agency data exchange supporting the delivery of integrated services across government departments. These will address issues of standards, data semantics, privacy and data protection, as well as Uganda's cultural and political context. In addition, NITA-U is developing a range of solutions that will facilitate unified communication and collaboration both within and across MDAs. While some solutions like VOIP and video conferencing are already operational, others like a user messaging and collaboration system as well as an SMS gateway are in the pipeline but need to be fast-tracked.

8.3.5 Government through NITA-U needs to nurture a data-driven culture by developing frameworks that can enable and guide the collection, use and sharing of the increasing amounts of data collected through the use of e-government services. This can help inform other digital processes and support different government procedures including policy making and budgeting. For example, growing use of mobile money generates a rich dataset that can inform government as it works towards digitising cash, developing a centralised electronic payments platform, as well as efforts to improve financial inclusion.

8.3.6 In order to promote the afore-mentioned data-driven culture, it is prudent for Government to institute strong data protection mechanisms in e-services and e-government initiatives at all MDAs and among companies that collect citizens' data such as ISPs, telecom companies, and public services providers. Accordingly, government should proceed to swiftly pass a strong Data Protection and Privacy law (currently in draft form), and once passed, take immediate measures to implement the law.

8.3.7 The push for adoption of an Open Data Policy for Uganda should be matched with a requirement for government bodies (central and local) to adopt open data policies and practices and to have greater information openness. Pro-active sharing of data and information should be encouraged and rewarded, and this such sharing should be conducted through multiple channels not least of them social media that is widely used in both urban and rural Uganda. The MDAs and LGs should be monitored for implementation of the Open Data Policy (once passed) and the Access to Information Act of 2005, which governs information openness among public bodies.

8.3.8 Government through NITA-U needs to prepare guidelines to facilitate more sharing of public data through using open standards and open data formats while balancing the need to provide timely official data and managing the potential risks that can arise from data misuse. Government should encourage and empower other government agencies and the private sector to remix and reuse such data in innovative ways. This can result in improved data integration between disparate systems across government as well as new products and services that enhance and share such information with the public. One way to do this maybe for NITA-U to collaborate with communication researchers at universities to build useful prototypes that use actual government data and demonstrate real benefit. Another way may be for NITA-U to organise competitions that reward third parties for demonstrating better ways to use myriad datasets (like health statistics, geospatial information to census data) for better decision and policy making.

8.3.9 Government through her agencies needs to incentivise the creation of relevant local content as well as translation tools that permit individuals to tailor content to their preferred local language. New e-government services designed by MDAs should also have the capacity to serve content to users in local languages.

8.4 Information Security

8.4.1 Government through NITA-U needs to raise the awareness and secure leadership commitment for digital security and privacy issues at the top political levels of government and within MDAs. This will facilitate the funding and adoption of effective and appropriate security measures across government and her agencies.

8.4.2 Given the increasing number of employee-owned smartphones and other portable devices that government staff bring to work, government working through NITA-U needs to develop institutional Bring Your Own Device (BYOD) guidelines particularly for devices that connect to internal MDA networks. At a minimum, the guidelines should cover the kind of devices permitted, basic security requirements expected of such devices, what MDA applications BYOD devices can access as well as ownership issues of the resulting data.

8.4.3 Government working through her agencies needs to build general digital security awareness of individuals using both digital and mass media in an ongoing manner, bearing in mind that digital risks and cybercrime are continuously growing in both volume and complexity. Furthermore, NITA-U should promote the use of digital signatures, which will enhance the use of the e-payments gateway and promote e-government and e-commerce.

Appendix A References

CIPESA, State of Access to Information in Uganda, http://goo.gl/K9cQdj
CIPESA, State of Open Government Index in Uganda, https://cipesa.org/?wpfb_dl=255
CIPESA, Ugandan Public Officials' Perceptions of using ICT to advance the Right to Information, http://goo.gl/SFi91K
International Telecommunications Union, ICT Development Index 2016, https://goo.gl/4qtvVN
International Telecommunications Union, IDI 2017 Rank, http://goo.gl/b1YKZ8
International Telecommunications Union, Manual for Measuring ICT ACCESS and Use by Households and Individuals, 2014 edition, www.itu.int/en/ITUFD/Statistics/Pages/publications/manual2014.aspx
International Telecommunications Union, Measuring the Information Society 2017, http://goo.gl/nXhWrH
NITA-U, Authentication of IT Training Regulations 2016, http://goo.gl/otBhTc
NITA IT Certification Office, http://itco.nita.co.ug
NITA-U, Draft Information Management Services Policy, http://goo.gl/X1EeeY
NITA-U, E-Government Readiness Report, https://goo.gl/eZNSgj
NITA-U, Feasibility Study for Integration of National Databases, August 2015
NITA-U, Government of Uganda Social Media Guide, Version 1.1, July 2013
NITA-U, Guidelines and Standards for Acquisition of Information Technology Hardware & Software for Government Ministries, Departments and Agencies, Version 1.0, April 2013
NITA-U, Guidelines for Development and Management of Government Websites, June 2014
NITA-U, National E-Government Framework, https://goo.gl/DpxtDx
NITA-U, National Information Security Policy, February 2014
NITA-U, Minimum IT Hardware & Software Specifications, 2013
NITA-U, Standards for Structured Cabling for Government Ministries, Departments and Agencies, 2013
Ministry of Finance and Economic Development, ICT sector budget framework paper http://goo.gl/sVDUTq
Ministry of Finance and Economic Development, Know your budget http://www.budget.go.ug
Ministry of ICT and National Guidance, ICT Sector Strategy and Investment Plan 2015 – 2020, https://goo.gl/NsteVY
Ministry of ICT and National Guidance, Institutionalisation of ICT Function in MDAs and Local Governments. Final Report by Task Force, May 2012
Ministry of ICT and National Guidance, The National Broadband Strategy for Uganda (2016 – 2020), https://goo.gl/cU7hUi
Organisation for Economic Cooperation and Development, OECD Model Survey on ICT Access and Usage by Households and Individuals, https://goo.gl/UHjKcj
Open Data Kit website http://opendatakit.org
Partnership for Measuring ICT for Development, www.itu.int/en/ITUFD/Statistics/Pages/intlcoop/partnership/default.aspx
R Project and foundation, http://www.r-project.org

Appendix A **References**

United Nations Statistics Division (2005): Designing Household Surveys Samples: Practical Guidelines, United Nations, New York.
Uganda Bureau of Statistics, Uganda National Household Survey (UNHS) 2016/17, http://goo.gl/5dRriy
Uganda Communications Commission; Annual Market & Industry Report 2015/16 http://goo.gl/gMKcLx
Uganda Communications Commission; (2015), Analysis of the Access and Usage of Communications Services in Uganda.
Uganda Government, NITA-U Act, Act No.4 of 2009 http://goo.gl/bLPNP2
Uganda Government, Vision 2040, http://goo.gl/2iuXds
Uganda Government, Second National Development Plan (2015/16 – 2018/20), https://goo.gl/EjlgRs
Uganda Government, The Uganda Communications Act, 2013, https://goo.gl/WOLHKs
Uganda Government, Electronic Transactions Regulations 2013, http://goo.gl/CmX7mq
Uganda Government, National government portal http://www.gou.go.ug
Uganda Government, eBiz http://ebiz.go.ug
Uganda Government, eCitizens portal http://ecitizen.go.ug
Uganda Government, Ask your government http://askyourgov.ug
Uganda Government, Government citizen interaction centre http://gcic.gou.go.ug
United Nations, E-Government development index, http://goo.gl/PqqhrA
United Nations, E-Participation index, http://goo.gl/7eWbQR
United Nations, UN E-Government Survey 2016, https://goo.gl/y4Nyfb
World Economic Forum, Networked Readiness Index, https://goo.gl/KJYOSX

Appendix B ICT Indicators

B.1 Ministries, Departments and Agencies (MDAs)

B.1.1 Proportion of MDAs with access to different IT services

	Proportion of government MDAs with:
	Percentage
Institutional blog	**10.4%**
An Intranet	**43.6%**
IT Service/Help Desk	**81.8%**
A Local Area Network (LAN)	**96.1%**
Institutional Email	**96.1%**
Institutional Website	**100.0%**
Internet Access	**100.0%**
Computers	**100.0%**

B.1.2 Proportion of MDA employees routinely using computers and the Internet

	Proportion of persons employed in government MDAs routinely using:	
	Computers	**The Internet**
	Percentage	
Total	**37.0%**	**22.5%**
Male	29.9%	18.0%
Female	58.1%	36.0%

B.1.3 Proportion of MDAs and employees by type of access to the Internet

	Proportion of government MDAs providing Internet access for work-related purposes via:	
	MDAs using type of access	**Staff using type of access**
	Percentage	
MDA-owned USB modem	**49.4%**	**12.4%**
MDA-wireless networks	**76.6%**	**50.0%**
MDA-wired networks	**93.5%**	**77.7%**

B.1.3 Proportion of MDAs and employees by type of access to the Internet

	Proportion of MDA computers:
	Percentage
Connected to a LAN	**68.0%**
Connected to Internet	**69.8%**

B.2 Local Government Administrations (LGs)

B.2.1 Proportion of LGs with access to different IT services

	Proportion of LGs with:
	Percentage
An Intranet	**24.1%**
IT Service/Help Desk	**60.0%**
A Local Area Network (LAN)	**43.3 %**
Institutional Email	**20.0%**
Institutional Website	**75.9%**
Internet Access	**69.0%**
Computers	**96.7%**

B.2.2 Proportion of LG employees routinely using computers and the Internet

	Proportion of persons employed in LGs routinely using:	
	Computers	**The Internet**
	Percentage	
Total	**3.3%**	**1.7%**
Male	3.1%	1.8%
Female	3.6%	1.7%

B.2.3 Proportion of LG employees by type of access to the Internet

	Proportion of LGs providing Internet access for work-related purposes via:	
	LGs using type of access	**Staff using type of access**
	Percentage	
LG-owned USB modem	**71.4%**	**16.6%**
LG-wireless networks	**42.9%**	**33.6%**
LG-wired networks	**57.1%**	**45.5%**

B.2.4 Proportion of LG computers connected to a LAN and the Internet

	Proportion of LG computers:
	Percentage
Connected to a LAN	**17.8%**
Connected to Internet	**15.1%**

B.3 Household and Individual

B.3.1 Proportion of households with a computer

	Proportion of households with a computer
National	**5.9%**
Rural	**3.8%**
Urban	**8.9%**
Desktop computer	**1.3%**
Portable/Laptop computer	**1.8%**
Tablet computer (or similar handheld computer)	**1.5%**

B.3.2 Proportion of households with Internet access

Proportion of households with Internet access	
National	**10.8%**
Rural	**6.6%**
Urban	**16.8%**
USB/modem dongle	**2.7%**
Router linked to fixed telephone line (ADSL)	**0.3%**
Mobile phone as a hotspot	**1.8%**

B.3.3 Proportion of individuals using a computer

Proportion of individuals using a computer	
National	**7.2%**
Rural	**3.0%**
Urban	**13.4%**
Female	**5.4%**
Male	**9.8%**

B.3.4 Proportion of individuals using the Internet

Proportion of individuals using the Internet	
National	**12.1%**
Rural	**7.1%**
Urban	**19.5%**
Female	%
Male	%

Appendix C Questionnaires

C.1 MDA Questionnaire

MODULE A: Admin (enumerator completes it before Interviewing the MDA)		
	Date	Automatically captured from device
	Survey start time	Combination of A4-A6 will automatically identify which enumerator collected record
	Survey end time	
	Device ID/IMEI	
	SIM Serial	
	Phone Number	
A.1	District:	
A.2	County/Municipality	
A.3	Subcounty/Town Council:	
A.4	Parish/Town Board/Ward:	
A.5	Street:	
A.6	Plot Number	
A.7	Building	
A.8	Name of MDA	
A.9	MDA_ID:	
A.10	Head IT	
a	Name:	
b	Designation:	
c	Email:	
d	Fixed phone:	
e	Mobile phone:	
A.11	Other IT contact person	
a	Name:	
b	Designation:	
c	Email:	
d	Fixed phone:	
e	Mobile phone:	

MODULE B: Institutional Information			
B.1	Name of Institution		
B.2	Type of Institution?	[1] Agency [2] Department [3] Ministry [99] Other, Please specify	
B.3	How many staff were employed in this organization as at June 30 2017?	Female: Male: Total:	
B.4	In terms of job levels, how many staff of your Institution were in the following levels?		
a	Directors		
b	Commissioners/Heads of Department		
c	Asst. Commissioners/Heads of Division		
d	Principal Officers/Heads of Unit		
e	Senior Officers		
f	Officers		
g	Assist. Officers		
h	Support staff		
i	Consultants		
j	Other please specify:		
B.5	How many ICT personnel positions were defined	Total:	

	within the institution's Human Resource structure as at June 30 2017?			
B.6	How many of these ICT personnel positions had been recruited as at June 30 2017?	Total: Male: Female:		
B.7	In terms of job levels, how many ICT personnel were defined in the following levels?	Defined		
a	Directors	Number:		
b	Commissioners/Heads of Department	Number:		
c	Asst. Commissioners/Heads of Division	Number:		
d	Principal Officers/Heads of Unit	Number:		
e	Senior Officers	Number:		
f	Officers	Number:		
g	Assist. Officers	Number:		
h	Support staff	Number:		
i	Consultants	Number:		
j	Other please specify:	Number:		
B.8	In terms of job levels, how many ICT personnel were Recruited recruited in the following levels?			
a	Directors	Number:		
b	Commissioners/Heads of Department	Number:		
c	Asst. Commissioners/Heads of Division	Number:		
d	Principal Officers/Heads of Unit	Number:		
e	Senior Officers	Number:		
f	Officers	Number:		
g	Assist. Officers	Number:		
h	Support staff	Number:		
i	Consultants	Number:		
j	Other please specify:	Number:		
B.9	In terms of qualifications, how many ICT personnel had the following as their HIGHEST academic qualifications?			
a	Ph.D Degree	Number:		
b	Masters Degree	Number:		
c	Post Graduate Diploma	Number:		
d	Bachelor's Degree	Number:		
e	Higher Diploma	Number:		
f	Ordinary Diploma	Number:		
g	Certificate	Number:		
i	Other please specify:	Number:		
B.10	In terms of IT specialisation, how many ICT personnel were in the following categories?			
a	Computer/technical support (help desk)	Number:		
b	Software engineers/developers or computer programmers (exclude website, mobile & social media)	Number:		
c	Web developers (incl mobile & social media)	Number:		
d	User Interface (UI)/User Experience (UX) Designers	Number:		
e	Enterprise/systems architects	Number:		
f	Business/systems analysts	Number:		
g	Database administrators	Number:		
h	Data analysts/Data scientists	Number:		
i	Quality assurance specialists/IT auditors	Number:		
j	Network/IT infrastructure managers	Number:		
k	Network engineers/telecom engineers	Number:		
l	Network/servers/computer system administrators	Number:		

m	IT security specialists	Number:	
n	IT service managers/IT project managers	Number:	
o	IT Manager/Director	Number:	
p	Other please specify:	Number:	
B.11	In terms of qualifications, how many of the IT Security personnel above have the following professional qualifications		Ask if B.10m>0
a	Certified Information Security Manager (CISM)	Number:	
b	Certified Information Systems Auditor (CISA)	Number:	
c	Certified Information Systems Security Professional (CISSP)	Number:	
d	Systems Security Certified Practitioner (SSCP)	Number:	
e	Certified Cyber Forensics Professional (CCFP)	Number:	
f	Certified Cloud Security Professional (CCSP)	Number:	
g	Certification Authorisation Professional (CAP)	Number:	
h	CompTIA Security +	Number:	
i	Computer Hacking Forensics Investigator (CHFI)		
j	Other please specify:	Number:	
B.12	Do you have a dedicated unit that helps address any ICT issues within the institution?	[0] No [1] Yes	
B.13	At what level is this unit within the structure of the Institution?	[1] Directorate [2] Division [3] Department [4] Unit [99] Other, Please specify	
B.14	What Governance structures are in place for ICT within the institution? (select all that apply)	[1] Board Committee on ICT [2] ICT Steering Committee, [3] ICT Technical Committee [99] Other, Please specify	
B.15	What degree of outsourcing does your institution undertake when it comes to the following ICT roles?		
a	Project management of ICT procurements	[1] Only internal staff [2] Mainly internal staff [3] Large equal distribution [4] Mainly external suppliers [5] Only external suppliers [88] Don't know	
b	ICT strategy development		
c	Management of servers		
d	Management of end-user computers and devices		
e	Management of institutional systems		
f	End-user support		
g	Security monitoring of ICT infrastructure		
B.16	What was your total Institutional expenditure for the fiscal year 2016-17 in Uganda Shillings?		
B.17	What was your total Institutional ICT expenditure for the fiscal year 2016-17 in Uganda Shillings?		
B.18	How many offices/branch locations does your Institution have?	Number:	
B.19	How many of these offices/branch locations are interconnected to the Head office/quarters?	Number:	Ask if B.18>1
B.20	How are the different offices/branch locations connected from an IT perspective? (select all that apply)	[0] Not connected [1] Leased Line on NBI [2] Leased Line through private ISP [3] Virtual Private Network (VPN) through NBI [4] Virtual Private Network (VPN) through other provider [99] Other (please specify)	Ask if B.18>1

MODULE C: Fixed-line Access and Use			
C.1	Does your institution have a working Fixed-line telephone connection	[0] No [1] Yes	Skip to C.6 if C.1=0
C.2	How many working Fixed-line telephone connections does your institution have?		
C.3	Does your Institution have a Private Automatic Branch eXchange (PABX)?	[0] No [1] Yes	
C.4	Please supply the following details about the MDA PABX		Ask if C.3 = 1
a	PABX Model:		
b	PABX Type:		
c	PABX capacity:		
d	Has PABX got VOIP capabilities	[0] No [1] Yes	
C.5	How many working fax machines does your institution have?		
C.6	Approximately, how much does your Institution spend on Fixed line Phone(s) in a month (calling, line rental, etc.)?		
C.7	How important is the usage of a fixed-line phone for your institutional activities?	[1] Very important [2] Important [3] Not sure [4] Not important [5] Not important at all	
No Fixed-line access			
C.8	If your institution does not have a fixed-line phone(s) why not?	[1] Cannot afford it [2] We do not need them [3] Service not available [4] Our phones are broken [5] Other please specify:	

MODULE D: Computers and Computing Devices			
D.1	What types of IT equipment are in use at your Institution (please indicate quantities)?		D.2 Please indicate Quantities, where relevant
a	Servers	[0] No [1] Yes	
b	Desktop computers	[0] No [1] Yes	
c	Laptop computers	[0] No [1] Yes	
d	Tablet computers	[0] No [1] Yes	
e	Single function desktop printers	[0] No [1] Yes	
f	Multifunctional Business Printers (print, copy, scan, fax)	[0] No [1] Yes	
g	Stand-alone scanners	[0] No [1] Yes	
h	Mobile Phones and PDAs	[0] No [1] Yes	
i	Stand-alone Fax Machines	[0] No [1] Yes	
j	Projectors	[0] No [1] Yes	
k	LCD TVs	[0] No [1] Yes	
l	VOIP Phones	[0] No [1] Yes	
m	Video Conferencing Equipment	[0] No [1] Yes	
D.3	How many of your computers fall within the following age brackets?		
	0 to 1 year old	Number:	
	1 to 3 years old	Number:	
	3 to 5 years old	Number:	
	5 to 7 years old	Number:	
	above 7 years old	Number:	
D.4	Which processor types do your institutional computers have?		Ask if D.1a>1 or D.1b>1 or D.1c>1
a	Intel Celeron	Number:	
b	Intel Pentium	Number:	

c	Core Duo/Core 2 Duo	Number:	
d	Intel Core i3	Number:	
e	Intel Core i5	Number:	
f	Intel Core i7	Number:	
g	Intel Itanium and Xeon series	Number:	
h	AMD Sempron	Number:	
i	AMD Athlon/AMD Turion	Number:	
j	AMD Phenom	Number:	
k	AMD A4 series/A6 series	Number:	
l	AMD A8 series/A10 series	Number:	
m	AMD Opteron	Number:	
n	Other, please specify:	Number:	
D.5	Does your institution have a Local Area Network (LAN)	[0] No [1] Yes	
D.6	How many of the computers in the institution are connected to the Local Area Network (LAN)?	Number	Ask if D.5=1
D.7	How many of the computers in the institution are connected to the Internet?	Number	
D.8	Are you aware of the National IT standards for Structured Cabling for government MDAs?	[1] Yes [0] No	Ask if D.5=1
D.9	Which of the following challenges is your institution facing in implementing the National IT Standards for Structured Cabling for government MDAs?		Ask if D.8=1
a	Lack of top management involvement	[1] Yes [0] No	
b	Employees lack required expertise (need up-skilling)	[1] Yes [0] No	
c	Poor building construction	[1] Yes [0] No	
d	Lack of investment and budgetary constraints	[1] Yes [0] No	
e	Lack of qualified structured cabling vendors and suppliers	[1] Yes [0] No	
f	Other, please specify:		
D.10	Does your institution have an Intranet?	[0] No [1] Yes	
D.11	How many employees have DEDICATED computers (desktops, laptops or tablets) for work purposes?	Female:	
		Male:	
		Total:	
D.12	How many people employed in your institution routinely use a computer at work? (e.g. on a weekly-basis)	Number:	
D.13	Does your institution offer an ICT Service/Help Desk where employees can report ICT issues?	[0] No [1] Yes	
D.14	How important is the usage of computers for your institution?	[1] Very important [2] Important [3] Not sure [4] Not important [5] Not important at all	
No Computer			
D.15a	Why does the institution not have computers? Too expensive (cannot afford)	[0] No [1] Yes	Ask if D.1a-D.1d=0
b	We do not need computers	[0] No [1] Yes	
c	We have no electricity to power computers	[0] No [1] Yes	
d	Other please specify:		
D.16	Does your institution plan to use computers in the future?	[0] No [1] Yes	

MODULE E: Internet Access and Use			
E.1	Does your institution have access to the internet?	[0] No [1] Yes	Skip to E.19 if E.1=0
E.2	Who is your Internet Service Provider? (If more than one, indicate name and quantity/cost of bandwidth)	E.3.A Amount of bandwidth	E.3.B Cost (US$ per

			(Mbps/month)	Mbps/month)
a	Africell		Bandwidth	Cost
b	Airtel		Bandwidth	Cost
c	Infocom/Liquid		Bandwidth	Cost
d	MTN		Bandwidth	Cost
e	Roke Telekom		Bandwidth	Cost
f	Smile		Bandwidth	Cost
g	Vodaphone		Bandwidth	Cost
h	UTL		Bandwidth	Cost
i	Other, please specify:		Bandwidth	Cost
j	I don't know			
E.4a	What type of internet access/connection does institution have to your Internet Service Provider?	Narrowband (Dial Up / ISDN)	[0] No [1] Yes	
b		Fixed Broadband – Fibre Cable	[0] No [1] Yes	
c		Fixed Broadband – Satellite	[0] No [1] Yes	
d		Fixed Broadband – Copper	[0] No [1] Yes	
e		Fixed Broadband – Wireless Access Points	[0] No [1] Yes	
f		Mobile Broadband (3G, 4G)	[0] No [1] Yes	
g		Other Please specify:		
E.5	Does you institution provide internet access to staff through use of institution-owned USB modems for work-related purposes?		[0] No [1] Yes	
E.6	How many staff use institution-owned USB modems for Internet access?		Number:	Ask if E.5=1
E.7	Does you institution provide internet access to staff through use of wireless networks for work-related purposes?		[0] No [1] Yes	
E.8	How many staff use the wireless network for Internet access?		Number:	Ask if E.7=1
E.9	Does you institution provide internet access to staff through use of wired networks for work-related purposes? (e.g. wall plugs)		[0] No [1] Yes	
E.10	How many staff use the wired network for Internet access?		Number:	Ask if E.9=1
E.11	How many employees routinely use the internet for institutional (work) purposes? (e.g. on a daily-basis)		Female:	
			Male:	
			Total:	
E.12	Does your institution restrict access to particular URLs/sites/applications?		[0] No [1] Yes	
E.13	If yes, why does the institution restrict access?			Ask if E.12=1
a	To manage bandwidth		[0] No [1] Yes	
b	To improve employee productivity at work		[0] No [1] Yes	
c	They violate institutional policy		[0] No [1] Yes	
d	To minimise risks of malware or other security reasons		[0] No [1] Yes	
e	Other, please specify			
E.14	Does your institution have a bandwidth manager?		[0] No [1] Yes	
E.15	Is the bandwidth manager proprietary or open source?		[1] Proprietary [2] Open source [99] Other, please specify	Ask if E.14=1
E.16	Does your institution provide institutional email addresses to all employees?		[0] No [1] Yes	
E.17	Please provide the email domain			Ask if E.16=1
E.18	Are employees required to use institutional email addresses for official purposes?		[0] No [1] Yes	Ask if E.16=1
E.19	Is use of Institutional email being enforced?		[0] No [1] Yes	Ask if E.18=1
E.20	Why is the requirement not enforced?			Ask if E.19=0
E.21	Do any people employed have remote access to the institutional e-mail system, documents or applications? (e.g.		[0] No [1] Yes	

	access systems away from work)			
E.22	Does your institution pay to advertise on the internet? (e.g. adverts on search engines, on social media, on other websites, etc.)		[0] No [1] Yes	
E.23	How important is the use of the Internet for your institutional (work) activities?		[1] Very important [2] Important [3] Moderately Important [4] Slightly Important [5] Not important	
E.24	What are those core activities for which your institution requires the use of the internet?			
a				
b				
c				
d				
e				
f				
	How would you rate following aspects using the scale below			
E.25	The cost of buying bandwidth from the various providers at my institution		[1] Very affordable [2] Affordable [3] Not sure [4] Unaffordable [5] Very unaffordable	
E.26	The reliability of the Internet connection at my institution		[1] Very good [2] good [3] Not sure [4] poor [5] Very poor	
E.27	The speed of the internet connection(s) at my institution		[1] Very fast [2] fast [3] Not sure [4] Slow [5] Very slow	
E.28	The customer support/service offered to my institution when we report faults		[1] Very responsive [2] Response [3] Not sure [4] Unresponsive [5] Very unresponsive	
E.29	The overall quality of Internet service offered to my institution		[1] Very good [2] good [3] Not sure [4] poor [5] Very poor	
E.30	In your opinion, what are the potential obstacles to a wider use of the Internet within your institution for work purposes?			
No Internet				
E.31a	Why does your institution not have Internet Access?	Cost of Internet service is too high	[0] No [1] Yes	Skip if E.1=1
b		Cost of Internet equipment is too high	[0] No [1] Yes	
c		Institution has no need for Internet		
d		Service not available or poor connections in our area	[0] No [1] Yes	
e		We access Internet elsewhere: e.g. Internet cafe	[0] No [1] Yes	
f		Institution has Privacy or security concerns		

g		Lack of expertise at my institution	[0] No [1] Yes	
h		Internet is too slow for us to use it	[0] No [1] Yes	
i		Other Please specify:		
E.32	Does your institution plan to use the Internet in the future?		[0] No [1] Yes	Skip if E.1=1

Module F: Website and Social Media Services			
F.1	Does your Institution have a website?	[0] No [1] Yes	
F.2	What Content Management System (CMS) powers your institutional website?	[1] Drupal [2] Joomla [3] WordPress [4] Microsoft [5] SharePoint [6] Plone [0] None [99] Other (Please Specify)	
F.3	Does your Institution have a person(s)/resource(s) for updating your website?	[0] No [1] Yes	
F.4	What type of person/resource maintains the institutional website?	[1] Use external agency or third party [2] Have at least one fully dedicated employee [3] Use partially dedicated employee	Ask if F.1=1
F.5	How frequently is your institutional website updated?	[1] Daily or almost everyday [2] At least once a week (but not everyday) [3] At least once a month (but not weekly) [4] At least once every 3 months (but not monthly) [5] At least once every year [6] Once in a while (randomly) [88]Not sure / don't know	Ask if F.1=1
F.6	Which delivery channels does your institution currently use to Interact with Citizens and Residents who need your services?		
a	Field visits	[0] No [1] Yes	
b	Walk-ins	[0] No [1] Yes	
c	Call Centre/Service desk	[0] No [1] Yes	
d	Traditional Media (e.g. newspapers, radio, TV)	[0] No [1] Yes	
e	Institutional website	[0] No [1] Yes	
f	Email	[0] No [1] Yes	
g	SMS (Short Message Service)	[0] No [1] Yes	
h	Mobile applications (e.g. android or IOS application)	[0] No [1] Yes	
i	Social media (e.g. Facebook, Twitter, Pinterest, Google+ etc.)	[0] No [1] Yes	
j	Other (Please Specify)		
F.7	Is your institution signed up for any online social network (Facebook, Twitter, LinkedIn, Pinterest, Google+ etc.)?	[0] No [1] Yes	

F.8	Which social network(s) is your institution signed up for?		Ask if F.7=1
a	Facebook	[1] Yes [0] No	
b	Twitter	[1] Yes [0] No	
c	LinkedIn	[1] Yes [0] No	
d	Instagram	[1] Yes [0] No	
e	Pinterest	[1] Yes [0] No	
f	Google+	[1] Yes [0] No	
g	Tumblr	[1] Yes [0] No	
h	YouTube	[1] Yes [0] No	
i	Flickr	[1] Yes [0] No	
j	WhatsApp	[1] Yes [0] No	
k	Other, please specify		
F.9	In what order does your institution publish information on social media relative to traditional channels such as newspapers, radio, and broadcast?	[1] Publish first on social media and later on traditional channels [2] Publish information on social media at same time as on traditional channels [3] Publish on social media after publishing on traditional channels	
F.10	How often does your institution publish information and/or interact on social media?		
a	Facebook	[1] Several times a day [2] Twice a day [3] Once a day [4] Once every few days [5] Once a week or less frequently [99] Don't know	Ask if F.7a=1
b	Twitter		Ask if F.7b=1
c	LinkedIn		Ask if F.7c=1
d	Instagram		Ask if F.7d=1
e	Pinterest		Ask if F.7e=1
f	Google+		Ask if F.7f=1
g	Tumblr		Ask if F.7g=1
h	YouTube		Ask if F.7h=1
i	Flickr		Ask if F.7i=1
j	WhatsApp		Ask if F.7j=1
F.11	What is the institutional objective(s) in using social media?		
a	Publish institutional information	[1] Yes [0] No	
b	Develop the institution's reputation	[1] Yes [0] No	
c	Obtain/respond to customer opinions, reviews and questions	[1] Yes [0] No	
d	Involve customers in institutional policy and service-delivery processes	[1] Yes [0] No	
e	Exchange opinions/knowledge within the institution	[1] Yes [0] No	
f	Other, please specify:	[1] Yes [0] No	
F.12	Does your Institution have a person(s)/resource(s) for managing your social media interaction/presence?	[0] No [1] Yes	
F.13	What type of person/resource maintains the institutional social media interaction/presence?	[1] Use external agency or third party [2] Have at least one fully dedicated employee [3] Use partially dedicated employee	Ask if F.11=1
F.14	Does your institution have a blog?	[1] Yes [0] No	

Module G: Applications and Data Sharing

G.1	Does your Institution have a mobile application for its services?	[0] No [1] Yes	
G.2	Does your Institution offer any services using SMS? (e.g. NSSF Contributions Balance, PLE Results, Electoral Commission Polling Stations, etc.)	[0] No [1] Yes	
G.3	Provide a list of your Institutional services offered on a mobile App/SMS		Ask if G.1 or G.2 =1
a			
b			
c			
d			
e			
f			
g			
h			
i			
j			
G.4	Does your Institution have any web-based applications? (e.g. etax for URA)	[0] No [1] Yes	
G.5	What type of web-based applications does your Institution offer?		Ask if G.4=1
	Name of web based application	Describe the application (what does it do)	Does it have Programming Interfaces (APIs)
a			[0] No [1] Yes
b			[0] No [1] Yes
c			[0] No [1] Yes
d			[0] No [1] Yes
e			[0] No [1] Yes
f			[0] No [1] Yes
g			[0] No [1] Yes
h			[0] No [1] Yes
i			[0] No [1] Yes
j			[0] No [1] Yes
G.6	Does your Institution maintain any database for public data/information? (Note: The databases referred to above relate to data repositories that can be accessed or interrogated by the public using computers, mobile phones, etc. For example, the List of locations of polling stations in the country can be interrogated to identify a registered voter's polling station using a mobile phone)	[0] No [1] Yes	
G.7	Does your Institution release any data to the public as open data?	[0] No [1] Yes	Ask if G.6=1
G.8	In what formats does your Institution release open data?		Ask if G.7=1
a	CSV - Comma Separated Values	[0] No [1] Yes	
b	Excel Spreadsheet	[0] No [1] Yes	
c	PDF File	[0] No [1] Yes	
d	Web pages	[0] No [1] Yes	
e	XML - eXtensible Markup Language	[0] No [1] Yes	
f	JSON - JavaScript Object Notation	[0] No [1] Yes	
g	RDF - Resource Descriptor Framework	[0] No [1] Yes	
h	KML - Keyhole Markup Language (geodata)	[0] No [1] Yes	
i	SQL Database Dump	[0] No [1] Yes	
j	RDFa - RDF Embedded in web pages	[0] No [1] Yes	
k	Other, please specify		

G.9	Provide name of Institutional database(s) where data/information of public interest is maintained:		Ask if G.8=1
	Name of Database	(b) Purpose of the database	(c) Is this database shared with another Institution? (Yes/No)
a			[0] No [1] Yes
b			[0] No [1] Yes
c			[0] No [1] Yes
d			[0] No [1] Yes
e			[0] No [1] Yes
f			[0] No [1] Yes
g			[0] No [1] Yes
h			[0] No [1] Yes
i			[0] No [1] Yes
j			[0] No [1] Yes
G.10	Are there any E-service(s) that your institution intends to implement in the next 5 years? (Note: E-Government refers to the utilization of ICTs and other web-based technologies to improve and/or enhance the efficiency and effectiveness of service delivery in the Public Sector.)		[0] No [1] Yes
	If yes, list name of e-service		Purpose of e-service
a			
b			
c			
d			
e			
f			
g			
h			
i			
j			
G.11	What INTERNAL challenges does your institution face in implementing E-Governance initiatives?		
a	Lack of Trust in ICT (e.g. security and privacy issues)		[0] No [1] Yes
b	Lack of top management involvement		[0] No [1] Yes
c	Difficulty in integrating existing (manual/automated) systems with electronic administration		[0] No [1] Yes
d	No perceived benefits of ICT to our institution		[0] No [1] Yes
e	Internal resistance to use of ICT		[0] No [1] Yes
f	Higher ICT costs than expected		[0] No [1] Yes
g	Lack of in-house technical expertise		[0] No [1] Yes
h	Lack of investment and budgetary constraints		[0] No [1] Yes i
Employees lack required skills to use ICT			
j	There are no internal barriers		[0] No [1] Yes
k	Other, Please Specify:		
G.12	What EXTERNAL challenges does your institution face in implementing E-Governance initiatives?		
a	Lack of funding		[0] No [1] Yes
b	Government legislation and regulations		[0] No [1] Yes
c	Lack of supporting infrastructure		[0] No [1] Yes
d	Lack of appropriate delivery channels		[0] No [1] Yes
e	Demand/Supply mis-match (e.g. citizens prefer personal contact)		[0] No [1] Yes
f	Relationship with other institutions		[0] No [1] Yes
g	Lack of qualified ICT suppliers		[0] No [1] Yes
h	Lack of common data exchange standards amongst MDAs		[0] No [1] Yes

i	Lack of political will	[0] No [1] Yes	
j	There are no external barriers	[0] No [1] Yes	
k	Other, Please Specify:		

MODULE H: Software Applications and Information Systems				
H.1	Which of the following types of software applications are used within your Institution? (officially supported by the institution)			
a	Office suite (word, spreadsheet, presentation)		[1] Yes [0] No	
b	Anti-virus software		[1] Yes [0] No	
c	Database software		[1] Yes [0] No	
d	Email server software		[1] Yes [0] No	
e	ERP software		[1] Yes [0] No	
f	Data Analytics		[1] Yes [0] No	
g	CRM		[1] Yes [0] No	
h	Other, please specify:			
H.2				
H.2	What Office suite (word, spreadsheet, presentation) does your institution use?		[1] Microsoft [2] Other (specify)	
H.3	Anti-virus software		[1] Microsoft [2] Other (specify)	
H.4	Database software		[1] Microsoft [2] Oracle [3] Both [4]Other (specify)	
H.5	Email server software		[1] Microsoft [2] Other (specify)	
H.6	ERP software		[1] Microsoft [2] Oracle [3] Both [4]Other (specify)	
H.7	Data Analytics			
H.8	CRM		[1] Microsoft [2] Oracle [3] Both [4]Other (specify)	
H.9	Which of these types of licenses does your institution have?			
	Licenses that vary by duration			
a	Perpetual licenses (use rights are permanent once purchased)		[1] Yes [0] No	
b	Subscription or rental licenses (used for a specific period of time, which can vary from days to years and may or may not include upgrade rights)		[1] Yes [0] No	
c	Temporary licenses (pending full payment or receipt of proof of purchase)		[1] Yes [0] No	
	Licenses that vary by usage			
d	Per copy, by workstation/seat/device (most licenses sold tend to be on a per-copy-used basis, with several different units of measure possible. Sometimes multiple users will be allowed per license)		[1] Yes [0] No	
e	Concurrent usage (allows a specified number of users to connect simultaneously to a software application)		[1] Yes [0] No	
f	Per server speed or per processor (linked to the speed or power of the server on which they run, or the number of processors within the server)		[1] Yes [0] No	
g	Enterprise or site (sold on an enterprise or site basis that [1] Yes [0] No requires a count of qualifying entities)			
h	Open source licenses			
i	Pirated licenses			
J	Other, please specify			
H.10	Which of the following operating systems does your institution currently use?			
a	Microsoft Windows		[1] Yes [0] No	
b	Mac OS X		[1] Yes [0] No	

c	Linux	[1] Yes [0] No	
d	Other, please specify:		
H.11	Which versions of Microsoft Windows does your institution currently use?		
a	Windows 7	[1] Yes [0] No	
b	Windows 8	[1] Yes [0] No	
c	Windows 10	[1] Yes [0] No	
d	Windows XP	[1] Yes [0] No	
e	Other, please specify:		
H.12	Which distributions of Linux does your institution currently use?		
a	Ubuntu	[1] Yes [0] No	
b	Linux Mint	[1] Yes [0] No	
c	Debian	[1] Yes [0] No	
d	openSUSE	[1] Yes [0] No	
e	Fedora	[1] Yes [0] No	
f	CentOS	[1] Yes [0] No	
g	Other, please specify:		
H.13	Does your Institution have a software upgrade strategy, policy or guideline governing how software upgrades are performed?	[1] Yes [0] No	
H.14	Are you aware of the National IT standards on Software and Hardware Acquisition for government?	[1] Yes [0] No	
H.15	Which of the following challenges is your institution facing in implementing the National IT Standards on Software and Hardware Acquisition for government?		
a	Lack of top management involvement	[1] Yes [0] No	
b	Employees lack required expertise (need up-skilling)	[1] Yes [0] No	
c	Lack of sufficient number of staff	[1] Yes [0] No	
d	Lack of investment and budgetary constraints	[1] Yes [0] No	
e	Lack of qualified software and hardware suppliers	[1] Yes [0] No	
f	Other, please specify:		
H.16	Does your institution offer internal ICT training programs to employees in the use of different applications?	[1] Yes [0] No	
H.17	What types of ICT training programs does your institution offer to employees?		Ask if H.16=1
a	Basic typing and data entry skills		
b	Use of operating systems		
c	Use of office productivity suites (e.g. Word, Excel and PowerPoint)		
d	Use of proprietary institutional systems		
e	Other, please specify:		
H.18	How regular are the ICT training programs offered?	[1] Monthly [2] Quarterly [3] Twice a year [4] Annually [5] Every two years [6] Irregular/ad hoc	Ask if H.16=1
H.19	Does your Institution own a dedicated training lab/space where you conduct ICT training?	[1] Yes [0] No	
H.20	How large is the training lab/space in terms of number of PCs?	Number:	Ask if H.19=1

MODULE I: Applications and Data Hosting			
I.1	Where are your institutional applications and databases currently hosted?		Multiple response
a	On-premise physical infrastructure	[1] Yes [0] No	
b	Government Data Centre (Government cloud)	[1] Yes [0] No	
c	Other cloud service providers	[1] Yes [0] No	

d	We do not have applications or databases		[1] Yes [0] No	Skip to I.6
I.2a	Does your institution buy any of the following cloud computing services used over the internet? (Ask if I.1b or I.1c=1)	E-mail	[1] Yes [0] No	
b		Software as a service	[1] Yes [0] No	
c		Infrastructure as a service	[1] Yes [0] No	
d		Platform as a service	[1] Yes [0] No	
e		Backup as a service	[1] Yes [0] No	
f		Storage	[1] Yes [0] No	
g		Collocation services	[1] Yes [0] No	
h		Other, please specify:		
I.3	What do you consider as some of the benefits from using cloud computing services?		high/some/limited/no benefit	
a	Reduction of ICT related costs		high/some/limited/no benefit	
b	Flexibility in up- or down-scaling services		high/some/limited/no benefit	
c	Simplicity of (easy and quick) deployment of cloud-based solutions		high/some/limited/no benefit	
d	Increased productivity		high/some/limited/no benefit	
I.4	4pproximately how much did your institution spend (annual expenditure) on cloud computing services in FY 2016/17?		UGX	
I.5	What factors prevent or limit your institution from using cloud computing services			
a	Risk of a security breach;		[1] Yes [0] No	
b	Problems accessing data or software;		[1] Yes [0] No	
c	Difficulties in unsubscribing or changing service provider (including concerns with data portability)		[1] Yes [0] No	
d	Uncertainty about the location of the data		[1] Yes [0] No	
e	Uncertainty about applicable law, jurisdiction, dispute resolution mechanisms		[1] Yes [0] No	
f	High cost of buying cloud computing services		[1] Yes [0] No	
g	Lack of cloud-related expertise in our institution		[1] Yes [0] No	
h	Our institution is not ready for cloud computing services		[1] Yes [0] No	exclusive
i	Other, please specify:			
I.6	Would your institution be willing to subscribe to cloud computing services offered by a local provider?		[1] Yes [0] No	
I.7	Would your institution be willing to subscribe to cloud computing services offered by government?		[1] Yes [0] No	
I.8	In relation to your Institution, what is the status of usage of virtualisation? (add definition of virtualisation)		[1] Currently using virtualisation [2] Have approved policies for virtualisation [3] Virtualisation under evaluation [4] Not using virtualisation but considering in the next 12 months [5] No plans to use virtualisation	

MODULE J: Information Security, Disaster Recovery and Business Continuity			
J.1	Are you aware of any Ugandan laws that govern electronic communications and transactions (sometimes called Cyber laws), such as use of email or buying goods and services online?	[1] Yes [0] No	

J.2	If Yes, Please state any cyber laws that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[0] Can't state any law [1] Electronic Transactions Act, 2011 [2] Electronic Signatures, Act 2011 [3] Computer Misuse Act, 2011	Ask if J.1 = 1
J.3	The Computer Misuse Act, 2011 was put in place to prevent unlawful access, and misuse of information systems including computers. Are you aware of any offences that are created by the Computer Misuse Act, 2011?	[1] Yes [0] No	
J.4	If so, please list any two offences that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[1] Unauthorised access, such as hacking [2] Unauthorised obstruction of use of computers, such as denial of service attacks [3] Electronic fraud [4] Intellectual property crimes [5] Malicious and offensive communications [6] Disclosing private sexual images without consent [7] Cyber stalking and harassment [8] Prohibited and indecent images of children [99] Other, please specify	Ask if J.2=1
J.5	Does your institution have a server room? (or data centre)	[1] Yes [0] No	
J.6	Does your institution have a Disaster recovery site?	[1] Yes [0] No	
J.7	Does your institution have any formal policies and procedures addressing any of the following area(s)? (in use and formally approved by management)		
a	ICT Policy/Strategy/Master Plan	[1] Yes [0] No	
b	Acceptable Use of Institutional ICT Resources	[1] Yes [0] No	
c	Information Security Policy	[1] Yes [0] No	
d	Disposal of ICT Equipment and Electronic Waste Management	[1] Yes [0] No	
e	Institutional Enterprise Architecture	[1] Yes [0] No	
f	ICT Interoperability Framework	[1] Yes [0] No	
g	ICT Disaster Recovery and/or Business Continuity	[1] Yes [0] No	
h	ICT Training	[1] Yes [0] No	
i	Other, please specify		
J.8	Does your institution maintain an up-to-date register of important IT assets?	[1] Yes [0] No	
J.9	Which of these ICT security incidents did your institution experience during the last financial year (2016/17)		
a	Failure to connect to the internet or other external networks	[1] Yes [0] No [88] Don't know	
b	Virus or other computer infection (e.g. malware, worm or Trojan horse) resulting in loss of information or working hours	[1] Yes [0] No [88] Don't know	
c	Attack of the type 'denial of service'	[1] Yes [0] No [88] Don't know	
d	Unauthorised access to institutional computer systems or data	[1] Yes [0] No [88] Don't know	

e	Unauthorised leakage or sharing of institutional information sent on the Internet and/or other privacy violations (e.g. private details of personnel)	[1] Yes [0] No [88] Don't know	
f	Loss of data because there were no backups	[1] Yes [0] No [88] Don't know	
g	Improper use of IT	[1] Yes [0] No [88] Don't know	
h	Phishing (receiving fraudulent messages) or pharming scam (getting redirected to fake websites asking for personal information) with a potential for financial loss	[1] Yes [0] No [88] Don't know	
i	Financial loss due to fraudulent use of institutional payment tools or credentials (e.g. cards, signatures or digital authorisations)	[1] Yes [0] No [88] Don't know	
j	Institutional ICT equipment was lost	[1] Yes [0] No [88] Don't know	
k	Other, please specify:		
J.10	Did you report the cybercrime(s) to anybody?	[1] Yes [0] No	
J.11	Who did you report the cybercrime to?		Ask if J.10=1
a	Institutional Financial services provider (e.g. bank)	[1] Yes [0] No	
b	Institutional Internet Service Provider	[1] Yes [0] No	
c	Uganda Police (or other law enforcement agency)	[1] Yes [0] No	
d	NITA-U	[1] Yes [0] No	
e	CERT.ug or UgCERT	[1] Yes [0] No	
f	Other (please specify)	[1] Yes [0] No	
J.12	If you did not report a cybercrime, what was your main reason?		Ask if J.10=0
a	We did not know what the crime was	[1] Yes [0] No	
b	We did not know who to or how to report it	[1] Yes [0] No	
c	We felt it was a waste of time	[1] Yes [0] No	
d	We fixed the problem ourselves internally	[1] Yes [0] No	
e	Not applicable	[1] Yes [0] No	
f	Other (please specify)	[1] Yes [0] No	
J.13	Which of these ICT security efforts have you implemented in your institution?		
a	Institutional firewall	[1] Yes [0] No	
b	Spam filters	[1] Yes [0] No	
c	Institutional subscription to anti-virus software	[1] Yes [0] No	
d	Regular full backups of critical institutional data	[1] Yes [0] No	
e	Keeping backups off-site/off-site data backup	[1] Yes [0] No	
f	Network intrusion detection system	[1] Yes [0] No	
g	Network intrusion protection system	[1] Yes [0] No	
h	Anti-phishing software	[1] Yes [0] No	
i	2-factor authentication for employees remote login to institutional ICT system	[1] Yes [0] No	
j	Technical efforts for protection/transmission of sensitive data	[1] Yes [0] No	
k	Routinely patch ICT systems, security enforcing products and applications against known vulnerabilities	[1] Yes [0] No	
l	Encryption of institutional devices (both fixed and mobile) processing/holding sensitive data	[1] Yes [0] No	
m	Discourage use of privately owned devices to process, store or remotely access critical infrastructure, apps and data	[1] Yes [0] No	
n	Emergency solutions for communication (alternatives for data and voice)	[1] Yes [0] No	
o	Conduct regular vulnerability assessments to identify potential weaknesses in all ICT resources	[1] Yes [0] No	
p	Emergency exercise at least once a year	[1] Yes [0] No	

J.14	How does your Institution dispose of e-waste? (select multiple)	[1] Regular/normal office waste disposal method [2] Through a recycling agent (external recycling) [3] Reuse (internal recycling) [4] Disposal through sale (as scrap, re-usable, etc.) [5] Landfill [6] Acid Bath [99] Other, Please specify	
J.15	Does your institution have a formal appointed person responsible for information security?	[0] No [1] Yes	
J.16	Does your institution have a formal appointed person responsible for disaster recovery and/or business continuity?	[0] No [1] Yes	
J.17	Did your institution conduct any IT security awareness sessions for the employees of the organisation during the last year (FY2016/17)?	[1] Yes [0] No	
J.18	If yes, about how many sessions were conducted per staff during the year?	Number:	Ask if J.17=1
J.19	Did your institution conduct any emergency testing/training exercise for disaster recovery/business continuity during the last year (FY2016/17)?	[0] No [1] Yes	
J.20	Thank you for your time, do you have any questions.		

C.2 Local Government Questionnaire

MODULE A: Admin (enumerator completes it before Interviewing the Local Government)		
A.1	Date	Will capture automatically from device Combination of A4-A6 will automatically identify which enumerator collected record
A.2	Survey start time	
A.3	Survey end time	
A.4	Device ID/IMEI	
A.5	SIM Serial	
A.6	Phone Number	
A.7a	District	
b	County/Municipality	
c	Sub County/Town Council	
d	Parish/Town Board/Ward	
e	Street	
f	Plot Number	
g	Building	
A.8	Name of Local Government	
A.9	Location (Rural Urban)	1 = Urban 2=Rural (automatic, based on UBOS designation)
A.10	GPS Location	Collect GPS coordinates of Local Government office
A.11	Local Government ID	Internally generated unique identifier for each MDA
A.12	Head of Local Government	
a	Name:	
b	Designation:	
c	Email:	
d	Fixed phone:	
e	Mobile phone:	
A.13	IT contact person	
a	Name:	
b	Designation:	
c	Email:	
d	Fixed phone:	
e	Mobile phone:	

MODULE B: Local Government Information			
B.1	Name of Local Government		
B.2	Type of Local Government?	[1] District [2] Municipality [3] Town Council [4] Town Board [99] Other, Please specify	
B.3	How many staff were employed in this organization as at June 30 2017?	Female: Male: Total:	
B.4	How many ICT personnel were employed in this organisation as at June 30 2017?	Total: Male: Female:	
B.5	In terms of IT specialisation, how many ICT personnel were in the following categories?		
a	Computer/technical support (help desk)	Number:	
b	Software engineers/developers or computer programmers (exclude website, mobile & social media)	Number:	
c	Web developers (including mobile & social media)	Number:	
d	User Interface (UI)/User Experience (UX) Designers	Number:	

e	Enterprise/systems architects	Number:	
f	Business/systems analysts	Number:	
g	Database administrators	Number:	
h	Data analysts/Data scientists	Number:	
i	Quality assurance specialists/IT auditors	Number:	
j	Network/IT infrastructure managers	Number:	
k	Network engineers/telecom engineers	Number:	
l	Network/servers/computer system administrators	Number:	
m	IT security specialists	Number:	
n	IT service managers/IT project managers	Number:	
o	IT Manager/Director	Number:	
p	Other please specify:	Number:	
B.6	Does the Local Government provide an information centre that citizens can access?	[0] No [1] Yes	
b	Does it provide computers for public use?	[0] No [1] Yes	Ask if B.6=1
c	How many computers does the centre have?	Number	Ask if B.6b=1
B.7	Do you have a dedicated unit that helps address any ICT issues within the Local Government?	[0] No [1] Yes	
B.8	What was your total Local Governmental expenditure for the fiscal year 2016-17 in Uganda Shillings?	UGX	
B.9	What was your total Local Government ICT expenditure for the fiscal year 2016-17 in Uganda Shillings?	UGX	
B.10	How many offices/branch locations does your Local Government have?	Number:	
b	How many of these offices/branch locations are interconnected to the Head office/quarters?	Number:	Ask if B.11>1
B.11	How are the different offices/branch locations connected from an IT perspective?	[0] Not connected [1] Leased Line on NBI [2] Leased Line through private ISP [3] Virtual Private Network (VPN) through NBI [4] Virtual Private Network (VPN) through other provider [99] Other (please specify)	Ask if B.11>1

MODULE C: Fixed-line Access and Use			
C.1	Does your Local Government have a working Fixed-line telephone connection	[0] No [1] Yes	Skip to C.6 if C.1=0
C.2	How many working Fixed-line telephone connections does your Local Government have?		
C.3a	Does your Local Government have a PABX?	[0] No [1] Yes	
b	PABX Model:		Ask if C.3a = 1
c	PABX Type:		Ask if C.3a = 1
d	PABX capacity:		Ask if C.3a = 1
e	Has PABX got VOIP capabilities	[0] No [1] Yes	Ask if C.3a = 1
C.4	How many working fax machines does your Local Government have?		
C.5	What is the Local Government's Monthly Cost of Fixed-line telephone Access and Usage		
C.6	How important is the usage of a fixed-line phone for your Local Government activities?	[1] Very important [2] Important [3] Not sure [4] Not important	

		[5] Not important at all	
No Fixed-line access			
C.7	If your Local Government does not have a fixed-line phone(s) why not?	[1] Can not afford it [2] We do not need them [3] Service not available [4] Our phones are broken [5] Other please specify:	

MODULE D: Computers and Computing Devices			
D.1	What types of IT equipment are in use at your Institution (please indicate quantities)?		Quantities
a	Servers	[0] No [1] Yes	
b	Desktop computers	[0] No [1] Yes	
c	Laptop computers	[0] No [1] Yes	
d	Tablet computers	[0] No [1] Yes	
e	Single function desktop printers	[0] No [1] Yes	
f	Multifunctional Business Printers (print, copy, scan, fax)	[0] No [1] Yes	
g	Stand-alone scanners	[0] No [1] Yes	
h	Mobile Phones and PDAs	[0] No [1] Yes	
i	Stand-alone Fax Machines	[0] No [1] Yes	
j	Projectors	[0] No [1] Yes	
k	LCD TVs	[0] No [1] Yes	
l	VOIP Phones	[0] No [1] Yes	
m	Video Conferencing Equipment	[0] No [1] Yes	
D.2	How many of your computers fall within the following age brackets?		Ask if D.1a>1 or D.1b>1 or D.1c>1
a	0 to 1 year old	Number:	
b	1 to 3 years old	Number:	
c	3 to 5 years old	Number:	
d	5 to 7 years old	Number:	
e	Above 7 years old	Number:	
D.3	Which processor types do your Local Government computers have?		Can skip if answered D.2
a	Intel Celeron	Number:	
b	Intel Pentium	Number:	
c	Core Duo/Core 2 Duo	Number:	
d	Intel Core i3	Number:	
e	Intel Core i5	Number:	
f	Intel Core i7	Number:	
g	Intel Itanium and Xeon series	Number:	
h	AMD Sempron	Number:	
i	AMD Athlon/AMD Turion	Number:	
j	AMD Phenom	Number:	
k	AMD A4 series/A6 series	Number:	
l	AMD A8 series/A10 series	Number:	
m	AMD Opteron	Number:	
n	Any ARM Processors	Number:	
o	Other, please specify:	Number:	
D.4a	Does your Local Government have a Local Area Network (LAN)	[0] No [1] Yes	
b	How many of the computers in the Local Government are connected to the Local Area Network (LAN)?	Number	Ask if D.4a=1
c	How many of the computers in the Local Government are connected to the Internet?	Number	
D.5	Are you aware of the National IT standards for Structured	[1] Yes [0] No	Ask if D.4a=1

	Cabling for government MDAs?		
D.6	Which of the following challenges is your Local Government facing in implementing the National IT Standards for Structured Cabling for government MDAs?		Ask if D.5=1
a	Lack of top management involvement	[1] Yes [0] No	
b	Employees lack required expertise (need up-skilling)	[1] Yes [0] No	
c	Poor building construction	[1] Yes [0] No	
d	Lack of investment and budgetary constraints	[1] Yes [0] No	
e	Lack of qualified structured cabling vendors and suppliers	[1] Yes [0] No	
f	Other, please specify:		
D.7	Does your Local Government have an Intranet?	[0] No [1] Yes	
D.8	How many people employed in your institution routinely use a computer at work? (e.g. on a weekly-basis)	Female: Male: Total:	
D.9	How many employees have DEDICATED computers (desktops, laptops or tablets) for work purposes?	Female: Male: Total:	
D.10	How many employees DO NOT USE computers (desktops, laptops or tablets) for work purposes?	Female: Male: Total:	
D.11	Does your Local Government offer an ICT Service/Help Desk where employees can report ICT issues?	[0] No [1] Yes	
D.12	How much did your Local Government spend (annual expenditure) on computer Hardware and Software of the Local Government in FY 2016/17? *(UGX)*		
D.13	How important is the usage of computers for your Local Government?	[1] Very important [2] Important [3] Not sure [4] Not important [5] Not important at all	
No Computer			
D.14a	Why does the Local Government not have computers? — Too expensive (can not afford)	[0] No [1] Yes	Ask if D.1a=0 & D.1b=01 & D.1c=01
b	We do not need computers	[0] No [1] Yes	
c	We have no electricity to power computers	[0] No [1] Yes	
e	Other please specify:		
D.15	Does your Local Government plan to use computers in the future?	[0] No [1] Yes	

MODULE E: Internet Access and Use				
E.1	Does your Local Government have access to the internet?		[0] No [1] Yes	Skip to E.13 if E.1=0
E.2	Who is your Internet Service Provider? (If more than one, indicate name and quantity/cost of bandwidth)		Amount of bandwidth (Mbps/month)	Cost (US$ per Mbps/month)
a	Provider 1:		Bandwidth	Cost
b	Provider 2:		Bandwidth	Cost
c	Provider 3:		Bandwidth	Cost
d	Provider 4:		Bandwidth	Cost
e	Provider 5:		Bandwidth	Cost
E.3a	What type of internet access/connection does Local Government have to your Internet Service	Narrowband (Dial Up / ISDN)	[0] No [1] Yes	
b		Fixed Broadband – Fibre Cable	[0] No [1] Yes	
c		Fixed Broadband – Satellite	[0] No [1] Yes	
d		Fixed Broadband – Copper	[0] No [1] Yes	
e		Fixed Broadband – Wireless Access	[0] No [1] Yes	

	Provider?	Points		
f		Mobile Broadband (3G, 4G)	[0] No [1] Yes	
g	Other Please specify:			
E.4	Does you Local Government provide internet access to staff through use of Local Government-owned USB modems for work-related purposes?		[0] No [1] Yes	
b	How many staff use Local Government-owned USB modems for Internet access?		Number: Percent:	
E.5	Does you Local Government provide internet access to staff through use of wireless networks for work-related purposes?		[0] No [1] Yes	
b	How many staff use the wireless network for Internet access?		Number: Percent:	
E.6	Does you Local Government provide internet access to staff through use of wired networks for work-related purposes? (e.g. wall plugs)		[0] No [1] Yes	
b	How many staff use the wired network for Internet access?		Number: Percent:	
E.7	How many employees routinely use the internet for Local Government (work) purposes? (e.g. on a weekly-basis)		Female: Male: Total:	
E.8a	Does your Local Government provide Institutional email addresses to all employees?		[0] No [1] Yes	
b	If yes, please provide the email domain			Ask if E.8a=1
c	Are employees required to use institutional email addresses for official purposes?		[0] No [1] Yes	Ask if E.8a=1
d	If yes, is that requirement being enforced?		[0] No [1] Yes	Ask if E.8c=1
e	If Not, why is the requirement not enforced?			Ask if E.8c=0
E.9	Do any employees have remote access to the Local Government e-mail system, documents or applications? (e.g. access systems away from work)		[0] No [1] Yes	
E.10	How important is the use of the Internet for Local Government (work) activities?		[1] Very important [2] Important [3] Moderately Important [4] Slightly Important [5] Not important	
E.11	What are those core activities for which your Local Government require the use of the internet?			
a				
b				
c				
d				
e				
E.12	How would you rate following aspects using the scale below			
a	The cost of buying bandwidth from the various providers at my your Local Government		[1] Very affordable [2] Affordable [3] Not sure [4] Unaffordable [5] Very unaffordable	
b	The reliability of the Internet connection at my Local Government		[1] Very good [2] good [3] Not sure [4] poor [5] Very poor	

c	The speed of the internet connection(s) at my Local Government		[1] Very fast [2] fast [3] Not sure [4] Slow [5] Very slow	
d	The customer support/service offered to my Local Government when we report faults		[1] Very responsive [2] Response [3] Not sure [4] Unresponsive [5] Very unresponsive	
e	The overall quality of Internet service offered to my Local Government		[1] Very good [2] good [3] Not sure [4] poor [5] Very poor	
E.13	In your opinion, what are the potential obstacles to a wider use of the Internet within your Local Government for work purposes?			
No Internet				
E.14a	Why does your Local Government not have Internet Access?	Cost of Internet service is too high	[0] No [1] Yes	Skip if E.1=1
b		Cost of Internet equipment is too high	[0] No [1] Yes	
c		Local Government has no need for Internet	[0] No [1] Yes	
d		Service not available or poor connections in our area	[0] No [1] Yes	
e		We access Internet elsewhere: e.g. Internet cafe	[0] No [1] Yes	
f		Local Government has Privacy or security concerns	[0] No [1] Yes	
g		Lack of expertise at my Local Government	[0] No [1] Yes	
h		Internet is too slow for us to use it	[0] No [1] Yes	
i		Other Please specify:		
E.15	Does your Local Government plan to use the Internet in the future?		[0] No [1] Yes	

Module F: Website and Social Media Services			
F.1	Does your Local Government have a website?	[0] No [1] Yes	
F.2	Is your Local Government website powered by a Content Management System (CMS)?	[0] No [1] Yes	
F.3	Which Content Management System (CMS) powers your Local Government website?	[1] Drupal [2] Joomla [3] WordPress [4] Microsoft [5] SharePoint [6] Plone [99] Other (Please Specify)	
F.4	Does your Local Government have a person(s)/resource(s) for updating your website?	[0] No [1] Yes	
b	What type of person/resource maintains the Local Government website?	[1] Use external agency or third party	Ask if F.4=1

		[2] Have at least one fully dedicated employee [3] Use partially dedicated employee	
F.5	How frequently is your Local Government website updated?	[1] Daily [2] Weekly [3] Monthly [4] Quarterly [5] Annually [7] Never [88] Don't know	Ask if F.1=1
F.6	Which delivery channels does your Local Government currently use to Interact with Citizens and Residents who need your services?		
a	Field visits	[0] No [1] Yes	
b	Walk-ins	[0] No [1] Yes	
c	Call Centre/Service desk	[0] No [1] Yes	
d	Traditional Media (e.g. newspapers, radio, TV)	[0] No [1] Yes	
e	Local Government website	[0] No [1] Yes	
f	Email	[0] No [1] Yes	
g	SMS (Short Message Service)	[0] No [1] Yes	
h	Mobile applications (e.g. android or IOS application)	[0] No [1] Yes	
i	Social media (e.g. Facebook, Twitter, Pinterest, Google+ etc.)	[0] No [1] Yes	
j	Other Partner Channels (e.g. LinkedIn, YouTube, etc.)	[0] No [1] Yes	
k	Other (Please Specify)		
F.7	Which social network(s) is your Local Government signed up for?		Ask if F.6i=1
a	Facebook	[1] Yes [0] No	
b	Twitter	[1] Yes [0] No	
c	LinkedIn	[1] Yes [0] No	
d	Instagram	[1] Yes [0] No	
e	Pinterest	[1] Yes [0] No	
f	Google+	[1] Yes [0] No	
g	Tumblr	[1] Yes [0] No	
h	YouTube	[1] Yes [0] No	
i	Flickr	[1] Yes [0] No	
j	WhatsApp	[1] Yes [0] No	
k	Other, please specify		
F.8	In what order does your Local Government publish information on social media relative to traditional channels such as newspapers, radio, and broadcast?	[1] Publish first on social media and later on traditional channels [2] Publish information on social media at same time as on traditional channels [3] Publish on social media after publishing on traditional channels	
F.9	How frequently does your Local Government publish information and/or interact on social media?		
a	Facebook	[1] Several times a day	Ask if F.7a=1
b	Twitter		Ask if F.7b=1

c	LinkedIn	[2] Twice a day [3] Once a day [4] Once every few days [5] Once a week or less frequently [99] Don't know	Ask if F.7c=1
d	Instagram		Ask if F.7d=1
e	Pinterest		Ask if F.7e=1
f	Google+		Ask if F.7f=1
g	Tumblr		Ask if F.7g=1
h	YouTube		Ask if F.7h=1
i	Flickr		Ask if F.7i=1
j	WhatsApp		Ask if F.7j=1
F.10	What are your Local Government objective(s) in using social media?		
a	Publish Local Government information	[1] Yes [0] No	
b	Develop the Local Government's reputation	[1] Yes [0] No	
c	Obtain/respond to citizen opinions, reviews and questions	[1] Yes [0] No	
d	Involve citizens in Local Government policy and service-delivery processes	[1] Yes [0] No	
e	Exchange opinions/knowledge within the Local Government	[1] Yes [0] No	
f	Other, please specify:	[1] Yes [0] No	
F.11	Does your Local Government have a person(s)/resource(s) for managing your social media interaction/presence?	[0] No [1] Yes	
b	What type of person/resource maintains the Local Government social media interaction/presence?	[1] Use external agency or third party [2] Have at least one fully dedicated employee [3] Use partially dedicated employee	Ask if F.11=1

MODULE H: Software Applications and Information Systems				
H.1	Which of the following types of software applications are used within your Local Government? (officially supported by the Local Government)			
a	Office suite (word, spreadsheet, presentation)	[1] Yes [0] No	[1] Microsoft [2] Other (specify)	
b	Anti-virus software	[1] Yes [0] No	[1] Microsoft [2] Other (specify)	
c	Database software	[1] Yes [0] No	[1] Microsoft [2] Oracle [3] Both [4]Other (specify)	
d	Email server software	[1] Yes [0] No	[1] Microsoft [2] Other (specify)	
e	ERP software	[1] Yes [0] No	[1] Microsoft [2] Oracle [3] Both [4]Other (specify)	
f	Data Analytics	[1] Yes [0] No		
g	CRM	[1] Yes [0] No	[1] Microsoft [2] Oracle [3] Both [4]Other (specify)	
h	Other, please specify:			
H.2	Licensing models and definitions may significantly differ depending on the software product and vendor. Which of these types of licenses does your Local Government have?			
	Licenses that vary by duration			
a	Perpetual licenses (use rights are permanent once purchased)		[1] Yes [0] No	
b	Subscription or rental licenses (used for a specific period of time, which can vary from days to years and may or may not include upgrade rights)		[1] Yes [0] No	
c	Temporary licenses (pending full payment or receipt of proof of purchase)		[1] Yes [0] No	
	Licenses that vary by usage			
d	Per copy, by workstation/seat/device (most licenses sold tend to be on a per-copy-used basis, with several different		[1] Yes [0] No	

	units of measure possible. Sometimes multiple users will be allowed per license)		
e	Concurrent usage (allows a specified number of users to connect simultaneously to a software application)	[1] Yes [0] No	
f	Per server speed or per processor (linked to the speed or power of the server on which they run, or the number of processors within the server)	[1] Yes [0] No	
g	Enterprise or site (sold on an enterprise or site basis that requires a count of qualifying entities)	[1] Yes [0] No	
h	Open source licenses(allows software to be freely used, modified and shared)	[1] Yes [0] No	
i	Pirated licenses (sold on an enterprise or site basis that requires a count of qualifying entities)	[1] Yes [0] No	
j	Other, please specify		
H.3	Which of the following operating systems does your Local Government currently use?		
a	Microsoft Windows	[1] Yes [0] No	
b	Mac OS X	[1] Yes [0] No	
c	Linux	[1] Yes [0] No	
d	Other, please specify:		
H.4	Which versions of Microsoft Windows does your Local Government currently use?		
a	Windows 7	[1] Yes [0] No	
b	Windows 8	[1] Yes [0] No	
c	Windows 10	[1] Yes [0] No	
d	Windows XP	[1] Yes [0] No	
e	Other, please specify:		
H.5	Which distributions of Linux does your Local Government currently use?		
a	Ubuntu	[1] Yes [0] No	
b	Linux Mint	[1] Yes [0] No	
c	Debian	[1] Yes [0] No	
d	openSUSE	[1] Yes [0] No	
e	Fedora	[1] Yes [0] No	
f	CentOS	[1] Yes [0] No	
g	Other, please specify:		
H.6	Does your Local Government have a software upgrade strategy, policy or guideline governing how software upgrades are performed?	[1] Yes [0] No	
H.7	Are you aware of the National IT standards on Software and Hardware Acquisition for government?	[1] Yes [0] No	
H.8	Which of the following challenges is your Local Government facing in implementing the National IT Standards on Software and Hardware Acquisition for government?		
a	Lack of top management involvement	[1] Yes [0] No	
b	Employees lack required expertise (need up-skilling)	[1] Yes [0] No	
c	Lack of sufficient number of staff	[1] Yes [0] No	
d	Lack of investment and budgetary constraints	[1] Yes [0] No	
e	Lack of qualified software and hardware suppliers	[1] Yes [0] No	
f	Other, please specify:		
H.9	Does your Local Government offer internal ICT training programs to employees in the use of different applications?	[1] Yes [0] No	
H.10	What types of ICT training programs does your Local Government offer to employees?		Ask if H.9=1
a	Basic typing and data entry skills		
b	Use of operating systems		
c	Use of office productivity suites (e.g. Word, Excel and PowerPoint)		
d	Use of proprietary Local Government systems		
e	Other, please specify:		

H.11	How regular are the ICT training programs offered?	[1] Monthly [2] Quarterly [3] Twice a year [4] Annually [5] Every two years [6] Irregular/ad hoc	Ask if H.9=1
H.12	Does your Local Government own a dedicated training lab/space where you conduct ICT training?	[1] Yes [0] No	
H.13	How large is the training lab/space in terms of number of PCs?		Ask if H.12=1

MODULE I: Applications and Data Hosting				
I.1	Where are your Local Government applications and databases currently hosted?			Multiple response
a	On-premise physical infrastructure		[1] Yes [0] No	
b	Government Data Centre (Government cloud)		[1] Yes [0] No	
c	Other cloud service providers		[1] Yes [0] No	
d	We do not have applications or databases		[1] Yes [0] No	Skip to I.6
I.2a	Does your Local Government buy any of the following cloud computing services used over the internet? (Ask if I.1b or I.1c=1)	E-mail	[1] Yes [0] No	
b		Software as a service	[1] Yes [0] No	
c		Infrastructure as a service	[1] Yes [0] No	
d		Platform as a service	[1] Yes [0] No	
e		Backup as a service	[1] Yes [0] No	
f		Storage	[1] Yes [0] No	
g		Collocation services	[1] Yes [0] No	
h		Other, please specify:		
I.3	Does your Local Government buy any cloud computing services delivered from: (Please refer to definition of cloud computing above, exclude free of charge services.)			
a	Shared servers of service providers?		[1] Yes [0] No	
b	Dedicated servers of service providers? (exclusively reserved for your Local Government)		[1] Yes [0] No	
I.4	What do you consider as some of the benefits from using cloud computing services?		high/some/limited/no benefit	
a	Reduction of ICT related costs		high/some/limited/no benefit	
b	Flexibility in up- or down-scaling services		high/some/limited/no benefit	
c	Simplicity of (easy and quick) deployment of cloud-based solutions		high/some/limited/no benefit	
d	Increased productivity		high/some/limited/no benefit	
I.5	How much did your Local Government spend (annual expenditure) on cloud computing services in FY 2016/17? *(UGX)*		UGX	
I.6	What factors prevent or limit your Local Government from using cloud computing services			
a	Risk of a security breach;		[1] Yes [0] No	
b	Problems accessing data or software;		[1] Yes [0] No	
c	Difficulties in unsubscribing or changing service provider (including concerns with data portability)		[1] Yes [0] No	
d	Uncertainty about the location of the data		[1] Yes [0] No	
e	Uncertainty about applicable law, jurisdiction, dispute resolution mechanisms		[1] Yes [0] No	
f	High cost of buying cloud computing services		[1] Yes [0] No	
g	Lack of cloud-related expertise in our Local Government		[1] Yes [0] No	
h	Our Local Government is not ready for cloud computing services		[1] Yes [0] No	exclusive

i	Other, please specify:		
I.7a	Would your Local Government be willing to subscribe to cloud computing services offered by a local provider?	[1] Yes [0] No	
b	Would your Local Government be willing to subscribe to cloud computing services offered by government?	[1] Yes [0] No	

MODULE J: Information Security, Disaster Recovery and Business Continuity			
J.1	Are you aware of any Ugandan laws that govern electronic communications and transactions (sometimes called Cyber laws), such as use of email or buying goods and services online?	[1] Yes [0] No	
b	If Yes, Please state any cyber laws that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[0] Can't state any law [1] Electronic Transactions Act, 2011 [2] Electronic Signatures, Act 2011 [3] Computer Misuse Act, 2011	Ask if J.1 = 1
J.2	The Computer Misuse Act, 2011 was put in place to prevent unlawful access, and misuse of information systems including computers. Are you aware of any offences that are created by the Computer Misuse Act, 2011?	[1] Yes [0] No	
b	If so, please list any two offences that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[1] Unauthorised access, such as hacking [2] Unauthorised obstruction of use of computers, such as denial of service attacks [3] Electronic fraud [4] Intellectual property crimes [5] Malicious and offensive communications [6] Disclosing private sexual images without consent [7] Cyber stalking and harassment [8] Prohibited and indecent images of children [99] Other, please specify	Ask if J.2=1
J.3	Does your Local Government have a server room? (or data centre)	[1] Yes [0] No	
J.4	Does your Local Government have a Disaster recovery site?	[1] Yes [0] No	
J.5	Does your Local Government have any formal policies and procedures addressing any of the following area(s)? (in use and formally approved by management)		
a	ICT Policy/Strategy/Master Plan	[1] Yes [0] No	
b	Acceptable Use of Local Government ICT Resources	[1] Yes [0] No	
c	Information Security Policy	[1] Yes [0] No	
d	Disposal of ICT Equipment and Electronic Waste Management	[1] Yes [0] No	
e	Local Government Enterprise Architecture	[1] Yes [0] No	
f	ICT Interoperability Framework	[1] Yes [0] No	
g	ICT Disaster Recovery and/or Business Continuity	[1] Yes [0] No	
h	ICT Training	[1] Yes [0] No	
i	Other, please specify		

J.6	Does your Local Government maintain an up-to-date register of important IT assets?	[1] Yes [0] No	
J.7	Which of these ICT security incidents did your Local Government experience during the last financial year (2016/17)		
a	Failure to connect to the internet or other external networks	[1] Yes [0] No [88] Don't know	
b	Virus or other computer infection (e.g. malware, worm or Trojan horse) resulting in loss of information or working hours	[1] Yes [0] No [88] Don't know	
c	Attack of the type 'denial of service'	[1] Yes [0] No [88] Don't know	
d	Unauthorised access to Local Government computer systems or data	[1] Yes [0] No [88] Don't know	
e	Unauthorised leakage or sharing of Local Government information sent on the Internet and/or other privacy violations (e.g. private details of personnel)	[1] Yes [0] No [88] Don't know	
f	Loss of data because there were no backups	[1] Yes [0] No [88] Don't know	
g	Improper use of IT	[1] Yes [0] No [88] Don't know	
h	Phishing (receiving fraudulent messages) or pharming scam (getting redirected to fake websites asking for personal information) with a potential for financial loss	[1] Yes [0] No [88] Don't know	
i	Financial loss due to fraudulent use of Local Government payment tools or credentials (e.g. cards, signatures or digital authorisations)	[1] Yes [0] No [88] Don't know	
j	Local Government ICT equipment was lost	[1] Yes [0] No [88] Don't know	
k	Other, please specify:		
J.8	Did you report the cybercrime(s) to anybody?	[1] Yes [0] No	
J.9	Who did you report the cybercrime to?		Ask if J.8=1
a	Financial services provider (e.g. bank)	[1] Yes [0] No	
b	Internet Service Provider	[1] Yes [0] No	
c	Uganda Police (or other law enforcement agency)	[1] Yes [0] No	
d	NITA-U	[1] Yes [0] No	
e	CERT.ug or UgCERT	[1] Yes [0] No	
f	Other (please specify)	[1] Yes [0] No	
J.10	If you did not report a cybercrime, what was your main reason?		Ask if J.8=0
a	We did not know what the crime was	[1] Yes [0] No	
b	We did not know who to or how to report it	[1] Yes [0] No	
c	We felt it was a waste of time	[1] Yes [0] No	
d	We fixed the problem ourselves internally	[1] Yes [0] No	
e	Not applicable	[1] Yes [0] No	
f	Other (please specify)	[1] Yes [0] No	
J.11	Which of these ICT security efforts have you implemented in your Local Government?		
a	Institutional firewall	[1] Yes [0] No	
b	Spam filters	[1] Yes [0] No	
c	Local Government subscription to anti-virus software	[1] Yes [0] No	
d	Regular full backups of critical Local Government data	[1] Yes [0] No	
e	Keeping backups off-site/off-site data backup	[1] Yes [0] No	
f	Network intrusion detection system	[1] Yes [0] No	
g	Network intrusion protection system	[1] Yes [0] No	
h	Anti-phishing software	[1] Yes [0] No	
i	2-factor authentication for employees remote login to Local Government ICT system	[1] Yes [0] No	

j	Technical efforts for protection/transmission of sensitive data	[1] Yes [0] No	
k	Routinely patch ICT systems, security enforcing products and applications against known vulnerabilities	[1] Yes [0] No	
l	Encryption of Local Government devices (both fixed and mobile) processing/holding sensitive data	[1] Yes [0] No	
m	Discourage use of privately owned devices to process, store or remotely access critical infrastructure, apps and data	[1] Yes [0] No	
n	Emergency solutions for communication (alternatives for data and voice)	[1] Yes [0] No	
o	Conduct regular vulnerability assessments to identify potential weaknesses in all ICT resources	[1] Yes [0] No	
p	Emergency exercise at least once a year	[1] Yes [0] No	
J.12	How does your Local Government dispose of e-waste? *(select multiple)*	[1] Regular/normal office waste disposal method [2] Through a recycling agent (external recycling) [3] Reuse (internal recycling) [4] Disposal through sale (as scrap, re-usable, etc.) [5] Landfill [6] Acid Bath [99] Other, Please specify	
J.13	Does your Local Government have a formal appointed person responsible for information security?	[0] No [1] Yes	
J.14	Does your Local Government have a formal appointed person responsible for disaster recovery and/or business continuity?	[0] No [1] Yes	
J.15	Did your Local Government conduct any IT security awareness sessions for employees during the last year (FY2016/17)?	[1] Yes [0] No	
b	If yes, about how many sessions were conducted per staff during the year?	Number:	Ask if J.15=1
J.16	Did your Local Government conduct any emergency testing/training exercise for disaster recovery/business continuity during the last year (FY2016/17)?	[0] No [1] Yes	
J.17	Thank you for your time, do you have any questions.		

C.3 Household and Individual Questionnaire

MODULE A: Admin (enumerator completes it before Interviewing the Household)		
A.1	Date	Will capture automatically from device
A.2	Survey start time	Combination of A4-A6 will automatically identify which enumerator collected record
A.3	Survey end time	
A.4	Device ID/IMEI	
A.5	SIM Serial	
A.6	Phone Number	
A.7	EA_ID (12 digit)	
A.8a	Village	Will use drop-down with details based on sampled EAs
A.8b	Parish	
A.8c	Sub county	
A.8d	County	
A.8e	District	
A.9	Location (Rural Urban)	1 = Urban 2=Rural (automatic, based on UBOS designation)
A.10	GPS Location	Collect GPS coordinates of household
A.11	Photo	Take a picture of the structure where the household lives
A.12	Household Listing ID	

Module B: Household Roster: Household Attributes (to be completed for each household member by head of the household or someone that manages the household)									
B.0	How many members does this household have?								
ID	Household Member		1	2	3	4	5	6	7
B.1	First Name								
B.2	Last Name								
B.3	Gender	[0] Male [1] female							
B.4	Age (years)								
B.5	Birth-date (DD/MM/YYYY)								

Module B: Household Roster: Household Attributes (to be completed for each household member by head of the household or someone that manages the household)								
ID	Household Member	8	9	10	11	12	13	14
B.1	First Name							
B.2	Last Name							
B.3	Gender [0] Male [1] female							
B.4	Age (years)							
B.5	Birth-date (DD/MM/YYYY)							

Module C: Household Attributes				
C.1	Does this house have ELECTRICITY? (If Multiple, choose the one used mostly)		[0] No [1] Main Electricity Grid [2] Generator [3] Solar [4] Other	
a	Does your household have a working...?	RADIO	[1]Yes [0]No	
b		TV	[1]Yes [0]No	
c		Satellite Decoder or Cable TV	[1]Yes [0]No	
C.2	Does any member of this household have access to a computer at home?		[1]Yes [0]No	
a	How many working desktop computers does the household have?			Ask if C.2=1
b	How many working laptops does the household have?			
c	How many working tablets (or similar handheld devices) does the household have?			
C.3a	Has this household subscribed to Pay TV (e.g. DSTV,		[1]Yes [0]No	

	star times, Zuku, GoTv, Azam Tv)?		
b	If yes which Pay TV does this household subscribe to?	[1] Azam TV [2] Citi Cable [3] DSTv [4] GoTv [5] Star Times Satellite [6] Star Times Terrestrial [7] Zuku [8] Azam Tv [9] Other, please specify	Ask if C.3a=1
c	Does this household have a digital TV set-top box for digital TV or a TV with an inbuilt digital TV decoder?	[1]Yes [0]No	Ask if C.1b=1

Module D: Household Phone			
D.1	Does this household have a fixed line telephone at home?	[1] Yes, fixed phone (or landline) [2] Yes, wireless (or desk phone with SIM) [0] No	
D.2	Does any member of this household have access to a mobile cellular telephone at home?	[1]Yes [0]No	Skip to D.5 if D.1 = No
D.3	What is the name of the service provider? (consider most used phone if multiple)	[1] Africell [2] Airtel [3] K2 [4] MTN [5] Orange [6] Vodaphone [7] UTL [99] Other, please specify [88] Don't know	
D.4	What billing type is it?	[1] Post-paid (monthly billing) [2] Pre-paid	
D.5	Approximately how much does your household spend on Household Phone(s) in a month (calling, line rental, etc.)? (specify in UGX)		

No Household Telephone				
D.6	Have you previously had a Household phone?		[1]Yes [0]No	Skip Module to HI if D.1 =Yes
D.7a	Why does the household not have a Household Phone? (READ OUT)	Not necessary to have household phone	[1]Yes [0]No	
		We use individual mobile phones	[1]Yes [0]No	
b		Fixed phones are not available where I live	[1]Yes [0]No	
c		Cannot afford one	[1]Yes [0]No	
d		Too long wait for a fixed line	[1]Yes [0]No	
e		Other, please specify:		
D.8	What type of billing would you prefer for the household phone?		[1] Pre-paid [2] Post-paid (monthly)	

Module E: Household Internet Access			
E.1	Does any member of this household have access to the Internet at home regardless of whether it is used?	[1] Yes [0] No [88] Don't Know	Skip to E.9 if E.1=0
E.2	Does any member of this household use USB/modem dongles to access the Internet via a laptop or computer? (uses a SIM for	[1] Yes [0] No [88] Don't Know	

	connection)		
E.3	Does any member of this household use a router linked to ADSL to access the Internet via a laptop or computer? (connected to a fixed line wire)	[1] Yes [0] No [88] Don't Know	
E.4	Does any member of this household use a mobile phone as hotspot to access the Internet via a laptop or computer?	[1] Yes [0] No [88] Don't Know	
E.5	Who is your household Internet Service Provider? (consider main provider or provider of most used connection, if multiple)	[1] Africell [2] Airtel [3] K2 [4] MTN [5] Orange [6] Vodaphone [7] UTL [99] Other, please specify [88] Don't know	
E.6	Approximately how much does the household spend monthly for the Internet (subscription & use)? (in UGX)		
E.7	How many household members use the Internet at home?		Is <= B.0
E.8	How many of these household members use their mobile phones to access the Internet at home?		Ask if E.6 > 0 Is <= B.0
E.9	How many of these household members that use the Internet at home are below the age of 15?		Ask if E.6 > 0 Is <= B.0
No Household Internet Access			
E.10	What is the main reason why the household does not have a working Internet Connection? (select all that apply)	[1] Cost of Internet service is too high [2] Cost of Internet equipment is too high [3] Service not available or poor connections in our area [4] Lack of confidence, knowledge or skills to use the Internet [5] Do not need the Internet (not useful, not interesting, lack of local content) [6] Privacy or security concerns [7] Have access to Internet elsewhere [8] Cultural reasons (e.g. exposure to harmful content) [9] Internet service is available but it does not correspond to household needs (e.g. quality, speed) [99] Other, please specify:	Ask only if E.1=0
E.11	You stated that your main reason for not having Internet is that you cannot afford it (too expensive) – At what monthly cost could the household afford internet?		Ask only if E.10 is [1]

Module IS: Individual Selection				
ID	Names of all household members 15 years or older:			Random selection: Select the individual with the next birthday from to day. Place tick for the randomly selected individual
	First Name	Gender	Birthday (Day/Month)	
1				*Tablet will automatically complete this table from roster in Module D and an individual randomly selected*
2				
3				
4				

5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Randomly Selected Individual (to be answered by the randomly selected individual)

Module F: Demographics of randomly selected Individual			
F.1	First Name		
F.2	Last Name		
F.3	Gender	[0] Male [1] female	
F.4	Age		
F.5	How are you related to Household head?	[1] Head of household [2] Spouse/partner [3] Son/daughter [4] Grandchild [5] Parent [6] Brother /sister [8] Not related [99] Other, please specify	
F.6	Marital status	[1] Married [2] Single/Never married [3] Separated [3] Widowed [4] Divorced [99] Other, please specify	
F.7	Highest level of schooling completed (Tertiary = university/College/polytechnic)	[1] None [2] Primary [3] Secondary: O-Level [4] Secondary: A-Level [5] Tertiary: diploma /Certificate [6] Tertiary: BSc/BA [7] Tertiary: Masters [8] Tertiary: PhD	
F.8	Main activity during last 6 months?	[1] Paid employee permanent [2] Paid employee casual/temporary/ contract/seasonal [3] Employer [4] Self-employed (Agriculture) [5] Self-employed (Other) [6] Unpaid house work (e.g. housewife) [7] Household worker (e.g. maid, askari) [8] Unemployed [9] Student [10] Retired/Too old/ Too sick [11] Disabled/handicapped [99] Other, please specify	
F.9	You indicated that you are still a student. Are you studying any IT (Information Technology) program?	[1] Yes [0] No	Ask if F.7>4 and F.8 = 9

F.10	If yes, what kind of IT program are you pursuing/enrolled in?	[1] Certificate in an IT programme [2] Diploma in Computer Science and IT [3] BSc. in Computer Science [4] Bachelor of IT [5] Bachelor of Information Systems [6] BSc. in Software Engineering [7] PGD in Computer Science [8] PGD in IT [9] PGD in Information Systems [10] PGD in Data Communications & Software Engineering [11] MSc in Computer Science [12] Master of IT [13] MSc. in Information Systems [14] MSc. in Data Communications & Software Engineering [15] PhD in Computer Science [16] PhD in Information Technology [17] PhD in Information Systems [18] PhD in Data Communications & Software Engineering [99] Other, please specify	Ask if F.9 = 1
F.11	You indicated having completed tertiary education. Is your in qualification in IT?	[1] Yes [0] No	Ask if F.7 >= 5
F.12	If yes, what kind of IT qualification did you get?	[1] Certificate in an IT programme [2] Diploma in Computer Science and IT [3] BSc. in Computer Science [4] Bachelor of IT [5] Bachelor of Information Systems [6] BSc. in Software Engineering [7] PGD in Computer Science [8] PGD in IT [9] PGD in Information Systems [10] PGD in Data Communications & Software Engineering [11] MSc in Computer Science [12] Master of IT [13] MSc. in Information Systems [14] MSc. in Data Communications & Software Engineering [15] PhD in Computer Science [16] PhD in Information Technology [17] PhD in Information Systems [18] PhD in Data Communications & Software Engineering [99] Other, please specify	Ask if F.11 = 1
F.13a	What kind of IT tools are available at your school? (READ OUT) [1] YES and I use it; [2] YES but I don't use it; [3] Not available	Desktop computer(s)	Ask if F.8 = 9
b		Portable/laptop computer(s)	
c		E-book readers (e.g. Amazon Kindle)	
d		Projector(s)	
e		Printer(s)	
f	Scanner(s)		
g		Digital Camera(s)	
h		Interactive whiteboards (e.g. smartboards)	

i		Other, please specify	
j		Other, please specify	
k		Other, please specify	
F.14	What do you earn every month in terms of salary or wage? (consider Gross Income before any deductions)		Ask if F.8 = 1 or 2
F.15	On average, what do you earn every month in terms of self-employment income and property income or income from agricultural produce and farming?		
F.16	On average, what do you earn every month in terms of pension, transfer income & scholarships?		

Module G: Individual Information			
G.1	How much do you contribute to household expenses every month?		
G.6	Can you easily read and write English?	[1] Yes [0] No	
G.7	What other languages do you understand or speak (local or foreign) apart from what you have mentioned	Pick up to 3 options	
G.8	Which of these types of ICT equipment have you used in the last 12 months?		
	Desktop computers/PC	[1] Yes [0] No	
	Portable/laptop computer	[1] Yes [0] No	
	Tablet computer (or similar handheld computer)	[1] Yes [0] No	
	Mobile phones	[1] Yes [0] No	
	Smart TV	[1] Yes [0] No	
	Electronic book devices (e-book readers)	[1] Yes [0] No	
	Music and/or video (MP3/4) players (e.g. iPod touch)	[1] Yes [0] No	
	Other handheld devices (e.g. video game consoles, GPS tools)	[1] Yes [0] No	
	None	[1] Yes [0] No	
G.9	How often do you use computers?	[1] Daily or almost everyday [2] At least once a week (but not everyday) [3] Less than once a week [4] Between 3 months and 1 year ago [5] More than a year ago or never	
G.10	What is your primary purpose for using the computer?	[1] Work [2] Personal usage [3] Entertainment [4] Communication [5] Education [99] Other, please specify	
G.11a	How confident are you that you can	Use word processing software	Ask if G.8a = 1
b	successfully perform the following IT tasks? (READ OUT)	Use basic arithmetic formulas in a spreadsheet	
c	[1] Not confident all [2] [3] Somewhat confident	Use spreadsheet advanced functions to organise and analyse data, such sorting, filtering, using formulas, creating charts	
d	[4] [5] Very confident	Use software for electronic presentations (slides)	
e	[88] Don't know	Send e-mails with attached files (document, picture, video)	
f		Post messages (e.g. to chat rooms, newsgroups or forums)	
g		Transfer files (e.g. to digital camera, mobile phone, m-player)	
h		Find, download and install software from the Internet	

i		Modify or verify the configuration of a software application	
j		Modify the security settings of your Internet browser	
k		Computer programming using a specialised language	
l		Create a web page	
m		Install or replace an operating system	
G.12	How did you acquire your ICT skills or learn how to use the computer/Internet?	[1] Formal education [2] Non-formal education [3] Informal learning [0] No	Ask if G.8a = 1
G.13	Do you have a National ID?	[1] Yes [0] No	
G.14	Do you have a Driving Permit?	[1] Yes [0] No	
G.15	Do you have a Passport?	[1] Yes [0] No	

Module H: Other ICTs				
H.1	Do you watch TV?		[1] Yes [0] No	Skip to H.4 if H.1=No
H.2	How do you watch TV?		[1] Using App on mobile phone [2] On a Regular TV set [3] On a computer [99] Other, please specify	Ask if H.1=1
H.3	Where do you watch television mainly?		[1] At home [2] At friends, relatives or neighbours home [3] Public places (bars, community halls) [4] Other [5] TV Club	
H.4	If you don't watch TV, why not? read out each statement	Not interested	[1] Yes [0] No	Only ask if not watching TV
b		House has no electricity	[1] Yes [0] No	
c		Cannot afford a TV set	[1] Yes [0] No	
d		Don’t have time to watch TV	[1] Yes [0] No	
e		Other, please specify		
H.5	Do you listen to radio?		[1] Yes [0] No	Skip to H.8 if H.5=No
H.6	Do you own a personal radio that you can use at any time?		[1] Yes [0] No	
H.7	Where do you listen to radio mainly		[1] At home [2] At work [3] At friends, relatives or neighbours home [4] Public places (bars, community halls etc.) [5] While travelling (car or public transport) [6] Using my mobile phone [99] Other, please specify	
H.8	If you do not listen to radio, why not?		[1] I am not interested in the radio [2] I cannot afford a radio [3] Don’t have time to listen to radio [99] Other, please specify	Only ask if H.5=No

Module I: Mobile Phone			
I.1	Do you own a mobile phone?	[1] Yes [0] No	Skip to I.11 if I.1=0
b	How many mobile phone handsets do you own?	Number:	
I.2a	Is your mobile phone a SMART phone? (consider primary/best if multiple) (A mobile phone that performs many of the functions of a computer, typically having a touchscreen interface, Internet access, and an operating system capable of running downloaded apps)	[1] Yes [0] No	
b	What operating system (OS) does your phone run?	[1] Android [2] Apple IOS [3] Windows Phone [4] Blackberry [99] Other, please specify	Ask if I.2a = 1
I.3a	Does your phone have a touchscreen?		Ask if I.2a = 0
b	Is you mobile phone capable of browsing the Internet?	[1] Yes [0] No	Ask if I.2a = 0
I.4a	How many ACTIVE SIM cards do you have? (an active SIM card is one you have used to make a call or mobile money transaction in the last 3 months)		
b	From which mobile phone provider(s)? (Select all that apply)	[1] Africell [2] Airtel [3] K2 [4] MTN [5] Orange [6] Vodaphone [7] UTL [99] Other, please specify	
I.5	What type is the billing for your mobile phone? (consider primary if multiple)	[1] Prepaid [2] Postpaid (contract)	
I.6	Where do you charge your mobile phone (battery) mostly?	[1] Home [2] Shop [3] Work/school [99] Other, please specify	
I.7	Do you share your mobile phone with others?	[0] No [1] Daily [2] Once a week [3] Several times a week [4] Several times a month [5] Occasional	
I.8	How satisfied are you with the service from your current mobile phone service provider(s)?	[1] Very satisfied [2] Satisfied [3] Not sure [4] Dissatisfied [5] Very dissatisfied [88] Don't know	
b	Why are you not satisfied/happy with your service provider(s)?		Ask if I.8a = 0
I.9	Can you tell me how much you spent last MONTH for mobile phone usage (airtime, data, subscription)?		
I.10 Which of the following services do you actively use on your mobile phone?			
a	Making and receiving phone calls (voice)	[1] Yes [0] No	
b	Sending and receiving text messages (SMS)	[1] Yes [0] No	
c	International calls	[1] Yes [0] No	
d	Sending and receiving mobile money	[1] Yes [0] No	

e	Skype/Voice over IP		[1] Yes [0] No	
f	Using as a personal organiser / diary / notebook Reminder / watch		[1] Yes [0] No	
g	Missed Call or a Please Call Me etc.		[1] Yes [0] No	
h	Taking photos or video clips		[1] Yes [0] No	
i	Facebook, Twitter, Google+, WhatsApp or other social networking		[1] Yes [0] No	
j	Browsing the Internet		[1] Yes [0] No	
k	Reading and writing Emails		[1] Yes [0] No	
l	Playing games		[1] Yes [0] No	
m	Listen to music / radio		[1] Yes [0] No	
n	Watching TV		[1] Yes [0] No	
I.11a	Why don't you have a mobile phone?	I cannot afford it	[1]Yes [0]No	Ask if I.1=0
b		No mobile coverage where I live	[1]Yes [0]No	
c		No electricity at home to charge the mobile phone	[1]Yes [0]No	
d		I don't have anyone to call	[1]Yes [0]No	
e		My phone is broken	[1]Yes [0]No	
f		My phone got stolen	[1]Yes [0]No	
g		Other please specify:		
I.12	Did you use a mobile in the past three months?		[1]Yes [0]No	Ask if I.1=0
I.13	Whose mobile phone did you use?		[1] Family member [2] Friends or colleague [3] Public phone on the roadside [99] Other, please specify	Ask if I.1=0
I.14	Do you have any active SIM cards, if yes how many? (an active SIM card is one you have used to make a call or mobile money transaction in the last 3 months)		Enter 0 for none	Ask if I.1=0
I.15	Do you plan to get a mobile phone in the future? If yes when?		[0] No [1] Within the next 6 months [2] Within the next year [3] Within the next 2 years	Ask if I.1=0

Module J: Internet / World Wide Web			
J.1	Have you ever used the Internet? (Gmail, Google, Facebook, email)	[1] Yes [0] No	Skip to J.21 if J.1=0
b	Have you used the Internet from any location in the last twelve (12) months?	[1] Yes [0] No	
J.2	From which locations have you used the Internet?		
a	At my home	[1] Yes [0] No	
b	At another person's home (friend, relative or neighbour)	[1] Yes [0] No	
c	At my Workplace (but not home)	[1] Yes [0] No	
d	At School or education facility (applies only to students – teachers and others who work at a place of education would report 'work' as the place of Internet use; where a place of education is also made available as a location for general community Internet use, such use should be reported in the Community Internet access facility category)	[1] Yes [0] No	
e	At Community Internet access facility (e.g. school lab open to community, public library, telecentre, typically free)	[1] Yes [0] No	
f	At Commercial internet access facility (e.g. internet cafe or cybercafés, typically paid)	[1] Yes [0] No	
g	On the move, via a mobile cellular telephone (including devices with mobile telephone functionality) or other mobile access devices, for example, a laptop computer, tablet or other handheld device	[1] Yes [0] No	

	connected to a mobile phone network		
h	Other, please specify		
J.3	On average, how often have you used the internet in the last 12 months? (from any location)	[1] Daily or almost everyday [2] At least once a week (but not everyday) [3] At least once a month (but not weekly) [4] Between 3 months and 1 year ago [5] More than a year ago or never	
J.4	How much time do you spend on the Internet per week (for any type of use)?	[1] Less than 5 hours [2] Between 5 and 9 hours [3] Between 10 and 19 hours [4] Between 20 and 29 hours [5] Between 30 and 39 hours [6] 40 hours or more	
J.5	For how many years have you been using the internet? (experience with Internet)	[1] Less that 1 year [2] 1 to 2 years *(1 year or more but less than 2 years)* [3] 2 to 5 years *(2 years or more but less than 5 years)* [4] 5 or more years [88] Don't know	
J.6	Which of the following devices have you used to access the Internet in the past 12 months?		
a	Desktop Computer?	[1] Yes [0] No	
b	Mobile phone via the mobile cellular network?	[1] Yes [0] No	
c	Mobile phone via other wireless networks? (e.g. Wi-Fi)	[1] Yes [0] No	
d	Tablet via the mobile cellular network? (using USB key/dongle or integrated data SIM card)	[1] Yes [0] No	
e	Tablet via other wireless networks? (e.g. Wi-Fi)?	[1] Yes [0] No	
f	Portable Computer (laptop, notebook, netbook) via the mobile cellular network? (using USB key/dongle or integrated data SIM card or mobile cellular telephone as modem)	[1] Yes [0] No	
g	Portable Computer (laptop, notebook, netbook) via other wireless networks? (e.g. Wi-Fi)?	[1] Yes [0] No	
h	Digital or Smart TV	[1] Yes [0] No	
i	Other portable devices? (e.g. portable games consoles, watches, e-book readers etc.)	[1] Yes [0] No	
J.7	What size of mobile phone bundles (bandwidth/data) do you regularly purchase?	[1] less than 100MB [2] > 100 – < 500MB	Ask if J.6b=1 or. J.6d=1 or J.6f=1

		[3] > 500 – < 1 GB [4] > 1GB – < 10 GB [5] > 10GB [99] Other, please specify	
J.8	How frequently do you purchase mobile phone bundles (bandwidth)?	[1] Daily [2] Weekly [3] Monthly [4] 3 months (quarterly) [5] Annual	Ask if J.6b=1 or. J.6d=1 or J.6f=1
J.9	On average, how much do you spend on data bundles on a monthly basis? (in UGX)		Ask if J.6b=1 or. J.6d=1 or J.6f=1
J.10	What difficulties have you experienced in using mobile connectivity for Internet access?	[1] Unexpected high costs [2] Poor mobile network signal (unavailability of broadband or low speed) [3] Difficulties in setting or changing parameters for Internet access (e.g. switching to WI-FI, activation of location aware applications or activation of internet access) [4] Inconvenience of using small screen or entering text on handheld device [99] Other, please specify	Ask if J.6b=1 or. J.6d=1 or J.6f=1
J.11	Why don't you use mobile connectivity for Internet access?	[1] Lack of access to devices [2] No need to use Internet [3] Don't know how to use it [4] Inconvenient to use small screen on a handheld device [5] Cost of device and/or subscription [6] Connection too slow [7] Privacy or security reasons [99] Other, please specify:	Ask if J.7a=0
J.12	When subscribing to an internet connection, what is the main factor	[1] Maximum	Ask if J.7b=1

	you consider?			download speed [2] Maximum amount you can download/upload [3] Price of subscription [4] It's part of a bundle [5] Cost of equipment (e.g. a modem) [6] Customer service offered [99] Other, please specify:	or. J.8b=1 or J.9b=1
J.13	Do you have an email address?			[1] Yes [0] No	
J.14a	What limits your use of the Internet?	No interesting content for me		[1] Yes [0] No	
b		Lack of local language content		[1] Yes [0] No	
c		Internet is very slow		[1] Yes [0] No	
d		Internet is expensive to use		[1] Yes [0] No	
e		Lack of network/connectivity options in my area		[1] Yes [0] No	
f		Difficulty to set or change parameters for Internet access (e.g. switch to WI-FI, activate location aware applications or activate internet access)		[1] Yes [0] No	
g		Inconvenience of using small screen or entering text on handheld device		[1] Yes [0] No	
h		Few people to communicate with via the Internet		[1] Yes [0] No	
i		Privacy or security concerns		[1] Yes [0] No	
j		Other, please specify:		[1] Yes [0] No	
J.15	Are you signed up for any online social network (Facebook, Twitter, LinkedIn, Pinterest, Google+ etc.)?			[1] Yes [0] No	
J.16a	Which social network(s) are you signed up for?	Facebook		[1] Yes [0] No	Ask if J.18 = 1
b		Twitter		[1] Yes [0] No	
c		LinkedIn		[1] Yes [0] No	
d		Pinterest		[1] Yes [0] No	
e		Google+		[1] Yes [0] No	
f		Tumblr		[1] Yes [0] No	
g		Instagram		[1] Yes [0] No	
h		Snapchat		[1] Yes [0] No	
i		WhatsApp		[1] Yes [0] No	
j		YouTube		[1] Yes [0] No	
k		Other, please specify:			
J.17	How do you primarily access social networks			[1] Via mobile phone [2] Via Desktop PC / laptop [3] Both [99] Other, please specify:	
J.18 For which activities did you use the Internet for private purposes in the last twelve (12) months from any location? (Read out statements)					
a	Getting information about goods or services		[1] Yes [0] No		
b	Seeking health information (on disease, injury, services)		[1] Yes [0] No		
c	Sending or receiving email		[1] Yes [0] No		
d	Making telephone calls over the Internet/VoIP (e.g. Skype,		[1] Yes [0] No		

	)		
e	Instant messaging or accessing chat sites, newsgroups or online discussions (e.g. WhatsApp)	[1] Yes [0] No	
f	Looking for a job or sending/submitting a job application online	[1] Yes [0] No	
g	Blogging (maintaining or adding content to a blog)	[1] Yes [0] No	
h	Purchasing or ordering goods or services (place online order, even if payment is offline)	[1] Yes [0] No	
i	Internet banking (includes electronic transaction with a bank for payment, transfers)	[1] Yes [0] No	
j	Education or learning activities (formal)	[1] Yes [0] No	
k	Playing or downloading video games or computer games	[1] Yes [0] No	
l	Downloading movies, images, music, watching TV or video, or listening to radio or music	[1] Yes [0] No	
m	Downloading software	[1] Yes [0] No	
n	Reading or downloading online newspapers or magazines, electronic books	[1] Yes [0] No	
o	Participate in distance learning for an academic degree or job training	[1] Yes [0] No	
p	Get information for school or university related work/ Researching a topic	[1] Yes [0] No	
q	Look for free education content, such as free courses, online encyclopedia, Wikipedia, and other learning resources	[1] Yes [0] No	
r	Collaborate on online documents (example Google docs, Dropbox)	[1] Yes [0] No	
s	Social networking or video-sharing websites (Facebook, Twitter, LinkedIn, Pinterest, Google+)?	[1] Yes [0] No	
t	Using storage space on the Internet to save documents, pictures, music, video, other files (e.g. Google Drive, Dropbox, Windows Skydrive, iCloud, Amazon Cloud Drive)	[1] Yes [0] No	
u	Uploading self/user-created context to website to be shared (text, images, photos, etc.)	[1] Yes [0] No	
v	Managing personal/own homepage	[1] Yes [0] No	
w	Other activities (please specify)	[1] Yes [0] No	
J.19	How confident are in using the Internet in the following? (Read out statements)		
a	Using an Internet search engine	[1] Not confident all	
b	Using email to communicate with others	[2]	
c	Instant messaging or accessing chat sites, newsgroups or online discussions (e.g. WhatsApp) [88] Don't know	[3] Somewhat confident [4] [5] Very confident	
J.20	I am going to ask you about your satisfaction in relation to various characteristics of your Internet service, rate each using the scale below		
a	Speed of your internet service	[1] Very satisfied	
b	Cost of your internet service	[2] Satisfied	
c	Reliability of your internet service	[3] Not sure	
d	Customer support after sales (e.g. when you call with issues)	[4] Dissatisfied [5] Very dissatisfied	
e	Value for money spent on your internet service	[88] Don't know	
f	Overall perception of your internet service		

NO Internet Use				
J.21a	What are the reasons why	Do not need the Internet (not useful, not interesting, lack of local content)	[1] Yes [0] No	Ask if J.1 = 0
b	you do not use	Do not know how to use it (lack of knowledge or skills)	[1] Yes [0] No	
c	the Internet?	Cost of Internet service is too high (service charges,	[1] Yes [0] No	

		etc.)		
d		Privacy or security concerns	[1] Yes [0] No	
e		Internet service is not available or is poor in my area	[1] Yes [0] No	
f		Cultural reasons (e.g. exposure to harmful content)	[1] Yes [0] No	
g		Don't know what Internet is	[1] Yes [0] No	
h		Not allowed to use the Internet	[1] Yes [0] No	
i		Cost of internet equipment or devices too high	[1] Yes [0] No	
j		Other, please specify:		

Module K: E-Government Services			
K.1	Have you interacted with any government Ministry, Department or Agency (MDA) in the last 12 months	[1] Yes [0] No	Skip to K.7 if K.1=0
K.2	Which channel did you use to Interact with the government MDA? (Select all that apply)		
a	Face-to-face	[0] No [1] Yes	
b	Telephone	[0] No [1] Yes	
d	Institutional website	[0] No [1] Yes	
e	Email	[0] No [1] Yes	
f	Facebook/Twitter	[0] No [1] Yes	
g	SMS (Short Text Messages)	[0] No [1] Yes	
h	Mobile application (e.g. android or IOS app)	[0] No [1] Yes	
i	Postal mail/fax	[0] No [1] Yes	
j	Third party or other intermediary	[0] No [1] Yes	
n	Other (Please Specify)		
K.3	How satisfied were you with your interaction with the government MDA using the channels below?		
a	Face-to-face	[1] Very satisfied [2] Satisfied [3] Not sure [4] Dissatisfied [5] Very dissatisfied [88] Don't know	Ask if G2a=1
b	Telephone		Ask if G2b=1
d	Institutional website		Ask if G2c=1
e	Email		Ask if G2d=1
f	Facebook/Twitter		Ask if G2e=1
g	SMS (Short Text Messages)		Ask if G2f=1
h	Mobile application (e.g. android or IOS app)		Ask if G2g=1
i	Postal mail/fax		Ask if G2h=1
j	Third party or other intermediary		Ask if G2i=1
K.4	Are you aware of any government and/or public service(s) available online?	[0] No [1] Yes	
K.5	Have you used any online government and/or public services for your non-work related matters in the past 12 months?	[1] Yes, have used services in last 12 months [2] No, used services over 12 months ago [3] No, have never used any	
K.6	Which of the following e-government and/or public service(s) have you used in the past 12 months for none-work related matters?		
a	Registration for TIN	[0] No [1] Yes	
b	Online payment for taxes	[0] No [1] Yes	
c	Online filling of tax returns	[0] No [1] Yes	
d	Online registration for UNEB Examinations	[0] No [1] Yes	
e	Know your UNEB Examinations results	[0] No [1] Yes	
f	NSSF eStatement	[0] No [1] Yes	
g	Mobile Payment for utility bills (water/electricity)	[0] No [1] Yes	
h	Application for trading license	[0] No [1] Yes	
i	Business Name Search and reservation	[0] No [1] Yes	
j	Electoral Commission voter locator	[0] No [1] Yes	
k	Application for Student Loan	[0] No [1] Yes	
l	Online Declaration of income, assets & liabilities for	[0] No [1] Yes	

	civil servants		
m	Online reporting of Gender Based Violence	[0] No [1] Yes	
n	Business Name Search and reservation	[0] No [1] Yes	
o	Electoral Commission voter locator	[0] No [1] Yes	
p	Application for Student Loan	[0] No [1] Yes	
q	Online Declaration of income, assets & liabilities for civil servants	[0] No [1] Yes	
r	UNEB e-Services (Exams registration status, results and Time tables)	[0] No [1] Yes	
s	Land Title Verification	[0] No [1] Yes	
K.7	How satisfied were you with the government service that you used?		
a	Registration for TIN	[1] Very satisfied [2] Satisfied [3] Not sure [4] Dissatisfied [5] Very dissatisfied [88] Don't know/not applicable	Ask if K.6a=1
b	Online payment for taxes		Ask if K.6b=1
c	Online filling of tax returns		Ask if K.6c=1
d	Online registration for UNEB Examinations		Ask if K.6d=1
e	Know your UNEB Examinations results		Ask if K.6e=1
f	NSSF eStatement		Ask if K.6f=1
g	Mobile Payment for utility bills (water/electricity)		Ask if K.6g=1
h	Application for trading license		Ask if K.6h=1
i	Business Name Search and reservation		Ask if K.6i=1
j	Electoral Commission voter locator		Ask if K.6j=1
k	Application for Student Loan		Ask if K.6k=1
l	Online Declaration of income, assets & liabilities for civil servants		Ask if K.6l=1
m	Online reporting of Gender Based Violence		Ask if K.6m=1
n	Business Name Search and reservation		Ask if K.6n=1
o	Electoral Commission voter locator	Ask if K.6o=1	
p	Application for Student Loan		Ask if K.6p=1
q	Online Declaration of income, assets & liabilities for civil servants		Ask if K.6q=1
r	UNEB e-Services (Exams registration status, results and Time tables)		Ask if K.6r=1
s	Land Title Verification		Ask if K.6s=1
K.8a	Have you heard of MYUG free Wi-Fi Service	[1] Yes [0] No	
b	Have you used the MYUG Service to access the internet in the last 3 months?	[1] Yes [0] No	Ask if K.8a=1
c	How often do you use the MYUG service?	[1] Daily or almost everyday [2] At least once a week (but not everyday) [3] At least once a month (but not weekly) [4] Occasionally	Ask if K.8a=1
d	How would you rate the speed of the MYUG connection?	[1] Very slow [2] slow [3] Moderate [4] fast [5] Very fast	Ask if K.8a=1
e	How would you rate your overall experience with using MYUG?	[1] Very satisfied [2] Satisfied [3] Not sure [4] Dissatisfied [5] Very dissatisfied [88] Don't know/not sure	Ask if K.8a=1
f	How do you think we can improve the MYUG service?		Ask if K.8a=1
K.9	What is the biggest frustration you face in accessing	[1] Time Delays	

	government services?	[2] Costs too much [3] Information getting lost [4] Keeping track of my request [5] Too much paper work [99] Other, please specify	
K.10	How can government service delivery to citizens be improved?	[1] Put more services online (on the Internet) [2] Share more data between institutions/systems [3] Reduce the cost/make it cheaper [4] Design services with citizens [99] Other, please specify	
K.11	In which sector do you face the most frustration when trying to access services?	[1] Health [2] Works & Transport [3] Justice, Law & Order [4] Education [5] Agriculture [99] Other, please specify	
K.12	Which of the following HEALTH information services do you recommend to be put online first?	[1] HIV Counselling [2] Nearest health facility [3] Antenatal Care and Family Planning [4] Child nutrition & immunization [99] Other, please specify	Ask if K.11=1
K.13	Which of the following WORKS & TRANSPORT information services do you recommend to be put online first?	[1] Info on permits and fines [2] Real-time traffic information [3] Info on road closures and diversions [4] Report potholes and other road obstacles [99] Other, please specify	Ask if K.11=2
K.14	Which of the following JLOS information services do you recommend to be put online first?	[1] Report Corrupt Govt. officials [2] Info on Court Schedules & Rulings [3] Report Human Rights cases [4] Report domestic violence [5] Report complaints to Police [99] Other, please specify	Ask if K.11=3
K.15	Which of the following EDUCATION information services do you recommend to be put online first?	[1] UNEB Exam Results [2] Available Scholarships & Student Loans [3] Registration Status Of Schools [4] Syllabus, Curriculum, Reading Materials [99] Other, please specify	Ask if K.11=4
K.16	Which of the following AGRICULTURE information services do you recommend to be put online first?	[1] Weather & growing seasons [2] Markets & prices [3] Prevention of pests & diseases [4] Location of veterinary shops & extension services [99] Other, please specify	Ask if K.11=5
K.17	List any other government services you would like to see available on line in other sectors?		
a			
b			

c		
d		
e		
f		

Module L: Online Risks and Incidents (Ask if J.1 = 1)			
L.1	Are you aware of any Ugandan laws that govern electronic communications and transactions (sometimes called Cyber laws), such as use of email or buying goods and services online?	[1] Yes [0] No	
b	If Yes, Please state any cyber laws that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[0] Can't state any law [1] Electronic Transactions Act, 2011 [2] Electronic Signatures, Act 2011 [3] Computer Misuse Act, 2011	Ask if L.1 = 1
L.2	The Computer Misuse Act, 2011 was put in place to prevent unlawful access, and misuse of information systems including computers. Are you aware of any offences that are created by the Computer Misuse Act, 2011?	[1] Yes [0] No	
b	If so, please list any two offences that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[1] Unauthorised access, such as hacking [2] Unauthorised obstruction of use of computers, such as denial of service attacks [3] Electronic fraud [4] Intellectual property crimes [5] Malicious and offensive communications [6] Disclosing private sexual images without consent [7] Cyber stalking and harassment [8] Prohibited and indecent images of children [99] Other, please specify	Ask if L.2=1
L.3	To what extent do you feel at risk from cybercrime?	[1] I don't feel at risk, it won't happen to me [2] I don't feel at risk, but could happen to me [1] I feel at risk, I am careful when online [3] I feel at risk, I am very vigilant online [5] I feel the risk is unbearably high	
L.4	Over the last 12 months, have you been a victim of a successful...? (Focus on cyber dependent crimes or crimes that can be committed only through the use of ICT)		
a	Virus or other computer infection (e.g. malware, worm or Trojan horse)	[1] Yes [0] No	
b	Phishing (receiving fraudulent messages) or pharming scam (getting redirected to fake websites asking for personal information) with a potential for financial loss?	[1] Yes [0] No	

c	Online account attack (email, Facebook, etc.)	[1] Yes [0] No	
d	Abuse of personal information sent on the Internet and/or other privacy violations (e.g. abuse of pictures, videos, personal data uploaded on community websites)	[1] Yes [0] No	
e	Financial loss due to fraudulent payment (credit or debit) card use	[1] Yes [0] No	
f	Receiving unsolicited messages (spam)	[1] Yes [0] No	
g	Experienced none	[1] Yes [0] No	
h	Other activities (please specify)	[1] Yes [0] No	
L.5	Over the last 12 months, have you been a victim of…? (Focus on cyber-enabled crimes or crimes which do not depend on ICT but have been transformed in scale or form by the use of ICT)		
a	Online fraud or theft	[1] Yes [0] No	
b	Online harassment or bullying	[1] Yes [0] No	
c	Online stalking	[1] Yes [0] No	
d	Online sexual offences (e.g. abuse of pictures, videos, personal data uploaded on community websites)	[1] Yes [0] No	
e	Experienced none	[1] Yes [0] No	exclusive
f	Other activities (please specify)	[1] Yes [0] No	
L.7	Do you know that under the Computer Misuse Act, 2011, you can report to law enforcement offices if an offence has been committed against you?	[1] Yes [0] No	Ask if any L.4 or L.5=1
L.8	Have you ever reported any online crimes committed against you to anyone?	[1] Yes [0] No	
L.9	Who did you report the online crimes to?		Ask if L.8=1
a	My Financial Services provider (e.g. bank)	[1] Yes [0] No	
b	My Internet Service Provider	[1] Yes [0] No	
c	The Uganda Police (or other law enforcement agency)	[1] Yes [0] No	
d	NITA	[1] Yes [0] No	
e	CERT.ug or UgCERT	[1] Yes [0] No	
f	Other (please specify)	[1] Yes [0] No	
L.10	If you have never reported any cybercrimes, what is your main reason?		Ask if L.8a=1
a	I did not know what the crime was	[1] Yes [0] No	
b	I did not know who to or how to report it	[1] Yes [0] No	
c	I felt it was a waste of time	[1] Yes [0] No	
d	I fixed the problem myself	[1] Yes [0] No	
e	Not applicable	[1] Yes [0] No	
f	Other (please specify)	[1] Yes [0] No	
L.11	What measures have you taken to improve your online security over the last 12 months?		
a	Use different passwords for different websites	[1] Yes [0] No	
b	Change passwords regularly	[1] Yes [0] No	
c	Use up-to-date antivirus software	[1] Yes [0] No	
d	Use a firewall	[1] Yes [0] No	
e	Reduced banking and shopping online	[1] Yes [0] No	
f	I have taken no measures	[1] Yes [0] No	
g	Other (please specify)	[1] Yes [0] No	

Module M: E-Commerce (Ask only internet users)			
M.1	Have you ever made an online order/purchase? (even if payment was not online)	[1] Yes [0] No	Skip to M.7 if M.1=4
M.2	When was the last time you made an online	[1] During the last 3 months	Ask if M.1=1

	order/purchase? (even if payment was not online)	[2] Between 3 and 6 months ago [3] Between 6 months to one year ago [4] More than one year ago	
M.3	What types of goods and services did you purchase over the Internet?		
a	Books, magazines or newspapers?	[1] Yes [0] No	
b	Cars/Automobiles, spare parts and accessories	[1] Yes [0] No	
c	Clothing, footwear, sporting goods or accessories	[1] Yes [0] No	
d	Computer equipment or parts (including peripheral equipment)?	[1] Yes [0] No	
e	Computer or video games?	[1] Yes [0] No	
f	Computer software (includes upgrades and paid apps; not games)?	[1] Yes [0] No	
g	Cosmetics	[1] Yes [0] No	
h	Financial products (including shares and insurance)	[1] Yes [0] No	
i	Food, groceries, alcohol or tobacco	[1] Yes [0] No	
j	ICT services (excluding software)	[1] Yes [0] No	
k	Medicine	[1] Yes [0] No	
l	Movies, short films or images	[1] Yes [0] No	
m	Music products	[1] Yes [0] No	
n	Photographic, telecommunications or optical equipment	[1] Yes [0] No	
o	Tickets or bookings for entertainment events (sports, theatre, concerts, etc.)	[1] Yes [0] No	
p	Travel products (travel tickets, accommodation, vehicle hire etc.)	[1] Yes [0] No	
q	Other? Please specify	[1] Yes [0] No	
M.4a	Are you aware of any rights available to you when you buy goods or services online?	[1] Yes [0] No	
b	If, Yes. Please state any two rights that you are aware of (DO NOT READ OPTIONS, JUST USE TO CATEGORISE USER RESPONSE)	[1] Right to clear information from the online sellers [2]Right to refund for delayed or non-delivery [3] Right to redress in case of Ask if M.4a=1 faulty goods [99] Other, please specify	
M.5	How often do you make online or mobile purchases?	[1] Daily or almost everyday [2] At least once a week (but not everyday) [3] At least once a month (but not weekly) [4] At least once every 3 months (but not monthly) [6] At least once every year [7] Once in a while (randomly) [88] Not sure / don't know	
M.6	Where is the location of the seller/platform/website that you place orders with most often?	[1] In Uganda [2] In East Africa [3] Other parts of Africa [4] Beyond Africa [88] Don't recall	
M.7	On average, how much do you spend per transaction on online orders or purchases?	[1] less than UGX 325,000 [2] UGX 325,001 to 650,000	

		[3] UGX 650,001 to 1.3 million [4] UGX 1.3 million or more [88] Don't know	
M.8	How do you pay for the goods you buy online?	[1] Mobile money [2] Credit card [3] Debit card [4] Electronics Funds Transfer (EFT) [5] Paid cash on pickup or delivery [6] Paid by cheque on pickup or delivery [99] Other, please specify	
M.9	What challenges have you encountered when buying goods or services online?	[1] Deliveries arrived late, beyond promised time [2] Goods arrived faulty or damaged [3] Good looked different on arrival, not what I expected [3] Goods did not arrive at all [4] Was overcharged or incurred additional or unexpected fee [99] Other, please specify	
M.10	Have you ever sold anything online?	[1] Yes [0] No	
M.11	How did you get paid?	[1] Mobile money [2] Credit card [3] Debit card [4] Electronics Funds Transfer (EFT) [5] Paid cash on pickup or delivery [6] Paid by cheque on pickup or delivery [99] Other, please specify	
M.12	What challenges do people that sell goods or services online encounter? (Select all that apply)	[1] My products are unsuited for online-sales [2] Logistics (e.g. delivering product to customer) [3] Payments [4] Security [5] Legal issues [6] Low expected returns [99] Other, please specify	

No E-Commerce (Ask only if M.1=0)			
M.11a	What are the reasons why you do not purchase goods/services online?	Not interested	[1] Yes [0] No
b		Prefer to shop in person; physical interaction with goods/seller	[1] Yes [0] No
c		Security of payment details (e.g. sharing my debit or credit card details)	[1] Yes [0] No
d		Privacy concerns (e.g. about giving personal details)	[1] Yes [0] No
e		Trust concerns (e.g. about warranties, receiving or returning products);	[1] Yes [0] No
f		Lack of awareness (e.g. I didn't know I could buy things online)	[1] Yes [0] No
g		Other, please specify:	

Module N: Electronic Payments			
N.1	Have you ever sent/transferred money using any electronic methods? (e.g. mobile money or online bank	[1]Yes [0]No	If N.1=0, Skip to N.9

	transfers)			
N.2	How often do you send/transfer any money using electronic methods?		[1] Daily or almost everyday [2] At least once a week (but not everyday) [3] At least once a month (but not weekly) [4] At least once every 3 months (but not monthly) [6] At least once every year [7] Once in a while (randomly) [88] Not sure / don't know	
N.3	Have you sent money to any of the following? (select all that apply)		[1] Within Uganda [2] To other parts of East Africa [3] To other parts of Africa (beyond East Africa) [4] To other parts of the World (beyond Africa) [88] Don't recall	
N.4	What channels did you use to send/transfer the money using electronic methods?			
a	Bank to bank		[1]Yes [0]No	
b	Bank to mobile phone		[1]Yes [0]No	
c	Mobile phone to bank		[1]Yes [0]No	
d	Mobile phone to mobile phone		[1]Yes [0]No	
e	Other, please specify		[1]Yes [0]No	
N.5	Do you pay for goods/services using any electronic methods? (e.g. mobile money, ATM /debit cards/ visa cards etc.)		[1]Yes [0]No	
N.6a	Which of the following instruments do you use to make electronic payments?	Mobile money	[1]Yes [0]No	
b		Credit cards (visa/master card)	[1]Yes [0]No	
c		Debit cards (visa/master card)	[1]Yes [0]No	
d		E-banking	[1]Yes [0]No	
e		Mobile banking (USSD/mobile app)	[1]Yes [0]No	
f		Point of sale	[1]Yes [0]No	
g	Other, please specify			
N.7a	What do you pay for/receive using electronic payment methods?	Sending /receiving money from someone	[1]Yes [0]No	
b		Utilities (Umeme, national water, etc.)	[1]Yes [0]No	
c		Transport payments (Uber, taxi, etc.)	[1]Yes [0]No	
d		School fees Payments	[1]Yes [0]No	
e		Taxes and Fees Payments (URA, KCCA, etc.)	[1]Yes [0]No	
f		Airtime top up or phone bill payments	[1]Yes [0]No	
g		Salary payments	[1]Yes [0]No	
h		Insurance Payments	[1]Yes [0]No	
i		Pay TV (DSTv, Azam, StarTimes, GoTV, Zuku, etc.)	[1]Yes [0]No	
j		Purchases at Point of Sale (e.g. at supermarket or petrol station)	[1]Yes [0]No	
k		Online shopping or purchases	[1]Yes [0]No	
l		Receive pension	[1]Yes [0]No	
m		Other, please specify		
N.7b	How important are the following attributes to you when selecting an electronic payment			

	method? Rate each on a scale of [1] Very important [2] Important [3] Not sure [4] Unimportant [5] Very unimportant		
a	Safety		
b	Speed		
c	Ease of use		
d	Avoiding additional costs applied to a use of specific method		
N.8	What are some of the challenges that you have encountered in using electronic payments?		
a	System or network failures	[1]Yes [0]No	
b	Delayed completion of transaction	[1]Yes [0]No	
c	Agents lack sufficient funds to pay out	[1]Yes [0]No	
d	Money I sent was not received by recipient	[1]Yes [0]No	
e	Sending money to the wrong recipient	[1]Yes [0]No	
f	High cost of transactions	[1]Yes [0]No	
g			
h	Other, please specify		
No Electronic payments Use (Ask if N.1= No)			
N.9	What do you consider as some of the barriers to using electronic payment methods?		
a	Not registered	[1]Yes [0]No	
b	Do not know how to use it	[1]Yes [0]No	
c	It's expensive or costs are high	[1]Yes [0]No	
d	I feel insecure using it with my money	[1]Yes [0]No	
e	I prefer to transact with cash	[1]Yes [0]No	
f	The transaction limits are low	[1]Yes [0]No	
g	No barriers	[1]Yes [0]No	
h	Other (please specify)		
N.10	Would you be interested in using electronic payments in future?	[1] Yes [0] No	
N.11	Thank you for your time, do you have any questions.		

Appendix D Digital Files

The following digital files have been submitted as part of this report on separate media:

1. Questionnaires used for data collection

a. Final MDA questionnaire in Portable Document Format (PDF) and the XLSForm (XLS) uploaded to ODK server

b. Final Local Government questionnaire in Portable Document Format (PDF) and the XLSForm (XLS) uploaded to ODK server

c. Final Household and Individual questionnaire in Portable Document Format (PDF) and the XLSForm (XLS) uploaded to ODK server

2. Raw data for all the questionnaires as downloaded from the ODK

a. MDA raw data in Comma Separated Values (CSV) file format

b. Local Government raw data in Comma Separated Values (CSV) file format

c. Household and Individual raw data in Comma Separated Values (CSV) file format

3. Cleaned data for all the questionnaires

a. MDA cleaned data in both Comma Separated Values (CSV) and Stata (DTA) file formats

b. Local Government cleaned data in both Comma Separated Values (CSV) and Stata (DTA) file formats

c. Household and Individual cleaned data in both Comma Separated Values (CSV) and Stata (DTA) file formats