NITA UGANDA

- Driving the IT Revolution -

National Information Technology Survey Final Report

2022

Preface

The National Information Technology Authority (NITA-U) , with funding from the government of Uganda, conducted the National Information Technology (IT) Survey 2022 to provide data and information that informs and supports the monitoring of national development policies and international frameworks related to information technology (IT). This third edition of the National IT Survey provides information on a wide range of indicators covering government ministries, departments and agencies (MDAs); local governments (LGs); and households and individuals as well as businesses.

The report presents information at the national, rural-urban and regional levels and will serve as a key reference document for those involved directly or indirectly in ICT-related planning and policymaking. We are confident that the underlying data will inform monitoring and evaluation frameworks at both the national and international levels and prove beneficial to academics, researchers and students alike through in-depth analysis.

Special gratitude goes to the Uganda Bureau of Statistics (UBOS) for technical support and to the various stakeholders, MDAs, LGs, business enterprises and households that contributed to the successful implementation of the survey.

Dr Hatwib Mugasa

EXECUTIVE DIRECTOR

Acknowledgements

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Abbreviations

Term	Description
4IR	Fourth Industrial Revolution
BYOD	Bring your own device
CAO	Chief Administrative Office
CERT.UG/CC	Computer Emergency Response Team/Coordination Centre
EA	Enumeration area
EGH	Expert Group on ICT Household Indicators
EGTI	Expert Group on Telecommunication/ICT Indicators
ICT	Information and communication technology
ISP	Internet service provider
IT	Information technology
ITU	International Telecommunications Union
LGA	Local government administration
MDA	Government ministry, department and agency
NITA-U	National Information Technology Authority-Uganda
ODK	Open data kit
SIM	Subscriber identity module or subscriber identification module
UBOS	Uganda Bureau of Statistics
UCC	Uganda Communications Commission
UGX	Uganda shillings
UNECA	United Nations Economic Commission for Africa
UNCTAD	United Nations Conference on Trade and Development

Executive Summary

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 data and information to inform and monitor national development policies and international frameworks related to IT.

In line with this mandate, NITA-U conducted the National IT Survey 2022 to understand the availability, access, usage, affordability and satisfaction with IT infrastructure, equipment and services amongst individuals, households, government MDAs and local government administrations (LGAs) as well as businesses. The survey was designed to be nationally representative, with the target population including all MDAs, LGAs and households and individuals across the country. The actual sample for the survey, developed with the guidance and support of UBOS, included 132 MDAs, 128 districts and 3,960 households and individuals as well as 600 businesses. The survey was carried between January and April of 2022.

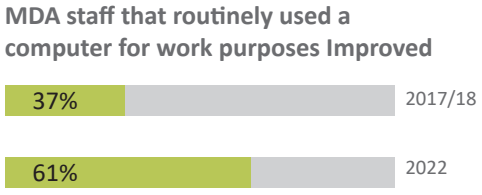
Overall Findings

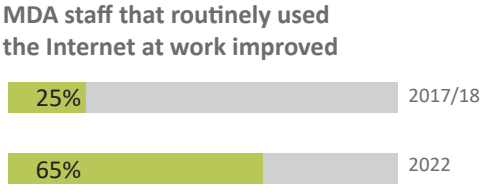
This survey showed that significant progress has been achieved in terms of the overall penetration and utilisation of IT services. However, the unequal access to and use of such services across the country remain a major challenge, with especially rural-urban-, gender- and income-based divides (that relate to the affordability of service) remaining as challenges. Gaps also exist at the sub-regional levels. Given these findings, the government needs to double down on programmes and policies designed to improve access and affordability to achieve the level of digital inclusion expected under the Sustainable Development Goals.

Key Findings from MDAs and Implications

The streamlined and mission-focused use of information and communication technology (ICT) services and systems starts with ICT policy, and there has been progress in that 75%[1] of the MDAs reported having such policies in place. NITA-U needs to extend the required support to ensure that the remaining gaps are addressed to reach the desired 100%. A caveat here is that this survey did not examine the quality and sufficiency of policies with respect to both back-end operations and front-end service delivery.

The proportion of MDA staff that routinely used a computer for work purposes, and the proportion of MDA staff that routinely used the internet at work, have greatly improved since 2017/18 (from 37% to 61%, and 23% to 65% respectively). Some of the internal challenges identified by the 2017/18 survey, such as poor internal network infrastructure and a lack of adequate ICT skills and knowledge among employees, persist.





1 Percentages in the Executive Summary have been rounded to two significant figures.

NITA-U is the dominant internet service provider (ISP) for MDAs, covering 91% of all MDAs, mostly via fibre connections. While there is increased satisfaction regarding the sufficiency of bandwidth among MDAs, most of them are still concerned about the cost and affordability of internet access. It is evident that NITA-U needs to continue driving down the cost of internet bandwidth for MDAs, which would also have a positive impact on the general cost of internet access in the country.

While most MDAs (64%) have applications and/or databases hosted in the cloud provided by NITA-U, they still have concerns about the high cost and security, which they see as the major barriers. Ideally, the utilisation of NITA-U's cloud services by MDAs should be 100%. To achieve this, NITA-U needs to address both real and perception barriers to the utilisation of the services.

There is a major gap in the adoption and utilisation of the opportunities provided by the Fourth Industrial Revolution (4IR) technologies to improve both back-end operations and decision-making and front-end public service delivery, with only 21% of the MDAs indicating steps in this direction. Uganda's National 4IR Strategy provides a good reference document for addressing this major gap.

While MDAs indicated high interest in shared platforms and infrastructure, the sharing of information databases with other MDAs or open data with the public is still minimal. To exacerbate the problem, only 6% of MDAs have an institutional enterprise architecture (IEA), and 4% have IT interoperability frameworks – both of which are critical as the government shifts towards the integration and interoperability of MDA systems to enhance efficiencies through whole-of-government digital investments. Both cultural and operational barriers to the sharing of data, both intra- and inter-MDA, need to be addressed as a matter of urgency. The absence of consistent and accurate data across the government disables both planning and service delivery and, in addition, leads to gaps and inconsistencies in reporting to international organisations.

Hindrances toward platforms & infrastructure, sharing of information databases

6%

Only 6% of MDAs have an Institutional Enterprise Architecture

4%

Only 4 % of MDAs have IT interoperability frameworks

Security remains a top priority, with 59% of MDAs reporting having experienced some type of IT security incident during that previous 12 months. There is a general decline in the proportion of different security incidents that occurred during the preceding 12 months of this survey compared to the 2017/18 edition. While this may reflect improvements in terms of IT security skills and infrastructure across MDAs, it may also be a result of reduced detection, for example, due to the increased sophistication of attacks. There is a continuing need to increase security awareness among MDAs to be alert to the various dangers and risks, both social and technical, related to working and delivering services online.

Key Findings from LGAs and Implications

The adoption of ICT among LGAs is still very low, with only 4.6% of staff having a computer (desktop computer or laptop) assigned to them for work purposes and 5.6% of staff routinely using a computer at work (for work purposes). The proportion of staff with internet access was even lower, at only 2.5%. LGAs are a critical part of the service delivery value chain: high utilisation at the MDA levels without penetration to the LGA levels means that Uganda is not yet positioned to exploit the opportunities of improving service delivery through digitalisation. This gap is therefore a priority area for corrective government interventions.

The government goal to connect all district headquarters to fibre still remains a challenge: while three in five (72%) LGAs had internet access, only 39% among these had fibre connections to their ISP. Potential obstacles to a wider use of

the internet for work purposes cited by LGAs included high cost (or inadequate budget), slow and unreliable internet, inadequate number of computers for staff and lack of access to electricity. It is difficult to see a realisation of digitalisation that will enable an efficient Parish Development Model until these glaring gaps with respect to access are addressed.

Most of the software applications used in MDAs were commercial off-the-shelf applications. Just like with MDAs, there are potential savings to be made if commonly used applications across LGAs can be procured together to leverage economies of scale. One in three (32.3%) LGAs had also adopted cloud computing, and most LGAs hosted their applications and/or databases in the government data centre.

69%

Experienced some type of ICT security incident during that last 12 months in the form of:

58%

Viruses or other computer infections

40%

Loss of data due to lack of backups

35%

Cybercrime exposure.

Most LGAs (69%) had experienced some type of ICT security incident during that previous 12 months. These included incidents related to viruses or other computer infections (58%) and loss of data because there were no backups (40%). This is alarming because as most LGAs aspire to go digital, only 35% of LGAs felt at risk of cybercrime, and only 44% of LGAs had any kind of formal ICT policy or plan to guide their ICT operations. This highlights the level of effort required to create awareness among the LGAs and to support them in building the necessary ICT operational environment.

Key Findings from Households and Implications

Household-level internet access is still severely limited, with 94% having no access at all. Consistent with other indicators is the urban-rural digital divide, with 13% of the households in urban areas having a working internet connection compared to 3.2% in rural areas. The concentration of households with access are in the Buganda South, Buganda North and Kampala sub-regions. The main reasons for not having internet access at home given by close to half (48%) of the households was that the 'cost of equipment is too high', followed by 37% of households indicating that the 'cost of service is too high'. Lack of knowledge was the most common reason cited in 2017/18, while cost of equipment was ranked third and cost of internet being high was ranked fifth. Household internet connections relied mainly on phones (61%) or USB dongle/MiFi devices (27%).

The proportion of households with working landline telephones was only 1%, but those with working mobile phones was 33%, consistent with the historical shift from landlines to mobile phones. However, among households that had mobile phones, the proportion of smartphones was still very low (17%). The proportion of households in urban areas using smartphones (31%) is much higher than the proportion of households in rural areas (13%).

A miniscule proportion of households owned at least one working desktop computer (0.4%), at least one working laptop (2.5%) or at least one working tablet (0.6%), with more urban households than rural having such devices. A much higher proportion of households, about 50%, reported owning a working radio, and about 20% reported owning a working TV. These figures are indicative of the effectiveness, or otherwise, of using radio or TV as key channels for information dissemination or service delivery (for example, educational programmes), especially since the reality is compounded by a high urban-rural divide.

There are still major challenges regarding access to power, a major factor in access to online services. Only 20% of the households nationally have access to the electricity grid (55% for urban and 8% for rural). The importance of solar power is reflected by the reversal of access dominance, with almost 50% of rural households using it (solar) compared to 28% urban. This points to the direction that needs to be taken for the required rapid extension of access to power.

Only one in five (20%) households had someone with a bank account or access to one. In urban areas, the proportion of households with at least a member with a bank account or access to one was 33% compared to only 16% of rural households. Households hardly use postal services anymore.

94%

Of the of the households nationally are severely limited in accessing the internet.

0.4%

Of households owned at least one working desktop computer

13%

Of the households in urban areas having a working internet connection compared to 3.2% in rural areas.

20%

Households nationally have access to the electricity grid (55% for urban and 8% for rural).

Overall, it is apparent that a small proportion of households had access to and used digital computing devices and the internet. These households tend to be from urban rather than rural areas. There is a need to expand infrastructure to ensure wider coverage and access and to sensitise households to the availability and potential of using digital services.

Key Findings from Individuals and Implications

Overall, 74% of all individuals had used a mobile phone in the three months prior to the survey – with the percentage in urban areas (83%) being higher than that in rural areas (71%). A gender divide is also evident, the corresponding percentage for men and women being 80 and 70% respectively. A total of 87% of those who had used phones owned a mobile phone with the respective figures for rural and urban being 85% and 92%. While a gender divide still exists in phone ownership among those who had used phones, the gap is narrower, with 90% for men and 85% for women. Most individuals that had used but owned no mobile phones cited cost as the major impediment for not owning a mobile phone, with more females giving this as their primary reason.

A staggering 97% of individuals had not used any computing device in the previous three months, while only 1.3% owned any personal computer/laptop. Not surprising within this context, only 10% had used the internet for any purpose in the previous three months, with a very sharp urban-rural divide (23% and 6%, respectively). Among individuals that had not used the internet, lack of knowledge or skills was the biggest barrier (51%), followed by lack of knowledge about what the internet was (28%) and the high cost of internet access (26%).

About half of all individuals (49%) had a registered mobile money account in their names compared to one in 10 individuals (10%) that had a personal bank account, underscoring the high impact of mobile money on an otherwise largely unbanked population. The immediate future, especially unlocking access to financial services for the overwhelming percentage of the population, is clearly going to be digital. Among individuals that had used mobile money but did not have their own mobile money account, the biggest impediments were 'having no National ID' (52%), followed by 'I have no phone' (20%) and 'I have no SIM card' (14%). Given that only 76% of individuals reported owning a national ID, this highlights the need to expedite and simplify the processes related to acquiring (and replacing) national IDs and other identifiers that can facilitate digital inclusion.

74%

Individuals had used a mobile phone in the three months

97%

Individuals had not used any computing device in the last 3 months

49%

Had a registered mobile money account in their names

10%

Had a personal bank account

1.3%

Owned any personal computer/laptop

Only one in five individuals was aware of any government services provided online. Among these individuals, 26% reported some form of e-government interaction in the previous 12 months, the most common being submitting completed forms online (18%). Among individuals that had used e-government services, the high cost of the internet was cited as the biggest challenge (19%), followed by time delays (10%). Among individuals that had not used any e-government services, most reported preferring personal contact (23%), followed by lack of knowledge that such services existed (21%). The reasons cited by individuals that had not used any e-government services highlight the need for more awareness creation to increase usage.

Key Findings from Businesses and Implications

Over half of all businesses reported having access to basic computing devices, such as desktop computers (58%), laptop computers (53%) and printers (59%). But the proportion of employees assigned a computer at work (for work purposes) (25%) and the proportion that routinely used computers at work (for work purposes) (28%) were still low. About one in three business employees routinely used the internet at work (for work purposes), closely matching the proportion of staff that routinely used computers at work. Businesses cited cost as the biggest impediment regarding access to both computing devices and the internet, corroborating feedback from other stakeholders such as MDAs, LGAs and households and individuals.

While one in two businesses (55%) had internet access, and only one in every three businesses had a business website. Among the businesses with internet access, 58% had received orders, while 52% had placed orders for goods and services via the internet during the previous three months. While the use of mobile money is high, businesses largely relied on cash on delivery/pickup for both sales and purchases. This highlights the need to develop both digital payments and delivery logistics systems to facilitate trade. These are cited as top limitations by businesses that had made online sales and/or purchases along with the low level of customer demand for online purchases.

58%

Overall of the businesses reported having access to basic computing devices like desktop computers or laptops

58%

Of the businesses had Internet access, had received orders via the Internet during the last three months

55%

While one in two businesses (55%) had Internet access,

52%

Had placed orders for goods and services via the Internet during the last three months.

Recommended Priority Action Areas

The report highlights various areas where action is required. The following recommendations are highlighted as critical to breaking down the barriers to access and utilisation:

NITA-U should make it a priority to ensure that all MDAs and LGAs have guiding ICT policies.1

1 Increase the penetration of computers and computer usage at the MDA and LGA levels.

2 The cost of internet access remains a major challenge and calls for collaborative action across both government and the private sector. The target should be affordability not just in government but among the poorer sectors of the population.

3 Uganda's National 4IR Strategy should be used as a guide for using such technologies to improve both back-end operations and decision-making and front-end public service delivery.

4 Both cultural and operational barriers to the sharing of data, including intra- and inter-MDA, need to be addressed as a matter of urgency to improve both planning and service delivery and to enable consistent and accurate reporting to the international organisations that Uganda is part of.

5 There is a continuing need to increase security awareness among MDAs and LGAs to be alert to the various dangers and risks, both social and technical, related to working and delivering services online. Cybersecurity needs to be addressed across the board – MDAs, LGAs and the general public.

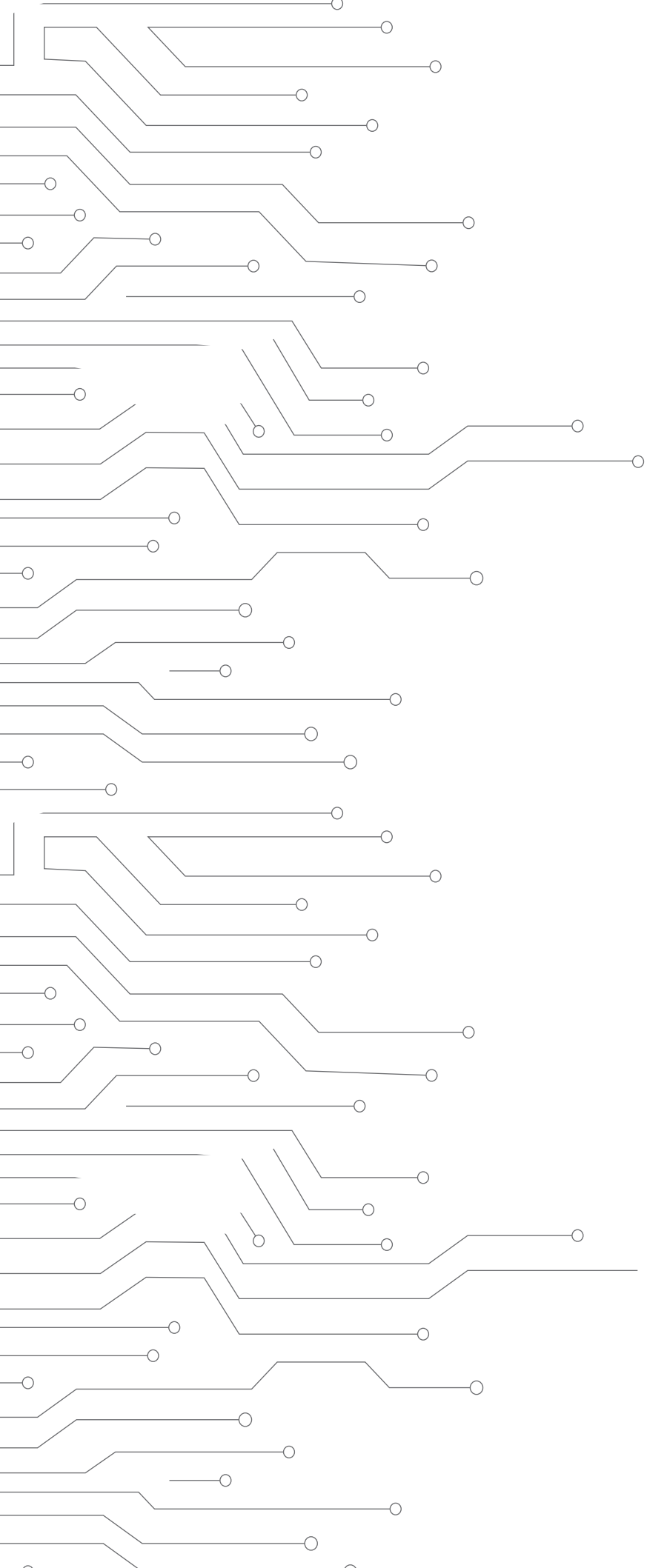
7 The extension of fibre across the country, starting with all district headquarters, is a priority. The National Broadband Baseline Study and Infrastructure Blueprint provides a good roadmap for this down to the sub-county level.

8 The government needs to develop and enforce an integrated approach to the acquisition of both hardware and software within MDAs and LGAs in order to minimise both operational and running costs.

9 Initiatives aimed at increasing access to solar power in rural areas, along with other strategies to bring down the costs of devices and services, would be major enablers for higher inclusion, especially riding on top of the improved access highlighted in these recommendations. This relates to all online services, including access to mobile money.

10 Awareness and user skills among the general population are still very limited, and NITA-U will need to develop major nationwide interventions, in collaboration with other stakeholders, to address this. This can be combined with addressing the awareness and utilisation gaps with respect to government services.

11 Businesses need specific targeting and training so that they can seize and fully exploit the opportunities provided by e-commerce through channels such as social media.



CHAPTER 1

Introduction

NITA-U is an autonomous statutory body that coordinates and regulates 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 data and information to inform and monitor national development policies and to IT.

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 to provide quality IT statistics for informed policy and decision-making. As part of these efforts, NITA-U conducted the National IT Survey 2022 to understand the availability, access and usage and affordability and satisfaction with IT infrastructure, equipment and services amongst individuals, households, government MDAs and LGAs as well as businesses. This report presents the findings of the survey across the country.

1.1 Study Objectives

The main objective of the study was to collect and analyse data relating to the availability, access, awareness, attitude and usage by government MDAs, business establishments and households and individuals of the various IT services and their attributes via a demand side survey.

The specific objectives of the study included:

i. Establishing the current status on the availability, access and usage of IT infrastructure and services across government MDAs, LGs and business establishments as well as among households and individuals.

ii. Identifying the existing gaps in terms of access to and usage of IT systems, applications, infrastructure and services in Uganda and proposing policy recommendations to address identified gaps.

iii. Establishing the level of public awareness of the available IT services (knowledge, attitude and perception) and making recommendations on how to improve the level of awareness.

iv. Assessing the level of IT service quality in Uganda and making recommendations on improvements where appropriate.

1.2 Report Structure

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

Chapter 1 introduces the study, and Chapter 2 briefly describes the survey process. Details of the survey process are provided in Annex B.

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

Chapter 4 presents the survey findings on IT access, usage and satisfaction with infrastructure, equipment and services across LGAs.

Chapter 5 provides the survey findings on IT access, usage and satisfaction with infrastructure, equipment and services among households.

Chapter 6 presents the survey findings on IT access, usage and satisfaction with infrastructure, equipment and services across individuals.

Chapter 7 presents the survey findings on IT access, usage and satisfaction with infrastructure, equipment and services among businesses.

Chapter 8 summarises key findings on IT access, usage and satisfaction at the different levels, highlighting key gaps along with recommendations to address them.

Annexes (at the end of the document) provide detailed information about various aspects that are not captured in the main report, including:

Annex A ICT Indicators

Annex B Detailed Survey Process

Annex C Digital Files

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CHAPTER

Survey Process

The national IT Survey 2022 went through the following steps before the dissemination of its final findings: survey planning, stakeholder consultations, survey and sampling design, development of instruments, pretesting and finalisation of instruments, recruiting and training of enumerators, data collection, data validation and processing, data analysis, and report writing and production. This section provides a high-level summary of the survey process, with details given in Annex B.

2.1 Sample Design

The consultants worked with NITA-U and UBOS to determine a sample size for households and individuals that responds to the level of accuracy required for the survey estimates for each domain as well as regarding resources and operational constraints. The team used a two-stage stratified sampling design to produce representative indicators at the national level, the residence level (urban vs. rural) and the gender level (female vs. male) as well as for the sub-regions.

The households and individuals sample covered a total of 264 Enumeration Areas (EAs) across the country, from each of which 15 households were randomly selected from an updated household listing to participate in the survey. For each household, one individual respondent was randomly selected from a household roster, resulting in a total of 3,960 households and individuals.

For the MDAs part of the survey, NITA-U provided a curated list of 132 government MDAs, which were all included as part of the survey. The EAs sampled for the survey covered 128 districts, which in-turn provided the representative sample for LGAs.

For the businesses part of the survey, UBOS derived a sample of 600 businesses that covered all the divisions of the International Standard Industrial Classification (ISIC) Rev 4[1] using an implicit stratified sampling procedure that combined elements of both systematic sampling and stratified sampling.

2.2 Survey Instruments

The questionnaire for households and individuals was designed in line with the International Telecommunication Union (ITU) Manual for Measuring ICT Access and Use by Households and Individuals (3rd edition, 2020).[2] In addition, a number of indicators were included by NITA-U based on stakeholder consultations and ongoing discussions within the Expert Group on ICT Household Indicators (EGH) and Expert Group on Telecommunication/ICT Indicators (EGTI).

Both the questionnaire for MDAs and the questionnaire for LGAs were designed in line with previous instruments used by NITA-U in the 2017/18 study. In addition, the questionnaires included guidelines from the Manual for

1 ISIC Rev. 4 https://unstats.un.org/unsd/classifications/Econ/isic
2 ITU Manual for Measuring ICT Access and Use by Households and Individuals, https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual.aspx

Measuring E-Government, United Nations Economic Commission for Africa (UNECA);[3] the UN E-Government Survey 2020[4] and the Manual for the Production of Statistics on the Information Economy from United Nations Conference on Trade and Development (UNCTAD). Additional national indicators were included to meet domestic requirements for planning and policymaking.

The questionnaire for businesses was designed in line with the UNCTAD Manual for the Production of Statistics on Information Economy. In addition, a number of indicators were adopted and domesticated from the Organisation for Economic Co-operation and Development (OECD) and Eurostat manuals to respond to local needs. The consultants trained 24 experienced enumerators to assist with data collection, and they were assigned to cover different regions of the country. Enumerators were allocated to a team based on their native language, which often was the dominant language spoken in the region assigned to the team. All enumerators were also fluent in English.

The MDA instrument was pretested with staff at NITA-U, while the rest of the instruments were pretested in one urban and one rural EA in Wakiso district to ensure that the questions were clear and understood by the respondents and to detect any discrepancies in the instruments. The pre-test also offered an opportunity to test out the field logistics to ensure the adequacy of the field procedures they would deliver.

Copies of the final instrument are included in the digital files in Annex C.

2.3 Data Collection and Processing

For data collection, the consultants deployed a private instance of KoBotoolbox, a free and open-source platform for collecting data accurately, quickly, offline and at scale with smart forms on mobile devices such as phones and tablets.[5] Leveraging tablets and cloud servers, KoBo helped the survey team to digitise the data collection process, supporting the necessary question branching, skipping and looping while providing data validation at the same time.

All enumerators had 10-inch data-enabled tablets, allowing them to use the mobile networks to submit real-time data to the server. The system also supported an offline-capable mode to allow 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. A central team provided feedback and corrections to enumerator teams in the field in close-to-real time using instant messaging channels. For MDAs, the survey team used online questionnaires. The IT officers of the MDAs led the collection of data from the other departments (e.g., human resources and finance) across their institutions so that they could populate the online questionnaires. For businesses, enumerators visited the locations to interview the respondents.

Out of a sample of 132 government Ministries, Departments and Agencies (MDAs) contacted by NITA-U for the survey, 95 provided data, a response rate of 72%. For local governments, out of 128 districts sampled for the survey, 95 provided full data, a response rate of 72.4%. The data also includes responses from 17 municipalities and 10 town councils found within the sampled districts.

Enumerators covered 263 of the 264 EAs for households and individuals. One EA in the Bunyoro sub-region refused to participate in the survey, despite pleas from the Chief Administrative Office (CAO), due to ongoing land conflicts. In total, enumerators listed 19,700 households across the 263 successful EAs. From these EAs, the survey team randomly selected 3,945 households to be interviewed. Among the sampled households, 72.6% provided full data (both household and individual), 13.6% provided partial data (only household data; the sampled individual was not available for interview), 2.9% were home but refused to consent to the survey and 10.9% were found to have no one at home. The sample was drawn by UBOS taking into account non-response, and therefore replacements for both households and individuals were not necessary. Enumerators were able to locate or contact 344 businesses out of the sample of 600, and these were approached to participate in the survey. Of these, 197 agreed to participate and provided full data, resulting in a response rate of 57.3%

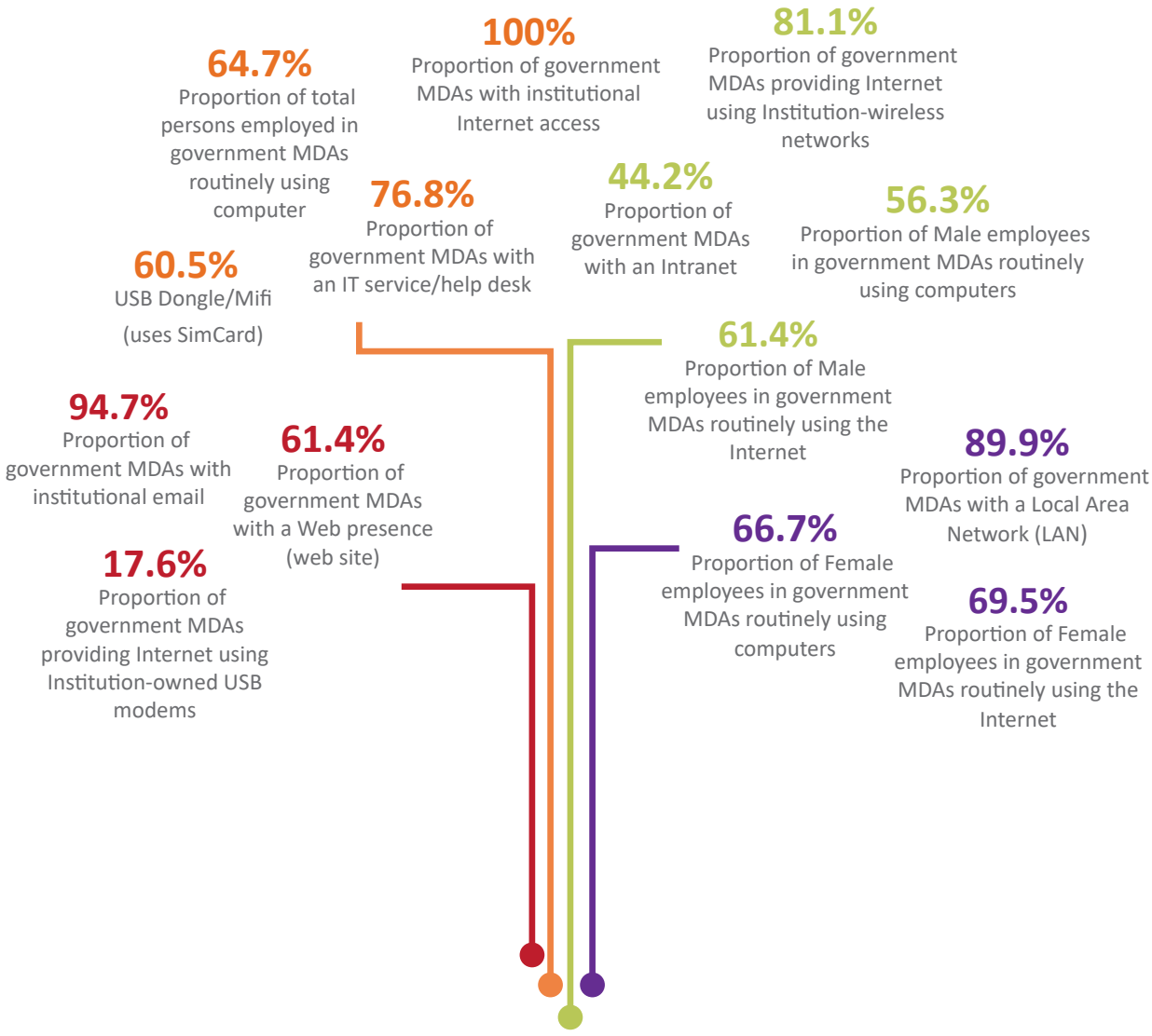
3 https://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf
4 https://www.un.org/development/desa/publications/publication/2020-united-nations-e-government-survey
5 KoBotoolbox, https://www.kobotoolbox.org/

1
CHAPTER

Findings from MDAs

This chapter summarises findings on different indicators related to the access and usage of different IT services by government MDAs. The indicators are organised into 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.

Key government MDA IT Indicators at a glance



3.1 MDA Characteristics

The survey collected data on several MDA characteristics. Out of a sample of 132 government MDAs contacted by NITA-U for the survey, 95 provided data, a response rate of 72%. This section summarises the type of MDAs that responded to the survey as well as their IT budgets and IT governance structures.

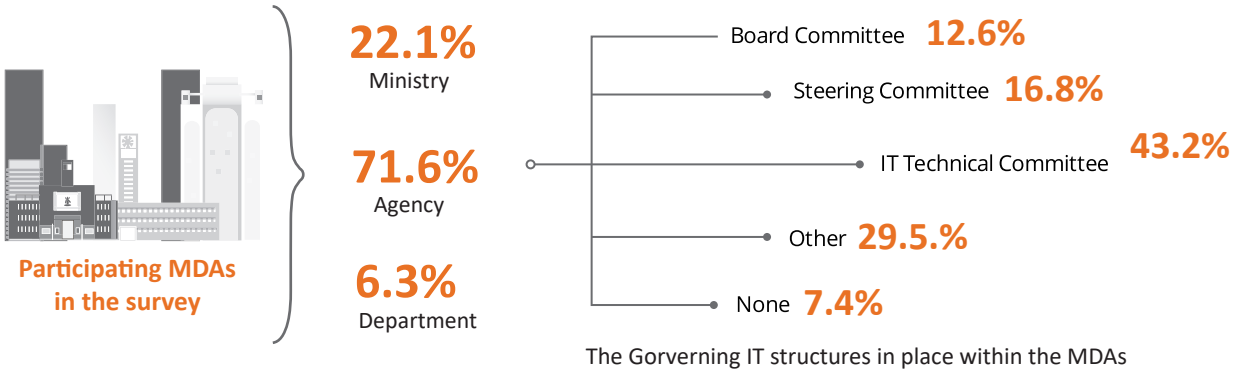


Figure 1: Types of MDAs that participated in survey & IT Governance Structures

In terms of internal IT governance, most MDAs (43.2%) had an internal IT Technical Committee, followed by an IT Steering Committee (16.8%) as indicated in Figure 1. Of concern, 29.5% of MDAs indicated having no IT governance structure in place, given the importance that the government attaches to using ICT to improve public service delivery. It should be particularly noted that IT governance is principally about the core business processes of any MDA, and this should therefore be composed of the policy-level stratum rather than the IT people. The senior IT staff, who should also have policy-level competence, are simply members of such governance committee.

3.2 ICT Workforce

Overall, ICT staff make up only 2.2% of the total staff employed by MDAs. There has not been much improvement compared to 2017/18, when ICT staff accounted for 1.9% of all staff. Within all ICT staff, 31.3% were female and 68.7% were male, showing a big gender bias towards male ICT staff within MDAs. The gender gap has not changed from the 2017/18 survey.
Table 1 highlights that there is no significant difference in the proportion of IT staff by gender across MDA types.

Table 1: Proportion of ICT workforce by MDA type and gender

	MDA type		
	Agency/Department	Ministry	Total
Female	1.6%	2.7%	2.3%
Male	1.8%	2.7%	2.2
Total	**1.7%**	**2.6%**	**2.3**

Overall, 76.8% of MDAs reported offering an IT Service/Help Desk to support their staff with IT issues. Despite this, end-user support is still one of the IT roles where MDAs still rely on external suppliers in terms of outsourcing as highlighted in Figure 2.

It should be noted that the IT help function is a specialised role, making it expensive and indeed cost-inefficient for each MDA to have their own internal or external help function. There is a need to build more awareness about the consolidated government IT service/help desk provided by NITA-U so that more MDAs can take advantage of this.

	Management of IT systems or data and applications	Hosting of IT applications and/or services	Management of end-user computers and devices	IT strategy and related policies
Use only internal staff	53.7%	45.3%	43.2%	32.6%
Use mainly internal staff	31.6%	42.1%	35.8%	43.2%
Largely equal distribution	11.6%	5.3%	15.8%	17.9%
Use mainly external suppliers	1.1%	4.2%	3.2%	5.3%
Use only external suppliers	1.1%	2.1%	1.1%	1.1%
Don't know	1.1%	1.1%	1.1%	0%

	End User Support	Project management of IT procurements	Security of IT infrastructure and systems
Use only internal staff	8.4%	40%	32.6%
Use mainly internal staff	15.8%	30.5%	37.9%
Largely equal distribution	28.4%	19%	17.9%
Use mainly external suppliers	35.8%	7.4%	5.3%
Use only external suppliers	11.6%	2.1%	2.1%
Don't know	0%	1.1%	4.2%

Figure 2: Degree of outsourcing of IT roles amongst MDAs

3.3 Digital Devices

The survey collected data about the type and numbers of computing devices owned by different government MDAs and the proportion of MDA employees that routinely used computers and the internet for work-related purposes.

Computing Devices

Figure 3 presents the penetration of basic computing devices across government MDAs. Desktop computers, laptops and printers had the highest penetration (97.9%), followed by projectors (89.5%) and LCD TVs (86.3%). At the opposite end of the spectrum, stand-alone fax machines (15.8%), barcode readers (16.8%) and smart boards (22.1%) had the least penetration.

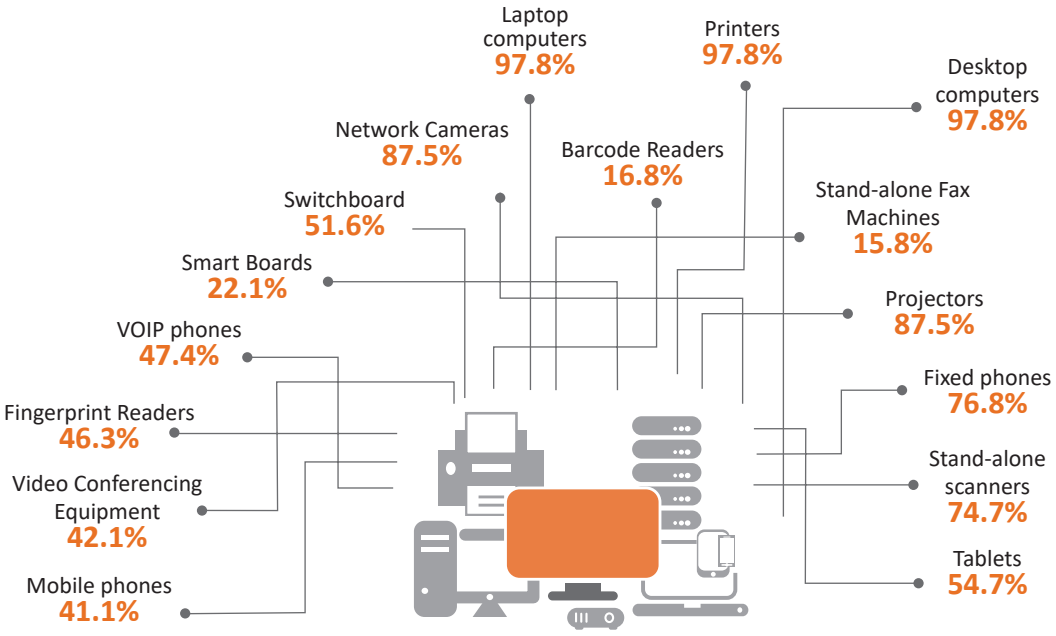


Figure 3: Penetration of Computing Devices across MDAs

MDAs reported that 63.2%% of all their staff have a computer assigned to them at work (for work purposes) and that 60.5% routinely used computers at work (for work purposes). The number of staff routinely using computers at work has increased from the reported 37% of all staff that routinely used computers at work in 2017/2018, a positive trend towards the desired 100%.

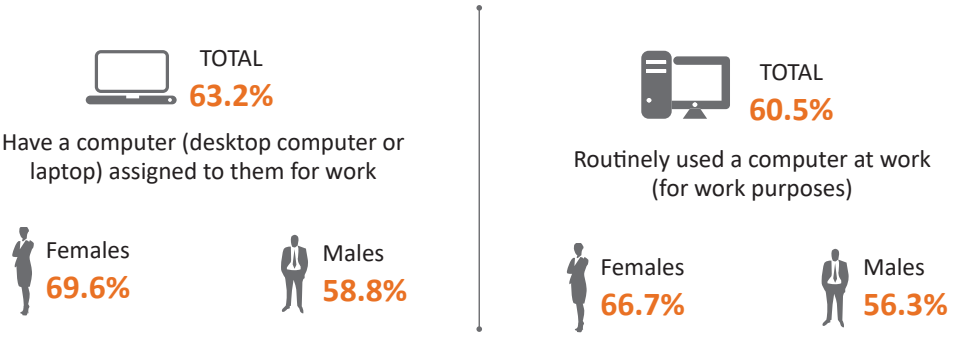


Figure 4: Proportion of MDA staff assigned and routinely using computers

From a gender perspective, a higher proportion of the female staff compared to male staff of MDAs have been assigned computers at work (69.6% of females vs. 58.8% of males) and routinely used computers at work (66.7% vs. 56.3%, respectively), as highlighted in Figure 4. This departure from the general gender trends in government most probably means that through gender stereotyping approaches to recruitment, the secretaries at the lower and medium levels where computers are now a must are most likely to be women.

One in three MDAs (32.6%) had a specific policy on 'bring your own device' (BYOD) for staff. A higher proportion of agencies/departments (37.8%) had BYOD policies compared to ministries (14.3%). Among MDAs with BYOD policies, 83.9% permitted employees to use their personal devices for work-related tasks.

Figure 5 indicates the various reasons why MDAs supported BYOD. Most MDAs (74.2%) indicated that BYOD increased staff productivity, followed by staff having more up-to-date technology due to personal upgrades (48.4%).

Figure 5: Reasons why MDAs supported BYOD policies

Figure 6 presents the reasons why some MDAs had no BYOD policy. Many MDAs (21.9%) were concerned that some employees may lack their own devices and also about the sensitive nature of MDA data. One in five MDAs (20.3%) had not thought about BYOD, and the 18.8% that responded other indicated that they were working on some form of BYOD policy.

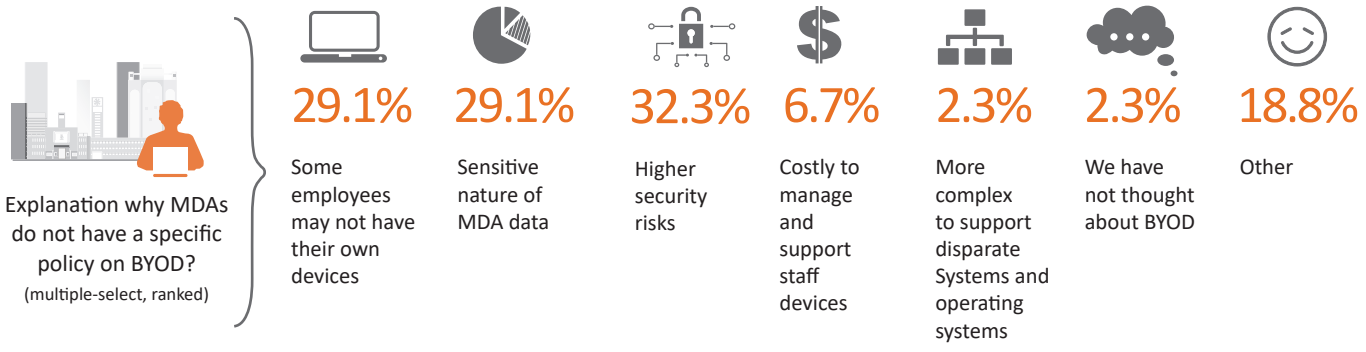


Figure 6: Reasons why MDAs did not have specific BYOD policies

The reasons given for a lack of a BYOD policy indicate that NITA-U still has more work to do in this area to support MDAs through awareness and guidelines that create flexibility while ensuring, where applicable, the data privacy and protection of institutional security, in dealing with BYOD. BYOD otherwise permits the MDAs to leverage employee devices to augment the limited number of computing devices provided to employees for work-related purposes.

MDAs with a BYOD policy provide different kinds of support to staff that embrace BYOD. In addition to internal IT support for employee devices (80.7%), MDAs also provided internet access/bundles for staff-owned devices (74.2%).

The survey asked MDAs that had fewer computers compared to the number of staff (76.8%) for the causes of this. While almost half of them (48%) cited budgetary constraints, the others (52.1%) indicated that some support staff positions such as drivers, did not require computers to perform their routine functions.

3.4 Network Connectivity and Internet Access

The survey collected data about MDAs' network connectivity, 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.

Internet access was universal across all MDAs, and 99% reported having a Local Area Network (LAN), 97.9% reported having an MDA website and 44.2% reported having an intranet. The absence of intranets must be recognised as an issue of concern because the full benefit of end-user devices, including resources sharing and common online working spaces, can only be realised through a networked environment. This gap needs to be addressed as a matter of urgency.

Internet Access

Figure 7 indicates that NITA-U is the dominant ISP for government MDAs, covering 90.5% of all MDAs, followed by UTL (27.4%) and Airtel (15.8%). NITA-U's coverage of MDAs has increased from 83.1% in 2017/18.

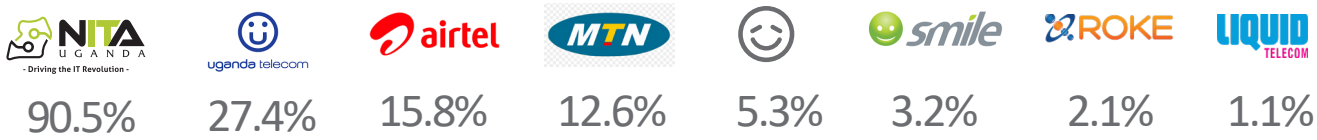


Figure 7: Proportion of MDAs served by different ISPs

Figure 8 highlights that 60% of MDAs had only one ISP. However, many MDAs reported connections to multiple ISPs, with some having up to five ISPs (1.1%). There has been a decrease in MDAs with a single ISP connection, from 74% in 2017/18 to 60% in 2022, while MDAs with two ISP connections (26.3% vs. 20.8%) and three ISP connections (10.5% vs. 2.6%) have increased, perhaps an indication that MDAs considered the reliability of internet connectivity more seriously. This could also be an issue related to NITA-U's delay to connect some MDA sites/offices due to internal limitations, such as budgetary constraints. This challenges NITA-U to increase the speed of connecting all MDA sites and to guarantee that such connections are configured to ensure a high level of availability through appropriate redundancy approaches.

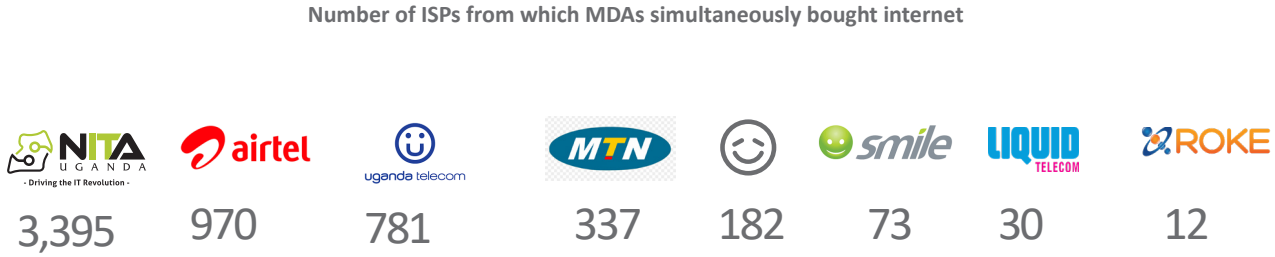


Figure 8: Total bandwidth purchased from each ISP monthly by MDAs

Type of Internet Connection

Figure 9 presents the variety of connection types that MDAs had with ISPs. Most MDAs (97.9%) had at least one fibre connection to their ISP, followed by USB dongles/MiFis (12.6%) and wireless access points (11.6%).

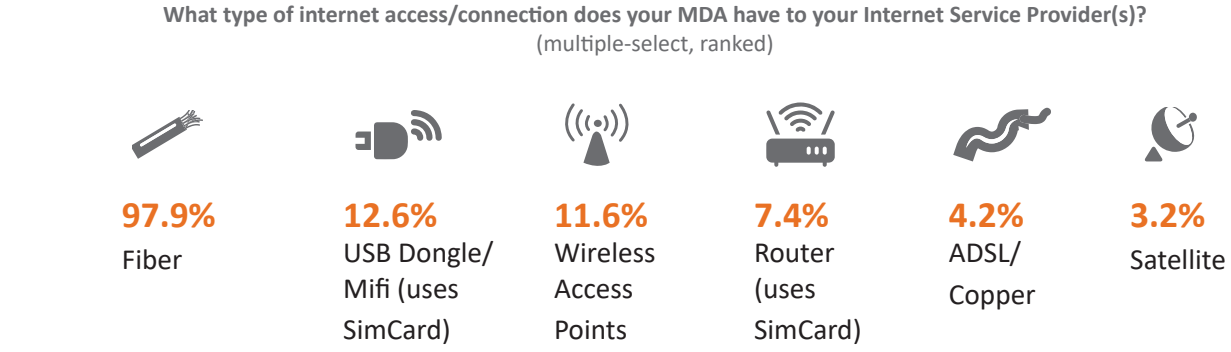


Figure 9: Type of internet connection used by various MDAs

A total of 2.6% of MDAs indicated that they did not have any fibre connections to their ISPs. It is imperative that all MDAs are connected to internet via fibre in order to be able to leverage the large amounts of bandwidth that they need to provide better public service. Within institutional buildings, most MDAs provided both wired networks (85.3%) and wireless networks (81.1%) to provide staff with internet access for work-related purposes.

Internet Use by Staff

About three in every five MDA staff (64.7%) routinely used the internet at work (for work purposes). A slightly higher proportion of the female staff (69.5%) routinely used the internet at work compared to the male staff (61.4%) of MDAs.

In terms of MDA type, a higher proportion of staff in agencies/departments (76.6%) routinely used the internet at work compared to staff in ministries (48.9%). The much lower level of utilisation of the internet within the ministries needs to be recognised as a cause for concern as the utilisation of network services drives collaboration, productivity, and efficiency.

Figure 10 presents the different work-related activities that MDA staff used the internet for at work. Most MDAs used the internet for communication via email (98.9%), followed by research and data collection (86.3%). Similarly, these were the top two activities for using the internet among staff in 2017/18 (100% and 69.3%, respectively), showing improvement in MDA staff use of the internet for research and data collection purposes. The activity using internet least was purchasing goods and services (42.1%), perhaps reflecting the nascent nature of e-commerce use in government.

Figure 10: Activities for which MDA staff used the Internet at work

The different work-related activities that MDA staff used the internet for at work by MDA type. Ministries utilised the internet more for back-end operations (85.7% vs. 73%) and VoIP (81% vs. 56.8%) compared to agencies/ departments. Agencies, on the other hand, utilised the internet more for staff recruitment and training (67.6% vs. 38.1%) as well as for file transfer and streaming applications (75.7% vs. 66.7%) compared to ministries. The fact that ministries use the internet largely for back-end operations is a cause of concern: granted, this improves back-end efficiency, but the bigger benefit comes through harnessing the internet for service delivery to match the intent of extending connectivity to the sub-counties and parishes.

A total of 33.7% of MDA used the internet to advertise their services. Figure 11 presents the different methods used by MDAs to target potential users through online advertising.

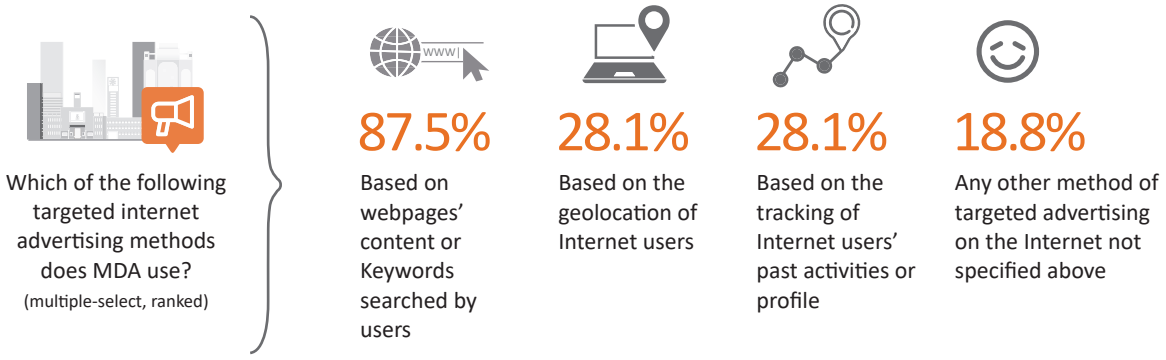


Figure 11: Online targeting methods used by MDAs when advertising

Fewer MDAs (51.6%) reported that they restricted access to particular websites (URLs) compared to 2017/18 (66.2%). The primary reason for doing this was now to minimise risks of malware (47.4%) as opposed to managing bandwidth (37.2%). This confirms improvement in the bandwidth situation among MDAs compared to 2017/18.

Figure 12: Reasons why MDAs restricted Internet access to particular URLs/sites/apps

Institutional Email

Most MDAs (94.7%) provided institutional email addresses to their staff. Of these, 73.3% had a policy that required staff to use official addresses for work purposes, but only 86.4% of MDAs with an institutional email policy enforced this requirement. It should be mandatory that any staff member of any MDA is automatically assigned a standard format email address and that all official communication uses only the government email services. It should be noted that the utilisation of other-than-institutional mail for government business has both data security and national security implications.

Obstacles to Internet use

The survey collected data from MDAs on what they perceived as potential obstacles to a wider use of the internet for work purposes. There were many complaints about the internet, ranging from its high cost (or inadequate budget) to its limited, slow and unreliable nature. An insufficient number of computers for staff to use as well as a lack of both technical and end-user skills were also cited by a number of MDAs.

While there is increased satisfaction about the sufficiency of internet bandwidth among MDAs, most of them are still concerned about the cost and affordability of internet. It is evident that NITA-U needs to continue driving down the cost of internet bandwidth for MDAs, which would also have a positive impact on the general cost of internet access in the country.

3.5 Websites and Social Media

MDAs used various digital channels to provide public service delivery. This section highlights the survey findings about the online presence of MDAs and their use of social media.

Figure 13 indicates the different channels used by MDAs to serve the public. At the top end, MDAs used email (87.4%), followed by MDA websites (86.3%) and social media (81.1%) to serve the public. At the lower end, less used channels included mobile applications (28.4%), video sites (33.7%) and instant messaging apps (37.9%). Given that the least-used channels are very popular digital channels with individuals, as covered in sections 6.4 and 6.5, NITA-U needs to support MDAs in figuring out how to use such digital channels to enhance public service delivery.

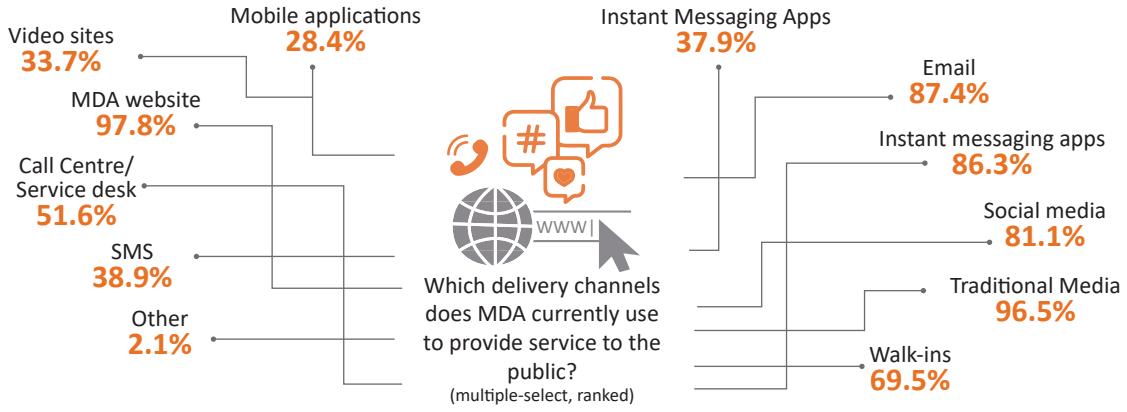


Figure 13: Service delivery channels used by different MDAs

Websites

Most MDAs (97.9%) owned an institutional website, and most (96.8%) had a person or resource that managed the website. Figure 14 highlights that about half of MDAs (55.4%) had at least one fully dedicated employee as a web person, followed by those with a partially dedicated employee (29.7%). Of concern is the 3.2% of MDAs that lacked any kind of person/resource to manage the institutional website. NITA-U should make such MDAs aware of the annual training that it provides for website management so that they can build internal capacity for website management.

The most active MDAs updated their websites at least once a week, but not every day (47.3%). Nearly all of the MDAs that indicated other (19.4%) stated that they updated the website on demand or when new content was available. It is concerning that one in every 10 MDAs (10.8%) updated their websites at least once every three months (but not every month).

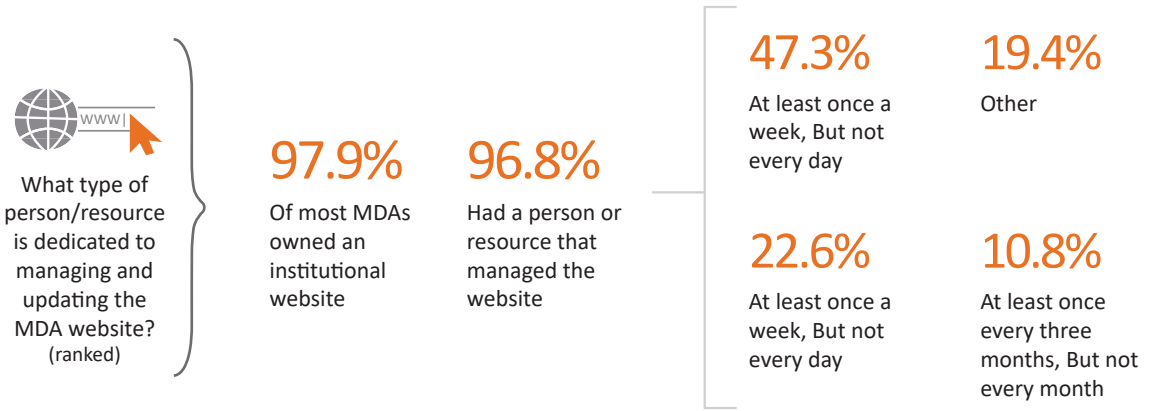


Figure 14: Type and frequency of MDA website maintenance

Social Media

Figure 15 presents the different social networks used by MDAs to support users. Most MDAs had Twitter profiles (91.6%), followed by Facebook (82.1%) and WhatsApp (40%).

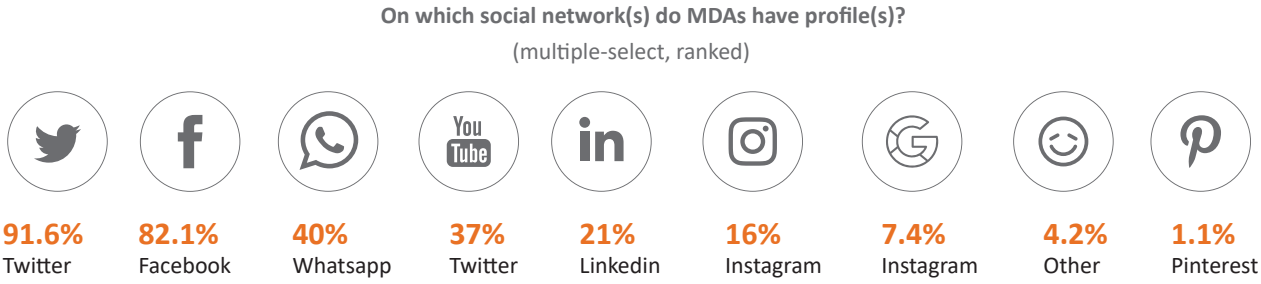


Figure 15: Social networks used by MDAs

MDAs selected Twitter (62.1%) and Facebook (20%) as the social media platforms that they used most often. Figure 16 illustrates that MDAs update their Twitter and Facebook platforms on a daily basis (59.3% and 47.4%, respectively). This is in line with the recommendations of the Government of Uganda Social Media Guide.

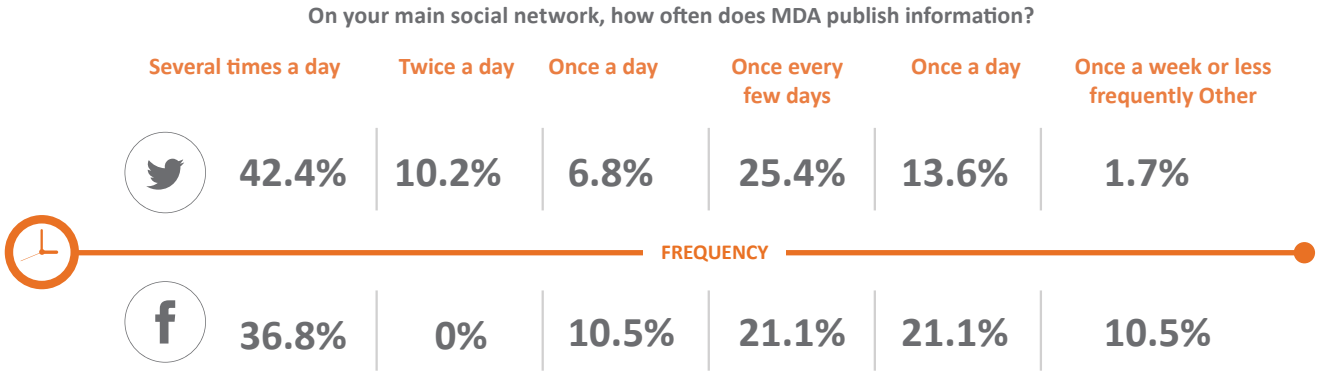


Figure 16: Frequency with which MDAs updated top social networks

3.6 E-government Services

Government MDAs used a variety of delivery channels to provide services to public customers. About half of all MDAs (59%) offered digital or online services to the public and/or businesses. Figure 17 indicates that the most-used feedback channels across all MDAs were email (90.5%), MDA websites (77.9%) and walk-ins (73.7%). These were the top three channels in 2017/18, with email and website swapping positions. Given the limited number of MDA locations compared to the large size and distribution of the population that they need to serve, MDAs need to leverage more digital channels that allow remote access to government services.

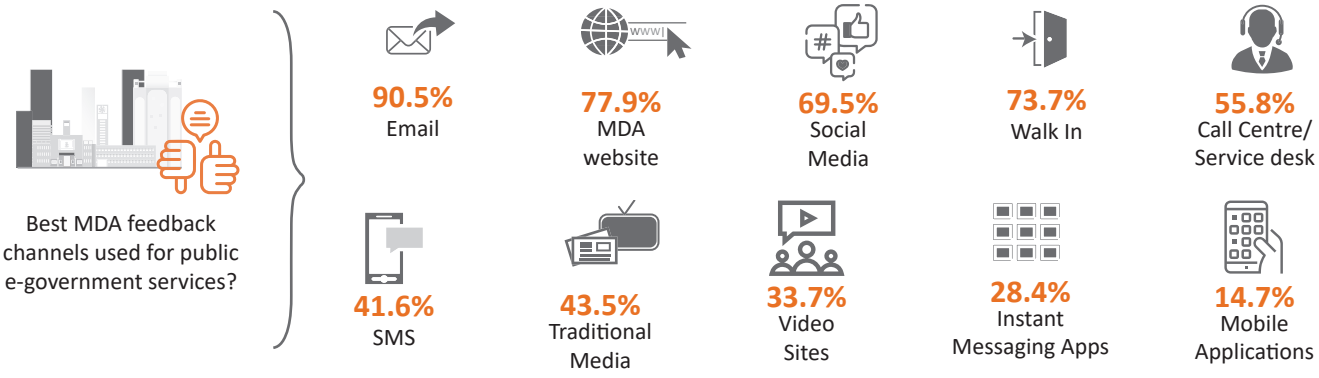


Figure 17: Feedback channels provided by MDAs

Figure 18 highlights that among the MDAs that offered online services, web applications were the most predominant platform (71.4%), followed by SMS (50%) and mobile applications (39.3%).

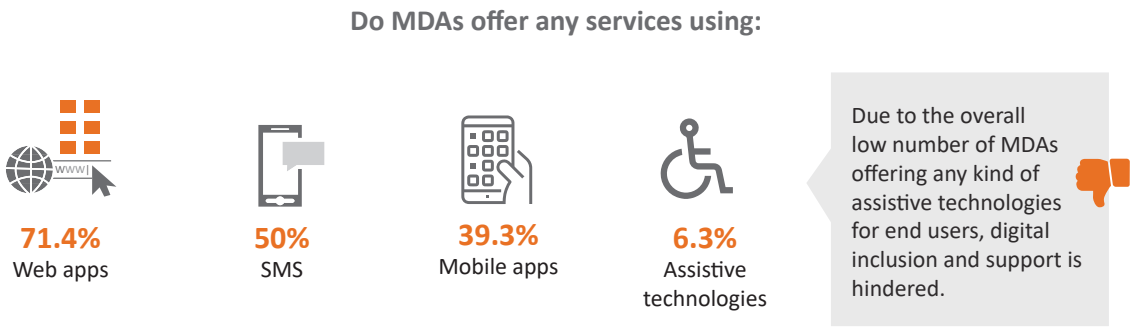


Figure 18: Platforms that MDAs use to offer digital services

The overall proportion of MDAs that offered some kind of assistive technologies for end users is still very low, at only 6.3%. This has implications for digital inclusion, and NITA-U needs to support MDAs to start leveraging assistive technologies. Among the MDAs providing web applications, 77.5% offered Application Programming Interfaces (APIs), providing a building block for integration with other systems and applications across various MDAs.

Databases and Open data

Only 42.1% of MDAs maintained databases for public data/information. Of these, 70% shared their database(s) with other MDAs and 62.5% released data to the public as open data. This highlights the work that needs to be done to help improve data sharing among MDAs and with the general public as open data.

MDAs that released open data used a variety of file formats. Figure 19 highlights that the most common file format used were web pages (76%) and PDF files (76%), followed by Excel spreadsheets (44%).

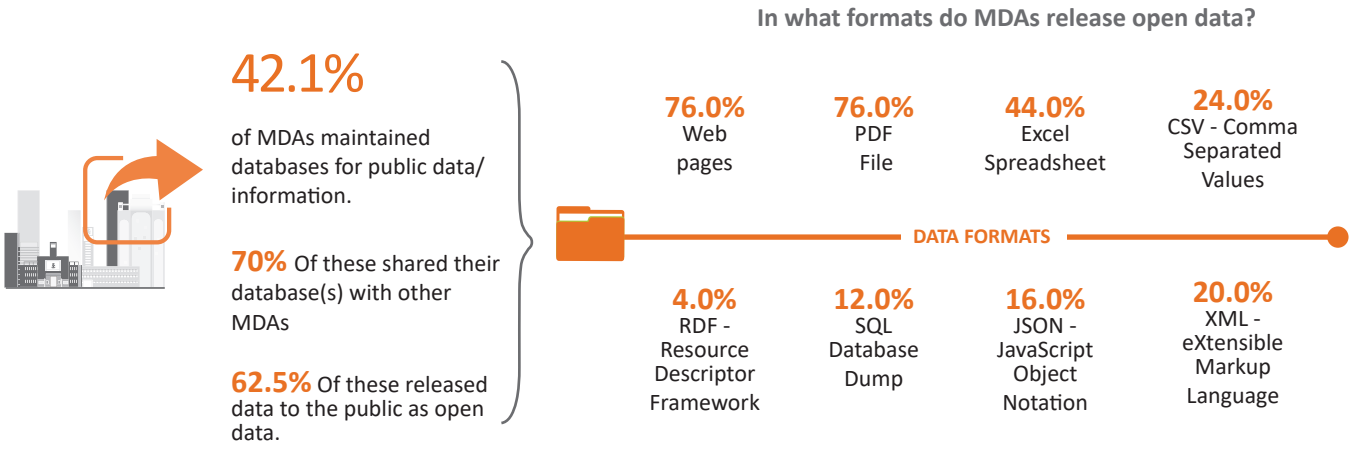


Figure 19: Proportion of MDAs that shared open data in different file formats

MDAs that maintained databases but did not release any information to the public as open data cited a number of reasons for not doing this. Figure 20 illustrates that top among the reasons were the sensitive nature of the data (80%) and government legislation and regulations (46.7%).

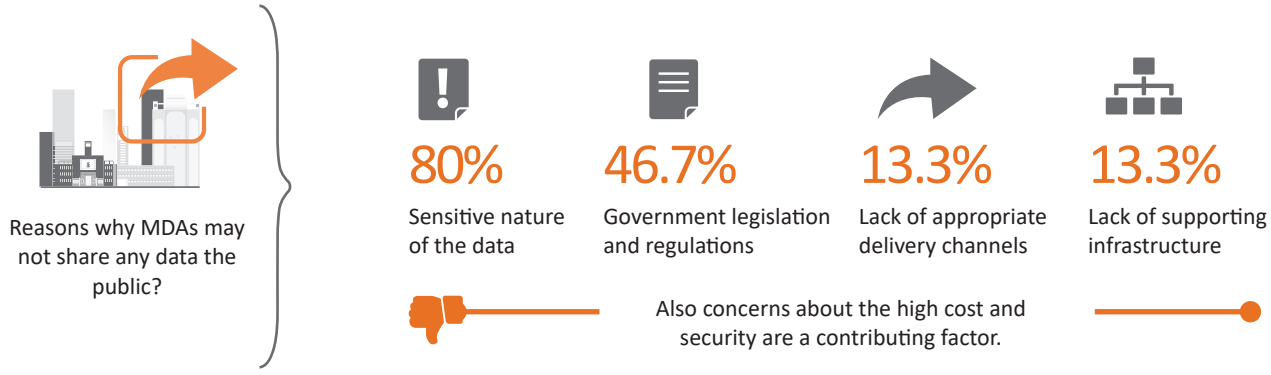


Figure 20: Reasons why MDAs did not release any data as open data

While most MDAs (64.2%) have applications and/or databases hosted in the cloud provided by NITA-U, they still have concerns about the high cost and security, which they see as the major barriers. Ideally, the utilisation of NITA-U cloud services by MDAs should be 100%. To achieve this, NITA-U needs to address both real and perception barriers to utilisation of the services.

New Services

Overall, 65.3% of MDAs intend to implement new e-services in the next five years. While many are considering internal management information systems to improve internal efficiencies, some are considering external-facing services to improve their public service delivery.

Implementation Challenges

MDAs reported a number of internal and external challenges related to the implementation of e-service initiatives. As illustrated through Figure 21, lack of investment and budgetary constraints emerged as key internal challenges to the wider implementation of e-government services (65.3%), followed by higher-than-expected IT costs (56.8%). The top two challenges are similar to those in 2017/18, reinforcing the need to give higher priority to e-services so that budgetary allocations to MDAs are sufficient.

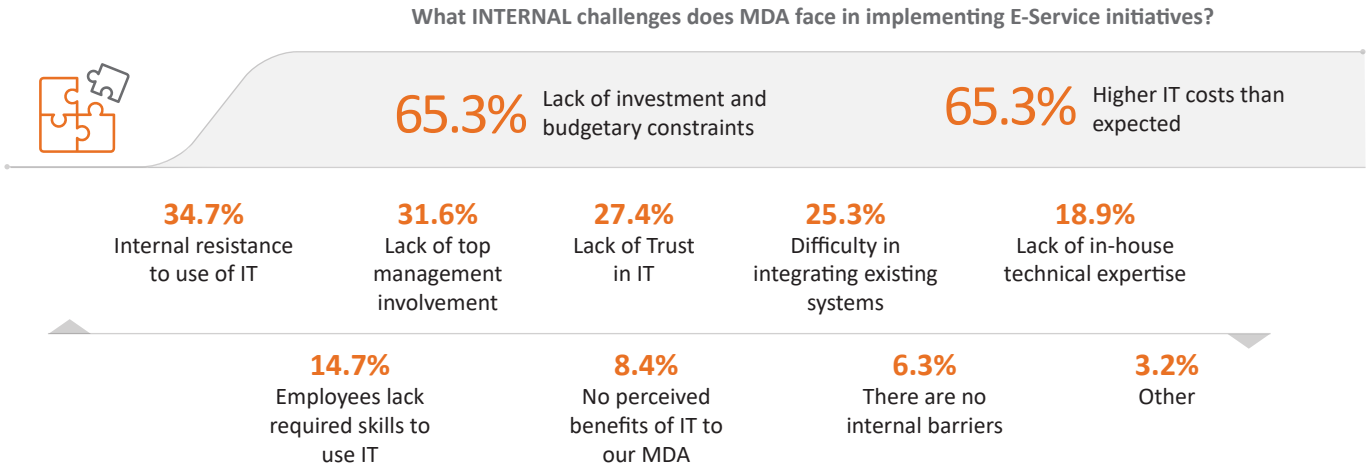


Figure 21: Internal challenges that hinder MDAs implementing e-services

Figure 22 highlights that lack of funding (82.1%) and lack of supporting infrastructure (47.4%) emerged at the top external challenges.

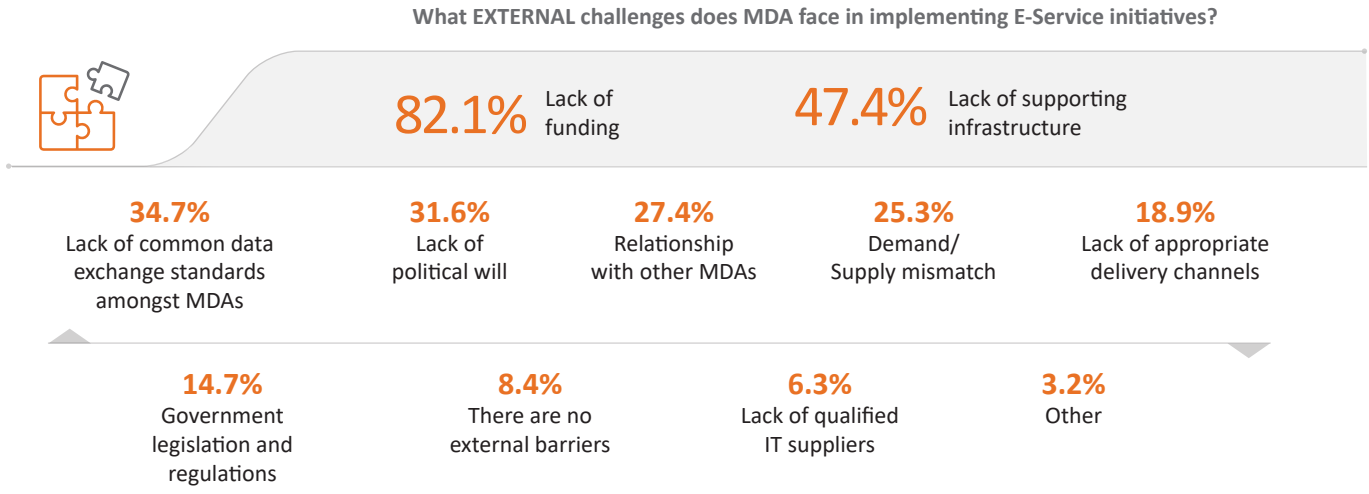


Figure 22: External challenges that hinder MDAs implementing e-services

3.7 Software and Information Systems

This section highlights the survey findings on different aspects of MDA software and information systems, including the different types of systems and software applications deployed by MDAs as well as the level of systems integration methods.

Software Applications

The vast majority of software applications used in MDAs were commercial off-the-shelf applications. A total of 66.3% of MDAs indicated that they did not have any software applications in the above categories developed in-house. Figure 23 presents categories of software that some MDAs had developed in-house. Database management systems were the most commonly in-house-developed applications (14.6%), followed by document/records management systems (9%).

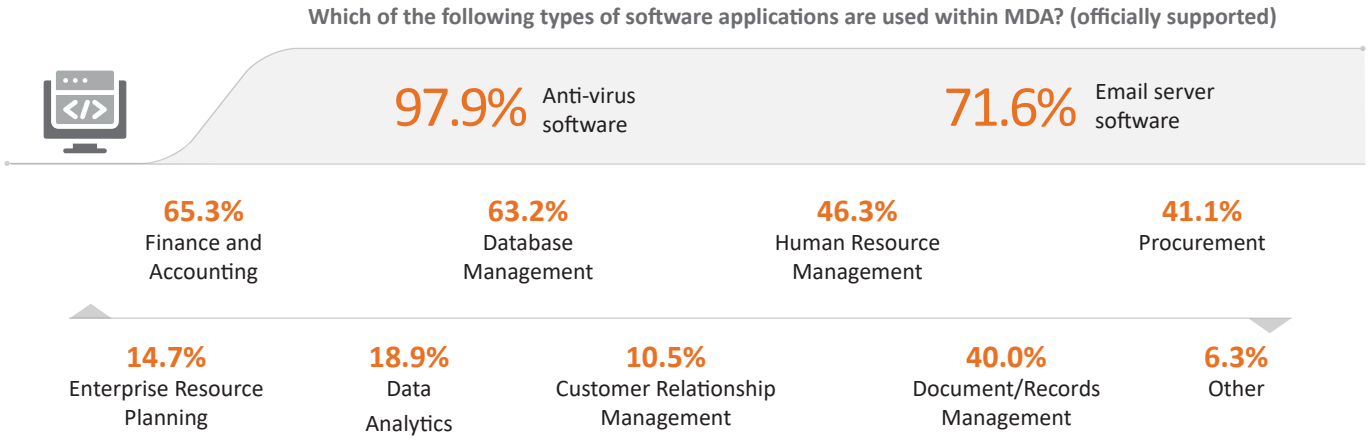


Figure 23: Different software applications used within MDAs

Given the similarities in the functionality of software indicated in Figure 24 and the fact that most MDAs used commercial applications, there are potential savings to be made if commonly used applications can be procured together to leverage better economies of scale. Better still, combined with the need to build local capacity, there could be a focus on developing open-source applications – they take time to develop, but are more sustainable.

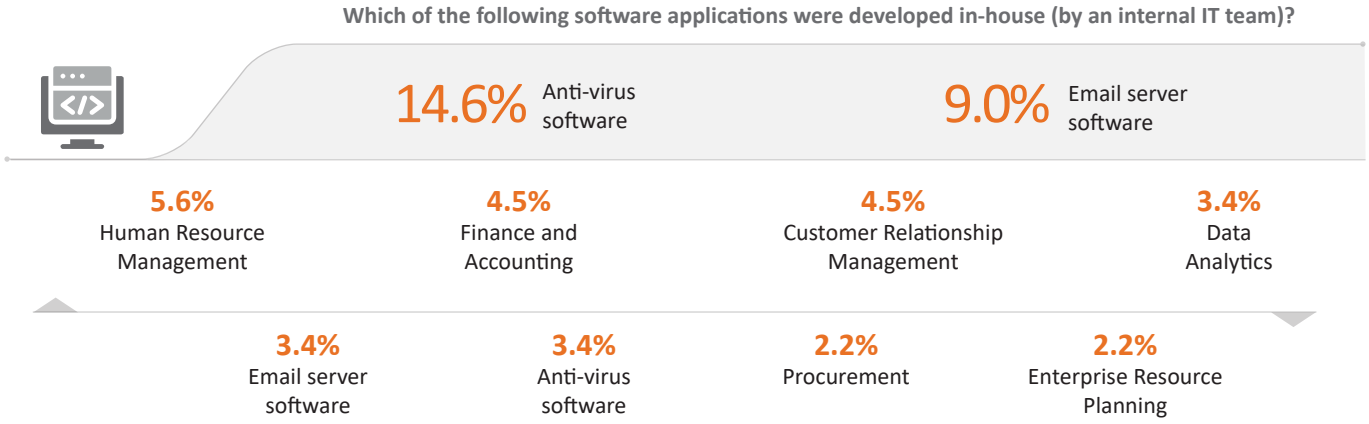


Figure 24: MDAs that had developed different software applications in-house

Software Integration

Among the MDAs that reported having different software solutions, 30.3% indicated having some form of integration between different software. Figure 25 highlights the different system integration methods MDAs used to interconnect their software solutions, with API calls being the most commonly reported method (66.7%) amongst MDAs that reported any form of integration.

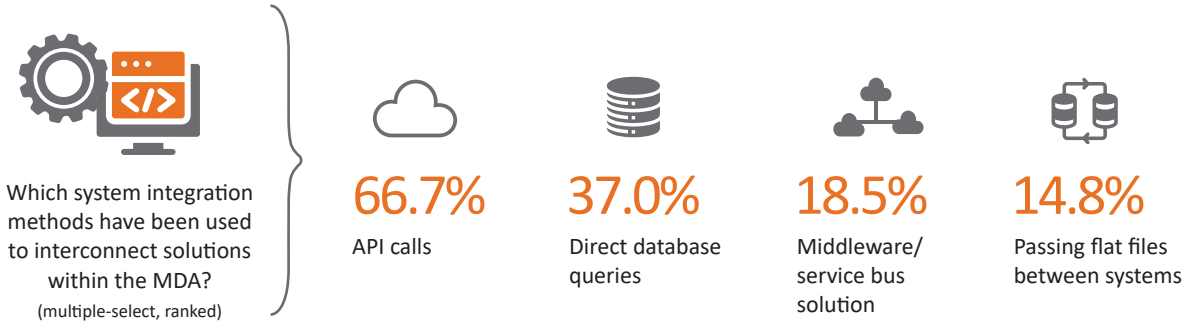


Figure 25: Software integration methods used by MDAs

The proportion of MDAs that reported any form of internal software integration (30.3%) was low, indicating that most MDAs have yet to harness the potential benefits that may arise from integrating the different digital systems that they use to deliver public services.

National IT standards on Software and Hardware Acquisition

The survey collected data on MDA awareness of the National IT Standards on Software and Hardware Acquisition for the government prepared by NITA-U. Most MDAs (84.2%) reported being aware of the IT standards. While there has been improvement from 2017/18, when 81.8% of MDAs reported awareness of the same IT standards, only 40% of MDAs reported having formal software acquisition and/or upgrades policies to guide effective software acquisition and use.

Figure 26 illustrates the challenges faced by MDAs in implementing the IT standards. Most MDAs (57.5%) reported lack of investment and budgetary constraints as the primary challenges, followed by lack of top management involvement (27.5%). It is an experiential lesson across the world that where top management do not take the lead in the implementation and sustainability of IT services and systems, there is very likely to be failure.

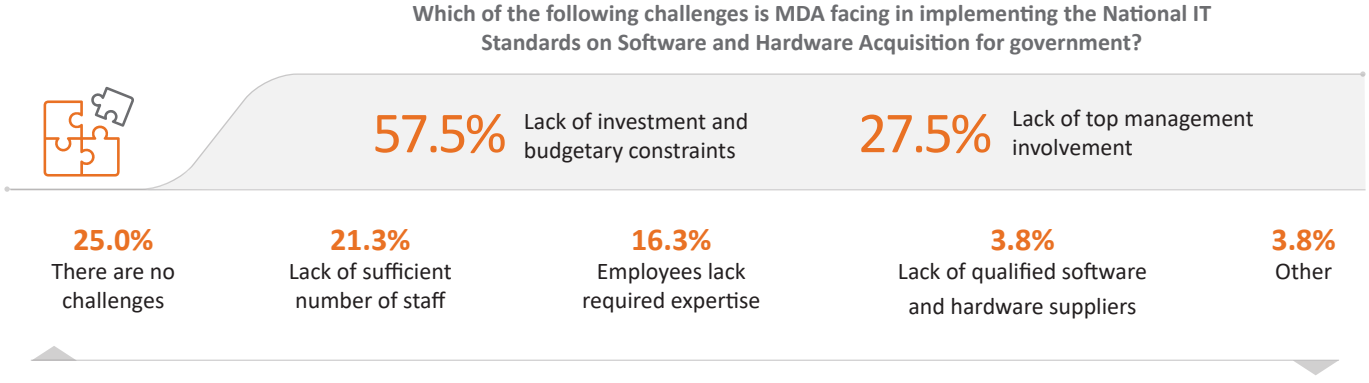


Figure 26: Challenges reported by MDAs in implementing national IT standards

3.8 Hosting and Cloud Computing

NITA-U has promoted cloud computing as an IT deployment and delivery model that can provide MDAs with access to flexible and convenient on-demand configurable computing resources that can be rapidly provisioned and deployed with marginal service-provider interaction. Three in every five MDAs (64.2%) have embraced cloud computing services.

Most MDAs hosted their applications and/or databases in the government data centre cloud (54.1%), followed by on-premise hosting (32.8%), as presented in Figure 36. Government data centre hosting has grown more than three-fold, from 16.9% in 2017/18, while on-premise hosting has dropped to 31.9% from 80.5% in 2017/18. Others (13.1%) included a mix of MDAs with a combination of both on-premise and government data centre as well as MDAs that used commercial service providers.

For security and privacy reasons, MDAs should be discouraged from using commercial service providers given the availability of government-owned and controlled cloud solutions. Alternatively, the onus should be on NITA-U and any other government cloud solution providers to up their game to ensure that MDAs have no need to solicit services from commercial providers on the basis of attributes such as quality, reliability or cost.

Figure 27 highlights that among the MDAs that had embraced cloud computing, e-mail and messaging (34.1%), security software (22%) and hosting business database(s) (19.5%) were the predominant cloud solutions bought by MDAs.

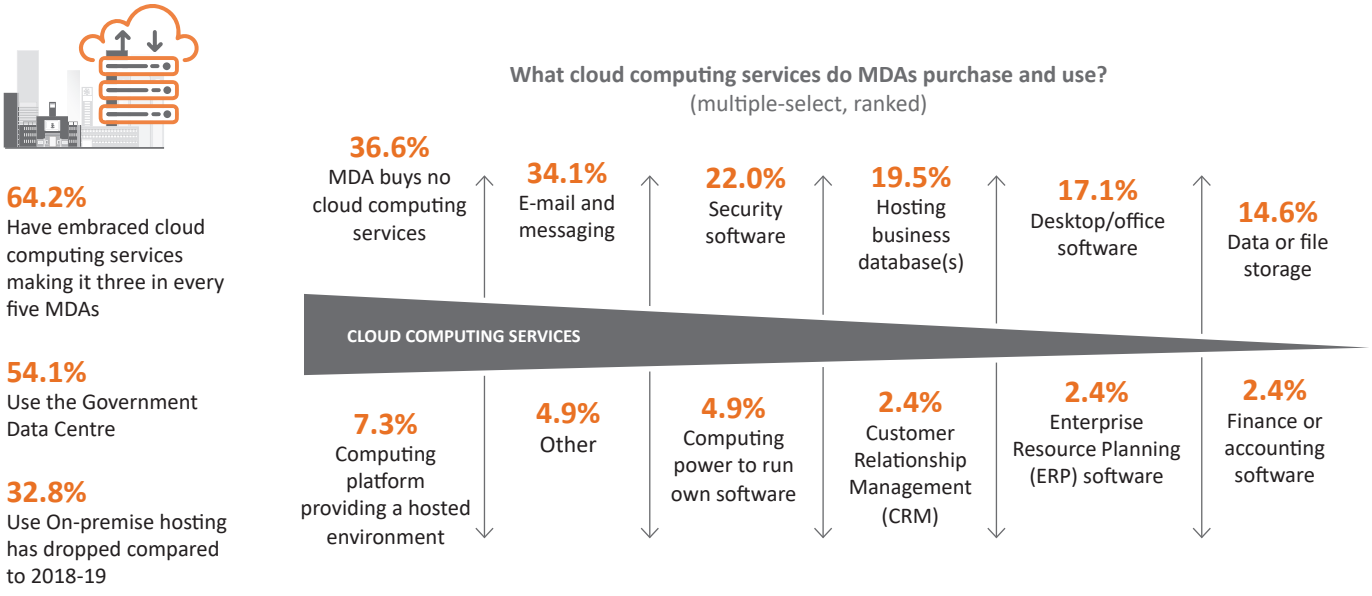


Figure 27: Cloud computing services bought by MDAs

Cloud Benefits and Barriers

The MDAs that had adopted cloud computing services identified a number of benefits. Figure 28 highlights that the top-most benefit cited by MDAs was disaster recovery (DR) (100%), followed by more flexibility in up- and down-scaling services (96.2%) and reduction in ICT-related costs (96.2%).

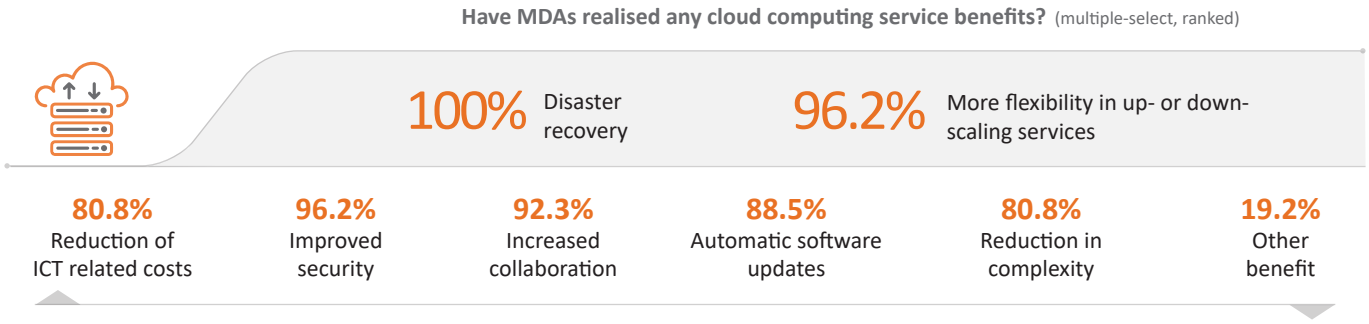


Figure 28: Cloud computing benefits identified by MDAs

Figure 29 presents the factors limiting MDA use of cloud computing services. High cost was the top-most barrier (46.3%), followed by security concerns (31.7%). From the interviews, the MDAs that cited reduction in ICT-related costs as a benefit of using the cloud tended to consider more factors than just the initial price, including other aspects such as the return on investment (ROI) of the cloud solution and the pay-as-you-go model. Conversely, the MDAs that cited high cost tended to think only about the high initial cost. This provides a unique opportunity for NITA-U to build more awareness of the benefits and the availability of government cloud computing services, most of which are provided to MDAs at no cost

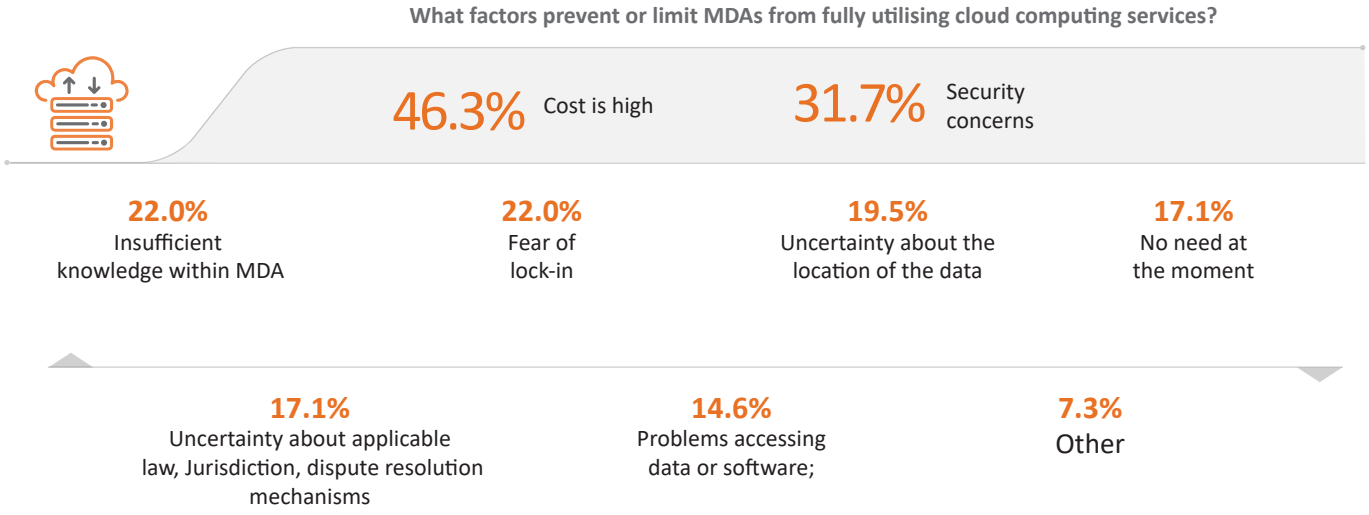


Figure 29: Barriers to cloud computing reported by MDAs

Among the MDAs with cloud applications, 52.5% used virtualisation while 29.5% did not but were considering its use in the following 12 months. Only 14.8% indicated no plans to use virtualisation.

3.9 IT Management and Security

As MDAs adopt more digital technologies to improve internal efficiency and service delivery, information management and security have become paramount. This section highlights survey findings from MDAs around ICT policies in place, security incidents experienced and counter measures adopted as well as awareness of cyber laws.

ICT Policies

ICT policies provide the foundation for the governance and management of IT resources within MDAs to ensure the effective deployment and use of IT. The survey collected data about ICT policies and procedures in use that MDAs had formally approved and implemented to enhance institutional ICT governance. Figure 30 illustrates that 66.3% of MDAs had an IT Policy/Strategy/Master Plan, 47.4% had an Acceptable Use Policy for Institutional IT resources and 42.1% had an Information Security Policy. While this edition covered a wider range of policies and procedures, Table 2 highlights a general decline in the proportion of MDAs that had formal key ICT policies in place.

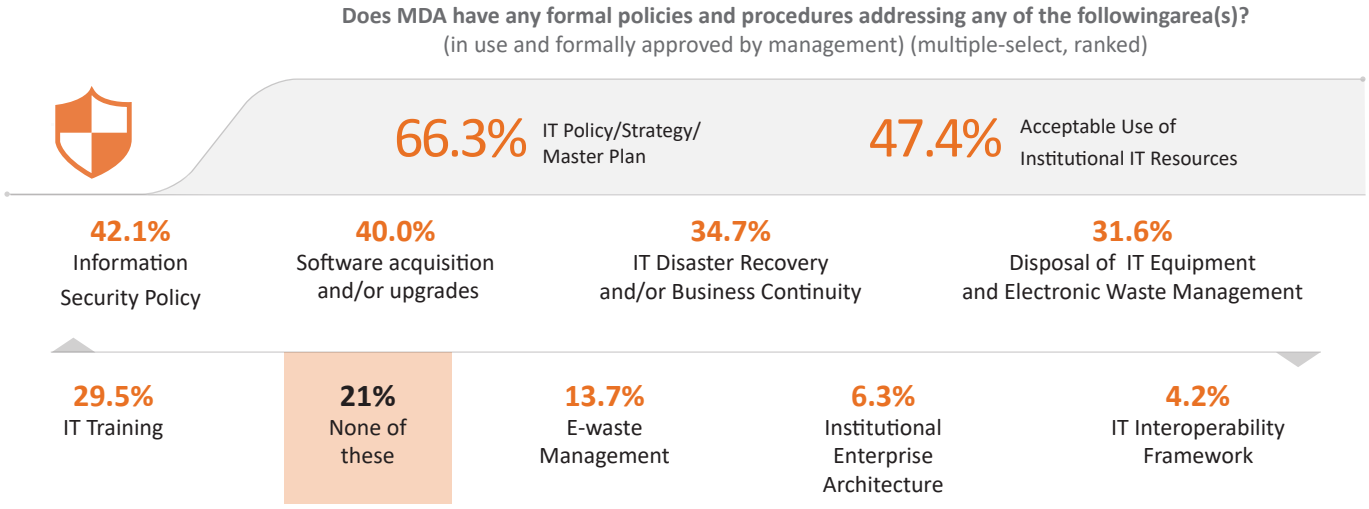


Figure 30: Proportion of MDAs with different formal IT policies

Of concern is that one in four MDAs (21.1%) reported having none of the above policies in place. This reflects an urgent area that NITA-U needs to address – MDAs are adopting digital technology at a much faster pace compared to their efforts to put in place proper IT governance and management frameworks. According to the National Information Security Policy, all MDAs are required to have an Information Security Policy and appropriate business continuity (BC) and DR programmes.

At the lower end, only 6.3% of MDAs had an IEA and 4.2% had IT interoperability frameworks. These last two areas will be critical as government shifts towards the integration and interoperability of MDA systems to garner more efficiencies from their whole-of-government digital investments.

NITA-U needs to extend the required support to ensure that the ICT policy gap is addressed to reach the desired 100%. A caveat here is that this survey did not examine the quality and sufficiency of policies with respect to both back-end operations and front-end service delivery.

Table 2: Comparison of proportion of MDAs with different IT Policies

Policy area	2017/18	2022
ICT Policy/Strategy/Master Plan	77.3%	66.3%
Acceptable Use of Institutional ICT Resources	68.2%	47.4%
Information Security Policy	77.3%	42.1%
ICT Disaster Recovery and/or Business Continuity	54.6%	34.7%

96.7%
MDAs maintained an up-to-date register of all important IT assets,

97.4%
A slight decline from of MDAs that maintained an up-to-date register in 2017/18.

Most MDAs (96.7%) maintained an up-to-date register of all important IT assets, a slight decline from 97.4% of MDAs that maintained an up-to-date register in 2017/18.

IT Security Incidents

Overall, 58.9% of MDAs experienced some type of IT security incident during that previous 12 months. While this may look like an improvement from 2017/18, where 71.4% of MDAs had experienced an IT security incident, we should keep in mind that MDAs only report on security incidents that they become aware of, whether successful or not. Given the push towards remote and online working brought on by the COVID-19 pandemic, MDAs and their staff are even more vulnerable to cyber threats, which have become more rampant and sophisticated than before.

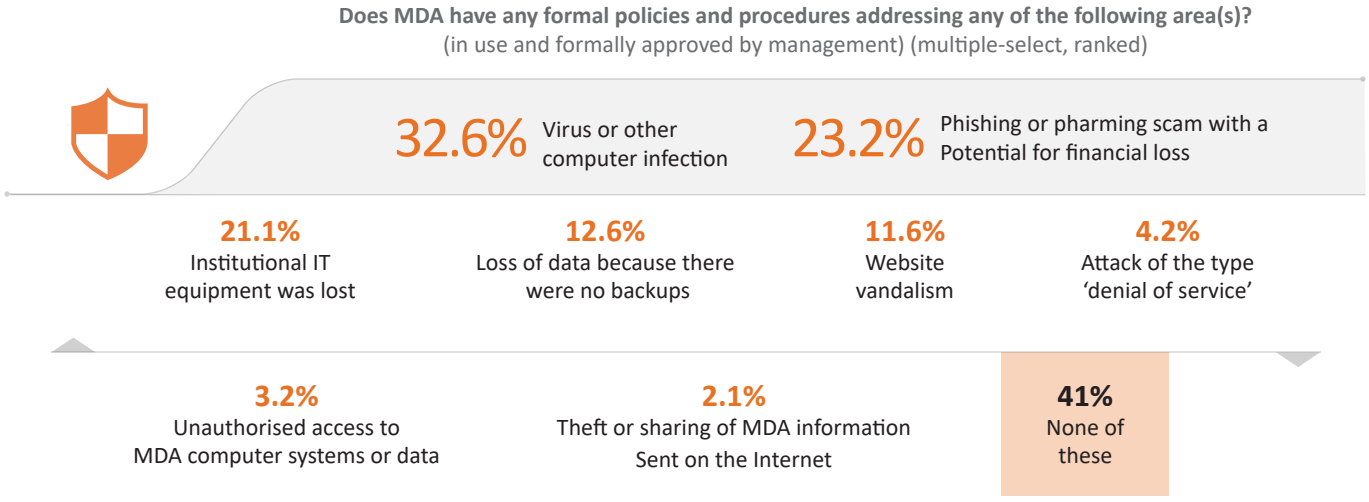


Figure 31: Proportion of MDAs that experienced different security incident(s)

Figure 31 illustrates that most IT security incidents MDAs experienced related to viruses or other computer infections (32.6%), phishing and pharming (23.2%) and lost IT equipment (21.1%). The least common IT security incidents were the theft or sharing of MDA information sent on the internet (2.1%) and unauthorised access to MDA computer systems or data (3.2%).

Amongst MDAs that experienced IT security incidents, 67.9% reported the security incident(s) to some entity. This is an improvement compared to 2017/18 where only 50.9% had reported any security incident(s). Figure 32 highlights that slightly less than half of these (47.4%) reported to NITA-U, followed by the Uganda Police (or other law enforcement agency) (34.2%). More MDAs now recognise NITA-U as the best-placed institution to report IT security incidents to compared to 2017/18, when more MDAs had reported to the Uganda Police than NITA-U (46.4% vs. 42.9%, respectively).

Among MDAs that did not report any IT security incidents (32.1%), three in four (77.8%) indicated that they had fixed the problem internally. Of concern, though, is that 11.1% of MDAs that did not report IT security incident(s) did not do so because that they did not know who to report to or how to report the incident(s).

IT Security Measures

Overall, 91.6% of all MDAs had implemented some IT security measures within their institutions to minimise the impact of IT security incidents. Figure 32 depicts that the most common IT security measure deployed by MDAs was firewalls (88.5%), followed by subscription to anti-virus software (87.4%) and making regular full backups of critical MDA data (70.1%).

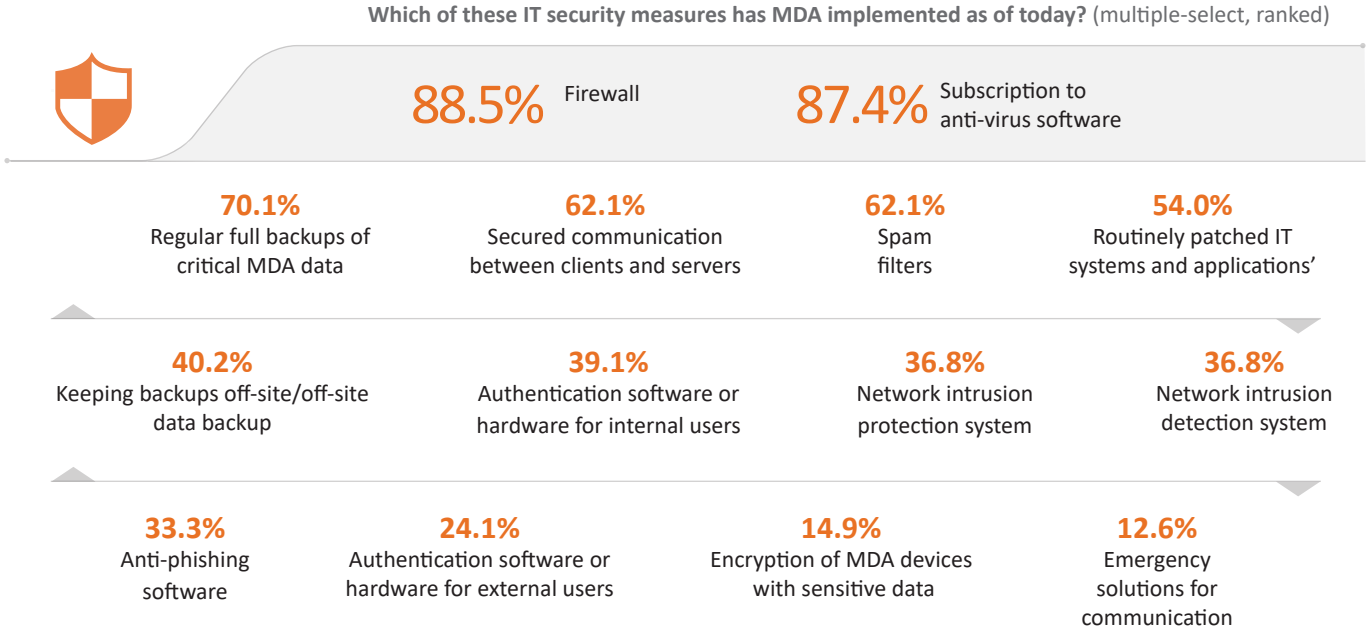


Figure 32: Various ICT security measures implemented by MDAs

Overall, 64.2% of MDAs reported awareness of the National Computer Emergency Response Team/Coordination Centre (CERT.UG/CC).

Figure 33 illustrates that most MDAs (91.8%) were aware of the National CERT.UG/CC's role in offering technical guidance on incident response support for cybersecurity issues, but fewer (34.4%) were aware of its role in conducting forensics for digital devices such as servers, computers and mobile phones. This shows a need for more awareness building amongst MDAs about the role and functions of the National CERT.UG/CC.

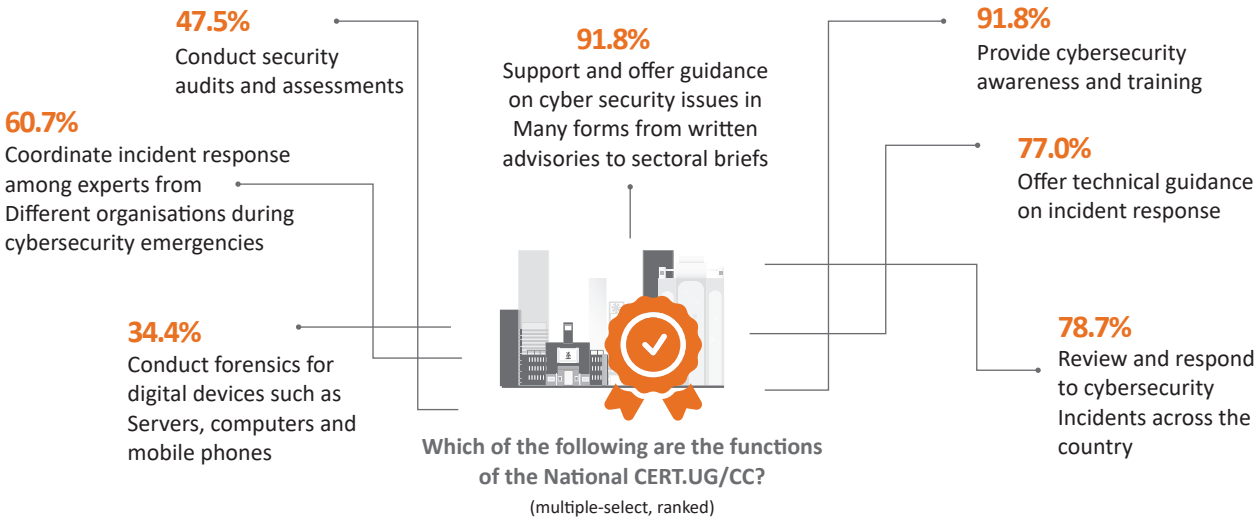


Figure 33: Awareness of CERT.UG functions amongst MDAs

The survey asked MDAs whether they had formally appointed personnel responsible for information security or DR and/or BC. Only 45.3% of MDAs had a formal employee responsible for information security, while only 39% of MDAs had a formal employee responsible for DR and/or BC.

Overall, only 44.2% of MDAs had conducted any IT security awareness sessions for staff during the previous 12 months, while only 17.9% of MDAs had conducted any emergency testing/training exercise for DR/BC during the previous 12 months.

3.10 Awareness of Cyber Laws

There was a high-level of awareness of Ugandan laws that govern electronic communications and transactions (sometimes called cyber laws) among MDAs. Figure 45 illustrates that 92.6% of MDAs indicated awareness of the Computer Misuse Act, 2011, followed by the Electronic Transactions Act, 2011 (91.6%).

Figure 34: MDA awareness of different cyberlaws

Figure 35 presents the channels through which MDAs had learnt about the cyber laws. Most (72.8%) had become aware of the laws through a website, followed by conferences (52.2%) and TV (38%). Hence these are some of the viable channels through which NITA-U can build more awareness of the cyber laws and other pertinent regulation, especially among MDAs.

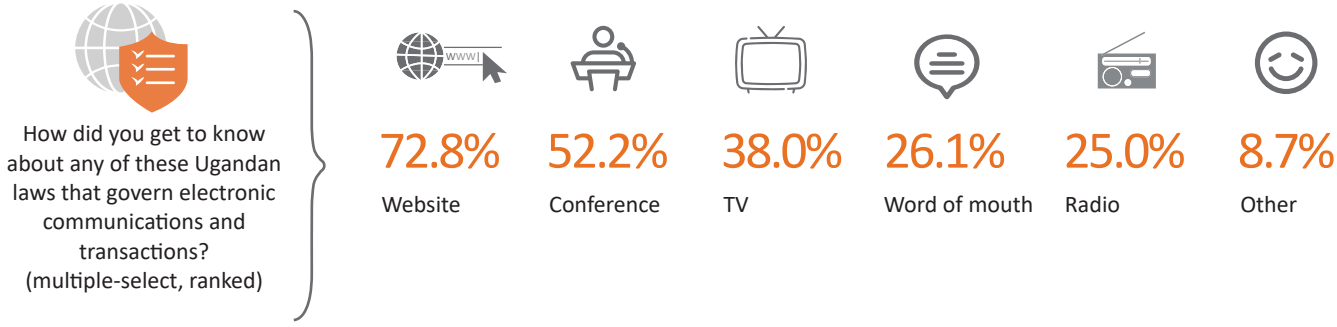


Figure 35: Channels through which MDAs learnt about cyberlaws

In terms of risk perception, a significant proportion of MDAs (27.4%) did not feel at risk of cybercrime, as highlighted in Figure 36. This is likely a false sense of security and may be an indication that such MDAs lack adequate sensitisation about the growing prevalence of cybercrime in the country.

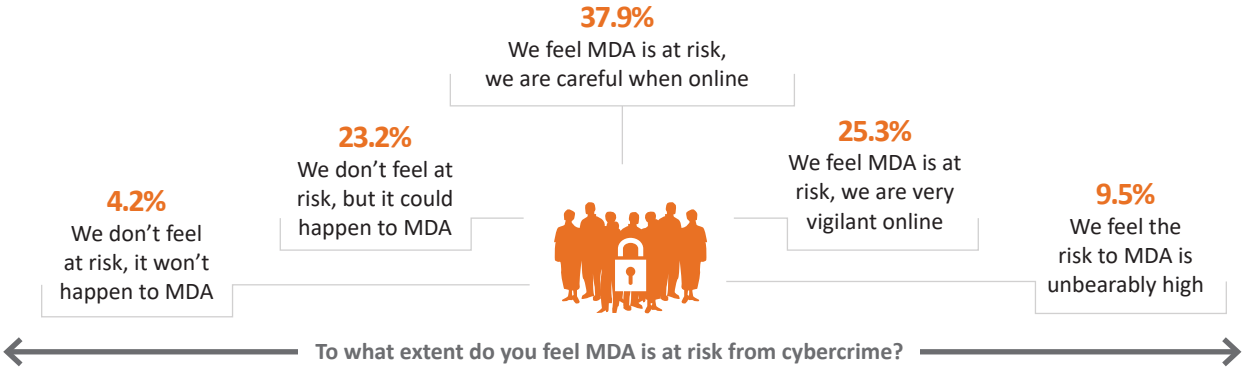


Figure 36: Perception of cybercrime risk among MDAs

Over the previous 12 months, 68.4% of MDAs were exposed to risks that can lead to cybercrime. Figure 37 illustrates the different cyber-dependent crimes (can only be committed using IT) that MDAs had been exposed to, with receiving unsolicited messages topping the list (52.6%).

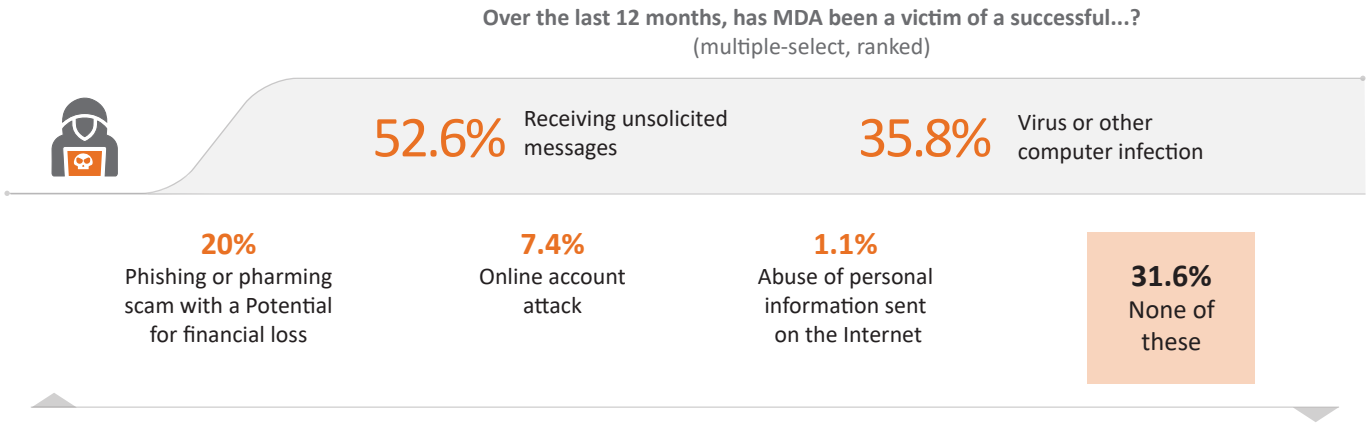


Figure 37: MDA victims of cyber dependent crime over the previous 12 months

Indeed, 12.6% of MDAs also reported experiencing some form of cyber-enabled crimes (IT increases their scale and form, but can be committed without use of IT) over the previous 12 months. Figure 37 highlights that 8.4% of MDAs experienced some form of online fraud or theft.

Overall, only 20% of all MDAs had ever reported any online crimes committed against the MDA or their staff to anyone. Of these, 63.2% had reported online crime incidents to NITA-U, while 15.8% had reported to the National CERT.UG/CC, as shown in Figure 38.

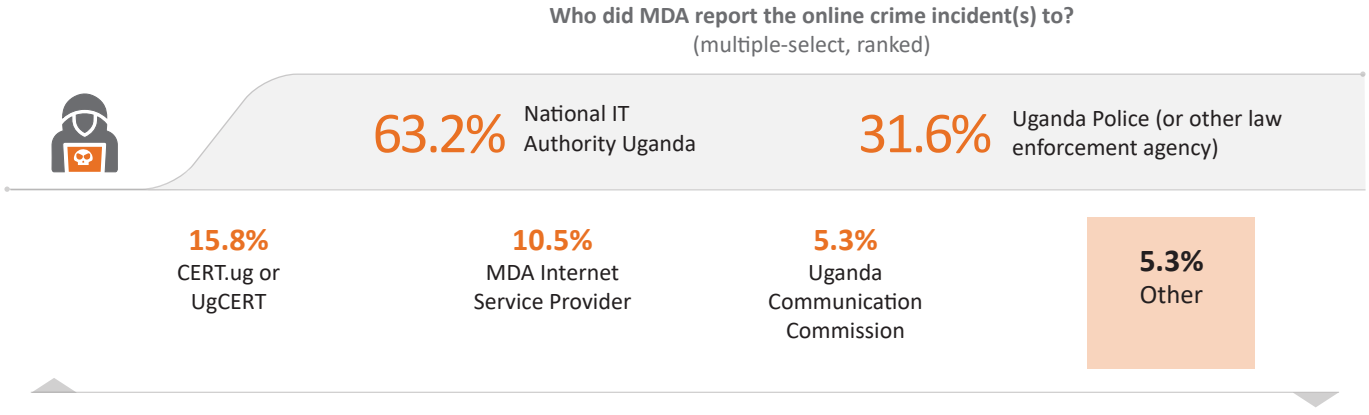


Figure 38: Entities to which MDA had reported cybercrimes

Figure 39 illustrates measures that MDAs had implemented to improve their online security. Measures included using up-to-date antivirus software (87.4%), using firewalls (77.9%) and forcing users to change passwords regularly (74.7%).

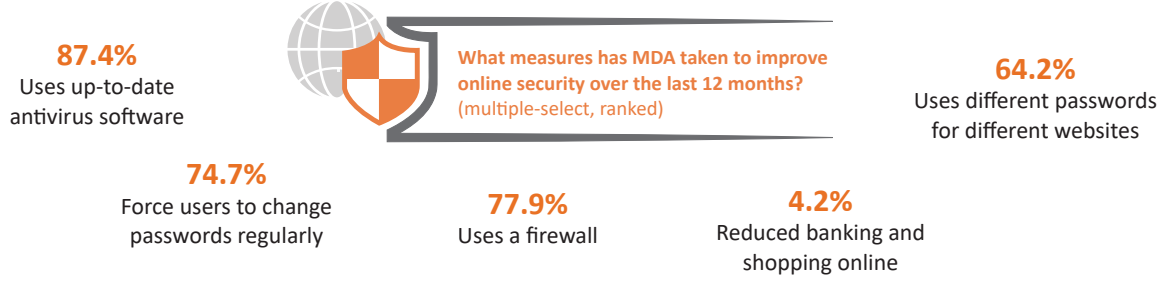


Figure 39: Measures undertaken by MDAs to improve online security

As MDAs move more services online, issues of data protection and privacy become paramount. Figure 40 depicts that only 37.9% had a data protection and privacy policy in place, while only 28.4% had a member of staff designated to ensure compliance with the Data Protection and Privacy Act, 2019.

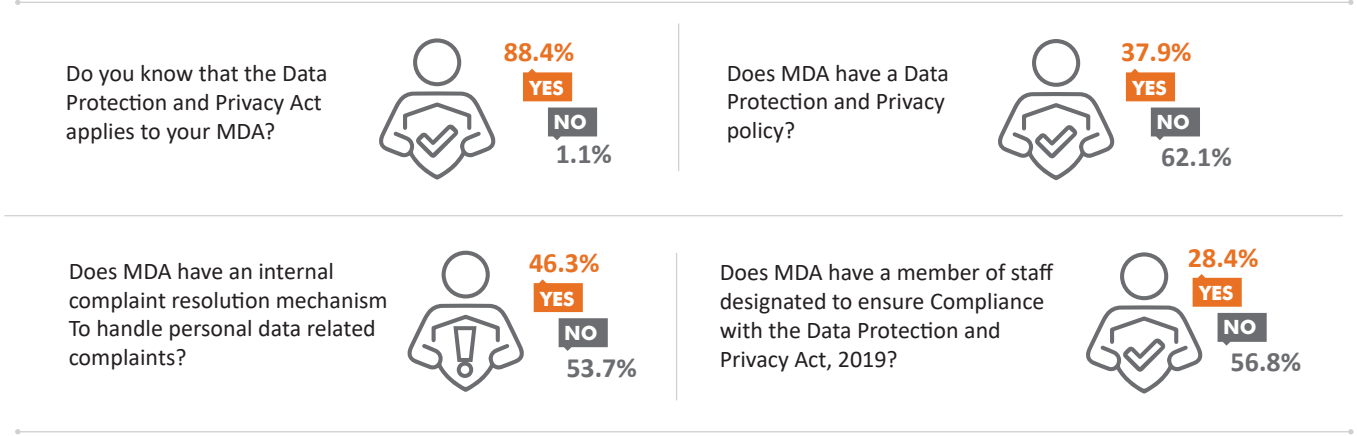


Figure 40: Data protection and privacy issues among MDAs

Overall, the government needs to set up a robust data protection, privacy and cybersecurity awareness training programme for MDAs so that they can better protect the personal data they collect and process in addition to safeguarding the data privacy and security of their networks against cybercrime.

3.11 Perceptions

Figure 41 presents MDA perceptions related to a number of aspects related to the MDA's ICT environment. On the most positive side, 88.4% of MDAs indicated high interest in utilising centralised platforms with other MDAs (e.g., IFMIS, HCM, E-GP, UMCS, e-Payment gateway), while 72.6% agreed or strongly agreed that the internet connection at their MDA is stable and reliable. On the less positive side, 29.5% of MDAs were not enthusiastic about the cost and (lack of) affordability of internet bandwidth. All of these aspects touch on the mandate of NITA-U. While MDAs are happy about the quality of their internet connections, which are predominantly supplied by NITA-U, they feel that the cost can be lower. The high interest in centralised and shared platforms and infrastructure is one area that NITA-U can continue to pursue with the right engagement and buy-in from MDAs.

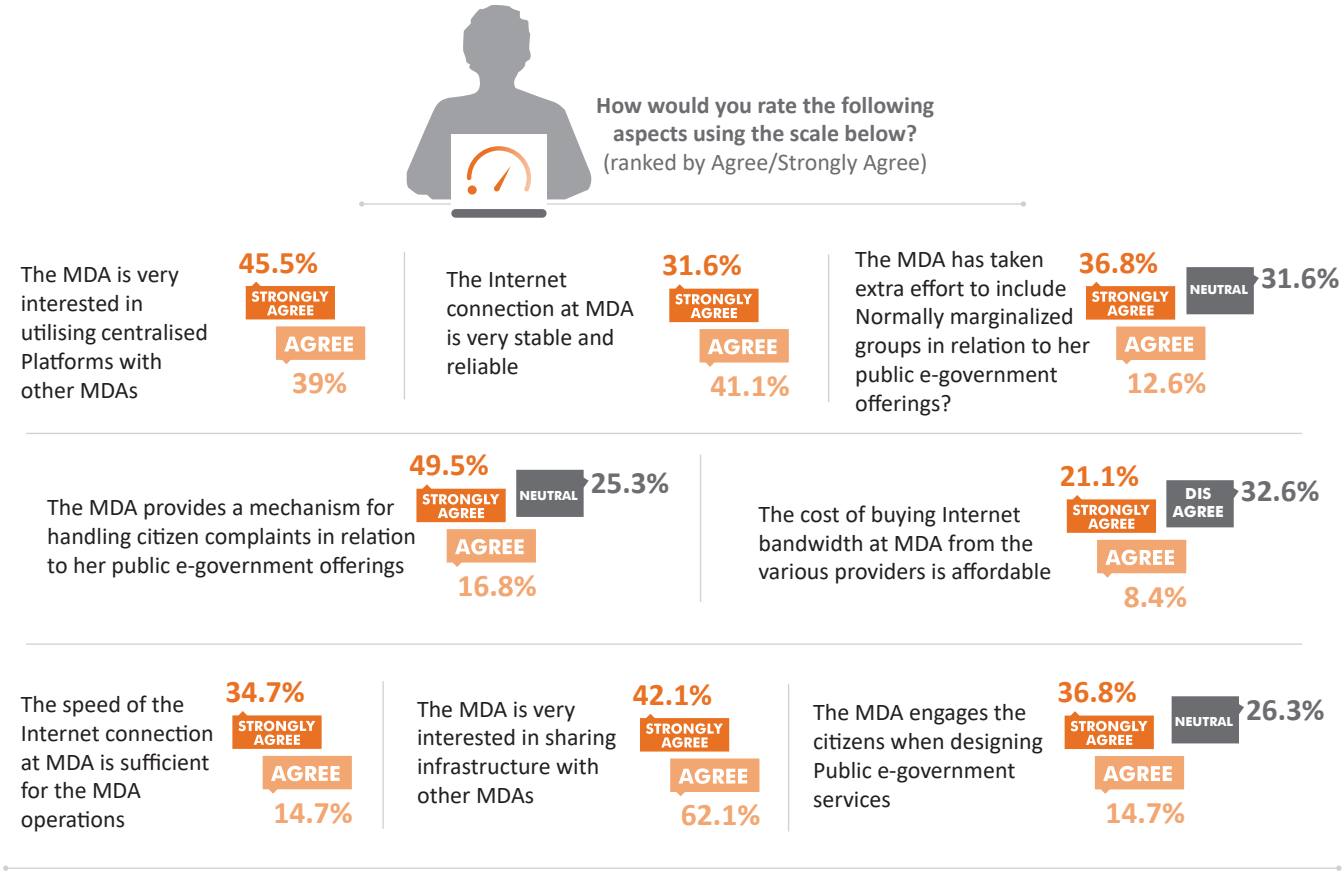


Figure 41: MDA perceptions of different aspects in the ICT environment

3.12 Summary of Findings and Implications

Figure 42 indicates that the proportion of IT staff across MDAs made up 2.2% of the total work force of MDAs. While there is a marginal improvement compared to 2017/18, the proportion of ICT staff is still insignificant given the high priority that the government attaches to ICT in terms of improving service delivery and the development of the country. The proportion of female IT staff compared to male IT staff (31.3% female vs. 68.7% male, respectively) compared to 2017/18 (31.2% female vs. 68.8% male) has barely changed. The female-male gap is skewed towards males in a ratio of 1:2, and is an area that NITA-U needs to shine light on and work with other stakeholders to address.

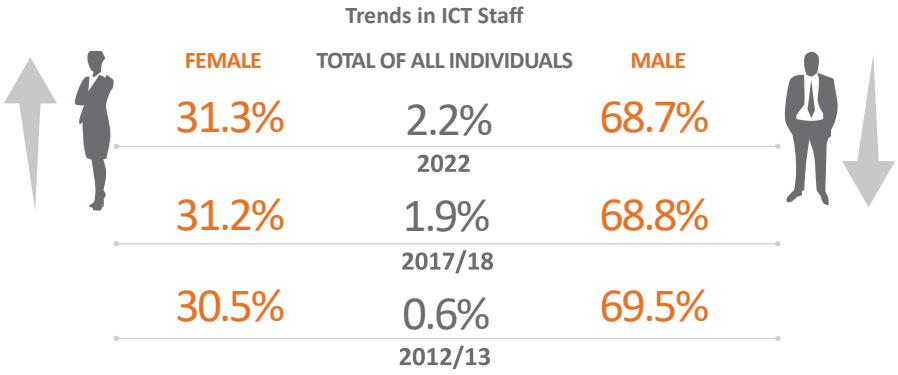


Figure 42: Trends in ICT personnel across MDAs across different surveys

The proportion of MDA staff that routinely used a computer for work purposes, and the proportion of MDA staff that routinely used the internet at work, have greatly improved since 2017/18 (from 37% to 60.5%, and 22.5% to 64.7% respectively). Some of the internal challenges identified by the 2017/18 survey, such as a poor internal network infrastructure and lack of adequate ICT skills and knowledge among employees, still persist.

While MDAs indicated high interest in shared platforms and infrastructure, the sharing of information databases with other MDAs or open data with the public is still minimal. To exacerbate the problem, only 6.3% of MDAs have an IEA, and 4.2% have IT interoperability frameworks – both critical as the government shifts towards the integration and interoperability of MDA systems to enhance efficiencies through whole-of-government digital investments. Both cultural and operational barriers to the sharing of data, both intra- and inter-MDA, need to be addressed as a matter of urgency. The absence of consistent and accurate data across the government disables both planning and service delivery and, in addition, leads to gaps and inconsistencies in reporting to international organisations.

Security remains a top priority, with 59% of MDAs reporting having experienced some type of IT security incident during that previous 12 months. There is a general decline in the proportion of different security incidents that occurred during the preceding 12 months of this survey compared to the 2017/18 edition. While this may reflect improvements in terms of IT security skills and infrastructure across MDAs, it may also be a result of reduced detection, for example, due to the increased sophistication of attacks. There is a continuing need to increase security awareness among MDAs to be alert to the various dangers and risks, both social and technical, related to working and delivering services online.

Table 3 provides a summary of the key findings across MDAs in relation to ICT access and use, and their potential implications for the ICT landscape as well as recommended actions that different stakeholders need to take to remedy the situation.

Summary of key findings on MDA access and use of ICT and recommended actions

	Key Findings	Implications	Recommended Action
1	29.5% of MDAs had no IT governance structure in place.	IT governance is principally about the core business processes of any MDA. Given the importance that the government attaches to using ICT to improve public service delivery, there is a need to constitute IT governance within MDAs that is composed of the policy-level stratum rather than the IT people.	• Recruit senior IT staff, who should also have policy-level competence. These and other business process leaders should constitute an MDA's IT governance committee.
2	76.8% of MDAs offered an IT service/help desk to support their staff with IT issues. Despite this, end-user support remains one of the IT roles where MDAs still rely on external suppliers in terms of outsourcing.	It should be noted that the IT Help Desk Function is a specialised role, making it expensive and indeed cost-inefficient for each MDA to have their own internal or external Help Desk function.	• There is a need to encourage MDAs to develop internal capacity to handle basic Help Desk functions to provide the first level of support. More complex issues can then be escalated to the government Help Desk provided by NITA-U. • There is a need to strengthen the centralised Help Desk hosted by NITA-U and to encourage MDAs to adopt its use. • Development of internal capacity would demand that remuneration is comparable to that in the private sector.
3	21.9% of MDAs with no BYOD policy were concerned that some employees may lack their own devices. 21.9% worried about the sensitive nature of MDA data. 20.3% had not thought about BYOD.	The reasons for lacking a BYOD policy indicate that NITA-U still has more work to do to support MDAs through awareness and guidelines that create flexibility while ensuring, where applicable, institutional data privacy and protection in dealing with BYOD.	• Develop BYOD guidance for MDAs to address the voluntary use of employees' personal mobile devices for government-related work while taking into account data privacy and protection. • Develop a toolkit to support MDAs considering developing a BYOD programme. This may include example of policies and case studies from successful MDAs in the country or beyond.
4	While internet access was universal across all MDAs, and 99% reported having a LAN, 97.9% reported having an MDA website, and 44.2% reported having an intranet.	The absence of intranets must be recognised as an issue of concern because the full benefit of end-user devices, including resources sharing and common online working spaces, can only be realised through a networked environment.	• Develop an overall government intranet strategy and general design guidelines. • Develop intranet templates and a core set of shared features that allows MDAs the flexibility to adapt any centrally provided capabilities to their own needs.
5	Many MDAs reported connections to multiple ISPs, with some having up to 5 ISPs (1.1%). There has been an increase in MDAs with 2 ISP connections (26.3% vs. 20.8%) and 3 ISP connections (10.5% vs. 2.6%) from 2017/18 to 2022.	This is an indication that MDAs considered the reliability of internet connectivity more seriously or have nationwide coverage in locations that are not currently served by NITA-U.	• Conduct a deeper examination of why, despite rationalisation, many MDAs still use other ISPs rather than NITA-U so that the gaps can be addressed (better to address the gaps that lead to this than to simply enforce compliance). • Ensure that all MDAs are connected to the internet by fibre. • Connections to all MDAs need to be configured to ensure a high level of availability through appropriate redundancy approaches.

	Key Findings	Implications	Recommended Action
6	Fewer MDAs restricted staff access to particular URLs to manage bandwidth (35.8% in 2022 vs. 66.2% in 2017/18). Most MDAs are still concerned about the cost and affordability of their internet (Figure 53).	This affords NITA-U a unique opportunity to continue driving down the cost of internet bandwidth for MDAs, and in the process for the wider public.	• Make reduction of cost the prime strategic objective of infrastructure rollout. • Increase volumes of procurement to use economies of scale for price reduction. • Build partnerships to further reduce the cost of high-speed internet access for MDAs and the general public.
7	A higher proportion of staff in agencies/departments (76.6%) routinely used the internet at work compared to staff in ministries (48.9%).	The much lower level of utilisation of the internet within the ministries needs to be recognised as a cause for concern as the utilisation of network services drives collaboration, productivity, and efficiency.	• Close the gap between internet availability and adoption in ministries by ensuring that there is sufficient bandwidth, building digital literacy and skills as well as creating more awareness among staff.
8	Ministries utilised the internet more for back-end operations (85.7% vs. 73%) and VoIP (81% vs. 56.8%) compared to agencies/departments. Conversely, agencies/ departments utilised the internet more for staff recruiting and training (67.6% vs. 38.1%) as well as file transfer and streaming applications (75.7% vs. 66.7%) compared to the ministries (Figure 16).		• Increase volumes of procurement to use economies of scale for price reduction in terms of purchasing digital devices. • Explore options to close the gap between internet availability/access in MDAs and adoption/use for different internal processes. • Support ministries to develop internal IT policies that focus on service delivery to create the reason for increased routine utilisation of the internet.
9	94.7% of MDAs provided institutional email addresses to their staff. Of these, 73.3% had a policy that required staff to use official addresses for work purposes. But only 86.4% of MDAs with an institutional email policy enforced this requirement.	It should be noted that utilisation of other than institutional mail for government business has both data security and national security implications.	• Work with the Ministry of Public Service to make the automatic allocation of government addresses part of the on-boarding process. • The consulting team is aware of a Public Service standing order (in draft) to enforce the use of official emails for official communications by government employees. This should be formalised and implementation expedited. • Ensure all government MDAs are connected to the government's Unified Messaging and Collaboration System (UMCS). • Make it mandatory that all official communication uses only the government email addresses and systems.
10	MDAs indicated high interest in shared platforms and infrastructure (Figure 53), but the sharing of information databases with other MDAs or open data with the public was still minimal (Figure 27). Only 6.3% of MDAs had an IEA and 4.2% had IT interoperability frameworks.	IEAs and interoperability frameworks are critical as the government shifts towards the integration and interoperability of MDA systems to enhance coherence and efficiencies through whole-of-government digital investments.	• Address both cultural and operational barriers to the sharing of data, both intra and inter-MDA as a matter of urgency. • Revise legal frameworks that hinder interoperability and data sharing across MDAs. • Improve MDA adherence to the government enterprise architecture and e-government interoperability framework. • Encourage more use of shared infrastructure among MDAs to make it easier to integrate and to share data.

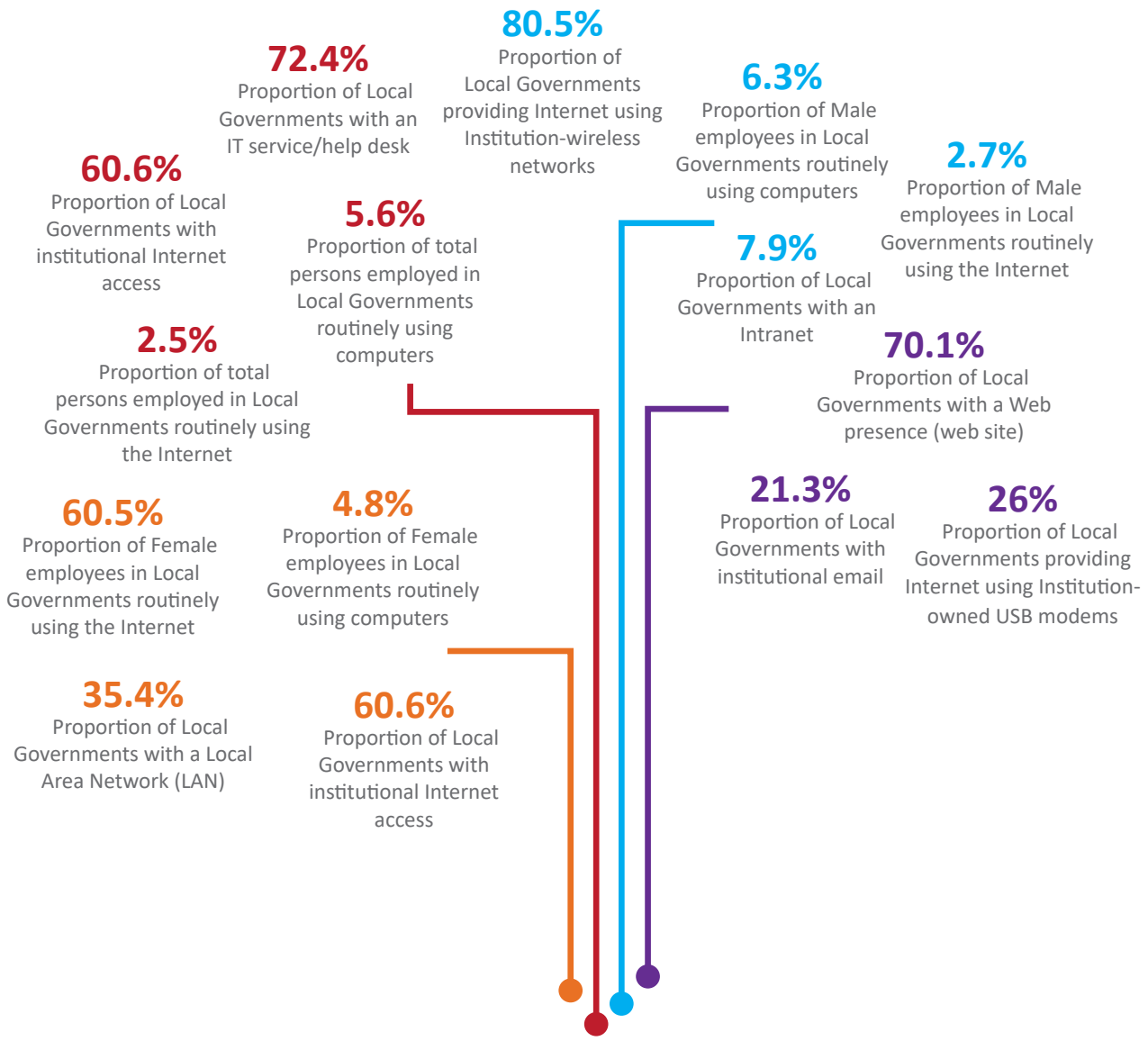
	Key Findings	Implications	Recommended Action
11	57.5% of MDAs reported lack of investment and budgetary constraints as the primary challenges in implementing national IT standards, followed by lack of top management involvement (27.5%)s	It is an experiential lesson across the world that where top management do not take the lead in the implementation and sustainability of IT services and systems, there is very likely to be failure.	• Work through the ministry to develop a minimum structure of IT committees in ministries that ensure control by the business owners. • Work with the ministry to establish minimum qualification requirements for the top IT officer in any MDA.
12	58.9% of MDAs experienced some type of IT security incident during that previous 12 months (Figure 41).	This number should likely be much higher to keep in line with global trends, given the push towards remote and online working brought on by the COVID-19 pandemic. MDAs and their staff are even more vulnerable to cyber threats, which have become more rampant and sophisticated than before.	• Implement a programme that enhances cybersecurity skills among the MDA/LGA ICT staff responsible for security. • Develop an MDA/LGA staff awareness training programme on cybersecurity issues. • Improve the planning, coordination and implementation of the national cybersecurity policy/strategy and related information security initiatives among pertinent stakeholders. • Develop a plan and solution that explicitly addresses user identity and access management across MDAs. • Undertake periodic/regular information security audits and the assessment of MDA/LGA ICT infrastructure to ensure compliance with best practices.

4
CHAPTER

Findings from LGAs

This chapter summarises the findings on different indicators related to the access and usage of different IT services by LGAs. The indicators are organised into 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.

Key Local Government IT indicators at a glance



4.1 Overview

Out of 128 districts sampled for the survey, 95 provided full data; the response rate was 72.4%. The data also include responses from 17 municipalities and 10 town councils found within the sampled districts. Figure 43 provides an overview of the access to and use of different types of ICT services across LGAs.

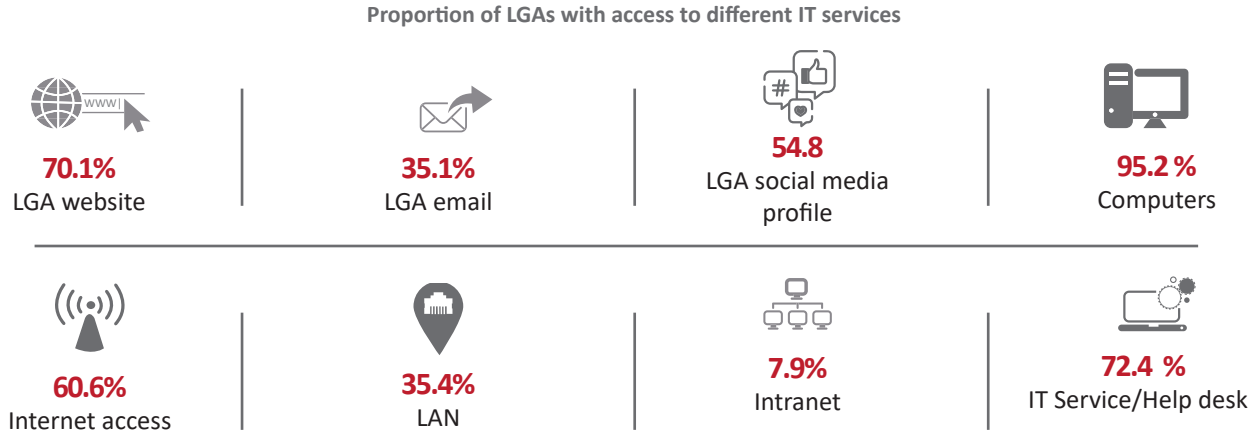


Figure 43: Proportion of LGAs with access to different IT services

4.2 Digital Devices

The survey collected data about the type and numbers of computing devices owned by different LGAs and the proportion of LGA employees that routinely used computers and the internet for work-related purposes.

Computing Devices

Figure 44 presents the penetration of various computing devices across LGs. The penetration of desktop computers was highest (95.3%), followed by printers (94.5%) and laptops (93.7%).

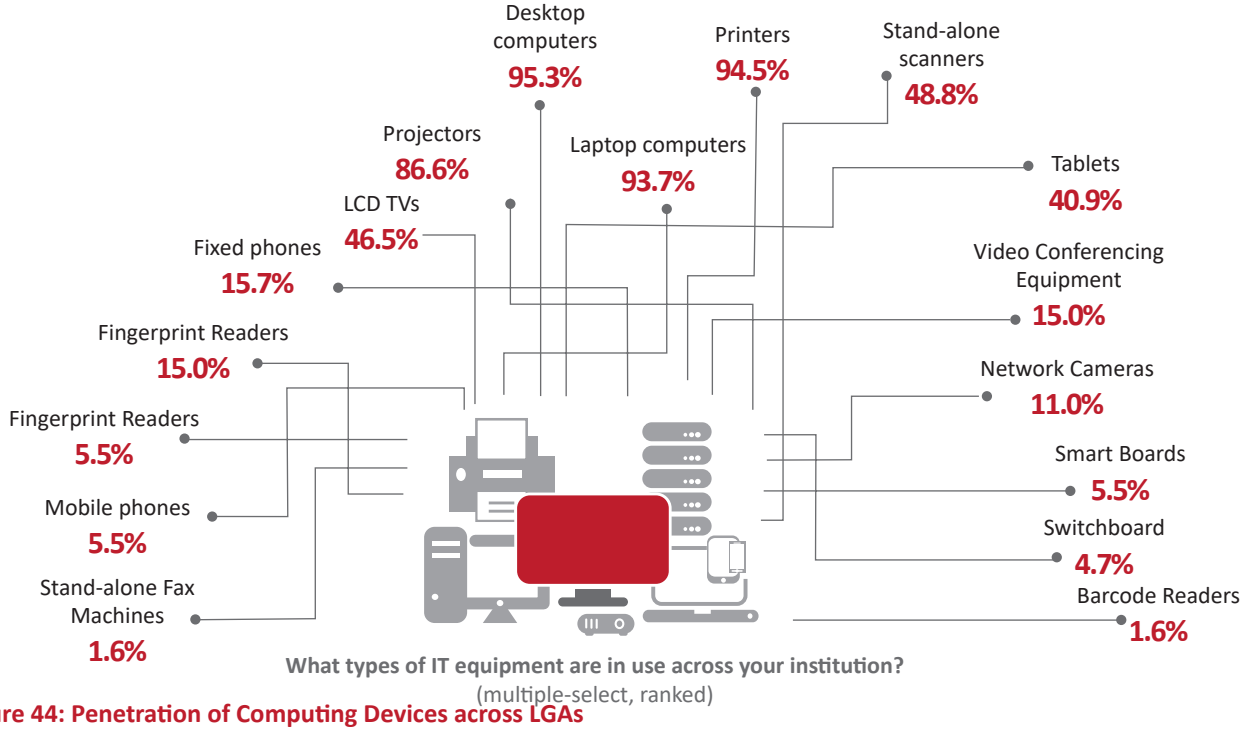


Figure 44: Penetration of Computing Devices across LGAs

Overall, LGAs reported that only 4.6% of their employees had a computer (desktop computer or laptop) assigned to them for work purposes, while only 5.6% of their staff routinely used a computer at work (for work purposes), as indicated in Figure 45. From a gender perspective, fewer female employees had computers assigned to them compared to male employees (3.9% vs. 5.2%). In addition, fewer female employees routinely used a computer at work (for work purposes) compared to male employees (4.8% vs. 6.3%).

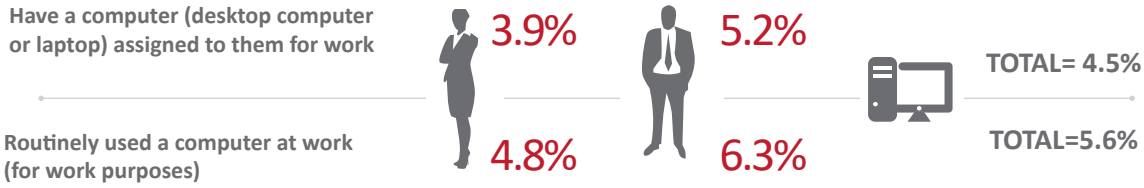


Figure 45: Proportion of LGA employees assigned and routinely using computers by gender

Only 18.1% of LGAs had a BYOD policy for staff. Of these, 95.7% reported that the BYOD policy permitted LGA employees to use their personal devices for work-related tasks.

Figure 46 presents the different reasons why LGAs supported a BYOD policy. Most LGAs (47.8%) indicated that BYOD increased staff productivity, followed by employees having more up-to-date technology due to personal upgrades (34.8%).

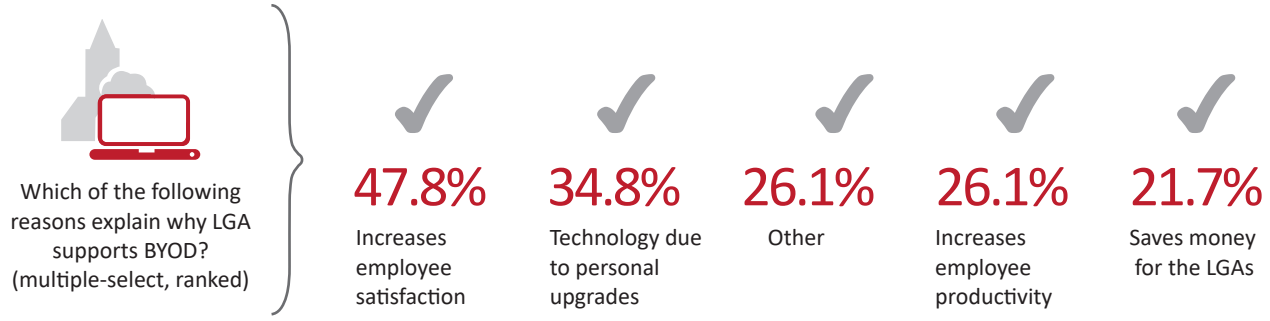


Figure 46: Reasons why LGAs supported BYOD policies

Figure 47 illustrates the kind of support to staff that embraced BYOD provided by LGAs with a BYOD policy. In addition to internal IT support for employee devices (65.2%), LGAs also provided internet access/bundles for staff-owned devices (65.2%).

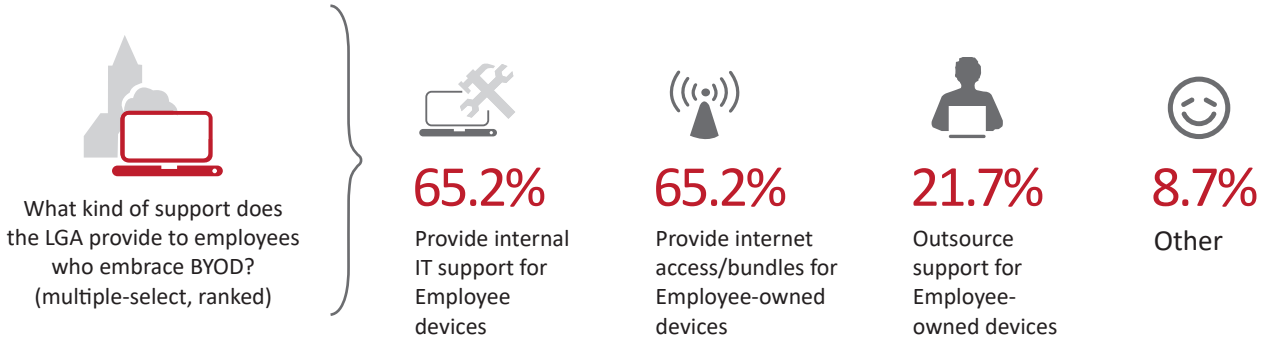


Figure 47: Support provided to staff by LGAs with BYOD policies

Among the reasons why LGAs had no BYOD policy, 52.9% had not thought about BYOD, while 21.2% were concerned that some employees may not have their own devices to bring along.

The survey asked LGAs that had fewer computers compared to the number of staff (96.1%) for reasons why the Local Government lacked computers for all staff. Most LGAs (73.8%) reported that they could not afford computers, 2.5% indicated they lacked electricity to power computers and 0.8% indicated that they did not need computers. This means that the efforts to ensure access and affordability by all end users, especially those in marginalised groups (among which rural areas are the largest) will not be fully exploited. LGs are a key route for service delivery, and if they are not digitalised, they will instead become major barriers.

Half of the LGAs (50%) that did not provide computers to all staff indicated plans to provide computers to all their staff as summarised in Figure 48. A total of 62.3% of LGAs reported that they hoped to accomplish this in the next five years.

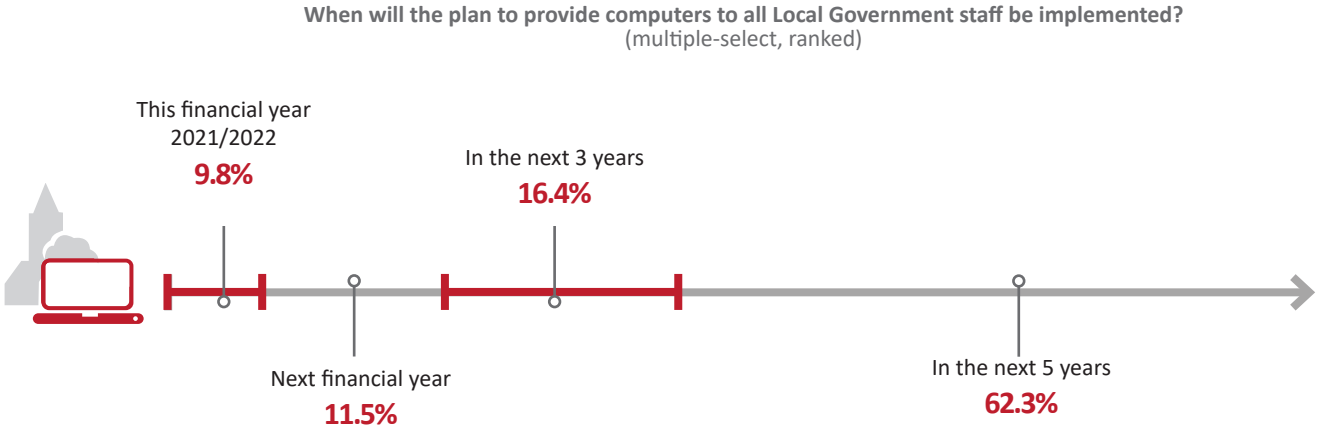


Figure 48: Timelines for LGAs that plan to provide all staff with computers

4.3 Network Connectivity and Internet Access

The survey collected data about local government's network connectivity, their ISPs, types of internet connections, amount of bandwidth procured and perceptions on their internet service. In addition, the survey explored how local government employees access the internet. Figure 60 provides an overview of LGAs with different ICT services. Every three in five (72.4%) LGAs had internet access, while 70.1% had an institutional website.

Internet Access and Type of Connection

Figure 49 highlights that among LGAs with internet access, NITA-U was the leading ISP, covering 70.1%, followed by Airtel (26%) and MTN (14.3%).

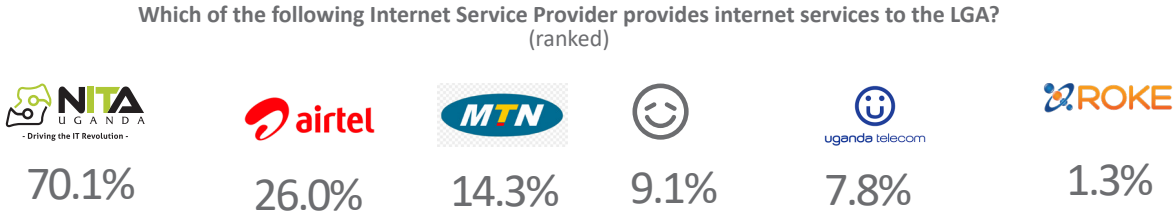


Figure 49: ISPs serving different LGAs

Among LGAs with internet access, most (79.2%) had only one ISP connection, while 15.6% had two ISP connections. However, a few LGAs reported having three or four connections (2.6% each).

Figure 62 indicates that among LGAs with internet access, most LGAs (53.2%) had wireless connections to their ISP, followed by fibre connections (39%). The government's goal to connect all district headquarters to fibre is still way off given that only 39% of LGAs had fibre connections to their ISPs.

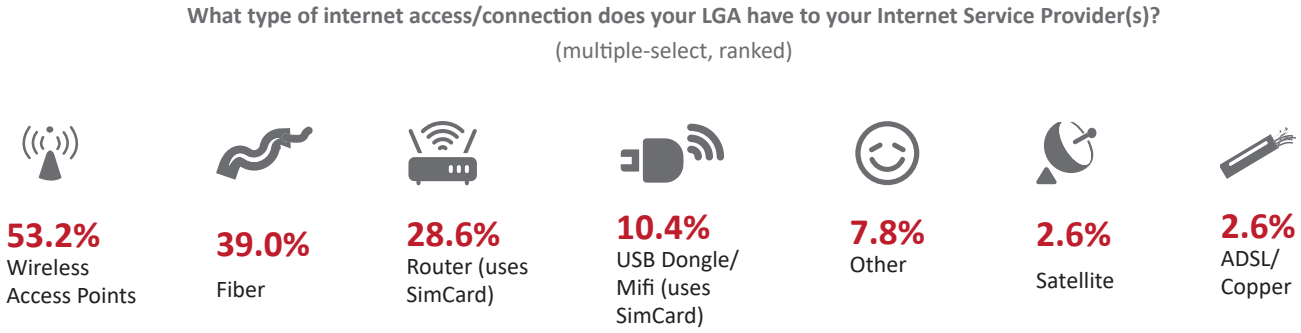


Figure 50: Type of Internet connection reported by LGAs

Only 35% of LGAs had Local Area Networks (LANs). LGAs used a variety of methods to provide staff with internet access for work-related purposes. Most LGAs used wireless networks (80.5%) and wired networks (45.5%) and as indicated in Figure 51.

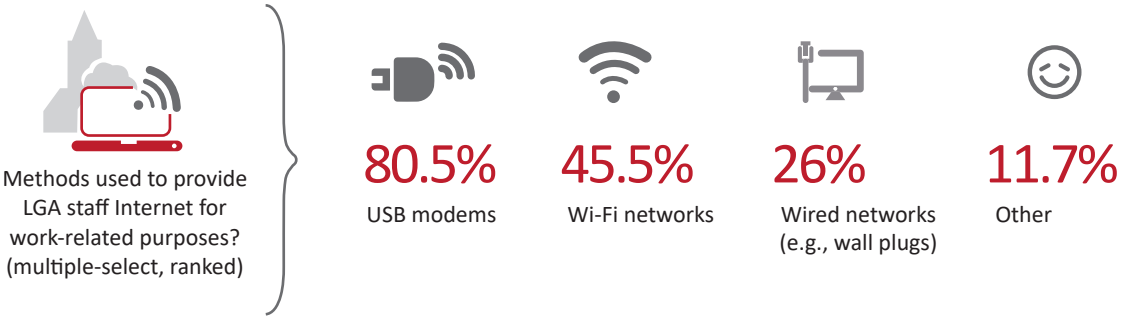


Figure 51 Methods used by LGAs to provide staff with Internet access

Internet Use by LGA Staff

Overall, 2.5% of LGA staff routinely used the internet at work (for work purposes). These are split into 40.5% female and 59.5% male, showing a bias towards male staff.

Figure 52 illustrates the different work-related activities that Local Government staff used the internet for. From the survey findings, most LGAs reported using the internet for communication via email (90.9%), followed by providing services to the public (74%). The activity carried out least using the internet was purchasing goods and services (18.2%).

Only 35.1% of LGAs provided institutional email addresses to their staff. Given that communication is the predominant use of the internet for LGA staff, NITA-U should explore avenues to facilitate LGAs in providing institutional email for work purposes.

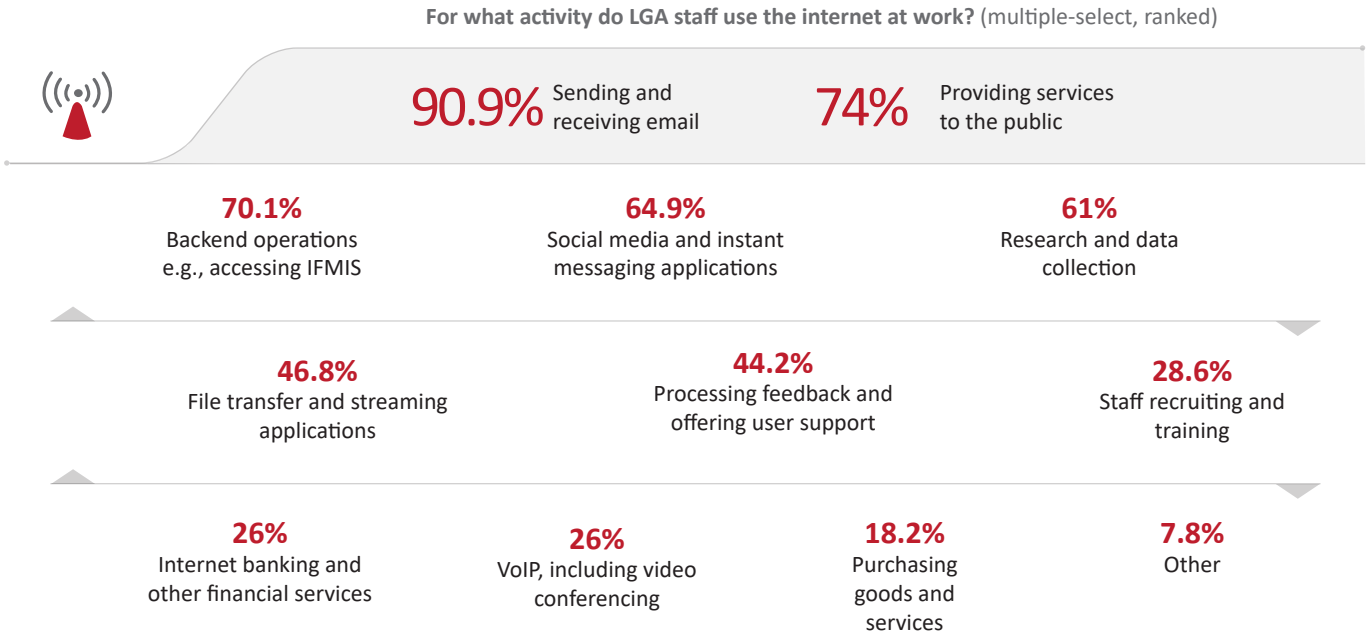


Figure 52: Activities for which LGA staff used the Internet at work

Obstacles to Internet Use

The survey collected data from LGAs on what they perceived as potential obstacles to a wider use of the internet for work purposes. There were many complaints about the internet, ranging from its high cost (or inadequate budget) to its limited, slow and unreliable nature. Inadequate number of computers for staff and the electricity to power them as well as the need to equip LGA staff with the necessary skills to use the internet were also cited.

No Internet Access

Figure 53 highlights the reasons why some LGAs (39.7%) lacked internet access. The high cost of internet service (68%) and high cost of internet equipment (68%) were cited as top reasons. LGAs that cited other reasons (24%) had just started operations and lacked adequate funds to prioritise the internet, or had contacted NITA-U for a connection.

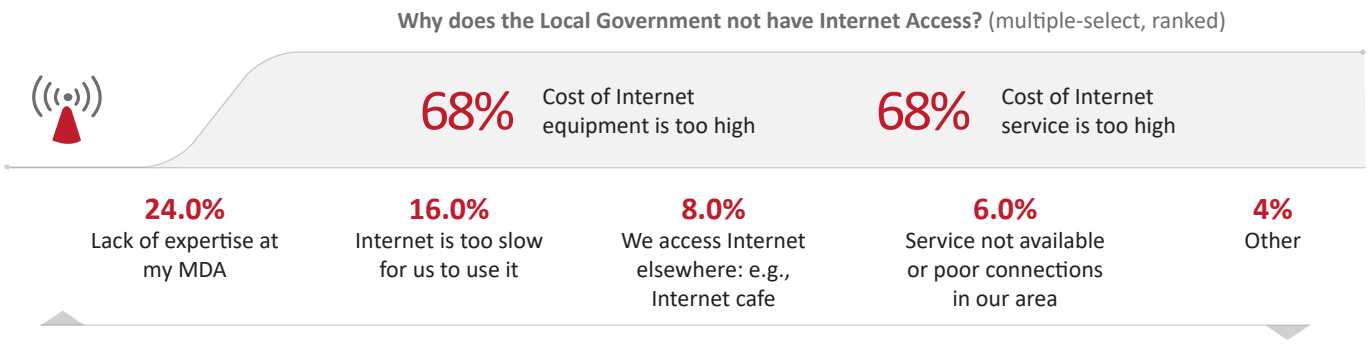


FIgure 53: Reasons why LGAs did not have Internet access

End-to end maximisation of efficiency and benefit to the end user can be achieved only if there are no constrictions in the data delivery chain. Steps need to be taken to ensure that connectivity apartheid in the entire country is eliminated.

A total of 56% of LGAs that had no internet access indicated that they had plans in place to provide internet access to their staff. Most of these LGAs (35.7%) planned to accomplish this in the next five years, followed by 32.1%, that hoped to accomplish this in the next financial year, as shown in Figure 54.

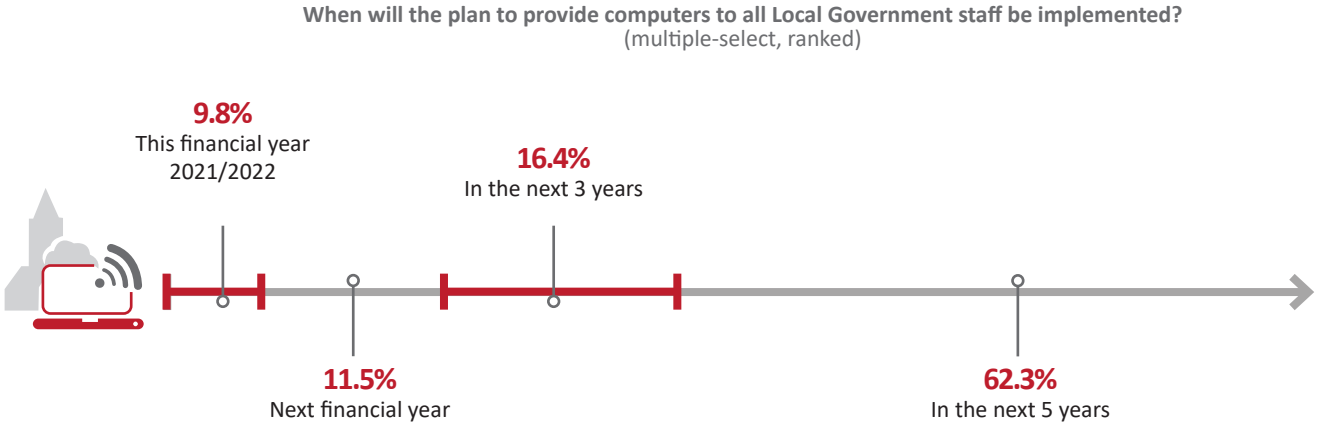


Figure 54: Planning timelines for LGAs without internet to provide staff with Internet

4.4 Websites and Social Media

The survey collected data from LGAs on the various channels that they used to provide public service delivery. This section highlights findings about the online presence of LGAs and their use of social media.

LGs still largely rely on the conventional methods of public service delivery including customer walk-ins (78%) and use of traditional media (69.3%) as shown in Figure 68. While the use of email (37.8%) and institutional websites (29.9%) are catching on, the use of mobile applications (3.9%) and video sites (3.1%) still lags. Given that the use of digital channels has increased among citizens as covered in sections 6.4 and 6.5, NITA-U needs to support LGs in figuring out how to transition to the use of digital channels for public service delivery.

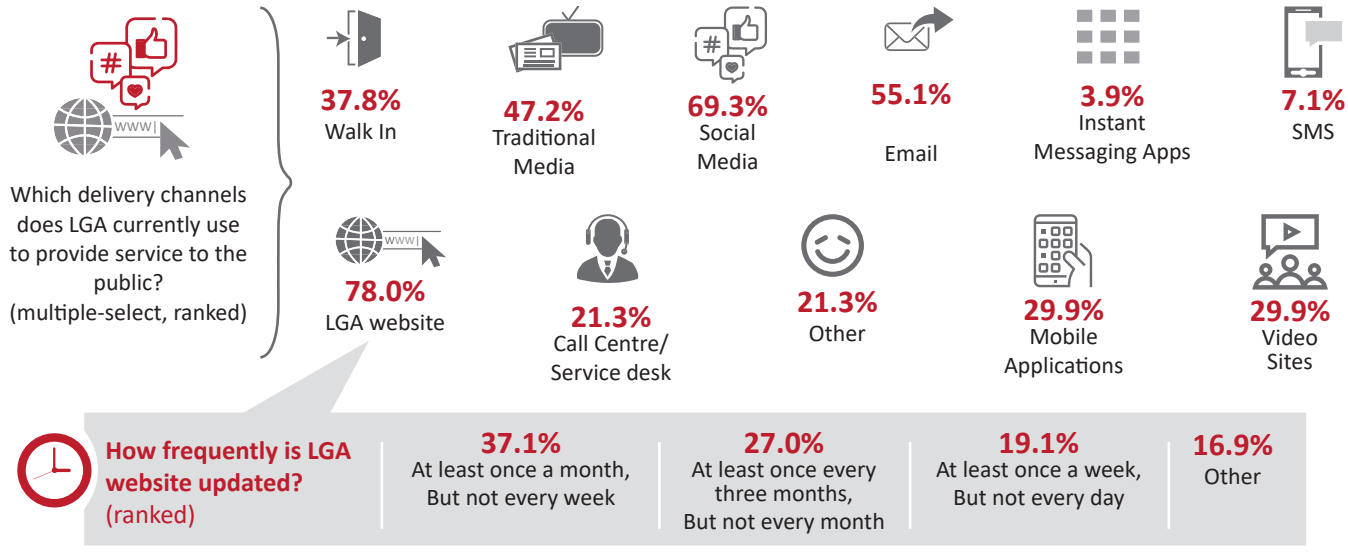


Figure 55: Service delivery channels used by different LGAs

Websites

Most LGs (70.1%) owned an institutional website and most (89.9%) had a person or resource that managed the website. Among LGAs with a person or resource that managed the website, most (91.3%) had at least one fully dedicated employee as the web person, followed by those that used a partially dedicated employee (7.5%).

Social Media

LGAs had profiles on different social networks. These included WhatsApp (68.5%), Facebook (57.5%) and Twitter (32.3%) as summarised in Figure 56.

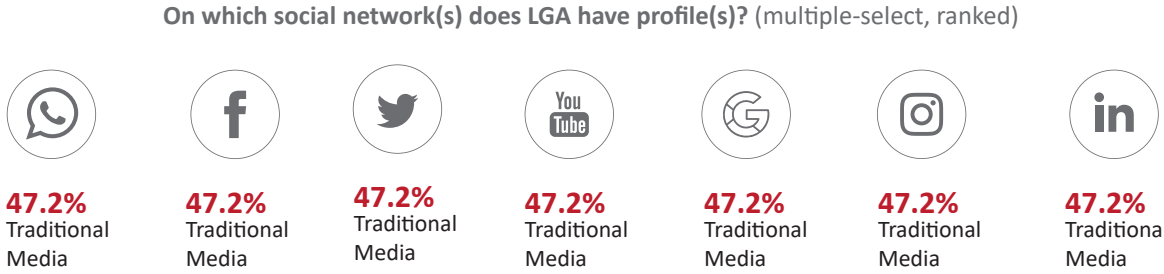


Figure 56: Social networks used by LGAs

LGAs also indicated that they used WhatsApp (61.3%) and Facebook (27%) most often by updating their profiles on these platforms on a daily basis (89.7% and 36.7%, respectively). This is in line with the recommendations of the Government of Uganda Social Media Guide.

4.5 E-government Services

The survey collected data on the various channels that LGs used to collect feedback from the public. Most LGAs (81.9%) reported using walk-ins, followed by traditional media (48%) and social media (37%), as summarised in Figure 57.

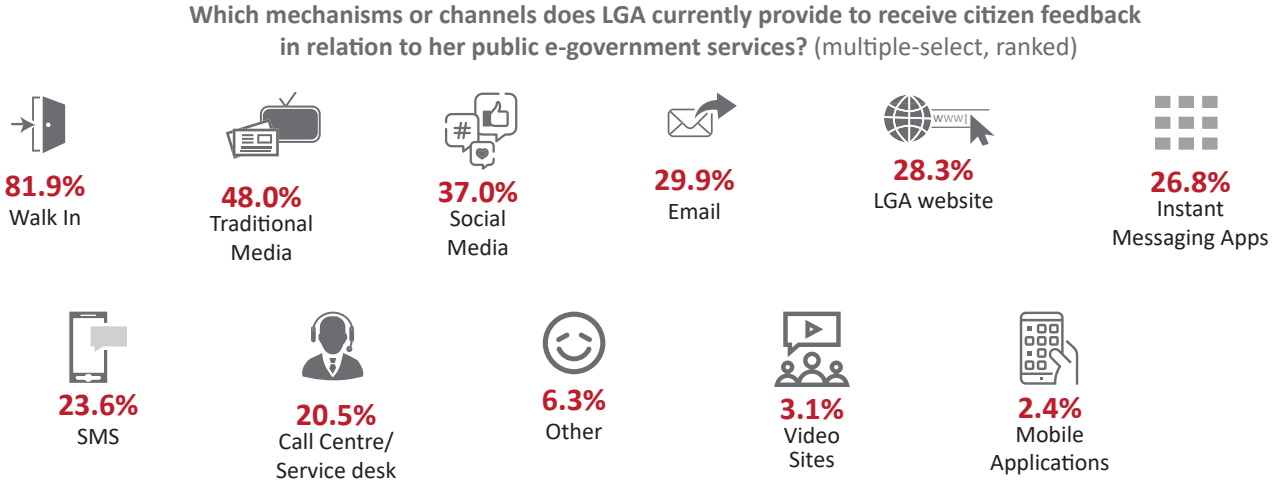


Figure 57: Feedback channels used by LGAs

About one in three LGAs (37%) offered some digital or online services. Amongst these LGAs, SMS applications were the most predominant (53.2%), followed by web applications (27.7%) and mobile applications (12.8%), as summarised in Figure 57.

The overall proportion of LGAs that offer some kind of assistive technologies for end users is still very low at only 3.1%. This has implications for digital inclusion, and LGAs need to be supported to start leveraging assistive technologies.

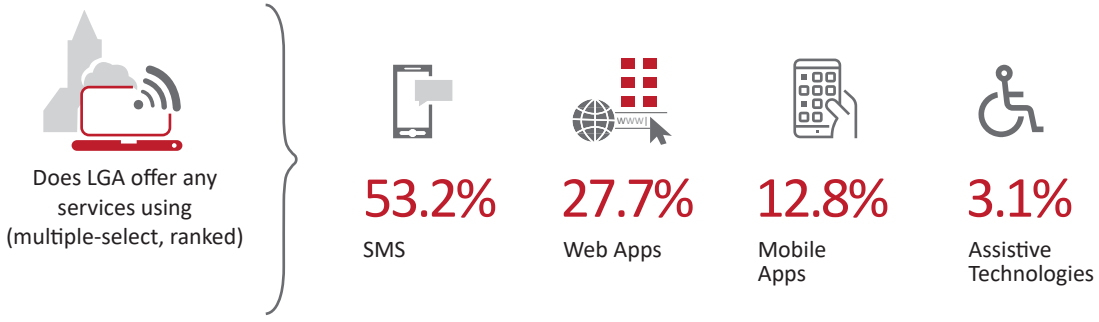


Figure 58: Platforms that LGAs used to offer digital services

Among the LGAs providing web applications, only 28% reported offering Application APIs.

Implementation Challenges

Figure 59 presents internal challenges that hindered the implementation of e-services identified by LGAs. Lack of investment and budgetary constraints emerged as the primary internal challenge (64.6%), followed by higher-than-expected IT costs (59.8%).

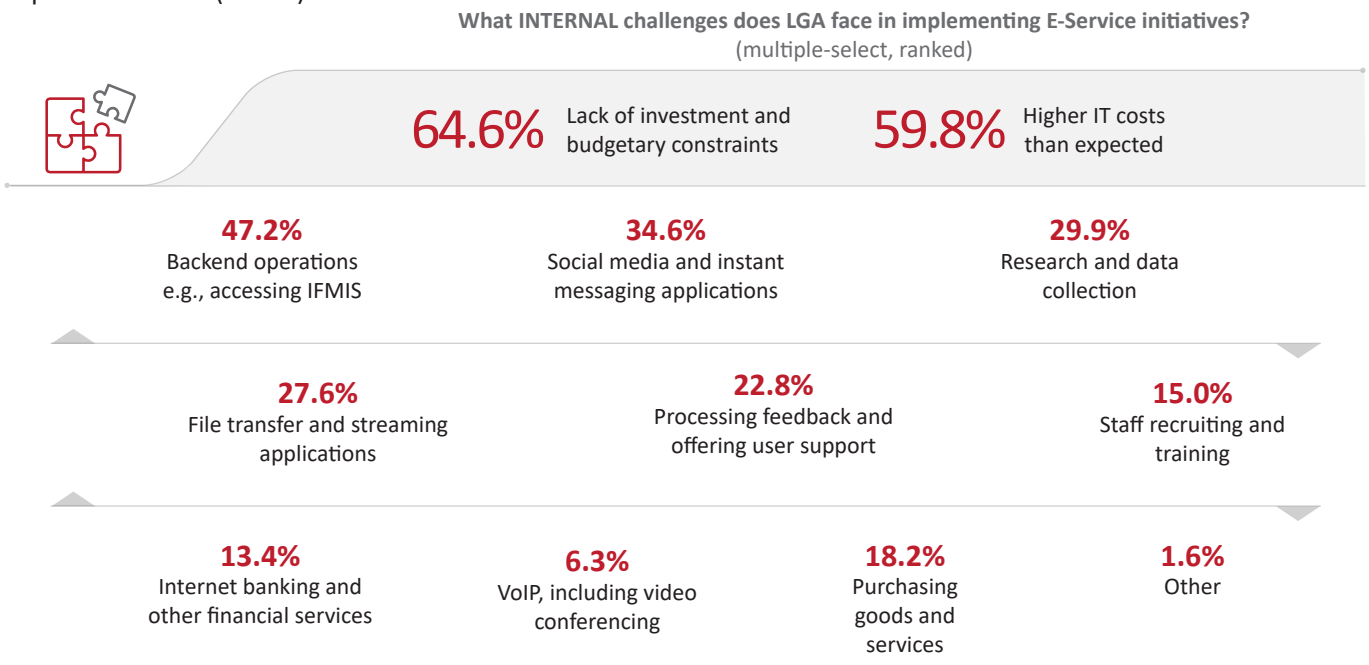


Figure 59: Internal challenges that hinder LGAs from implementing e-services

In terms of external challenges, lack of funding (92.9%) and lack of supporting infrastructure (70.9%) emerged at the top as shown in Figure 59.

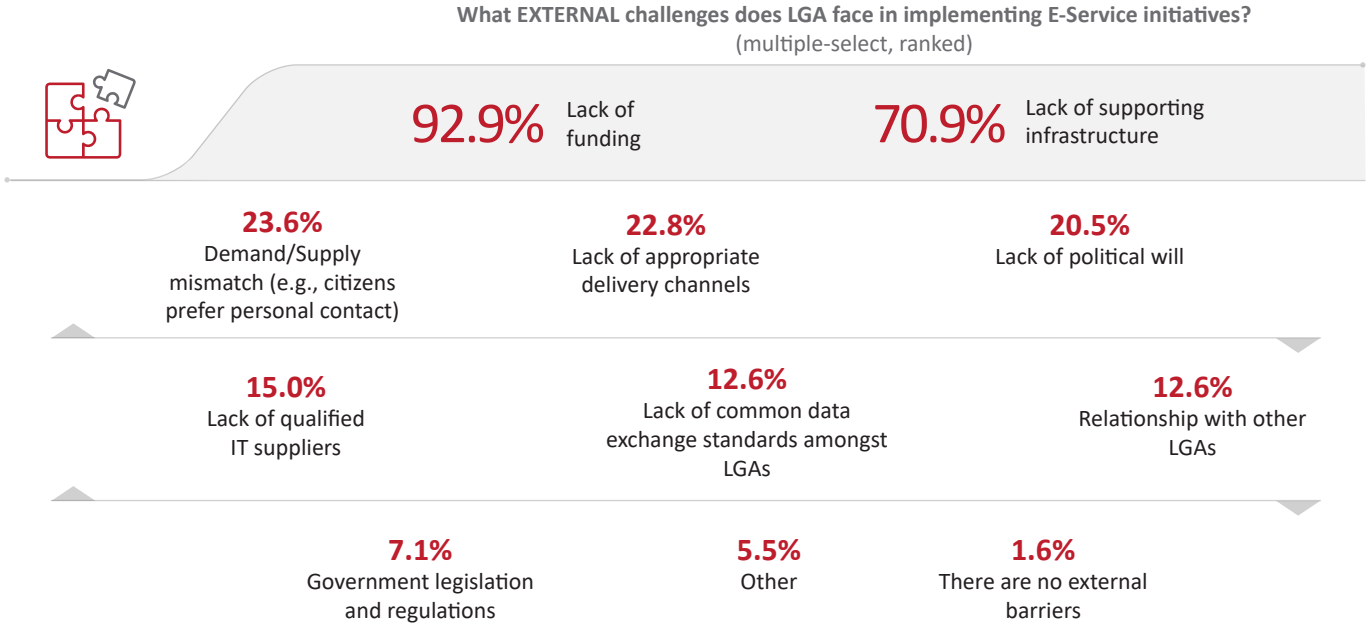


Figure 60: External challenges that hinder LGAs from implementing e-services

4.6 Software and Information Systems

This section highlights survey findings on LGs' software and information systems including the different types of systems and software applications deployed by LGAs, as well as the level of systems integration methods.

Software Applications

Figure 61 presents the variety of software applications used by LGs. Most LGAs (78.7%) used anti-virus software, followed by finance and accounting (70.9%) and human resource management (66.9%) software.

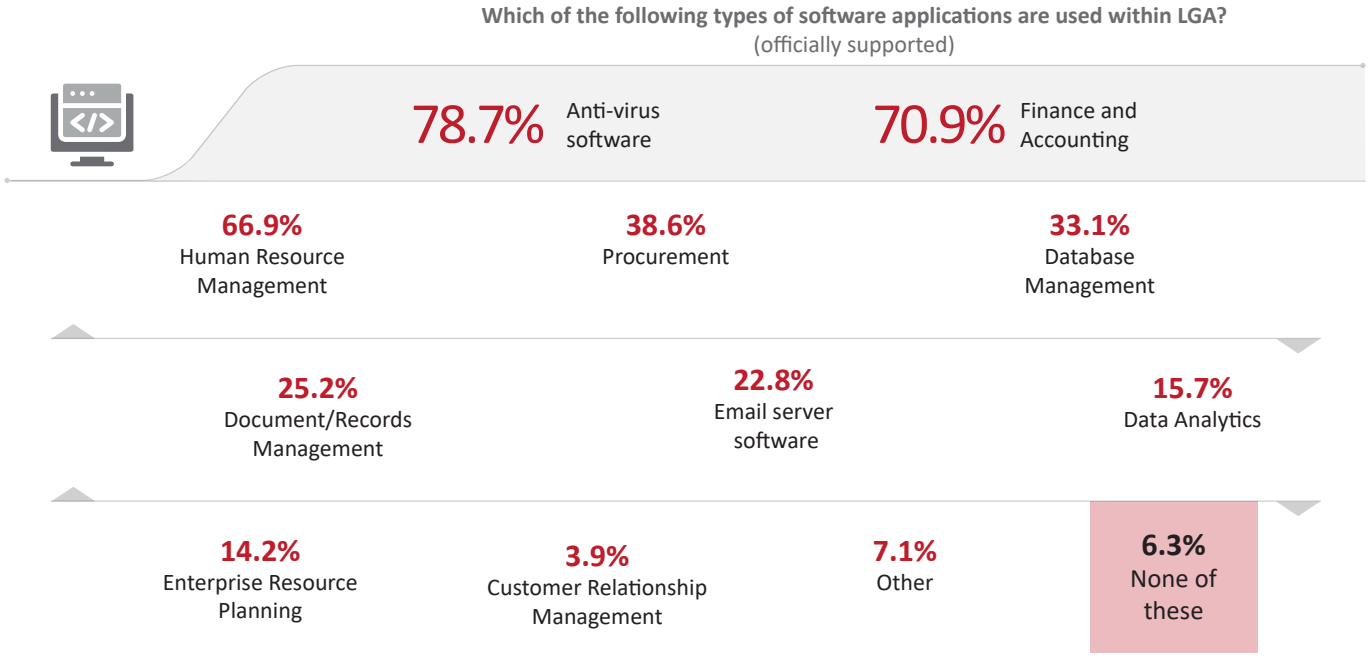


Figure 61: Different software applications used within LGAs

The vast majority of software applications used in LGAs were commercial off-the-shelf applications. A total of 89.3% of LGAs indicated that they did not have any software applications in the above categories developed in-house. The largest category of software applications that LGAs reported developed in-house were database management systems (5.3%), while the largest category of software purchased commercially off-the-shelf was anti-virus software (76.7%).

As with MDAs, there are even more potential savings to be made if commonly used applications across LGAs can be procured together to leverage better economies of scale.

Software Integration

Among the LGs that reported having different software solutions, 51.5% indicated having some form of integration between different software. The survey collected data on the different system integration methods that LGAs had used to interconnect their software solutions. These are summarised in Figure 62, with direct database queries being the most commonly reported method (58.5%) among LGAs that reported some form of integration.

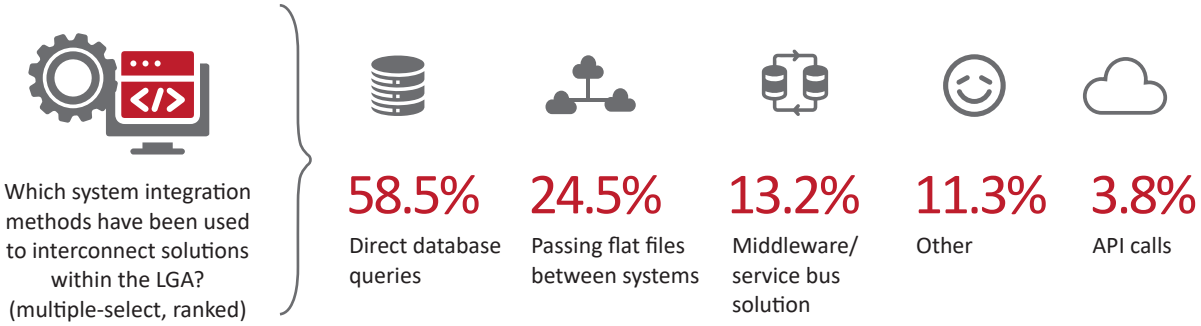


Figure 62: Software integration methods used by LGAs

National IT Standards on Software and Hardware Acquisition

One in two LGs (54.3%) reported being aware of the National IT standards on Software and Hardware Acquisition for the government prepared by NITA-U.

LGAs were asked about challenges faced in implementing the IT standards, and only 4.3% indicated not having any challenges. Most LGAs (76.8%) reported lack of investment and budgetary constraints as the primary challenges, followed by lack of top management involvement (59.4%), as shown in Figure 63. The top two are similar to the challenges cited by MDAs.

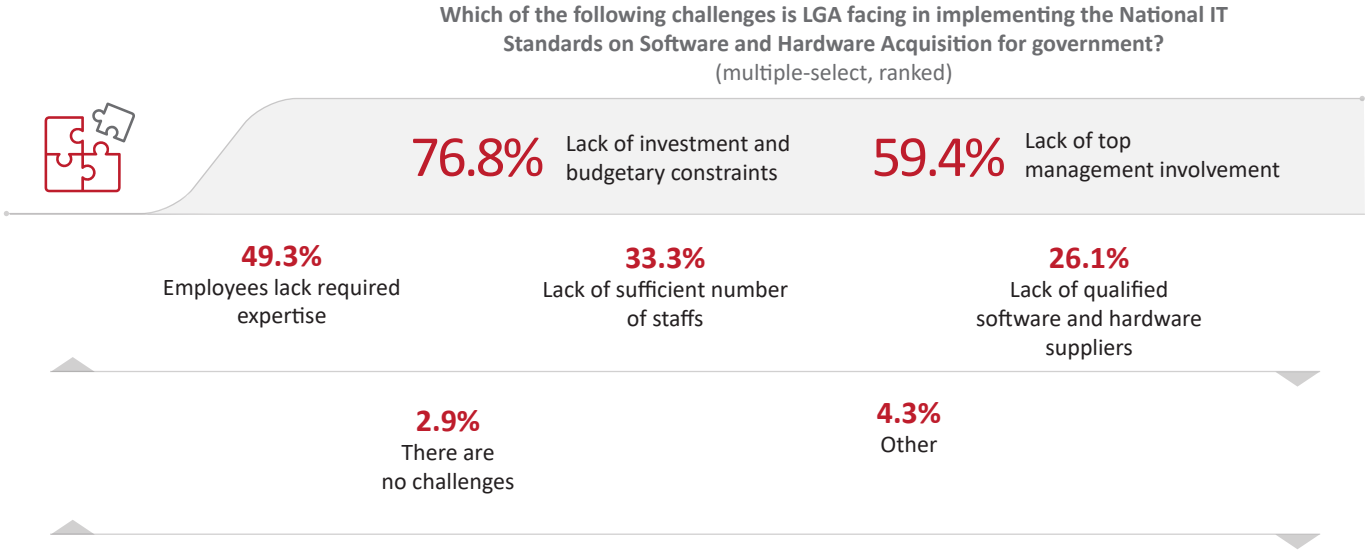


Figure 63: Challenges reported by LGAs in implementing National IT Standards

4.7 Hosting and Cloud Computing

One in three (32.3%) LGAs had applications and/or databases hosted somewhere. Of these, 82.9% hosted their applications and/or databases in the Government Data centre, followed by on-premise hosting (14.6%). Figure 64 highlights cloud computing services bought by different LGAs with cloud applications. Of these, 34.3% had desktop/office software, followed by security software (31.4%) and email and messaging (28.6%).

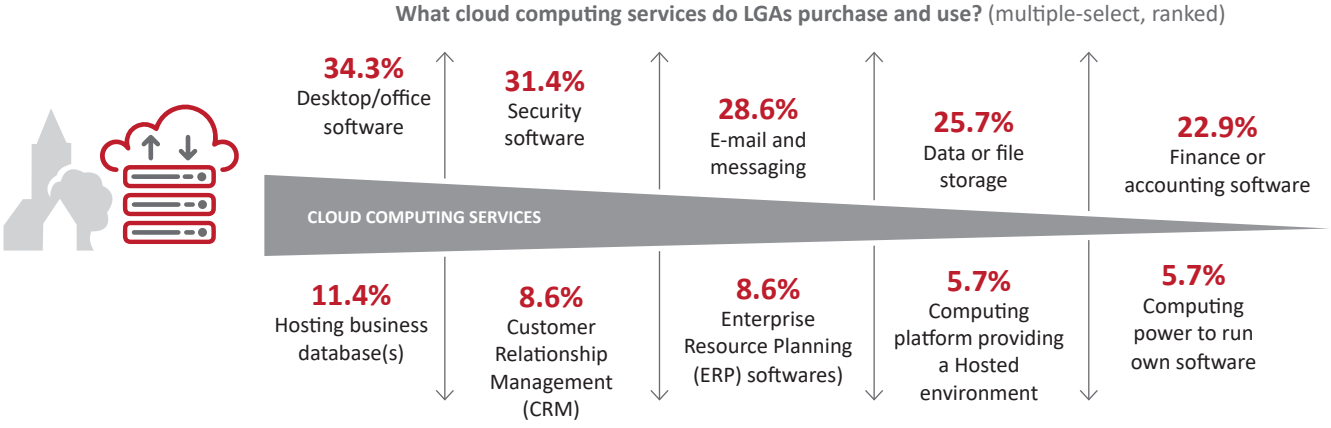


Figure 64: Cloud computing services bought by LGAs

Figure 65 presents the cloud computing benefits highlighted by LGAs. The top-most benefit cited by LGAs was increased collaboration (91.4%), followed by the reduction of ICT-related costs (88.6%) and more flexibility in up- and down-scaling services (85.7%).

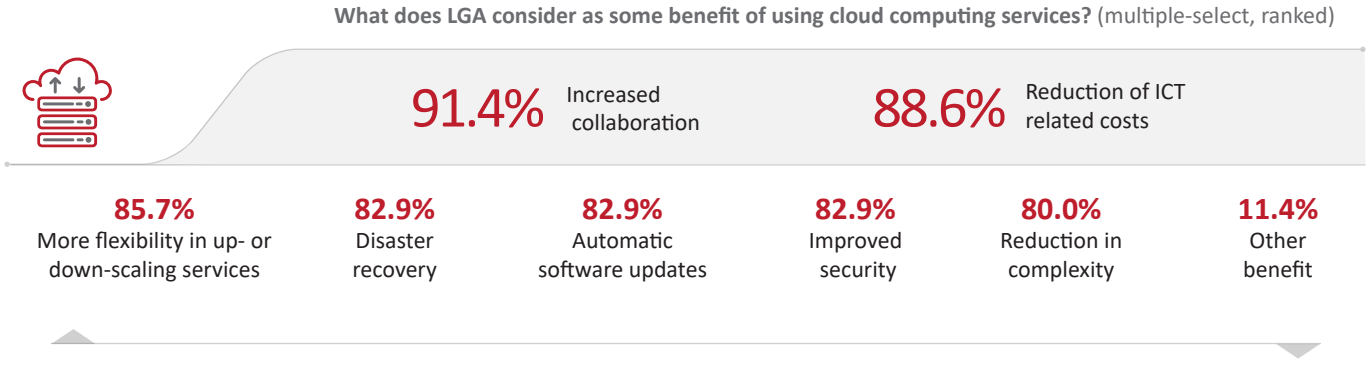


Figure 65: Cloud computing benefits identified by LGAs

Figure 66 highlights factors that limited LGA use of cloud computing services. The high cost was cited as the top-most common barrier (57.1%), followed by problems accessing data or software (28.6%).

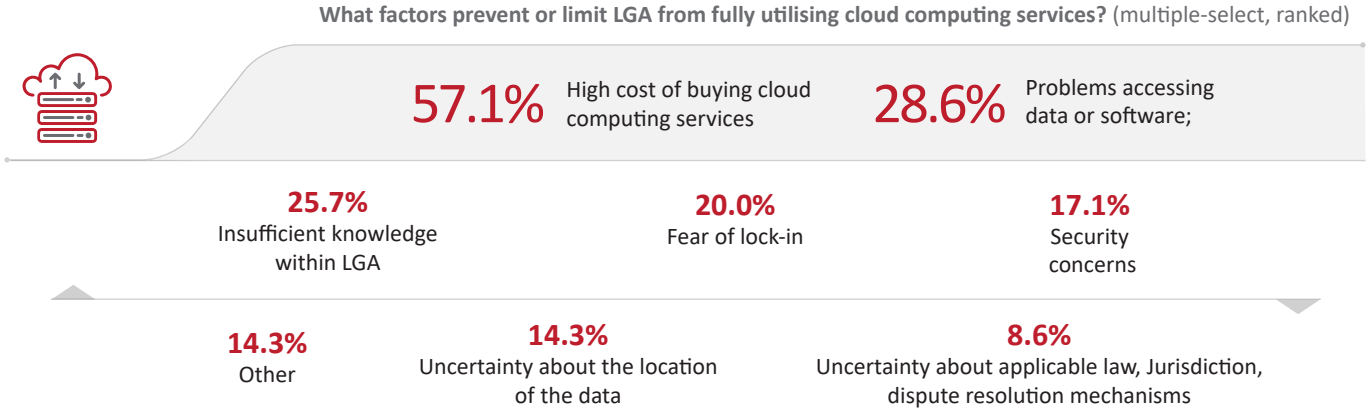


Figure 66: Barriers to cloud computing reported by LGAs

4.8 IT Management and Security

This section highlights survey findings from LGs related to ICT policies formally developed, approved and implemented within LGA operations; IT security incidents experienced; and counter measures adopted as well as awareness of national cyber laws.

ICT Policies

The survey collected data from LGs about ICT policies and plans they had formally developed, approved and implemented within their operations. Overall, 44.1% of LGAs lacked any formal ICT policies and plans. A total of 41.7% of LGAs had an IT Policy/Strategy/Master Plan, followed by LGAs with an acceptable use policy (22.8%) as shown in Figure 67.

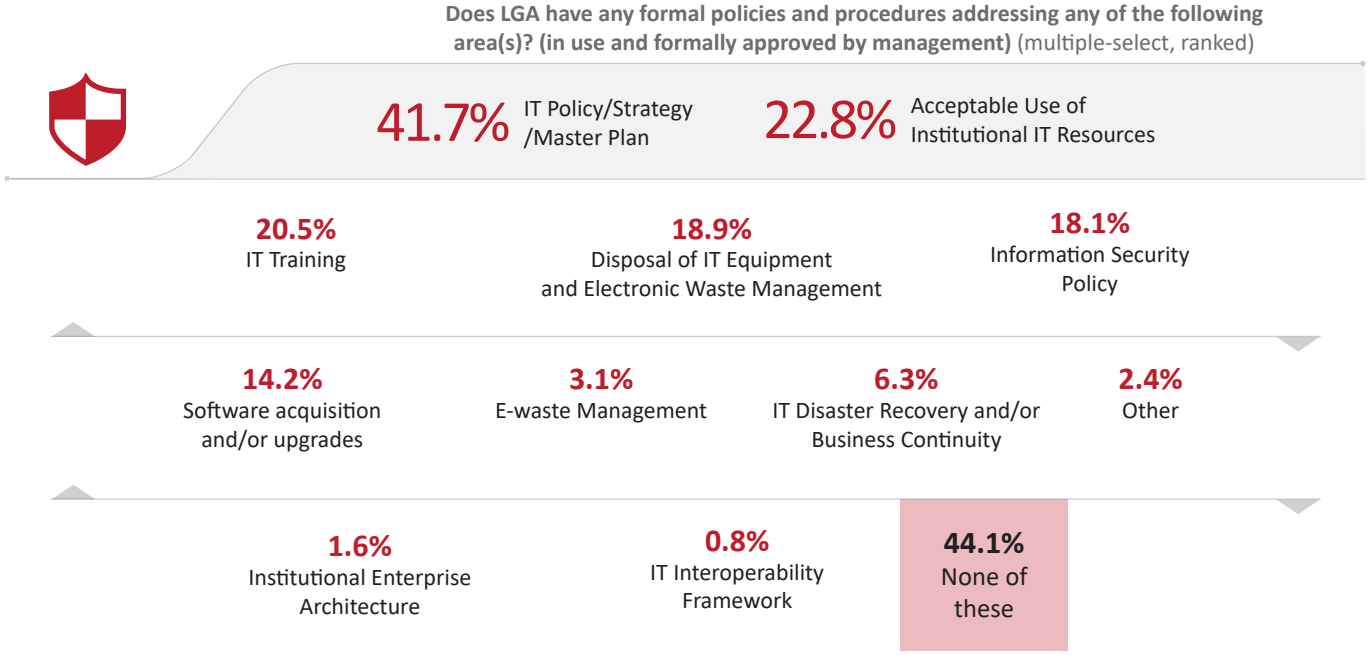


Figure 67: ICT policies formally approved and in use by different LGAs

Most LGAs (84.1%) reported maintaining an up-to-date register of all important IT assets.

IT Security Incidents

Overall, 69.3% of LGAs experienced some type of IT security incident during that previous 12 months. This is an improvement from 2017/18, where 95.2% of LGAs had experienced an IT security incident. The most common IT security incidents related to viruses or other computer infections (58.3%), followed by loss of data because there were no backups (40.2%) as highlighted in Figure 82. The least common IT security incidents reported were unauthorised access to LGA computer systems or data (4.8%) and theft or the sharing of LGA information sent on the internet (4.8%).

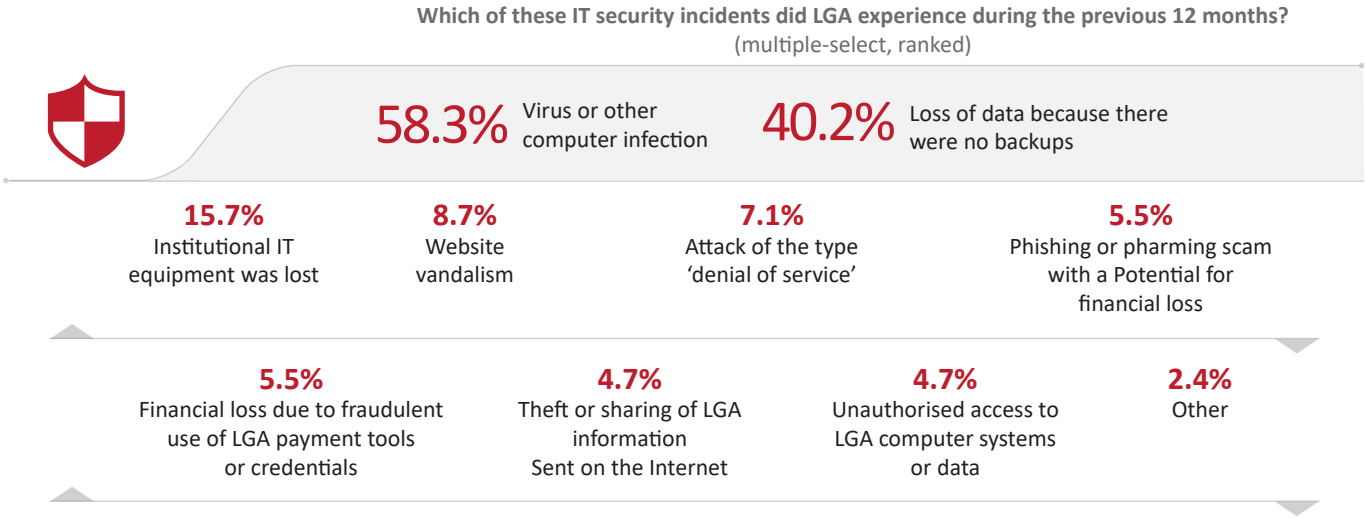


Figure 68 Proportion of LGAs that experienced different security incident(s)

Amongst LGAs that experienced IT security incidents (69.3%), 50% reported the IT security incident(s) to some entity. This is an improvement compared to 2017/18, where only 35% had reported any IT security incident(s). Figure 69 indicates that half of these (55.8%) reported to the Uganda Police (or other law enforcement agency), followed by internally within the LGA (30.2%).

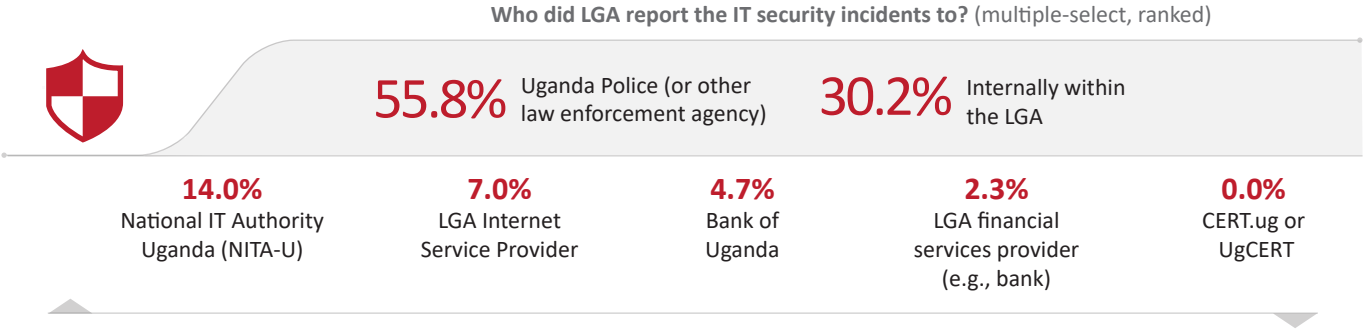


Figure 69: Proportion of LGAs that reported security incident(s) they experienced

Most LGAs reported IT security incidents to the police compared to NITA-U or the National CERT.UG/CC, an indication of the lack of awareness about the role that these institutions can play in investigating and mitigating future IT security incidents.

Amongst local governments that did not report any IT security incidents (50%), three in four LGAs (79.5%) indicated that they had fixed the problem internally, 9.1% indicated that they did not know who to report to or how to report the incident(s) and 9.1% indicated that they did not know what the crime was.

Overall, only 19% of LGAs reported awareness of the National CERT.UG/CC. Amongst these LGAs, there was varying awareness of the National CERT.UG/CC functions. Most LGAs (88.0%) were aware of the National CERT.UG/CC's role in reviewing and responding to cybersecurity incidents across the country, but fewer (24.0%) were aware of its role in conducting forensics for digital devices such as servers, computers and mobile phones.

IT Security Measures

Overall, 55.1% of all LGAs had implemented some IT security measures within their institutions to minimise the impact of IT security incidents. Figure 70 indicates that the most common IT security measure deployed by LGAs was institutional subscription to anti-virus software (71.4%), followed by making regular full backups of critical LGA data (32.9%) and implementing firewalls (27.1%).

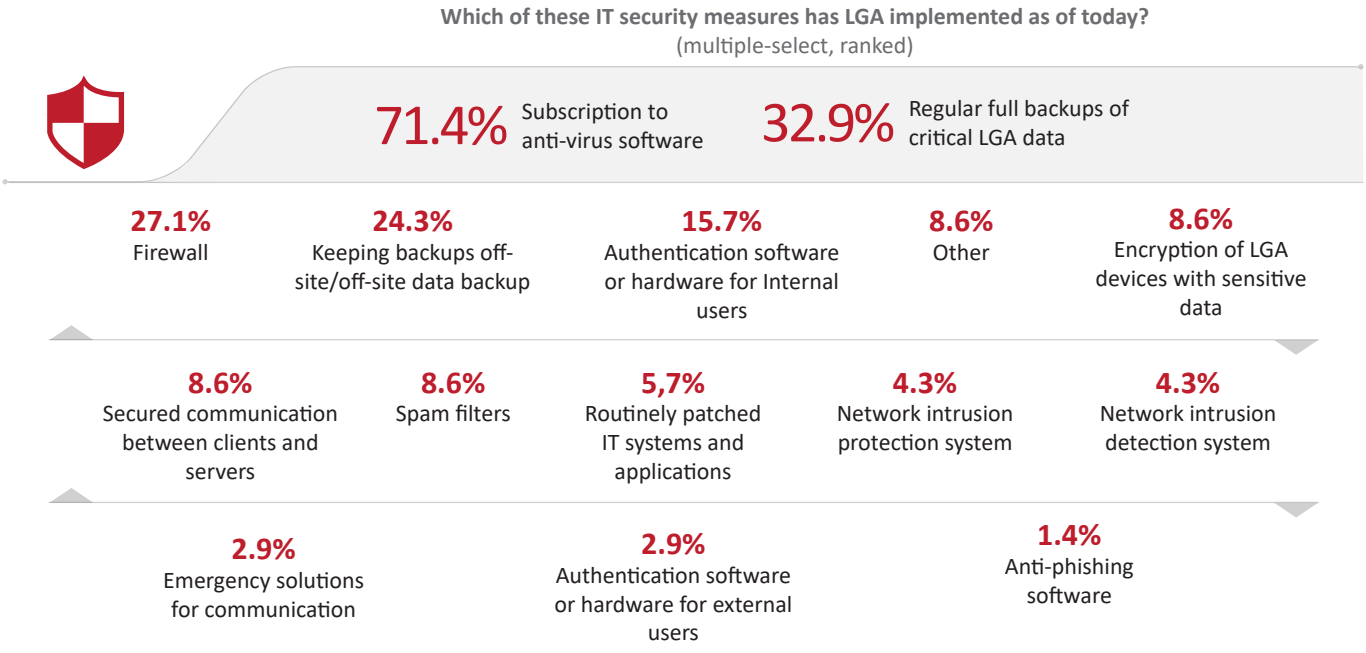


Figure 70: Various ICT security measures implemented by LGAs

4.9 Awareness of Cyber Laws

The survey collected data on the awareness of LGAs of the Ugandan laws that govern electronic communications and transactions (sometimes called cyber laws). Overall, 79.5% indicated awareness of the Electronic Signatures Act, 2011, followed by the Electronic Transactions Act, 2011 (74.8%) as highlighted in Figure 71.

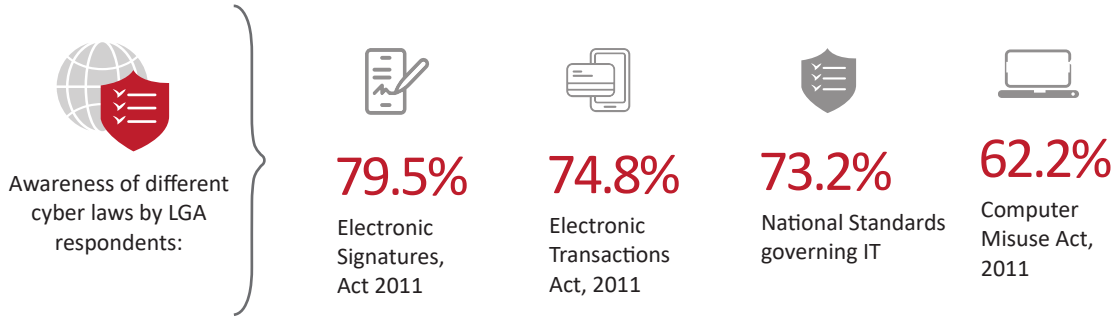


Figure 71: LGA awareness of different cyberlaws

Figure 72 highlights the different channels through which LGAs became knowledgeable about Uganda's laws governing electronic communications and transactions. Most (63.7%) had become aware of the laws through a website (NITA-U and Ministry of ICT and National Guidance), followed by TV (53.1%) and conferences/workshops (40.7%).

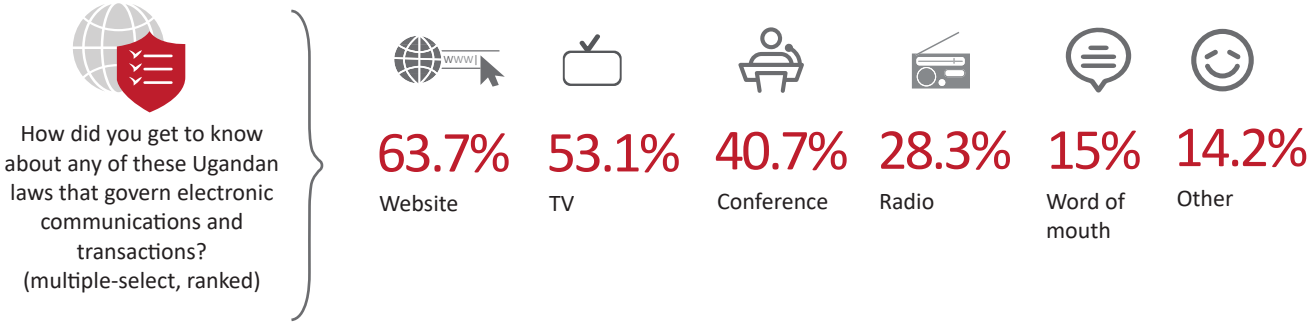


Figure 72: Channels through which LGAs learnt about cyberlaws

Other (14.2%) consisted of social media and LGA staff that had learnt about the cyber laws through IT classes at school.

Regarding the risk perception of cybercrime among LGAs, one in three LGAs (30.7%) did not feel at risk of cybercrime. Over the previous 12 months, 71.7% of LGAs had victims of cyber-dependent crimes (can only be committed using IT). Figure 73 indicates that most LGAs (64.6%) experienced virus or other computer infection (64.6%), followed by receiving unsolicited messages (17.3%).

Figure 73: LGA victims of cyber dependent crime over previous 12 months

Overall, 22.1% of LGAs experienced some form of cyber-enabled crimes (IT increases their scale and form but can be committed without use of IT) over the previous 12 months. Most LGAs had experienced some form of online fraud or theft (14.2%) as indicated in Figure 74.

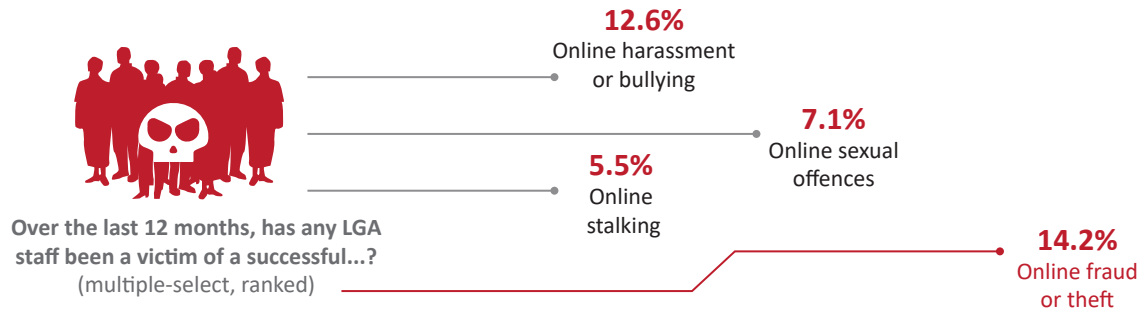


Figure 74: LGA victims of cyber enabled crime over previous 12 months

Overall, 8.7% of all LGAs had ever reported any online crimes committed against them or their staff to anyone. Of these, only 27.3% had reported online crime incidents to both NITA-U and the Uganda Police.

Figure 75 highlights the reasons why most LGAs had never reported any online crimes. While 42.2% of such LGAs indicated it was not applicable, the reasons cited by the rest of the LGAs highlight the need for more training to improve the awareness of LGAs about cybercrimes and the need to report incidents so that long-lasting solutions can be crafted given that the situation will only get worse when more LGAs become connected.

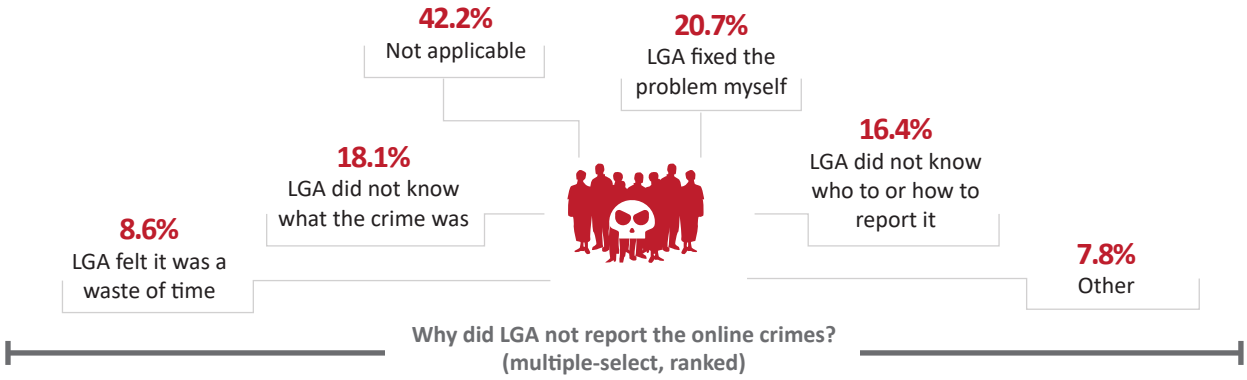


Figure 75: Reasons why the LGA had never reported any cybercrimes

The survey collected data on security measures implemented by LGAs to improve their online security. Most LGAs (59.1%) reported using different passwords for different websites. Other measures included using up-to-date antivirus software (54.3%) and forcing users to change passwords regularly (51.2%), as indicated in Figure 76.

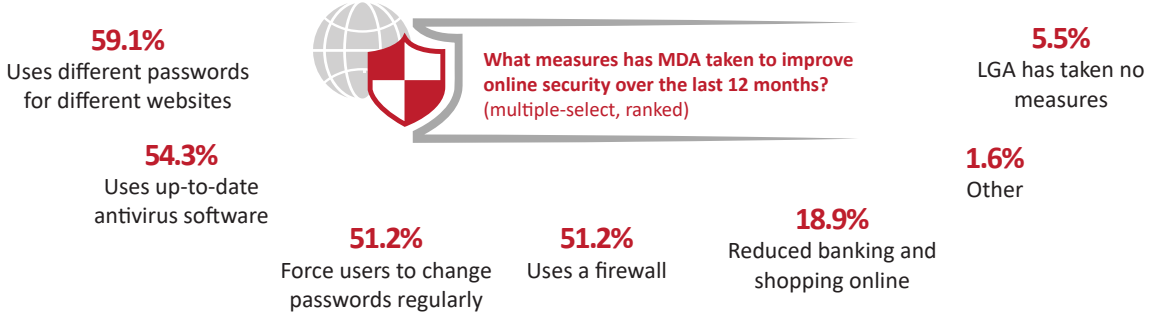


Figure 76: Measures undertaken by LGAs to improve online security

4.10 Perceptions

Figure 77 highlights LGA perceptions related to a number of aspects related to their ICT environment. On the most positive side, 90.6% of LGAs indicated that the speed of the internet connection at work was sufficient for LGA operations. On a less positive side, 53.5% disagreed or strongly disagreed that the cost of buying internet bandwidth from the various providers was affordable.

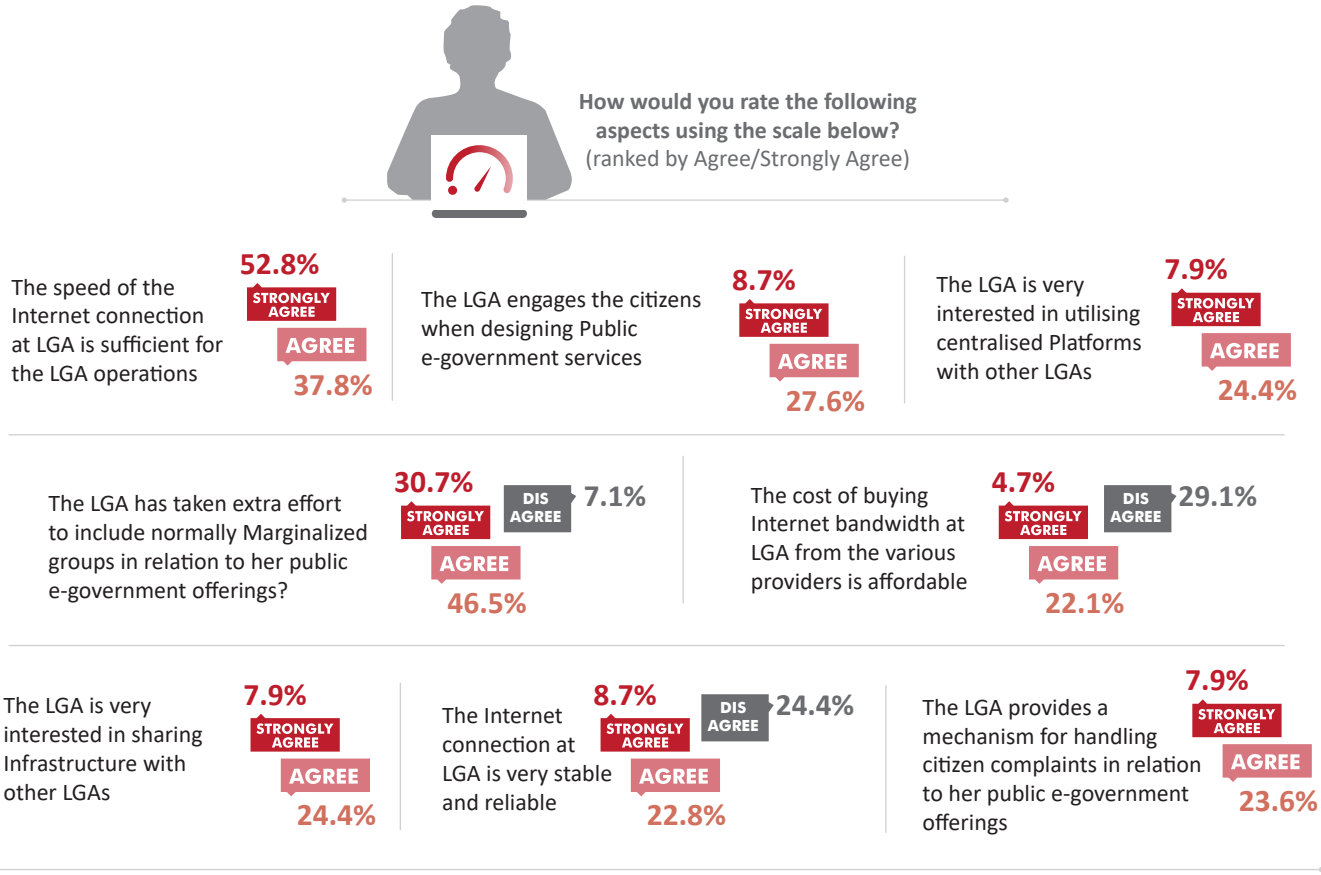


Figure 77: LGA perceptions of different aspects in the ICT environment

4.11 Summary of Findings and Implications

The adoption of ICT among LGAs is still very low, with only 4.6% of staff having a computer (desktop computer or laptop) assigned to them for work purposes, and 5.6% of staff routinely using a computer at work (for work purposes). The proportion of staff with internet access was even lower, at only 2.5%. LGAs are a critical part of the service delivery value chain: high utilisation at the MDA levels without penetration to the LGA levels means that Uganda is not yet positioned to exploit the opportunities of improvising service delivery through digitalisation. This gap is therefore a priority area for corrective government interventions.

The government goal to connect all district headquarters to fibre still has a long way to go: while three in five (72.4%) LGAs had internet access, only 39% among these had fibre connections to their ISP. Potential obstacles to a wider use of the internet for work purposes cited by LGAs included high cost (or inadequate budget), slow and unreliable internet, inadequate number of computers for staff and lack of access to electricity. It is difficult to see a realisation of digitalisation that will enable an efficient Parish Development Model level until these glaring gaps with respect to access are addressed.

Table 5 highlights a summary of key findings of access to and use of ICT devices and services across LGs and potential implications for the ICT landscape as well as recommended actions that different stakeholders need to take to remedy the situation.

Table 5: Summary of key findings on LGA access to and use of ICT and recommended actions

	Key Findings	Implications	Recommended Action
1	LGAs still largely rely on conventional methods of public service delivery, including customer walk-ins (78%) and the use of traditional media (69.3%). The use of digital channels such as email (37.8%) and institutional websites (29.9%) are catching on, while mobile applications (3.9%) and video sites (3.1%) still lag.	Individuals use of digital channels has increased among citizens as indicated in sections 6.4 and 6.5. As the population becomes younger and more digitally literate, there will be rising expectations for digital engagement among LGAs, pushing them to make the transition. Thus LGAs need to figure out how to leverage digital channels to deliver public services in order to remain relevant to their constituents.	• Build better awareness among district leadership to create appreciation about the importance of leveraging ICT to improve service delivery • Develop a toolkit to support LGAs that want to innovate and use ICT to better serve the public. This needs to include relevant case studies of successful solutions from LGAs in other countries or regions. • In line with the rationalisation of ICT services across the government, provide an integrated suite of applications that allows LGAs to transition to using digital services to serve the public in a flexible and incremental manner • Create a platform to enable LGAs to share information and experiences about implementing ICT amongst themselves. Besides learning from each other, this can lead to collaboration and peer pressure to improve.
2	Only 4.6% of LGA staff had a computer (desktop computer or laptop) assigned to them for work purposes while only 5.6% of LGA staff routinely used a computer at work (for work purposes) (Figure 56). Only 18.1% of LGAs had a BYOD policy for staff.	This means that the efforts to ensure access and affordability by all end users, especially those in marginalised groups (among which rural areas are the largest) will not be fully exploited. LGs are a key route for service delivery, and if they are not digitalised, they will instead become major barriers.	• The government needs to explore avenues to leverage economies of scale to buy more computers and software for LGAs given the number of staff without access. • Develop BYOD guidance for LGAs to address the voluntary use of employees' personal mobile devices for LGA related work, while taking into account data privacy and protection.

	Key Findings	Implications	Recommended Action
3	72.4% of LGAs had internet access. Only 39% of these had fibre connections to their ISP. Only 2.5% of LGA staff routinely used the internet at work (for work purposes). These are split into 40.5% female and 59.5% male, showing a bias towards male staff. Potential obstacles to a wider use of the internet for work purposes cited by LGAs included high cost (or inadequate budget), slow and unreliable internet, inadequate number of computers for staff and lack of access to electricity (Figure 65). Among LGAs without internet access (39.7%), the high cost of internet service (68%) and high cost of internet equipment (68%) were cited as top reasons.	End-to end maximisation of efficiency and benefit to the end user can be achieved only if there are constrictions in the data delivery chain. Steps need to be taken to ensure that connectivity apartheid in the entire country is eliminated.	• Ensure that all LGAs and district HQs are connected to the internet by fibre. • Make more public investments into ICT infrastructure that supports inclusive digital growth and lowers costs • Explore policy options to reduce the cost of high-speed internet and make it more affordable for LGAs • Build partnerships to further reduce the cost of high-speed internet access for LGAs and the general public
4	Only 35% of LGAs had LANs		• Develop an overall government strategy and general design guidelines for LANs and intranets in LGAs. • Ensure that new LANs adhere to the government's Guidelines and Standards for Structured Cabling. • Develop intranet templates and a core set of shared features that allows LGAs the flexibility to adapt any centrally provided capabilities to their own needs.
5	Only 3.1% of LGAs offered any kind of assistive technologies for end users.	LGAs provide one of the proximate interfaces through which citizens interact with public services. As such, this interface needs to be inclusive by providing assistive technologies.	• LGs lack the capacity to address this, meaning that NITA-U needs to take it up as an area of activity.
6	Most software applications used in LGAs were commercial off-the-shelf applications.	As with MDAs, there are potential savings to be made if commonly used applications across LGAs can be procured together to leverage economies of scale.	• Explore avenues to leverage economies of scale to buy computers and software for LGAs given the number of staff without access. (It should be recognised that while this is desirable, the political fallout with LGAs needs to be addressed through a change management process: LGAs currently control their budgets. Approved suppliers, equipment types, and established competitive prices, giving LGAs a choice, might be the way to go).

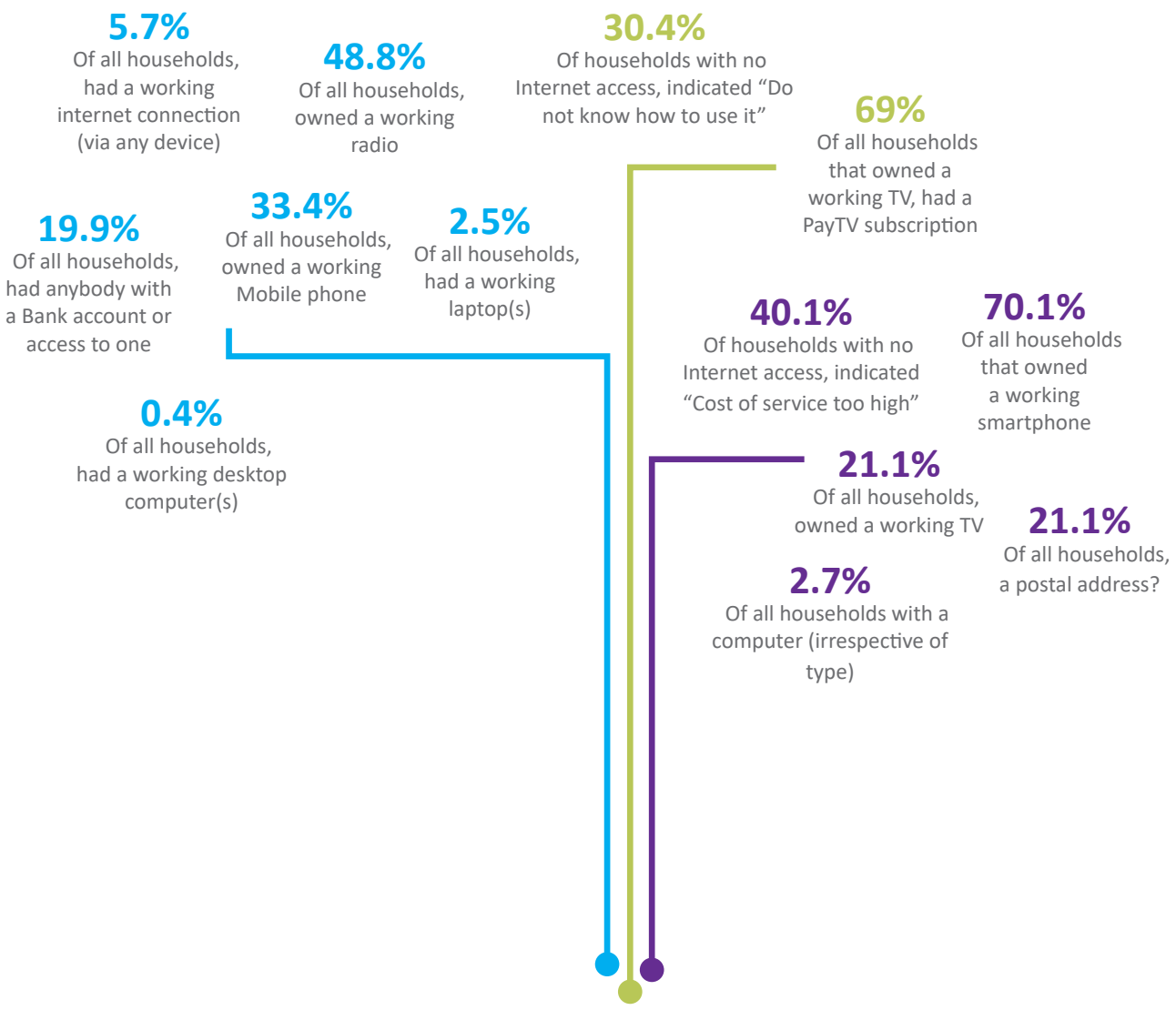
	Key Findings	Implications	Recommended Action
7	44.1% of LGAs lacked any formal ICT policies and plans.	IT governance is principally about the core business processes of any LGA. Given the importance that the government attaches to using ICT to improve public service delivery, there is a need to constitute ICT governance structures and management processes within LGAs. ICT policies provide the foundation for the governance and management of ICT resources within LGAs to ensure the effective deployment and use of ICT.	• Support LGAs to develop and implement good ICT policies and procedures that underpin their use of ICT. • Support LGAs to build the necessary awareness among LGA employees.
8	69.3% of LGAs experienced some type of IT security incident during the previous 12 months (Figure 82). Viruses or other computer infections (58.3%) were most common, followed by loss of data because there were no backups (40.2%).	This number should likely be much higher to keep in line with global trends, given the push towards remote and online working brought on by the COVID-19 pandemic. LGAs and their staff are even more vulnerable to cyber threats, which have become more rampant and sophisticated than before.	• Implement a programme that enhances cybersecurity skills among LGA ICT staff responsible for security. • Develop an LGA staff awareness training programme on cybersecurity issues. • Undertake periodic/regular information security audits and assessments of LGA ICT infrastructure to ensure compliance with best practices.

5
CHAPTER

Findings from Households

In this chapter, we describe the general characteristics of the sampled population for households and present findings on ICT access and usage at the household level including telephones, computers and other IT devices as well as the internet.

Key Household IT indicators at a glance



5.1 Household Characteristics

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

Enumerators listed 19,700 households across 263 visited EAs. From these households, the survey team randomly selected 15 households per EA, or a total of 3,945 households to be interviewed. Among the sampled households, 72.6% provided full data (both household and individual), 13.6% provided partial data (only household data; the sampled individual was not available for interview), 2.9% were home but refused to consent to the survey and 10.9% were found to have no one at home.

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 2019/20 Uganda National Household Survey (UNHS) conducted by UBOS. The smallest household was one person, while the largest was 25 people. The average household size was larger in rural areas (5 people) compared to urban areas (4 people). Most households ranged from three to five persons as summarised in Figure 78.

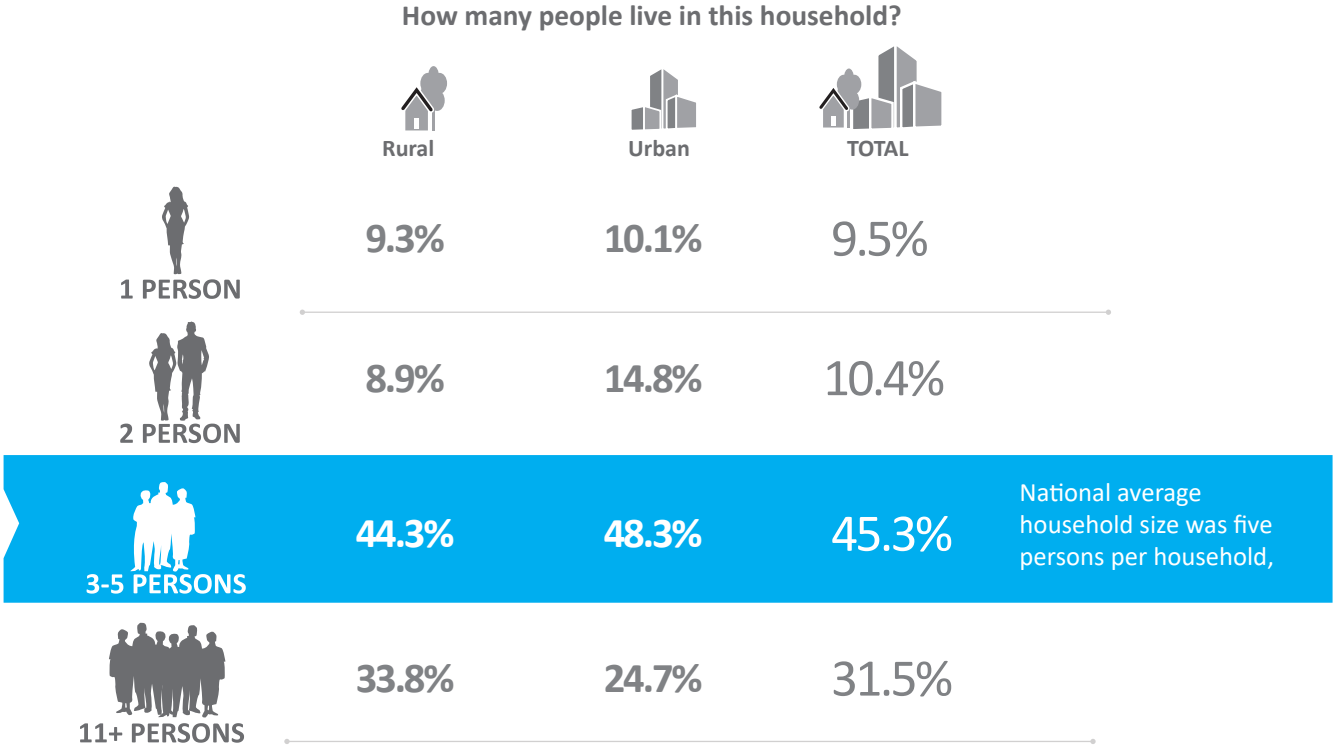


Figure 78: Household size by location

Electricity

Solar provides the main source of power/lighting (44.3%) for households across the country. Only 19.9% of households had access to the main electricity grid and 15.4% had no power/lighting source, as summarised in Figure 79. From a location perspective, more households in urban areas (54.5%) had access to the main electricity grid compared to households in rural areas (8.3%). For solar, the situation is reversed: more households in rural areas (49.8%) have access to solar compared to households in urban areas (28%).

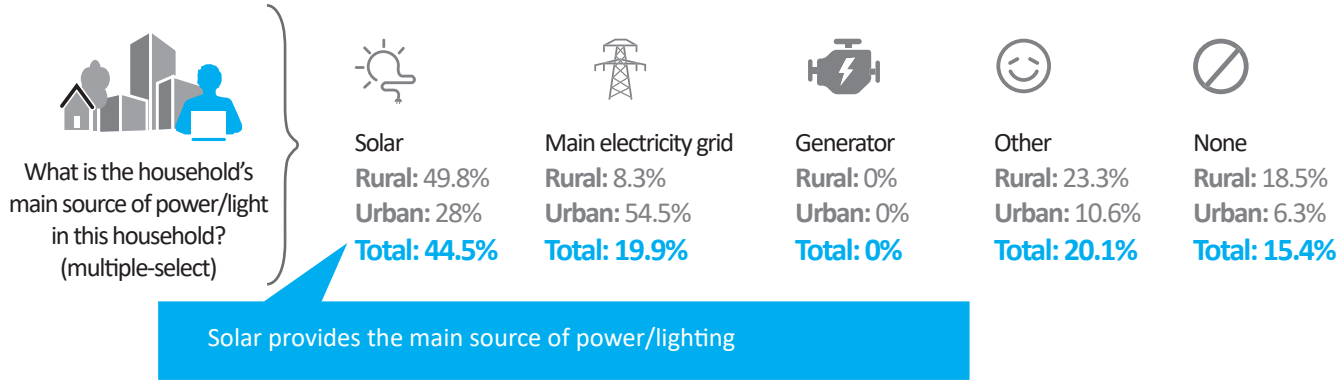


Figure 79: Proportion of households with access to different sources of power by location

Education Level

The survey collected data on the highest education level attained by any household member. Most households (45.2%) had a household member that had completed primary education, followed by secondary O-level (32%) as presented in Figure 80.

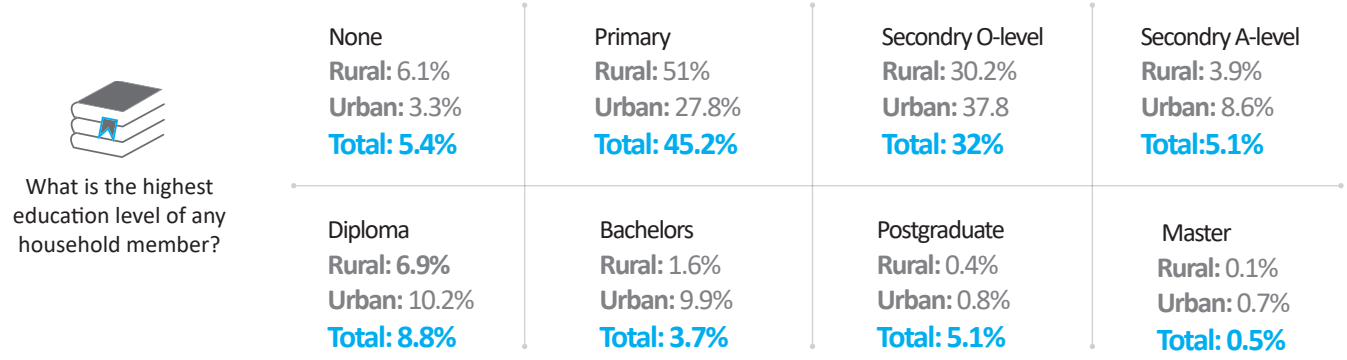


Figure 80: Highest qualification of any household member by location

Access to Bank Accounts and Postal Services

Households were asked about their access to bank accounts and postal services. One in five households (19.9%) had someone with a bank account or access to one, as shown in Figure 81. By location, one in every three households in urban areas (32.9%) had a household member with a bank account or access to one compared to only 15.5% of households in rural areas. Households with a postal address were only 1.1%, while use of postal services by any household member was only 0.9%, implying that it is a service hardly being used any more.

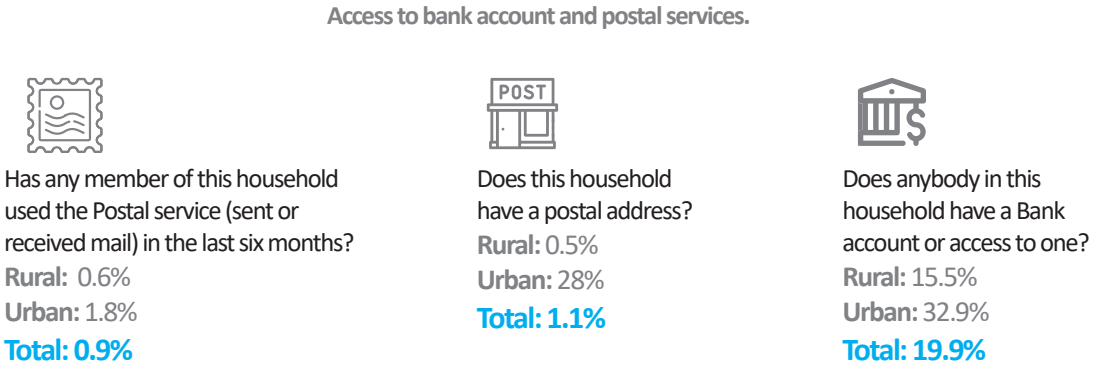


Figure 81: Household access to a bank account and postal services by location

Digital/Electronic Waste

Households were asked about different ways they handled electronic waste (e-waste) or dealt with digital devices that stop working, or which they did not need or use. The most common method used by 47.8% of the households, as indicated in Figure 82, was putting it into storage. The second and third most common methods used by households were taking devices to a local recycling centre and throwing them away (each at 19.2%). Disaggregating by location, more households in rural areas put e-waste into storage compared to households in urban areas (49.6% vs. 42.8%). Conversely, more households in urban areas tried to repair (12% vs. 5.3%) or sold their e-waste as second-hand/ spare parts (23.3% vs. 16%) compared to households in rural areas.

How does the household deal with digital/electronic devices that stop working or you no longer need or use? (multiple-select, ranked by all households)

Put into storage **Rural:** 49.6% **Urban:** 42.8% **Total: 47.8%**	Take to local recycling centre **Rural:** 20.5% **Urban:** 15.6% **Total: 19.2%**	Throw into the dustbin **Rural:**19.8% **Urban:**17.4% **Total: 19.2**	Sell on as second-hand/spare parts **Rural:** 16% **Urban:**23.3% **Total:18%**	Donate for free to family, friends, organisations **Rural:** 13.6% **Urban:**14.9% **Total: 13.6%**
Don't know **Rural:** 10.1.% **Urban:** 5.1% **Total: 8.8%**	Try to repair it **Rural:** 5.3% **Urban:** 12% **Total: 7.1%**	Other **Rural:** 3.2% **Urban:** 3.7% **Total: 3.3%**	Destroy it by burning or similar **Rural:** 2.1% **Urban:** 2.6% **Total: 2.2%**	Returned to vendor/warranty substitution **Rural:** 0.6% **Urban:** 2.7% **Total:1.2%**

Figure 82: Proportion of households showing e-waste disposal methods by location

5.2 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.

Access and Type

The proportion of households with working landline telephones was 1%. More households in urban areas had working landline telephones compared to households in rural areas (was 2.1% vs. 0.7%, respectively).

The proportion of households with working mobile phones was 33.4%. There was marginal difference between households in urban and rural areas (34.1% vs. 33.2%, respectively).

Among households with mobile phones, 17.3% had smart phones, as summarised in Figure 83. More urban households (31.4%) had smart phones compared to rural households (12.5%).

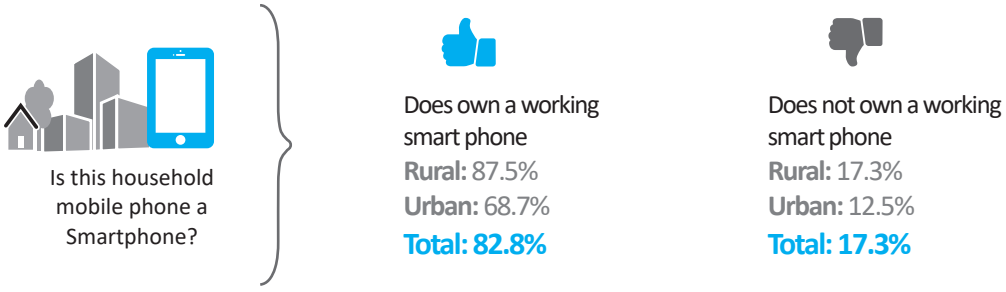


Figure 83: Proportion of households with smartphones as a household phone by location

Cost of Service

On average, households spent UGX 23,000 per month on telephone service (both airtime and recurrent rental charge if applicable). On average, urban households spent more (UGX 25,000) per month on telephone service compared to rural households (UGX 23,000). Figure 98 summarises household monthly expenditure on telephone service organised into price ranges by location. Half (49.9%) the households spent in the range of 0 to 10,000 Uganda shillings (UGX) per month on telephone service. Households in rural areas placed more (50.7%) in this category compared to households in urban areas (47.6%). One in every five (22.2%) households spent in the range of 10,001 to 20,000 UGX. Households in rural and urban areas were comparable in this range (22.3% and 20.4%). Households that spent 20,001 to 30,000 UGX were 11.7%. There were more households in urban (12.8%) compared to rural (11.4%) areas.

On average, how much per month does the household spend on telephone service (both airtime and recurrent monthly charge if applicable)?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001-100,000	100,000 +
Rural: 50.7%	Rural: 22.8%	Rural: 11.4%	Rural: 3.6%	Rural: 4.4%	Rural: 5.4%	Rural: 1.7%
Urban: 47.6%	Urban: 20.4%	Urban: 12.8%	Urban: 3.1%	Urban: 5.8%	Urban: 7.7%	Urban: 2.6%
Total: 49.9%	Total: 22.2%	Total: 11.7%	Total: 3.5%	Total: 4.7%	Total: 6%	Total: 2.0%

On average, households spent UGX 23,000 per month on telephone service (both airtime and recurrent rental charge if applicable).

Figure 84: Household expenditure (UGX) on phone per month by location

5.3 Computers and Other IT devices

The survey asked households how many working desktop computers, laptops or tablets they owned. Figure 85 highlights that 0.4% of all households owned at least one working desktop computer, 2.5% owned at least one working laptop and 0.6% owned at least one working tablet. Overall, most households owned just one computing device. In terms of location, households in urban areas owned more working computing devices compared to households in rural areas.

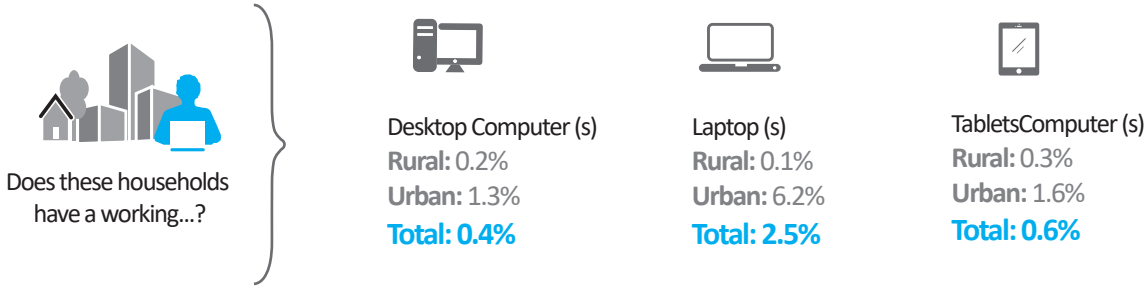


Figure 85: Proportion of households with a working computer/laptop/tablet

The survey explored other household IT assets, which included radio and TV. One in two households (48.8%) reported owning a working radio compared to one out of five (21.1%) that reported owning a TV. From a location perspective, the variation between households in rural and urban areas was not as pronounced for radio (46.8% vs. 55%) compared to that for TV, where 12.8% of households in rural areas owned a TV compared to 46.3% of households in urban areas, as presented in Figure 86.

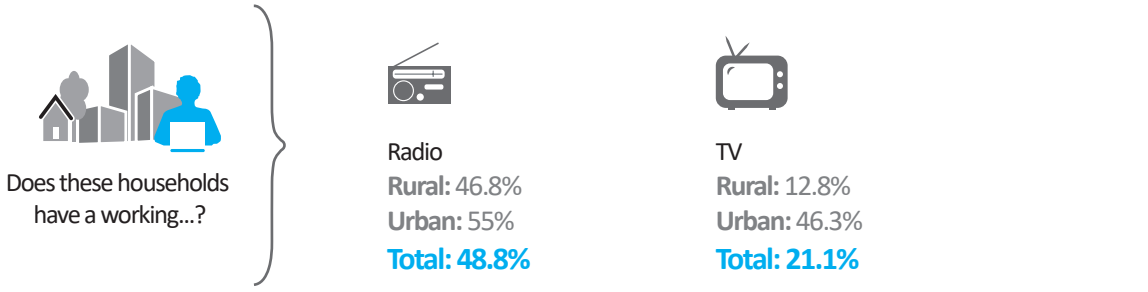


Figure 86: Proportion of households with a working radio and TV by location

Among households with a working TV (21.1%), 69% reported having a Pay-TV subscription. This translates to 15.6% of all households having a Pay-TV subscription. In terms of location, there was marginal difference between households in urban and rural areas.

5.4 Internet Access

The study investigated whether households had access to the internet, the number of household members that used the internet, the kind of devices connected to the internet and the average expenditure of the household on internet access. For households that lacked internet access, the study explored the reasons for the lack of a working internet connection.

Access to Internet

Figure 87 highlights that only 5.7% of households reported having a working internet connection at home. Over four times more households (13.4%) in urban areas reported having a working internet connection compared to only 3.2% of households in rural areas. Figure 88 depicts that when disaggregated by sub-regions, Kampala (the capital city) and the regions around it had the largest number of households with internet access. Buganda South had one in four households (24.6%) with internet access. Kampala had 17.0%, and Buganda North had 11.5% of the households with internet access. The Acholi, Bukedi and Elgon sub-regions each had 7% of the households with internet access, while the rest of the regions had less than 5% of the households with internet access.

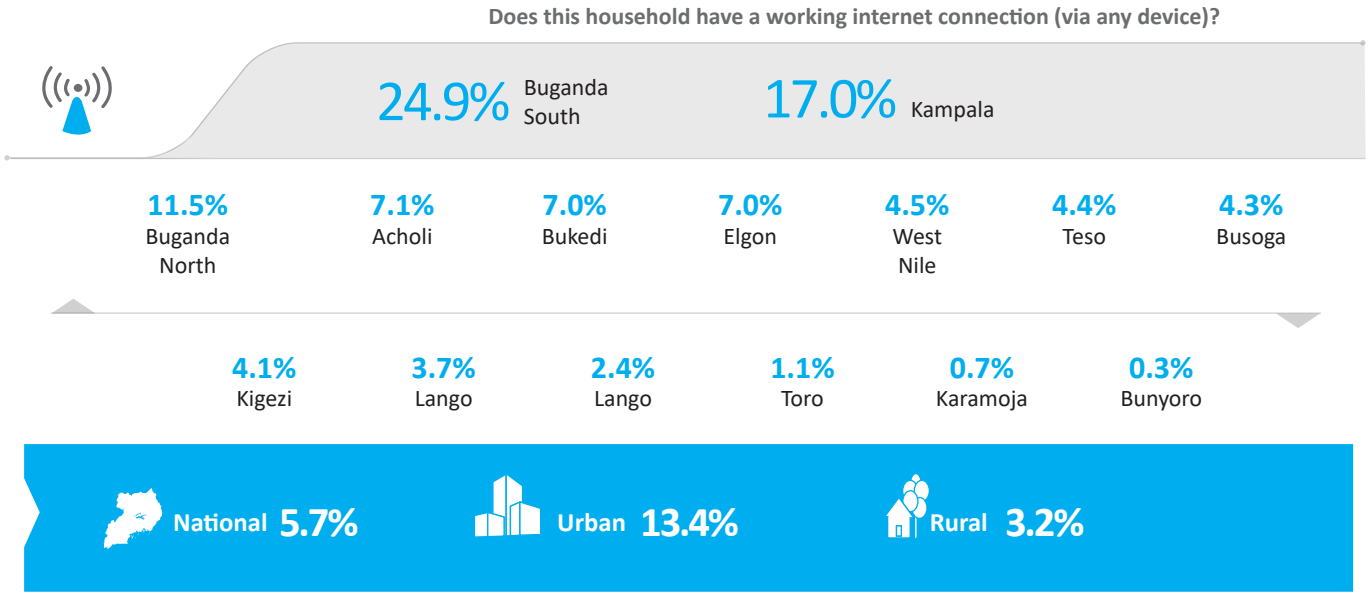


Figure 87: Household Internet access by location and sub-region

Households with a working internet connection (5.7%) used a variety of technologies to access the internet as indicated in Figure 102. Using a mobile phone or smartphone as a modem was the most common method (61.4%), followed by using a USB dongle/MiFi (26.5%).

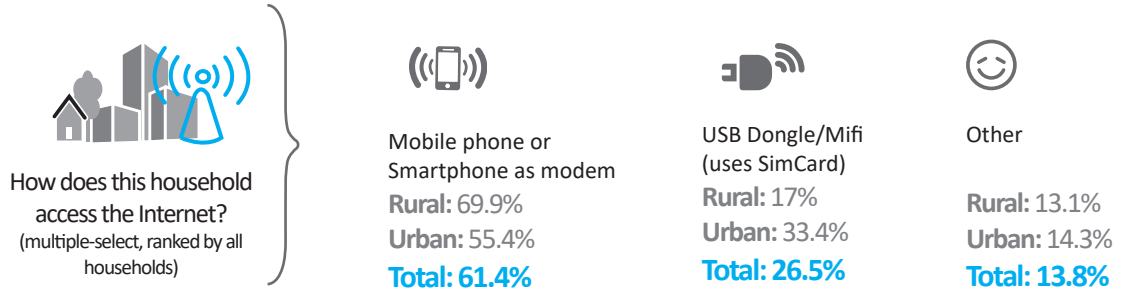
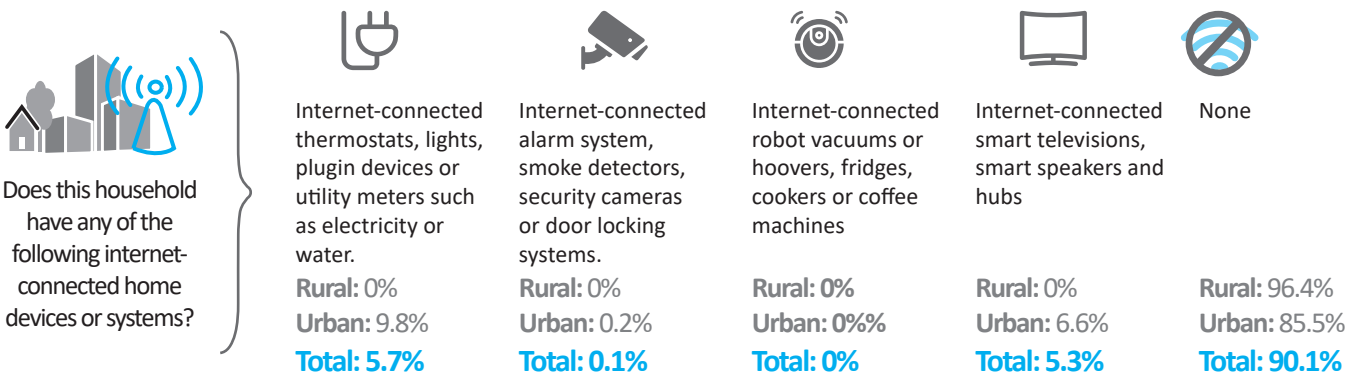


Figure 88: Household Internet access methods by location

Mobile phone or Smartphone as modem	USB Dongle/ Mifi (uses SimCard)	Other	Router (uses SIM card)	ADSL (uses a fixed telephone line)	Fibre optic cable
Rural: 69.9%	**Rural:** 17%	**Rural:** 13.1%	**Rural:** 0%	**Rural:** 0%	**Rural:** 0%
Urban: 55.4%	**Urban:** 33.4%	**Urban:** 14.3%	**Urban:** 5%	**Urban:** 1.2%	**Urban:** 0%
Total: 61.4%	**Total: 26.5%**	**Total: 13.8%**	**Total: 2.9%**	**Total: 0.7%**	**Total: 0%**

Figure 88: Household internet access methods by location

Household automation using digital devices that connect to the internet is still nascent in Uganda, as summarised in Figure 89.



Does this household have any of the following internet-connected home devices or systems?

Internet-connected thermostats, lights, plugin devices or utility meters such as electricity or water.	Internet-connected alarm system, smoke detectors, security cameras or door locking systems.	Internet-connected robot vacuums or hoovers, fridges, cookers or coffee machines	Internet-connected smart televisions, smart speakers and hubs	None
Rural: 0%	**Rural:** 0%	**Rural: 0%**	**Rural:** 0%	**Rural:** 96.4%
Urban: 9.8%	**Urban:** 0.2%	**Urban: 0%%**	**Urban:** 6.6%	**Urban:** 85.5%
Total: 5.7%	**Total: 0.1%**	**Total: 0%**	**Total: 5.3%**	**Total: 90.1%**

Figure 89: Households with internet-connected devices by location

Cost of Internet

On average, households spent UGX 25,000 per month on internet access. On average, urban households spent more (UGX 30,000) per month on internet access compared to rural households (UGX 18,000). Figure 90 summarises household monthly expenditure on internet access organised into price ranges by location. There were more rural households (42.7%) in the lowest expenditure range of 0 to 10,000 UGX per month compared to urban households (28%). Overall, 33.8% of the households spent in this category. One in five (20.7%) of the households spent within the next category of 10,001 to 20,000 Uganda shillings per month. In terms of location, there were more urban households (24.3%) compared to rural households (15.2%). Those who spent within the range 20,001 to 30,000 UGX were 15.1%, and those who spent over 100,000 UGX were 16.3%. Urban and rural household expenditures in both cases were comparable.

On average, how much per month does the household spend on Internet service (subscription & use)?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001- 100,000	100,000 +
Rural: 42.7%	**Rural:** 15.2%	**Rural:** 17.4%	**Rural:** 4%	**Rural:** 0.5%	**Rural:** 3%	**Rural:** 17.3%
Urban: 28%	**Urban:** 24.3%	**Urban:** 13.5%	**Urban:** 1.5%	**Urban:** 5.9%	**Urban:** 11.2%	**Urban:** 15.7%
Total: 33.8%	**Total: 20.7%**	**Total: 15.1%**	**Total: 2.5%**	**Total: 3.8%**	**Total: 7.9%**	**Total: 16.3%**

Figure 90: Household expenditure (UGX) on Internet access per month by location

Households without Internet Access

Most households (94.3%) did not have internet access at home. The survey asked the reasons why households lacked a working internet connection at home. Cost of equipment too high (48.3%), cost of service too high (40.1%) and do not know how to use it (30.4%) were the top three primary reasons for not having a working internet connection at home as summarised in Figure 91. Lack of knowledge was the most common reason cited in 2017/18, while cost of equipment was ranked third and cost of internet being high was ranked fifth. The results mirror the findings of the UNHS 2019/20 in terms of reasons for not using the internet.

Why does this household not have a working internet connection?
(multiple-select, ranked by all households)

Cost of equipment too high **Rural:** 46.4% **Urban:** 53.6% **Total: 48.3%**	Cost of service too high **Rural:** 39.5% **Urban:** 41.7% **Total: 40.1%**	Do not know how to use it **Rural:** 34.3% **Urban:** 19.6% **Total: 30.4%**	No electricity in the household **Rural:** 25.5% **Urban:** 10.5% **Total: 12.5%**	Do not need the internet **Rural:** 12.9% **Urban:** 11.6% **Total: 12.5%**	Do not know what internet is **Rural:** 5.6% **Urban:** 1.7% **Total: 4.6%**
Other **Rural:** 3.9% **Urban:** 4.7% **Total: 4.1%**	Internet not available in the area **Rural:** 4.1% **Urban:** 2.3% **Total: 3.6%**	Lack of local content **Rural:** 2.6% **Urban:** 2% **Total: 2.4%**	Returned to vendor/warranty substitution **Rural:** 0.7% **Urban:** 1.9% **Total:1%**	Privacy or security concerns **Rural:** 0.2% **Urban:** 0.7% **Total:0.3%**	Cultural reasons **Rural:** 0.1% **Urban:** 0.1% **Total: 0%**

Figure 91: Factors preventing households from having internet connection by location

5.5 Online Child Protection

The survey collected data on how many children below 15 years of age used the internet in participating households, the kind of activities that children used the internet for and the measures that households had taken to protect children online.

Overall, 94.8% of households reported that they did not have children below 15 years of age that used the internet. By location, there was no significant variation between households in urban areas and those in rural areas (93.7% vs. 96.3%, respectively).

Child Access to the Internet

Among the households that reported having children below 15 years of age that used the internet (5.2%), children accessed the internet using a variety of avenues, as summarised in Figure 92. Most children (67.4%) used their parents' phone to access the internet. Considering location, the parents' phone was the only method available to children below 15 in rural households, while children below 15 in urban households had other avenues for accessing the internet.

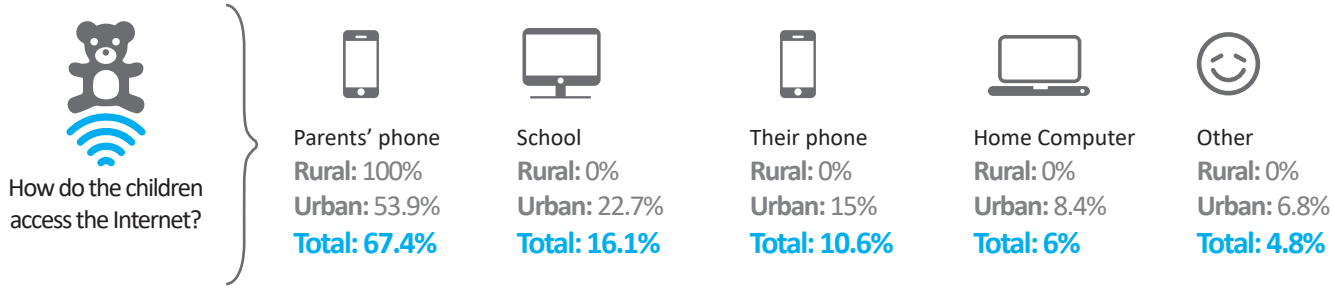


Figure 92: Internet access methods used by children below 15 years by location

Child Activities Online

Children below the age of 15 that used the internet engaged in a number of activities, as presented in Figure 93. Downloading and playing games was the most common activity (63.2%), followed by online studies and homework (34.2%).

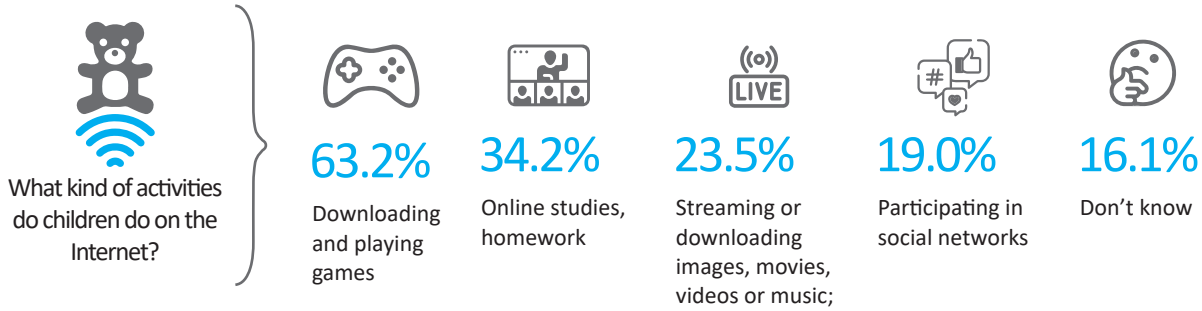


Figure 93: Online activities that children below the age of 15 engaged in on the Internet

Most children (59.4%) below 15 years typically used the internet more than one hour but less than three hours a day, as indicated in Figure 94.

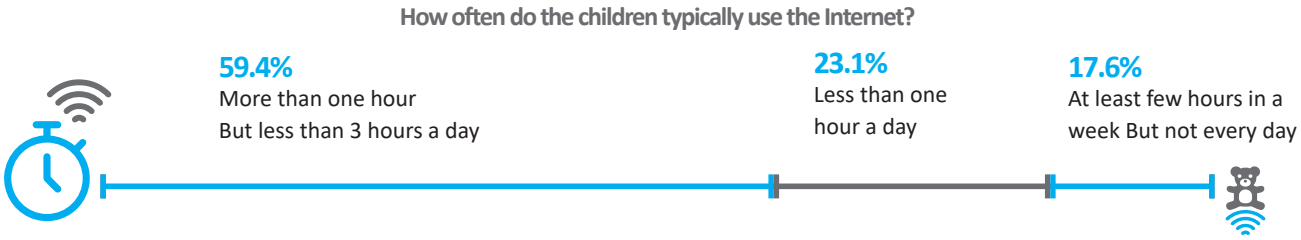


Figure 94: Online frequency among children below the age of 15 that used the Internet

Child Exposure and Protection

Most parents (88.3%) with children below 15 years that accessed the internet acknowledged that they did not know whether their children had been subjected to any form of online victimisation, as shown in Figure 95.

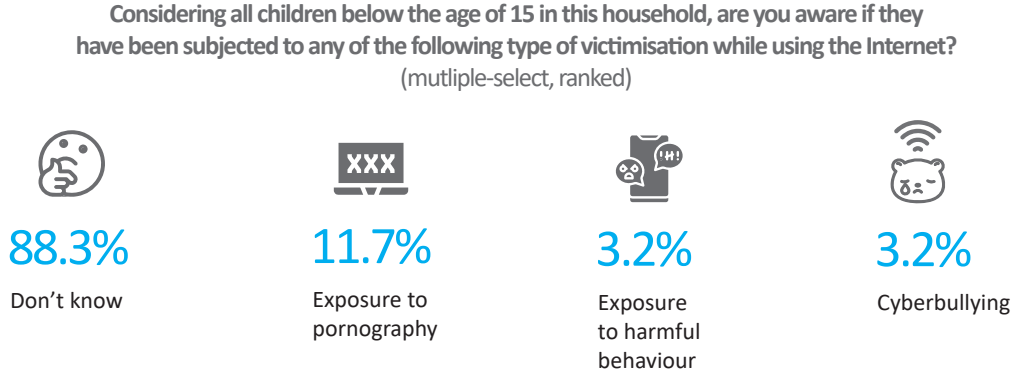


Figure 95: Proportion of parents aware if their children below 15 had been victimised online

Most parents (55.3%) acknowledged that they had taken no action to keep their children below 15 safe online, as highlighted in Figure 96. This points to an acute awareness gap that needs to be addressed. Children must be given the opportunity to learn about the environment they will operate in from their earliest ages, but parents also need to appreciate and understand their responsibility, as well as what they need to do, with respect to the cyber safety of their children.

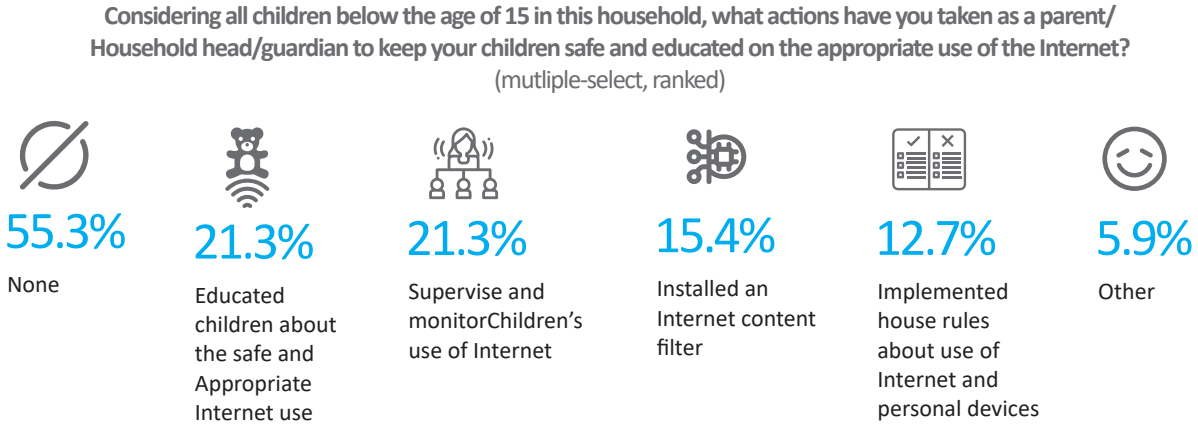


Figure 96: Actions taken by parents to keep children below 15 safe online

Education during the COVID-19 Lockdowns

The survey collected data on households that had school-aged children regarding carrying on their studies during the school lockdowns (as a result of COVID-19 restrictions). Among households with school-aged children, only 44.7% reported having children who continued with their education during the lockdowns, as shown in Figure 97. More households in urban areas had children who continued with their education compared to households in rural areas (46.8 vs. 39.6%, respectively).

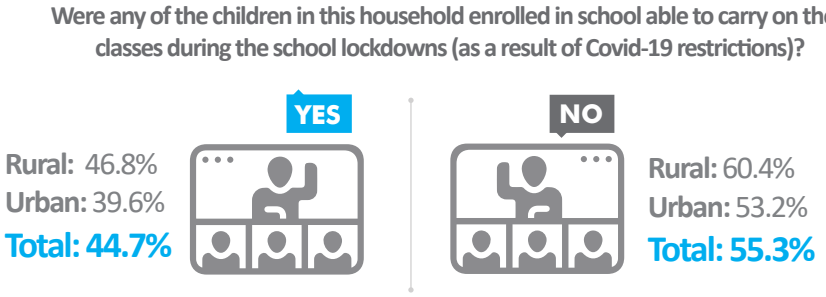


Figure 97: Proportion of households with children that continued with education during the lockdown

Most households (66.4%) with children who continued with their education during the lockdowns reported using the internet (e.g. Zoom, Microsoft Teams, etc.) to continue their children's education, followed by using on-air classes (e.g. radio and TV), at 26.5%, as presented in Figure 98.

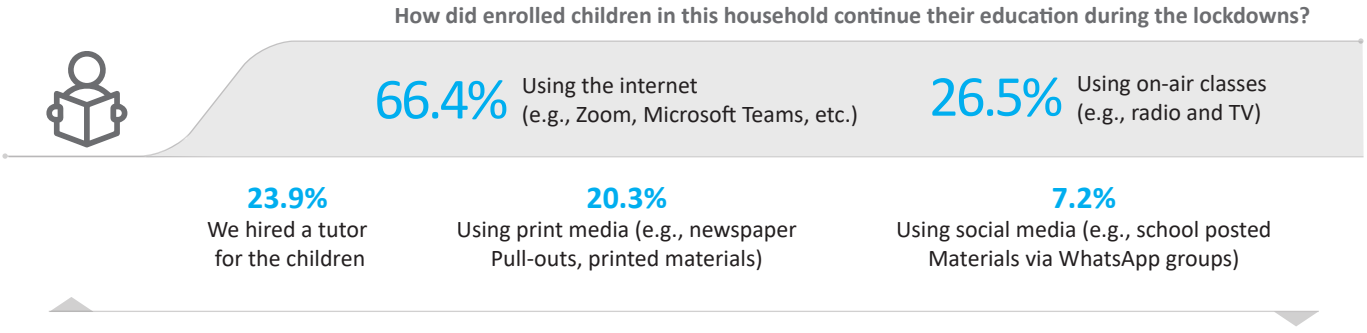


Figure 98: Methods used by households to support continued child education during the lockdowns

5.6 Summary of Findings and Implications

Household-level internet access continues to remain severely limited, with 94.3% having no access at all. Consistent with other indicators is the urban-rural digital divide, with 13.4% of the households in urban areas having a working internet connection compared to 3.2% in rural areas. The concentration of households with access are in the Buganda South, Buganda North and Kampala sub-regions. The main reasons for not having internet access at home given by close to half (48%) of the households was that the 'cost of equipment is too high', followed by 37% of households that indicated the 'cost of service is too high'. Lack of knowledge was the most common reason cited in 2017/18, with cost of equipment ranked third and cost of internet being high ranked fifth. Households connected to internet mainly through phone (61%) or USB dongle/MiFi devices (27%).

A miniscule proportion of households owned at least one working desktop computer (0.4%), at least one working laptop (2.5%) or at least one working tablet (0.6%), with more urban households than rural having such devices. A much higher proportion of households, about 50%, reported owning a working radio, and about 20% reported owning a working TV. These figures make a statement about the effectiveness, or otherwise, of using radio or TV as key channels for information dissemination or service delivery (such as educational programmes), especially since the reality is compounded by a high urban-rural divide.

Overall, it is apparent that a small proportion of households had access to and used digital computing devices and the internet. These households tend to be from urban more than from rural areas. There is a need to expand infrastructure to ensure wider coverage and access and to inform households about the availability of and potential of using digital services.

Table 8 provides a summary of the key findings of household access to and use of ICT, and their implications for the sector as well as recommendations.

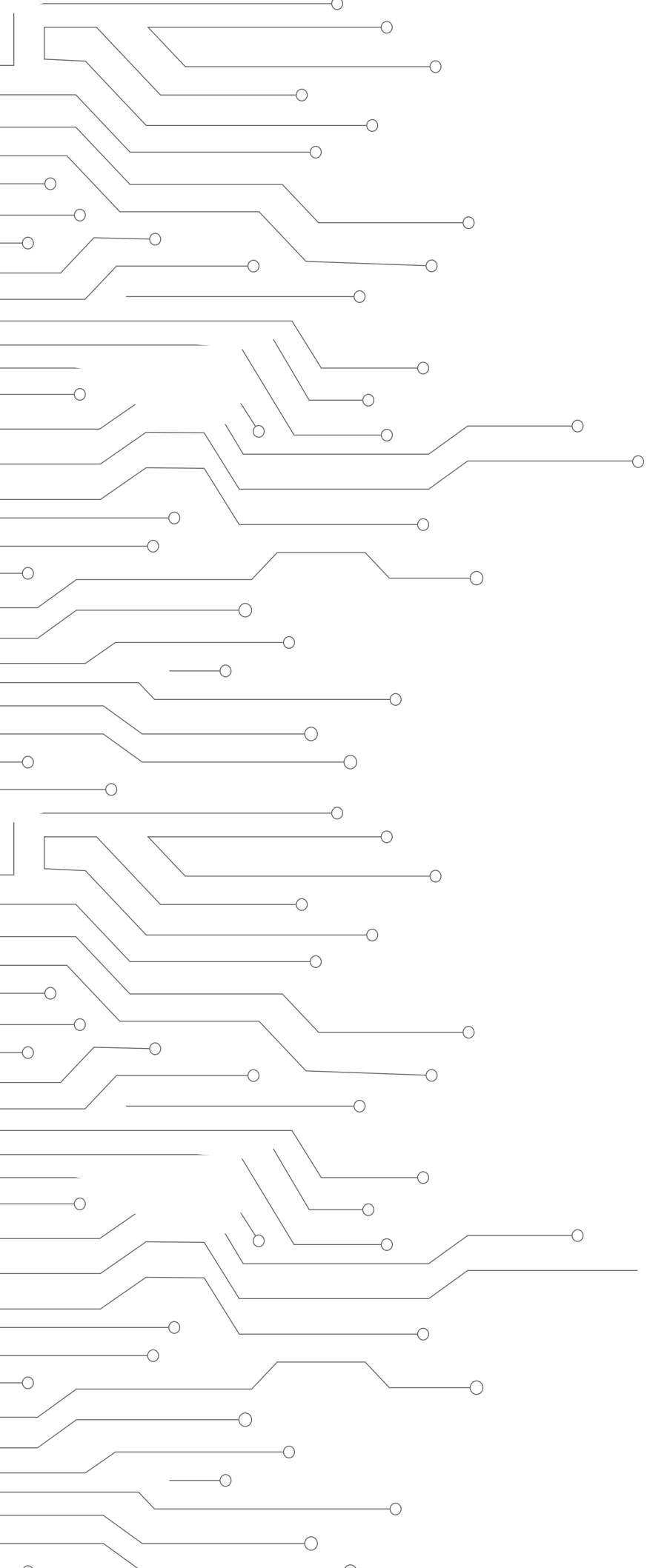
Table 6: Summary of key findings on household access to and use of ICT and recommended actions

	Key Findings	Implications	Recommended Action
1	One in five (19.9%) households had access to the main electricity grid. A higher proportion (54.5%) of urban households accessed the main electricity grid compared to only 8.3% of rural households. Solar is the primary source of power/lighting, accessed by 44.3% of households across the country.	Access to reliable and affordable electricity is a major constraint to achieving universal access to and use of ICTs and the internet, particularly for rural and hard to reach areas. Lack of access drives up the cost in various ways, for example, individuals need to travel to a trading centre and pay to charge their mobile phones or providers have to use generators to power their base stations.	• Power is needed at two levels – backbone and distribution – which calls for coordination and working with the power companies and the regulatory authorities in the power sector in rolling out backhaul and distribution infrastructure. • Increase emphasis on rural access to portable renewable energy devices through close collaboration with the telecommunication companies, maybe as part of the Uganda Communications Commission (UCC) Universal Service Fund programmes.

	Key Findings	Implications	Recommended Action
2	One in five (19.9%) households had someone with a bank account or access to one. In urban areas, this was 32.9% of households compared to only 15.5% of rural households.	The future of financial services is going to be digital. Digital financial services which typically include a mobile wallet and an integrated payment system such as mobile money permit the transfer of resources quickly, cheaply, securely and over longer distances.	• Increase awareness of digital financial innovations, and their potential benefits through nationwide messaging (e.g. by implementing the National Payment Systems regulations 2021) • Develop new policies and regulations to expand financial inclusion in frontier locations (low population size and density).[1] • Revise regulatory guidelines and implement projects that improve interoperability between banks and Payment Service Providers (PSPs) • Reduce the high cost of using digital payments and services.
3	Only 1% of households had working landline telephones compared to 33.4% of households having working mobile phones.	Households are opting for mobile phones instead of landlines. However, among households that had opted for mobile phones, the proportion of smartphones was still small (17.3%), with a large urban-rural gap. Mobile phones can help households to communicate, improve access to information and services, and increasingly to access financial services.	• Close the gap between the improved reach of mobile networks (geographical / population coverage) and the household adoption and use of mobile devices. • Explore avenues and innovative funding schemes to improve the penetration of smartphones.
4	Only 0.4% of households owned at least one working desktop computer, 2.5% at least one working laptop and 0.6% at least one working tablet	An increase in household access to computers or other digital devices has a direct correlation with an increase in internet penetration at the national level, which in turn has been correlated to increase in national GDP	• Emphasise issues of digital inclusion (all communities have access to the internet and other ICTs) and digital equity (all communities have the digital skills and literacy to participate in society and the economy). • Government should explore avenues and innovative funding schemes to reduce the cost of digital access devices such as smartphones, computers, laptops, and tablets

6 https://www.bcg.com/publications/2019/how-mobile-money-agents-can-expand-financial-inclusion

	Key Findings	Implications	Recommended Action
5	Only 5.7% of households had a working internet connection at home with over four times more households in urban (13.4%) compared to rural (3.2%) households having a working internet connection. Kampala and surrounding regions had the largest number of households with internet access. Buganda South had 24.6%, Kampala had 17.0% and Buganda North had 11.5% of households with internet access. The Acholi, Bukedi and Elgon sub-regions each had 7% of households with Internet access, while the rest of the regions had less than 5% of households with internet access.	This points to a major urban-rural digital divide regarding both access and cost.	• Set clear goals for how to make internet access more affordable and to increase adoption. For example, internet should be treated as a public utility and receive attention akin to other utilities, such as water and electricity, in terms of distribution and affordability. • Close the gap between the improved reach of mobile networks (geographical /population coverage) and household adoption and use of the internet by building digital skills and literacy among individuals, implementing policies to drive down the cost of internet access, and incentivising the creation of local content. • Use incentives to induce providers to focus on affordability and adoption.
6	The main reasons for not having internet access at home were 'cost of equipment is too high' (48%), followed by 'cost of service is too high' (37%). The results mirror the findings of the UNHS 2019/20.	This leads to the exclusion of the poorer sections of Uganda society.	• Address the high level of taxes through creating awareness of the benefits of this to the decision-makers as well as the real opportunity of increased gross taxation over the years as the economy expands faster. • Explore avenues and innovative funding schemes to reduce the cost of digital access devices, such as smartphones, computers, laptops and tablets as well as internet access, especially for the poorer sections of society.

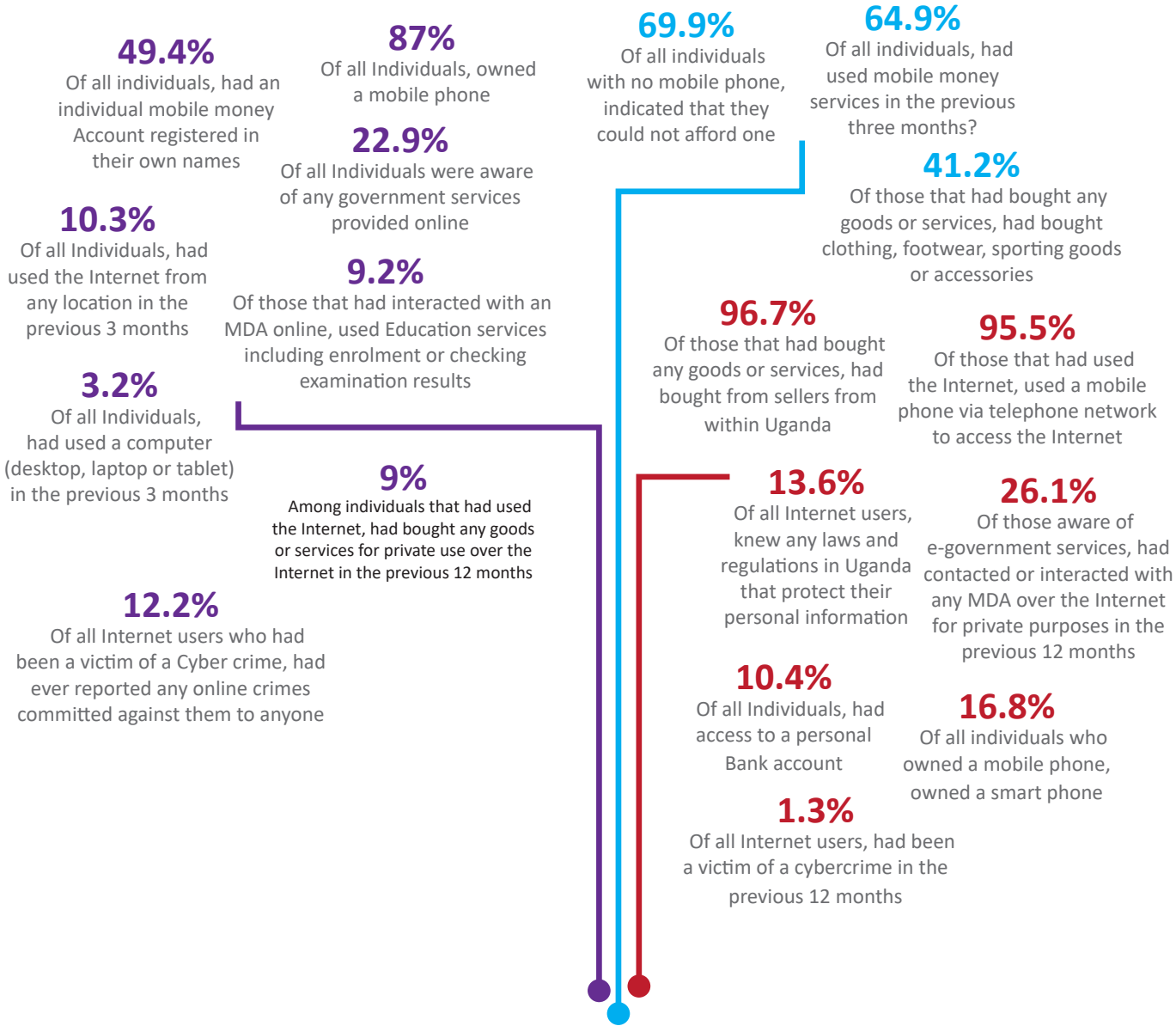


6
CHAPTER

Findings from Individuals

This chapter summarises the survey findings on individuals' access to and usage of different IT devices and services, including mobile phones, computers and internet access.

Key Individual IT indicators at a glance



6.1 Individual Characteristics

The survey collected data on the demographic characteristics of the individuals that participated in the survey. Demographics included gender, age, level of education and labour force status. This section summarises those characteristics that are most pertinent to the access to and use of IT amongst individuals.

Enumerators listed 19,700 households across 263 visited EAs. From these households, the survey team randomly selected 15 households per EA, or a total of 3,945 households, to be interviewed. In each household, the device generated a household roster and randomly selected an individual 15 years or older to be interviewed. Among the sampled households, 72.6% provided full data (both household and individual), 13.6% provided partial data (only household data; the sampled individual was not available for interview), 2.9% were home but refused to consent to the survey and 10.9% were found to have no one at home.

Age and Gender

The ratio of female to male respondents was 53 to 47, as indicated in Table 9. Given that the UNHS 2019/20 indicates that the female proportion of the population is 51%, the survey had a bias towards women. This is explained by the fact that the survey targeted households during the day and that women are more likely to be at home compared to men.

The 15–24 age group accounted for most individuals (31.1%), followed by the 25–4 age group (26%) and 35–44 age group (20.7%).

The proportion of individuals with a National Identification Card was 75.9%, much higher than other identification documents, such as the passports (1.4%) or driving permits (0.8%).

Table 7: Distribution of individuals by gender, location, age group and ID

Individual Characteristic	Proportion of Individuals		
	Urban (%)	Rural (%)	Total (%)
Gender			
Female	51.9%	53.2%	52.9%
Male	48.1%	46.8%	47.2%
Age group (years)			
15–24	35.2%	29.6%	31.1%
25–34	28.2%	25.2%	26.0%
35–44	18.0%	21.7%	20.7%
45–54	10.2%	11.9%	11.4%
55–64	4.8%	5.6%	5.4%
65–74	2.2%	2.7%	2.6%
75+	1.4%	3.3%	2.8%
Type of identification document (multiple-select)			
Uganda National ID	72.4%	77.2%	75.9%
Ugandan Passport	4.3%	0.4%	1.4%
Uganda Driver's License	1.8%	0.4%	0.8%
Work ID	2.8%	0.7%	1.3%
School ID	7.4%	2.7%	3.9%
Foreign ID/Passport	0.4%	0.2%	0.2%
None of These	21.4%	20.3%	20.6%

Education

Most individuals (54.9%) reported having completed primary-level education as their highest level of schooling, while about 10% of the population reported having no formal education as summarised in Table 10. More individuals in rural areas (61.6%) reported having completed primary-level education as the highest level of schooling compared to their counterparts in urban areas (35.9%). For higher levels of education, this trend was reversed. One in four (25.7%) individuals reported having completed secondary O-level. There were more individuals in urban (38.6%) than in the rural (21.2%) areas who completed O-level secondary education.

Table 8: Distribution of individuals by location and level of education completed

Individual Characteristic	Proportion of Individuals		
Education level	**Urban (%)**	**Rural (%)**	**Total (%)**
None	6.3%	11.2%	10.0%
Primary	35.9%	61.6%	54.9%
Secondary: O Level (S1–S4)	38.6%	21.2%	25.7%
Secondary: A Level (S5–S6)	4.5%	1.9%	2.6%
Tertiary: Diploma/Certificate	8.1%	2.9%	4.3%
Tertiary: Bachelors	4.5%	0.7%	1.7%
Tertiary: Postgraduate Diploma/Certificate	1.2%	0.3%	0.6%
Tertiary: Masters	0.8%	0.0%	0.2%
Tertiary: PhD	0.1%	0.1%	0.1%

Table 11 presents the distribution of individuals by gender and level of education completed. Fewer female individuals reported having completed all education levels with the exception of tertiary – diploma/certificate – which had more females. While completion is comparable between female and male individuals at the primary and secondary levels (O-level), the proportion of female individuals that had completed secondary advanced level (1.7%) was less than half that of male individuals (3.6%).

Table 9: Distribution of individuals by gender and level of education completed

Individual Characteristic	Proportion of Individuals		
Education level	**Male (%)**	**Female (%)**	**Total (%)**
None	5.4%	13.5%	10.0%
Primary	55.5%	54.5%	54.9%
Secondary: O Level (S1–S4)	27.6%	24.2%	25.7%
Secondary: A Level (S5–S6)	3.6%	1.7%	2.6%
Tertiary: Diploma/Certificate	4.1%	4.3%	4.3%
Tertiary: Bachelors	2.6%	1.0%	1.7%
Tertiary: Postgraduate Diploma/Certificate	0.8%	0.4%	0.6%
Tertiary: Masters	0.2%	0.2%	0.2%
Tertiary: PhD	0.1%	0.1%	0.1%

Labour Force Status

In terms of labour force status, most individuals (28.3%) reported that they were self-employed without employees, followed by unpaid housework (24.6%), as highlighted in Table 10. Rural and urban for the self–employed without employees were comparable, whereas for the unpaid housework, there were more rural (25.7%) than urban (21.5%) individuals.

Table 10: Distribution of individual's labour force status by location (ranked by total)

Individual Characteristic	Proportion of Individuals		
Labour force status	**Urban (%)**	**Rural (%)**	**Total (%)**
Self-employed without employees	27.1%	28.8%	28.3%
Unpaid housework (e.g. housewife)	21.5%	25.7%	24.6%
Workers not classifiable by status	4.6%	11.7%	9.8%
Others outside the labour force	6.2%	9.8%	8.9%
Student/Pupil	8.9%	6.8%	7.4%
Employee	10.4%	4.9%	6.3%
Unemployed, seeking a job	7.6%	5.2%	5.8%
Unemployed, not looking for a job	6.1%	3.2%	3.9%
Self-employed with employees	5.1%	2.3%	3.0%
Retired	2.3%	1.1%	1.5%
Disabled and unable to work	0.4%	0.5%	0.5%

Table 12: Distribution of individual's labour force status by gender (ranked by total)

Individual Characteristic	Proportion of Individuals		
Labour force status	**Male (%)**	**Female (%)**	**Total (%)**
Self-employed without employees	37.3%	21.3%	28.3%
Unpaid housework (e.g. housewife)	7.8%	37.8%	24.6%
Workers not classifiable by status	11.0%	8.9%	9.8%
Others outside the labour force	7.8%	9.7%	8.9%
Student/Pupil	10.1%	5.2%	7.4%
Employee	9.4%	3.9%	6.3%
Unemployed, seeking a job	6.7%	5.2%	5.8%
Unemployed, not looking for a job	3.7%	4.1%	3.9%
Self-employed with employees	3.9%	2.3%	3.0%
Retired	1.9%	1.1%	1.5%
Disabled and unable to work	0.4%	0.5%	0.5%

Disability

The study collected data about individuals with disabilities, as summarised in Table 14. Only 7.4% of individuals reported having any disability. There was a slight difference by location, with more individuals in rural (7.9%) than in urban (5.9%) areas reporting that they had disabilities. Amongst the individuals that reported a disability (7.4%), the most common disability was visual impairment (39.9%), closely followed by physical impairment (38.6%). By location, more individuals in rural areas reported a disability compared to individuals in urban areas (7.9% vs. 5.9%, respectively).

Table 13: Distribution of individuals with disabilities by location

Individual Characteristic	Proportion of Individuals		
Do you have any disability?	**Urban (%)**	**Rural (%)**	**Total (%)**
No	94.1%	92.1%	92.6%
Yes	5.9%	7.9%	7.4%
What kind of disability do you have?			
Visual impairment	48.8%	37.6%	39.9%
Physical impairment	41.9%	37.7%	38.6%
Intellectual disability	8.8%	12.4%	11.7%
Learning disability	1.5%	2.9%	2.6%
Hearing impairment	2.0%	1.5%	1.6%
Other	8.1%	15.8%	14.2%

By gender, more male individuals reported a disability compared to female individuals (7.5% vs. 7.3%, respectively) as presented in Table 13.

Table 14: Distribution of individuals with disabilities by gender

Individual Characteristic	Proportion of Individuals		
Do you have any disability?	**Male (%)**	**Female (%)**	**Total (%)**
No	92.5%	92.7%	92.6%
Yes	7.5%	7.3%	7.4%
What kind of disability do you have?			
Visual impairment	38.2%	41.3%	39.9%
Physical impairment	37.9%	39.1%	38.6%
Intellectual disability	13.7%	10.1%	11.7%
Learning disability	0.6%	4.2%	2.6%
Hearing impairment	1.8%	1.4%	1.6%
Other	13.2%	15.1%	14.2%

6.2 Mobile Phones

At the individual level, the survey collected information on the ownership of active SIM cards, access to and use of mobile phones, type of mobile phones and use of and expenditure on mobile phones as well as reasons why individuals did not own mobile phones.

Phone Use and Ownership

The survey collected data about individuals that had used mobile phones in the three months preceding the study and those that owned mobile phones. Overall, 74.1% of all individuals had used a mobile phone in the previous three months as indicated in Figure 99. By location, more individuals in urban areas (82.7%) reported having used a mobile phone in the previous three months compared to individuals in rural areas (71%). By gender, 80.2% of male individuals reported having used a mobile phone in the previous three months compared to 69.2% of female individuals, as highlighted in Figure 99.

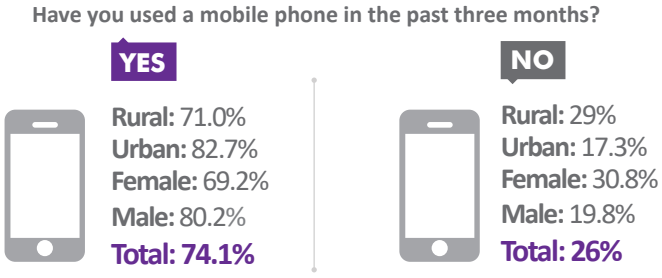


Figure 99: Proportion of individuals that used a mobile phone by location and gender

Of those individuals that had used mobile phones, 87% reported owning a mobile phone as shown in Figure 100. Figure 100 also highlights a higher proportion of urban individuals (92.1%) owned phones compared to the 84.9% of rural individuals. In terms of gender, more males (89.6%) compared to females (84.6%) owned mobile phones.

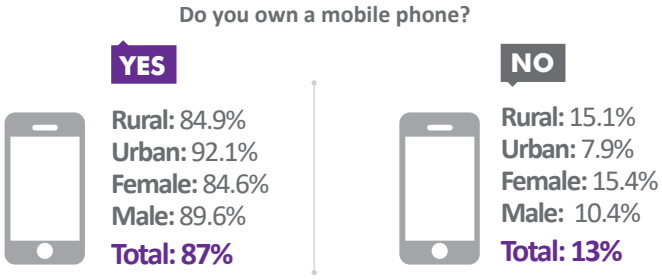


Figure 100: Proportion of individuals that owned a mobile phone by location and gender

By sub-region, more individuals in Teso (98.3%) and Buganda South (96.2%) reported owning phones compared to Bunyoro (72.8%) and Karamoja (50.9%), as indicated in Figure 101.

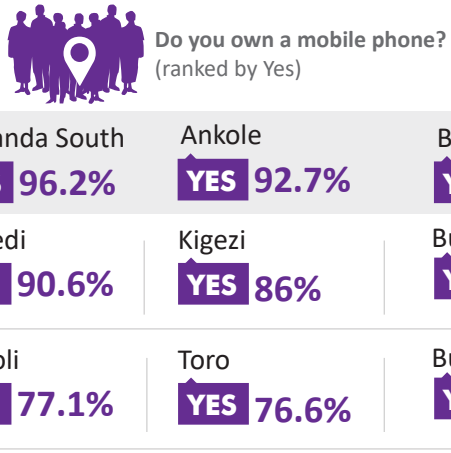


Figure 101: Proportion of individuals that owned a mobile phone by sub-region

Within all age groups, at least three out of four individuals owned mobile phones. The 55–64 age group had the highest proportion of individuals that owned mobile phones (94.6%), followed by individuals between 45 and 54 years (92.1%), as shown in Figure 102.

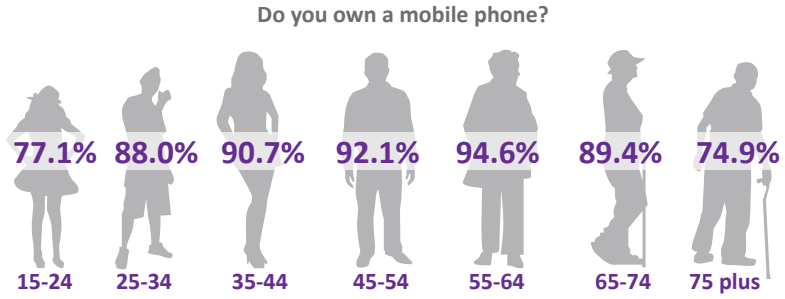


Figure 102: Proportion of individuals that owned a mobile phone by age range

Overall, most individuals that owned mobile phones were between 25 and 34 years (30.1%), followed by individuals between 35 and 44 years (25.9%).

Individuals that reported owning a mobile phone were asked what type of phone they owned; 57.1% indicated owning a basic phone, 26.1% reported owning a feature phone and 16.8% reported owning a smartphone, as indicated in Figure 103.

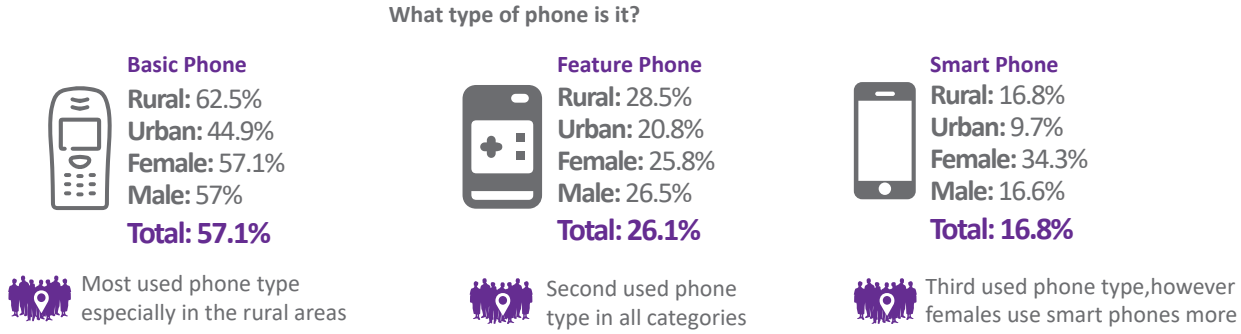


Figure 103: Proportion of individuals that owned different phone types by location and gender

Figure 103 indicates that the proportion of males and the proportion of females owning the different types of phones was comparable; for instance, 17.1% of males compared to 16.6% of females owned smartphones. There were, however, significant differences when compared by location. More individuals (62.5%) in rural areas owned basic phones compared to 44.9% of individuals in urban areas. The reverse is true for smartphones: only 9.7% of individuals in rural areas owned smart phones compared to 34.3% of individuals in urban areas. A total of 28.5% of individuals in rural areas owned feature phones compared to 20.8% of individuals in urban areas.

Individuals that owned mobile phones that were not smartphones (83.2%) were asked for the main reason why they had chosen not to obtain a smartphone. Most of these individuals (75.9%) indicated that they could not afford a smartphone or that it was too expensive. This highlights the need for the government to devise strategies to lower the cost of smartphones as this is the primary avenue through which individuals first access the internet.

Active SIMs

Individuals were asked how many active SIM cards they owned. Figure 117 illustrates that individuals mostly owned one or two SIM cards. Over two-thirds (37%) said they owned one SIM card. There was no difference by location, but by gender, a higher proportion of males, 38.5% compared to 35.8% of females, owned one active SIM card. Those who owned two active SIM cards were 29.5%. By location, the proportion of individuals in urban areas with two active SIM cards was 40.7% compared to only 25.6% of individuals in rural areas. One out of every three individuals had no SIM cards. More individuals in rural (36.6%) than in urban (21%) areas had no active SIM cards. Figure 117 also depicts that by gender, 38.5% of females compared to 25.1% of males did not have active SIM cards.

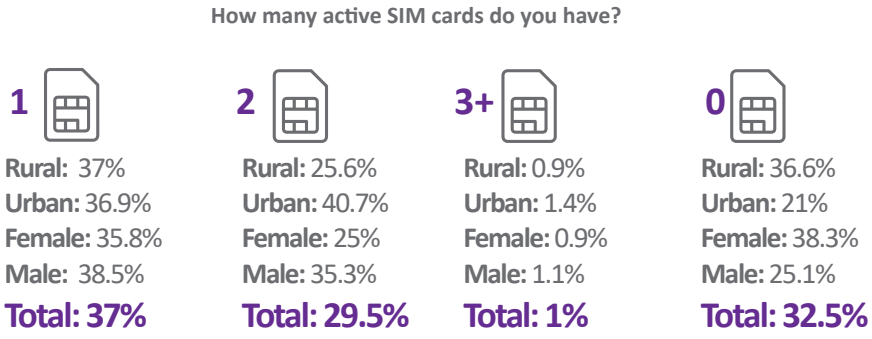


Figure 104: Number of active SIM cards amongst individuals by location and gender

Individuals with more than one active SIM card were asked for reasons that make them change their SIMs. These are summarised in Figure 105 and Figure 106. The number one reason for changing active SIMs was reported as making use of cheaper on-network calls (calls on the same network) irrespective of location or gender (70.2%).

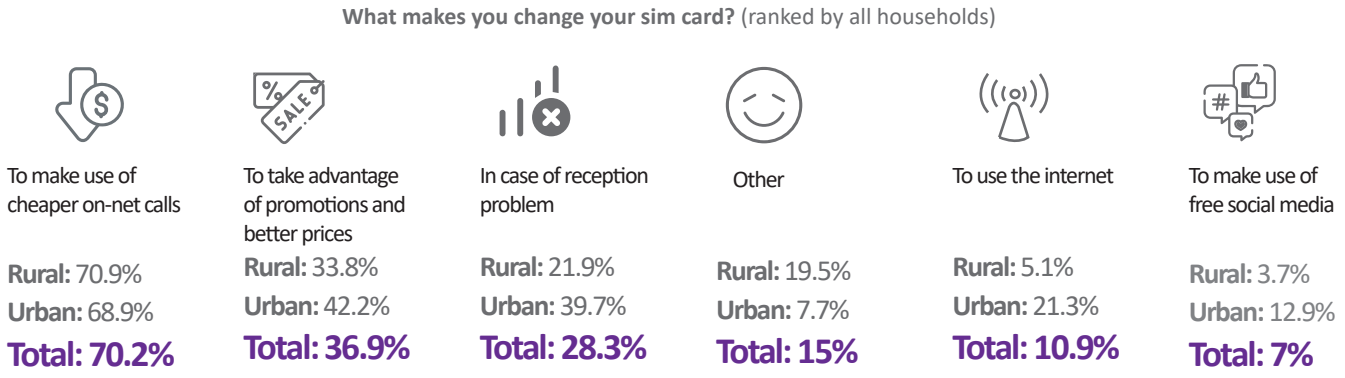


Figure 105:Individual reasons for changing active SIM cards by location

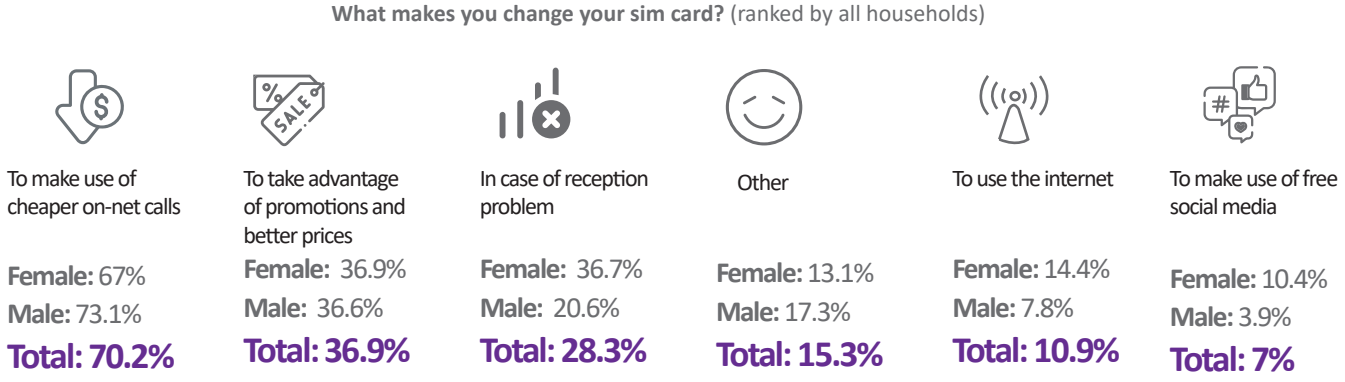


Figure 106: Individual reasons for changing active SIM cards by gender

Phone Usage

The study asked individuals what they used their phones for using a multiple-response question. Figure 107 highlights that most individuals used phones for voice calls (95.4%) as the most predominant function. There were no gender differences. The second most common use was sending SMS, done by half (51.2%). By gender, there were more males (55.8%) sending SMS than females (46.8%). Use for entertainment, chatting or social media ranged between 11% and 16%.

Figure 108 illustrates that for voice calls there were no differences by location but that for SMS, 54.6% of males compared to 49.6% of females sent SMS. The remaining uses – chatting, social media, sending mail and entertainment – are all used by more males than females.

What do you use your mobile phone for?
(multiple-select, ranked by all individuals)

Make voice calls	Send SMS	Send MMS	Entertainment	Chatting
Female: 95.9%	**Female:** 46.8%	**Female:** 18%	**Female:** 15.8%	**Female:** 13.6%
Male: 94.8%	**Male:** 55.8%	**Male:** 24%	**Male:** 14.9%	**Male:** 13.4%
Total: 95.4%	**Total: 51.2%**	**Total: 21%**	**Total: 15%**	**Total: 13%**

Access to social media	Access to email	Web browsing	Other
Female: 11.7%	**Female:** 4.9%	**Female:** 3.7%	**Female:** 4.3%
Male: 12.1%	**Male:** 6.4%	**Male:** 6.9%	**Male:** 4.3%
Total: 11.9%	**Total: 5.6%**	**Total: 5.2%**	**Total: 4.2%**

Figure 107: Individual mobile phone usage by gender

What do you use your mobile phone for?
(multiple-select, ranked by all individuals)

Make voice calls	Send SMS	Send MMS	Entertainment	Chatting
Female: 95.5%	**Female:** 49.6%	**Female:** 22%	**Female:** 3%	**Female:** 7.1%
Male: 95.1%	**Male:** 54.9%	**Male:** 17%	**Male:** 20.8%	**Male:** 27.9%
Total: 95.4%	**Total: 51.2%**	**Total: 21%**	**Total: 15.4%**	**Total: 13.5%**

Access to social media	Access to email	Web browsing	other
Female: 5.7%	**Female:** 2.2%	**Female:** 2.4%	**Female:** 4.3%
Male: 25.7%	**Male:** 13.2 %	**Male:** 11.5%	**Male:** 3.9%
Total: 11.9%	**Total: 5.6%**	**Total: 5.2%**	**Total: 5.2%**

Figure 108: Individual mobile phone usage by location

Smartphone owners were asked about the applications that they had downloaded on their smartphones. Figure 109 shows the smartphone apps downloaded by gender. Social networking apps were downloaded by 93.7%, followed by games, downloaded by 45.9%, and voice or messaging apps, downloaded by 41.8%. There were no gender differences for these three apps. The business apps, downloaded by 32.5%, however, showed gender differences. A total of 40% of males had downloaded business apps compared to 25.6% of females. Figure 110 shows apps downloaded by location. For social networking, the location gap was marginal (rural 94.7%, urban 93.1%). Alternatively, game apps, voice or messaging and business apps all had a higher proportion of downloads by urban individuals compared to rural. The business app download location gap was the widest, with rural at 21.6% compared to 39% of urban individuals.

What kind of apps have you downloaded on your smartphone?
(multiple-select, ranked by all individuals)

Social networking apps	Game apps	Voice or messaging apps	Business apps	Entertainment apps	Educational apps	News apps
Female: 93.7%	**Female:** 45.3%	**Female:** 42%	**Female:** 25.6%	**Female:** 28.7%	**Female:** 25.2%	**Female:** 18.9%
Male: 93.7%	**Male:** 46.6%	**Male:** 41.7%	**Male:** 40%	**Male:** 26.9%	**Male:** 22.5%	**Male:** 21.7%
Total: 93.7%	**Total: 45.9%**	**Total: 41.8%**	**Total: 32.5%**	**Total: 27.8%**	**Total: 23.9%**	**Total: 20.2%**

Weather apps	Search tools apps	Transport apps	Health apps	Trading apps	Other	Dating apps
Female: 13%	**Female:** 14.3%	**Female:** 2.2%	**Female:** 2.2%	**Female:** 2.2%	**Female:** 2.2%	**Female:** 2.2%
Male: 19.7%	**Male:** 17.6%	**Male:**13.2 %	**Male:**13.2 %	**Male:** 13.2 %	**Male:**13.2 %	**Male:**13.2 %
Total: 16.3%	**Total: 15.9%**	**Total: 10%**	**Total: 5.6%**	**Total: 5.6%**	**Total: 5.6%**	**Total: 5.6%**

Figure 109: Smartphone apps downloaded by individuals by gender

What kind of apps have you downloaded on your smartphone?
(multiple-select, ranked by all individuals)

Social networking apps	Game apps	Voice or messaging apps	Business apps	Entertainment apps	Educational apps	News apps
Rural: 94.7%	**Rural:** 42.6%	**Rural:** 39.6%	**Rural:** 21.6%	**Rural:** 25.9%	**Rural:** 22.4%	**Rural:** 5.9%
Urban: 93.1%	**Urban:** 47.9%	**Urban:** 43.2%	**Urban:** 39%	**Urban:** 29%	**Urban:** 22.4%	**Urban:** 22.8%
Total: 93.7%	**Total: 45.9%**	**Total: 41.8%**	**Total: 32.5%**	**Total: 27.8%**	**Total: 23.9%**	**Total: 20.2%**

Weather apps	Search tools apps	Transport apps	Health apps	Trading apps	Other	Dating apps
Rural: 4.2%	**Rural:** 7.2%	**Rural:** 0.7%	**Rural:** 1.7%	**Rural:** 0.2%	**Rural:** 2.4%	**Rural:** 0.7%
Urban: 23.4%	**Urban:** 21%	**Urban:** 15.5%	**Urban:** 10.3%	**Urban:** 8.6%	**Urban:** 3.7%	**Urban:** 2.2%
Total: 16.3%	**Total: 15.9%**	**Total: 10%**	**Total: 7.1%**	**Total: 5.4%**	**Total: 3.2%**	**Total: 1.7%**

Figure 110: Smartphone apps downloaded by individuals by location

Phone Expenditure

The survey asked participants about their mobile phone expenditure during the previous month on voice, SMS and data as a proxy for their monthly expenditure. On average, individuals spent UGX 10,800 per month on voice, SMS and data for their mobile phones. By location, individuals in rural areas on average spent UGX 9,100 per month on voice, SMS and data for their mobile phones compared to individuals in urban areas, which spent UGX 16,800 per month. By gender, male individuals on average spent UGX 15,100 per month compared to female individuals, who spent UGX 8,000.

In terms of expenditure range, most individuals (59.7%) spent less than UGX 10,000 per month on voice, SMS and data, as indicated in Figure 111, by gender, and Figure 112, by location.

On average, how much per month does the household spend on Internet service (subscription & use)?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001- 100,000	100,000 +
Female: 68.9%	**Female:** 15.6%	**Female:** 6%	**Female:** 3.0%	**Female:** 3.5%	**Female:** 2.4%	**Female:** 0.6%
Male: 50.1%	**Male:** 21.2%	**Male:** 14.5 %	**Male:** 4.5%	**Male:** 3.4%	**Male:** 4.9%	**Male:** 1.4%
Total: 59.7%	**Total: 18.3%**	**Total: 3.7%**	**Total: 3.7%**	**Total: 3.4%**	**Total: 3.7%**	**Total: 1%**

Figure 111: Individual monthly expenditure for voice, SMS and data by gender

On average, how much per month does the household spend on Internet service (subscription & use)?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001- 100,000	100,000 +
Rural: 64.4%	**Rural:** 17.4%	**Rural:** 9.6%	**Rural:** 2.7%	**Rural:** 2.3%	**Rural:** 3.1%	**Rural:** 0.6%
Urban: 49.2%	**Urban:** 20.4%	**Urban:** 11.3%	**Urban:** 6.2%	**Urban:** 6%	**Urban:** 5.0%	**Urban:** 2.0%
Total: 59.7%	**Total: 18.3%**	**Total: 10.1%**	**Total: 3.7%**	**Total: 3.4%**	**Total: 3.7%**	**Total: 1%**

Figure 112: Individual monthly expenditure for voice, SMS and data by location

The survey also asked participants about their monthly expenditure on data only. On average, individuals spent UGX 2,500 per month on data. By location, individuals in rural areas on average spent UGX 1,000 per month on data for their mobile phones compared to individuals in urban areas, who spent UGX 6,900 per month. By gender, male individuals on average spent UGX 3,000 per month compared to female individuals, who spent UGX 2,100.

In terms of expenditure range, most individuals (90.8%) spent between UGX 0 and 10,000 per month on mobile data, as indicated in Figure 126, by location. By gender, the gap was marginal between males and females (89.6% vs. 92%). In terms of location, 79.6% of individuals in urban compared to 95.8% in rural areas spent in this expenditure range on data only.

In terms of mobile phone expenditure: last month, how much did you spend on data alone?

0-10,000	10,001-20,000	20,001-30,000	30,001-40,000	40,001-50,000	50,001- 100,000	100,000 +
Rural: 95.8%	**Rural:** 1.6%	**Rural:** 1.6%	**Rural:** 0.4%	**Rural:** 0.4%	**Rural:** 0.2%	**Rural:** 0%
Urban: 79.6%	**Urban:** 5.8%	**Urban:** 7.9%	**Urban:** 1.5%	**Urban:** 2.4%	**Urban:** 2.7%	**Urban:** 0.6%
Total: 90.8%	**Total: 2.9%**	**Total: 3,5%**	**Total: 0.8%**	**Total: 0.9%**	**Total: 1.0%**	**Total: 2.0%**

Figure 113: Individual monthly expenditure for mobile data by location

Individuals with No Mobile Phones

The survey explored reasons for not owning a mobile phone among individuals that had used but not owned a mobile phone (Figure 114 and Figure 115). 'I cannot afford it' (69.9%) was the major reason for not owning a mobile phone, with more females (72.3%) than males (65.7%) giving this as their primary reason. By location, more individuals in rural (72.3%) compared to 58.3% in urban areas gave this reason. The second reason was 'I am not allowed to own one' (11.6%), which had no disparity by location or gender. The third reason was having 'no electricity at home to charge a mobile phone' (11.2%). By location, 10.5% of individuals in urban compared to 14.6% in rural areas gave no electricity as a reason. By gender, only 9.7% females compared to 14.3% males gave this reason.

Interestingly, more individuals in urban areas cited lack of electricity at home to charge the mobile phone compared to individuals in rural areas (14.3% vs. 9.7%, respectively). Affordability of the mobile phone is still a major hindrance in 2022, just as it was in 2017/18.

Why don't you have a mobile phone?
(ranked by total)

I cannot afford a mobile phone	I am not allowed to own one	No electricity to charge phone	My phone is broken	Other
Rural: 72.3%	**Rural:** 11.7%	**Rural:** 11.2%	**Rural:** 10%	**Rural:** 6.9%
Urban: 58.3%	**Urban:** 11.5%	**Urban:** 10.5%	**Urban:** 16.5%	**Urban:** 29.7%
Total: 69.9%	**Total: 11.6%**	**Total: 11.2%**	**Total: 16.5%**	**Total: 10.9%**

I don't know how to use it	My phone got stolen	No mobile coverage where I live	I have privacy concerns
Rural: 9.8%	**Rural: 5.5%**	**Rural:** 2%	**Rural:** 0.2%
Urban: 4.4%	**Urban: 6.1%**	**Urban:** 2.3%	**Urban:** 0.2%
Total: 8.8%	**Total: 5.6%**	**Total: 0.8%**	**Total: 0%**

Figure 114: Individual reasons for not owning a mobile phone by location

Other reasons cited by more individuals in rural areas compared to individuals in urban areas included lack of knowledge on how to use the mobile phone and lack of mobile network coverage where individuals lived, as shown in Figure 114.

Other reasons cited by more female individuals compared to male individuals included lack of permission to own a mobile phone and lack of knowledge on how to use the mobile phone as, shown in Figure 115.

Why don't you have a mobile phone?
(ranked by total)

I cannot afford a mobile phone
Female: 72%
Male: 65%
Total: 69.9%

I am not allowed to own one
Female: 12.3%
Male: 10.3%
Total: 11.6%

No electricity to charge phone
Female: 11.2%
Male: 9.7%
Total: 14.3%

My phone is broken
Female: 11.2%
Male: 9.1%
Total: 15.2%

Other
Female: 5.8%
Male: 20.9%
Total: 10.9%

I don't know how to use it
Female: 10.5%
Male: 5.5%
Total: 8.9%

My phone got stolen
Female: 5.9%
Male: 5%
Total: 5.6%

No mobile coverage where I live
Female: 2.6%
Male: 0.9%
Total: 2%

I have privacy concerns
Female: 0.1%
Male: 0.2%
Total: 0.2%

Figure 115: Individual reasons for not owning a mobile phone by gender

6.2 Computers and Internet

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

Computing Devices

Overall, most individuals (96.8%) had not used any computing device in the three months preceding the survey. Figure 116 shows that by location, more individuals in rural areas (98.7%) had not used any computing device compared to individuals in urban areas (91.4%). Figure 117 shows that by gender, more female individuals (97.5%) had not used any computing device compared to male individuals (95.9%). Most individuals had used laptops (2%) compared to desktops (1.6%) and tablets (0.7%).

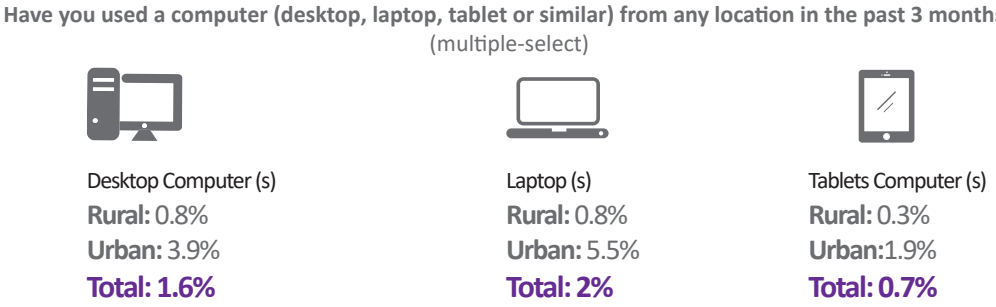


Figure 116: Proportion of individuals that used a computer from any location in the previous three months by location

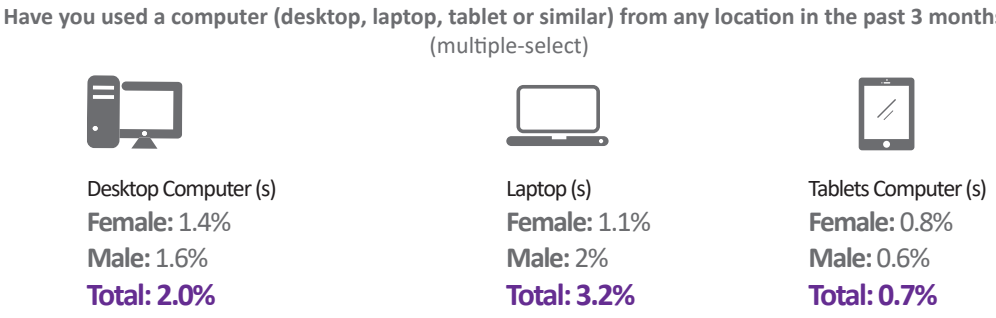


Figure 117: Proportion of individuals that used a computer from any location in the previous three months by gender

Overall, only 1.3% of individuals reported owning any personal computer/laptop, as shown in Figure 118. By location, more individuals in urban areas owned a personal computer/laptop compared to individuals in rural areas (3.9% vs. 0.3%, respectively). By gender, a higher proportion of males (2.3%) compared to females (0.4%) owned a personal desktop computer/laptop. Clearly, there is still a large proportion (98.7%) of individuals without personal computers/laptops.

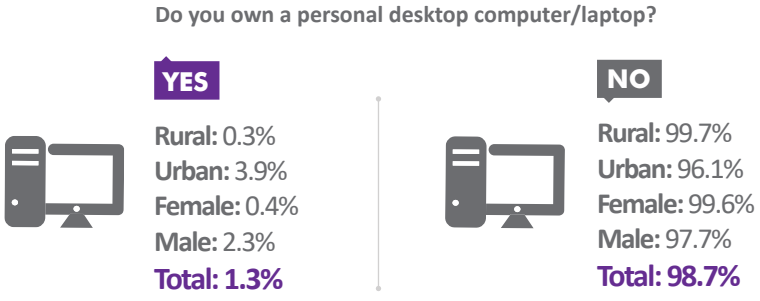


Figure 118: Proportion of individuals that owned a computer/laptop by location and gender

Computer Usage

Individuals that had not used any computing device in the previous three months (3.2%) were asked how often they used a desktop computer/laptop. Figure 119 shows that most (42.9%) of the individuals used their desktop computer/laptop daily. Both the location and gender gaps are marginal.

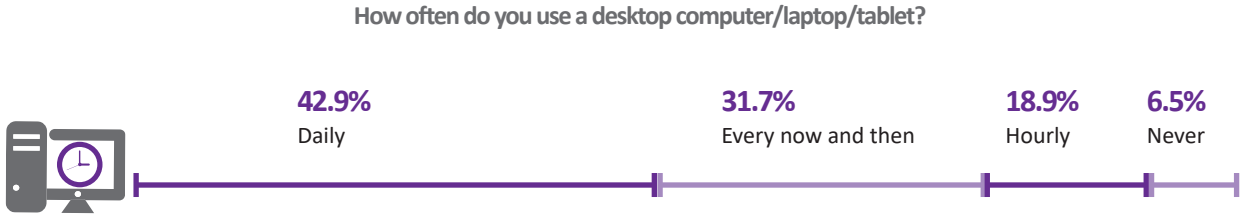


Figure 119: Frequency of individual computer usage

The survey collected data about the activities that individuals had undertaken irrespective of devices used. Figure 120 shows that the most-cited activity carried out by seven out of every 10 (69.9%) individuals was 'sending messages (e.g. files, messaging service, SMS) with attachments'. The second most-cited activity, cited by over half (54.3%) of the individuals, was 'using copy and paste tools to duplicate or move data, information, content in digital environments'. There were more individuals in urban than in rural areas citing these activities. In addition, a higher proportion of individuals in urban areas reported carrying out more complex computer activities compared to their counterparts in rural areas.

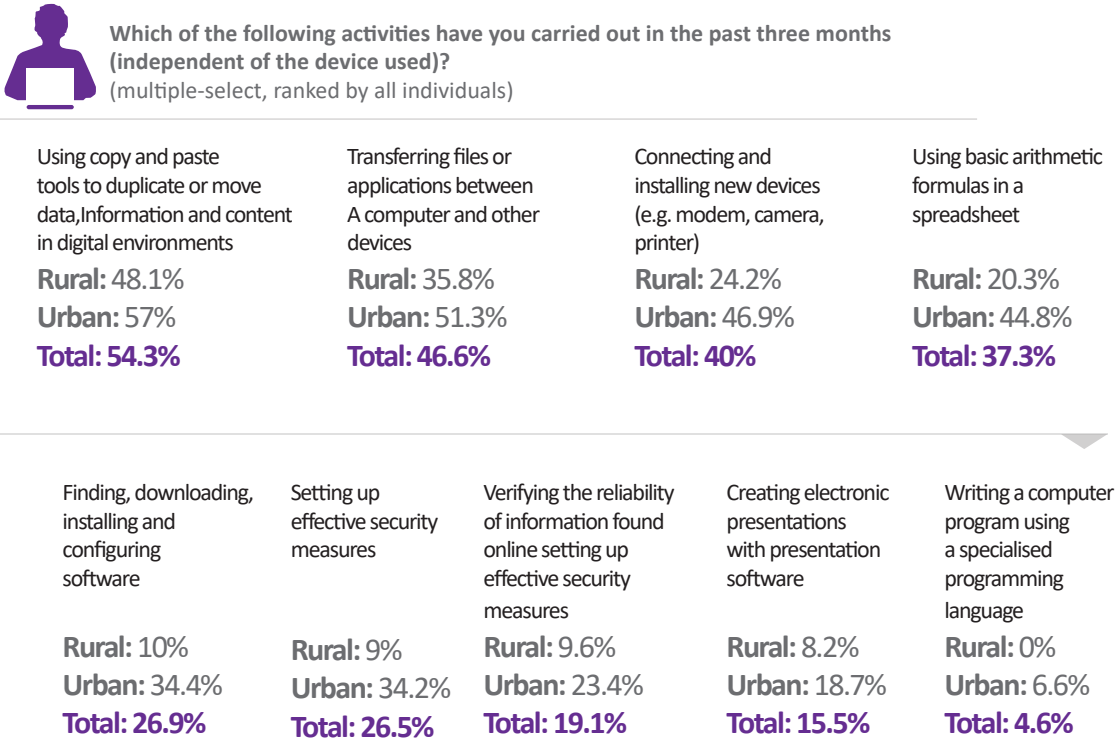


Figure 120:Individual computer activities carried out in previous three months by location

Which of the following activities have you carried out in the past three months (independent of the device used)?
(multiple-select, ranked by all individuals)

Sending messages (e.g. e-mail) With attached files	Using copy and paste tools to duplicate or move data,Information and content in digital environments	Transferring files or applications between A computer and other devices	Connecting and installing new devices (e.g. modem, camera, printer)	Using basic arithmetic formulas in a spreadsheet
Female: 77.8%	**Female:** 46.4%	**Female:** 43.7%	**Female:** 25.4%	**Female:** 25.9%
Male: 63.8%	**Male:** 60.3%	**Male:** 48.8%	**Male:** 51.1%	**Male:** 46%
Total: 69.9%	**Total: 54.3%**	**Total: 46.6%**	**Total: 40%**	**Total: 37.3%**

Changing privacy settings on your device, account or app to limit the sharing of personal data and information	Finding, downloading, installing and configuring software	Setting up effective security measures	Verifying the reliability of information found online setting up effective security measures	Creating electronic presentations with presentation software	Writing a computer program using a specialised programming language
Female: 18.5%	**Female:** 11%	**Female:** 24.6%	**Female:** 14.5%	**Female:** 6.7%	**Female:** 0.6%
Male: 33.9%	**Male:** 39%	**Male:** 28%	**Male:** 22.7%	**Male:** 22.2%	**Male:** 7.7%
Total: 27.2%	**Total: 26.9%**	**Total: 26.5%**	**Total: 19.1%**	**Total: 15.5%**	**Total: 4.6%**

Figure 121: Individual computer activities carried out in previous three months by gender

Figure 121, which displays computing activities by gender, shows that for all the activities except sending messages (emails, SMS etc.), there were more males carrying out the activities compared to females. The most outstanding three of these activities were using copy and paste tools to duplicate or move data, information and content in a digital environment (60.3% males vs. 46.4% females); transferring files or applications between a computer and other devices (48.8% males vs. 43.7% females); and connecting and installing new devices such as modems, camera and printers (51.1% males vs. 25.4% females).

Individuals were also asked to rate their level of competence, independent of device, in a number of ICT/digital skills that encompassed locating, creating and communicating digital content as well as information and data literacy (independent of device used).

Figure 122 shows that the skill in which the highest proportion (62.8%) of individuals showed the highest level of competence was ‘using a calculator’. The second was ‘use of computer/laptop/tablet’, with 56.2%, and the third was ‘copying or moving file/folder’, with 50.7%. The least proportion of individuals indicating a high level of skill was in using spreadsheets (27.4%), conducting a transaction on the internet (20.8%) and writing a computer program (10.7%), indicating low levels of digital competence in these activities.

Please rate your ICT/digital skill in the following areas (independent of the device used)
(ranked by high-level of competance)

Use calculator	62.8% HIGH LEVEL	MID LEVEL 6.5%		
Use a Computer/ Laptop/Tablet	56.2% HIGH LEVEL	MID LEVEL 8.5%		
Copying or moving file/ folder	50.7% HIGH LEVEL	MID LEVEL 7.6%		
Read and send e-mail	45.8% HIGH LEVEL	MID LEVEL 9.5%		
Use social media platforms (via an app or on a website)	45.6% HIGH LEVEL	MID LEVEL 10.2%		
Transfer files between a Computer And other devices	45.4% HIGH LEVEL	MID LEVEL 6.8%		
Connect and install new devices (e.g., modem, camera, printer, etc.)	40% HIGH LEVEL	MID LEVEL 14.8%		
Send emails with attached files	39.2% HIGH LEVEL	MID LEVEL 8.9%		
Use the internet	33.8% HIGH LEVEL	MID LEVEL 13.1%		
Use word processor	33,6% HIGH LEVEL	MID LEVEL 15%		
Use Google suite (Google Drive, Docs, Hangout)	32.7% HIGH LEVEL	MID LEVEL 15.6%		
Browse, search and filter data, Information and digital content	30.5% HIGH LEVEL	MID LEVEL 18.7%		
Use presentation application	28.6% HIGH LEVEL	MID LEVEL 7.9%		
Find, download, install and Configure software	27.8% HIGH LEVEL	MID LEVEL 14.6%		
Use spreadsheet	27.4% HIGH LEVEL	MID LEVEL 10.8%		
Conduct transaction on the Internet	20.8% HIGH LEVEL	MID LEVEL 9.9%		
Write a Computer program	% HIGH LEVEL	MID LEVEL 10.7%		

Figure 122: Individual rating of ICT/digital skills (independent of devices)

6.3 Internet Access and Use

The survey collected data on whether individuals had used the internet and their internet access methods and locations as well as frequency. Overall, only 10.3% of individuals had used the internet for any purpose in the previous three months, as indicated in Figure 123. By location, more individuals in urban areas (22.9%) had used the internet compared to individuals in rural areas (5.9%). By gender, more male individuals (12.9%) had used the internet compared to female individuals (8.2%).

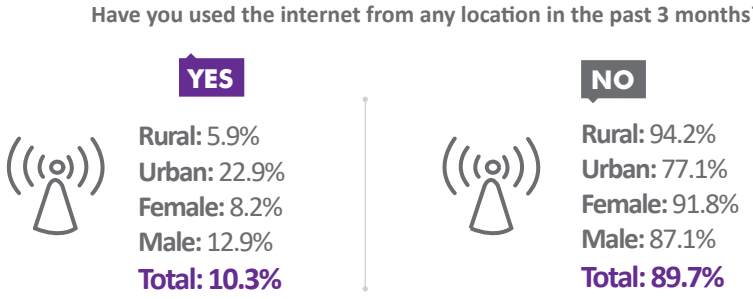


Figure 123: Proportion of individuals that had used the Internet by location and gender

By age group, more individuals between 25 and 34 years of age (14.5%) had used the internet from any location in the previous three months compared to other age groups, followed by individuals between 15 and 24 years (13.5%) as shown in Figure 124.

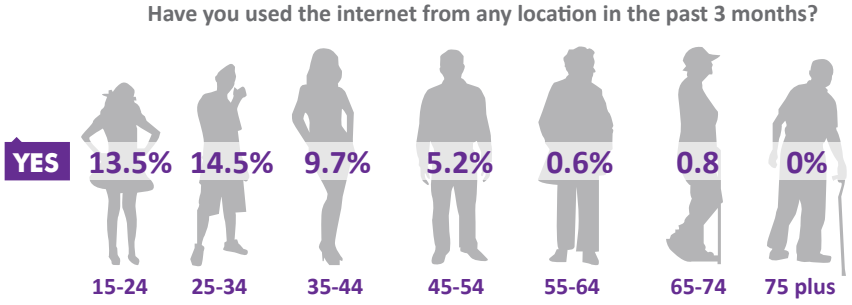


Figure 124: Proportion of individuals that had used the Internet by age group

Overall, individuals between 25 and 34 years of age accounted for most internet users (37.9%) in the previous three months, followed by individuals between 15 and 24 years (34.7%).

By sub-region, more individuals in the Kampala sub-region had used the internet from any location in the previous three months (45.9%), compared to other sub-regions, as presented in Figure 125.

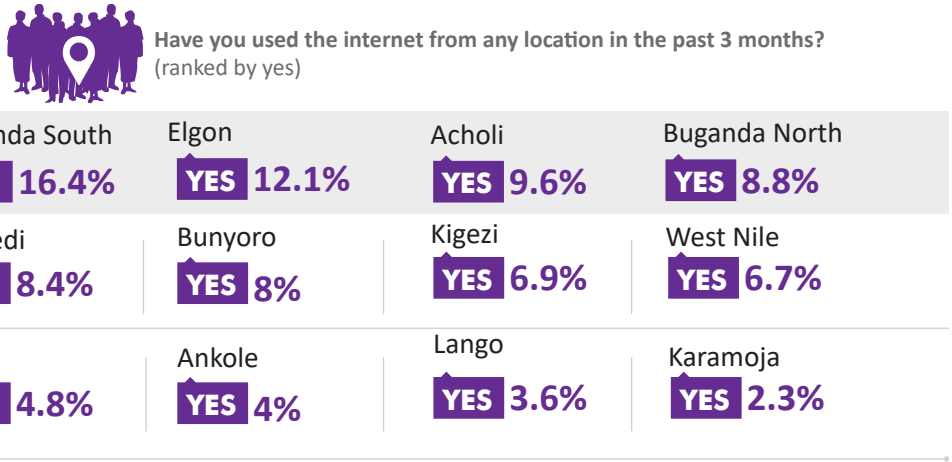


Figure 125: Proportion of individuals that had used the Internet by sub-region

Internet Access Locations

From the individuals that reported using the internet (10.3%), the survey asked about the locations from which they used the internet. Most individuals predominantly accessed the internet at home (77.9%), followed by at one's workplace (27%) and at one's place of education (10.3%), as summarised in Figure 126.

By location, the places where individuals used the internet did not significantly differ between urban and rural areas except for 'another person's home' (7.7% vs. 3.2%, respectively), 'internet café' (5.9% vs. 3.2%, respectively) and 'a facility open to the public' (1.2% vs. 0.7%, respectively).

Where did you use the Internet in the past three month? (ranked by all individuals)

Home	Workplace	Place of education (e.g, school)	Another person's home	Internet café
Rural: 76.1%	**Rural:** 27.7%	**Rural:** 9.1%	**Rural:** 3.2%	**Rural:** 4.8%
Urban: 79.2%	**Urban:** 26.5%	**Urban:** 11.1%	**Urban:** 7.7%	**Urban:** 3.2%
Total: 77.9%	**Total: 27%**	**Total: 10.3%**	**Total: 5.8%**	**Total: 5.9%**

Government MYUG Wi-Fi location	Facility open to the public	Community centre/facility	Other
Rural: 0%	**Rural:** 0.7%	**Rural:** 0%	**Rural:** 9.5%
Urban: 2.3%	**Urban:** 1.2 %	**Urban:** 1%	**Urban:** 9.2%
Total: 1.3%	**Total: 0.1%**	**Total: 0.6%**	**Total: 9.7%**

Figure 126: Locations that individuals used to access the Internet by location

Where did you use the Internet in the past three month? (ranked by all individuals)

Home	Workplace	Place of education (e.g, school)	Another person's home	Internet café
Female: 86.7%	**Female:** 25.6%	**Female:** 7.3%	**Female:** 5.6%	**Female:** 2.7%
Male: 70.6%	**Male:** 28.2%	**Male:** 12.7%	**Male:** 6.1%	**Male:** 6.5%
Total: 77.9%	**Total: 27%**	**Total: 10.3%**	**Total: 5.8%**	**Total: 4.8%**

Government MYUG Wi-Fi location	Facility open to the public	Community centre/facility	Other
Female: 1.8%	**Female:** 0.4%	**Female:** 1.3%	**Female:** 6.3%
Male: 0.9%	**Male:** 1.5 %	**Male:** 0%	**Male:** 12.1%
Total: 1.3%	**Total: 1%**	**Total: 0.6%**	**Total: 9.5%**

Figure 127: Locations that individuals used to access the Internet by gender

By gender, more female individuals used the internet at home compared to male individuals (86.7% vs. 70.6%, respectively), and at a community centre/facility (1.3% vs. 0%, respectively), as presented in Figure 127. Conversely, more male individuals used the internet at most other locations compared to female individuals.

The survey asked individuals that had used the internet in the previous three months about the kind of digital devices they used as well as methods of accessing the internet, as summarised in Figure 128. Most individuals (95.5%) has used the internet via a mobile phone via the telephone network (using SIM/mobile data), followed by a mobile phone via Wi-Fi (29.9%). This demonstrates the importance of the mobile phone as the primary avenue through which individuals used the internet.

Have you used the internet in the past 3 months using...
(multiple-select, ranked by all individuals)

...a mobile phone via the telephone network (using the SIM/mobile data)?
Rural: 91.7%
Urban: 98.4%
Total: 95.5%

...a mobile phone via WiFi?
Rural: 22.2%
Urban: 35.6%
Total: 29.9%

...a desktop computer via WiFi?
Rural: 17%
Urban: 16.5%
Total: 17.4%

...a desktop computer via SIM card or USB modem?
Rural: 14.7%
Urban: 17.5%
Total: 16.3%

..a portable computer (laptop, notebook, Chromebook) via SIM card or USB modem?
Rural: 10.7%
Urban: 16.6%
Total: 14.1%

...a portable computer (laptop, notebook, Chromebook) via WiFi?
Rural: 8.5%
Urban: 17.7%
Total: 13.8

...a tablet via SIM card or USB modem?
Rural: 11.1%
Urban: 10.5%
Total: 10.8%

...other portable devices (e.g., game consoles, Ebook readers, watches, etc.) via SIM card or USB modem?
Rural: 7.7%
Urban: 7.2%
Total: 7.4%

...a tablet via WiFi?
Rural: 5.8%
Urban: 7.3%
Total: 6.7%

...other portable devices (e.g., game consoles, Ebook readers, watches, etc.) via WiFi?
Rural: 1.4%
Urban: 9.2%
Total: 5.9%

Figure 128: Internet access devices and connections among individuals by location

Have you used the internet in the past 3 months using...
(multiple-select, ranked by all individuals)

...a mobile phone via the telephone network (using the SIM/mobile data)?
Female: 91.7%
Male: 98.4%
Total: 95.5%

...a mobile phone via WiFi?
Female: 22.2%
Male: 35.6%
Total: 29.9%

...a desktop computer via WiFi?
Female: 17%
Male: 16.5%
Total: 17.4%

...a desktop computer via SIM card or USB modem?
Female: 12%
Male: 19.8%
Total: 16.3%

..a portable computer (laptop, notebook, Chromebook) via SIM card or USB modem?
Female: 8.8%
Male: 18.5%
Total: 14.1%

...a portable computer (laptop, notebook, Chromebook) via WiFi?
Female: 10.6%
Male: 16.5%
Total: 13.8%

...a tablet via SIM card or USB modem?
Female: 10.8%
Male: 12.2%
Total: 10.8%

...other portable devices (e.g., game consoles, Ebook readers, watches, etc.) via SIM card or USB modem?
Female: 5.6%
Male: 8.9%
Total: 7.4%

...a tablet via WiFi?
Female: 6.7%
Male: 6.7%
Total: 6.6%

...other portable devices (e.g., game consoles, Ebook readers, watches, etc.) via WiFi?
Female: 3.2%
Male: 8.1%
Total: 5.9%

Figure 129: Internet access devices and connections among individuals by gender

Internet Activities

The survey collected data about the activities that individuals had used the internet for for private purposes in the previous three months (from any location). The most common purpose reported was social networking (75.3%), followed by making telephone or video calls over the internet (49.4%) and sending or receiving email (31.1%), as presented in Figure 130.

By location, the major contrasts in activities among individuals that had used the internet for private purposes in urban and rural areas included making telephone or video calls over the internet (58.3% vs. 37.0%), purchasing or ordering goods or services (13.9% vs. 0.4%) and getting information about goods or services (26.5% vs. 13.2%), all respectively.

Social networking was selected as the most important purpose individuals used the internet for (56.5%), followed by making telephone or video calls over the internet (19.1%) and sending or receiving email (5%).

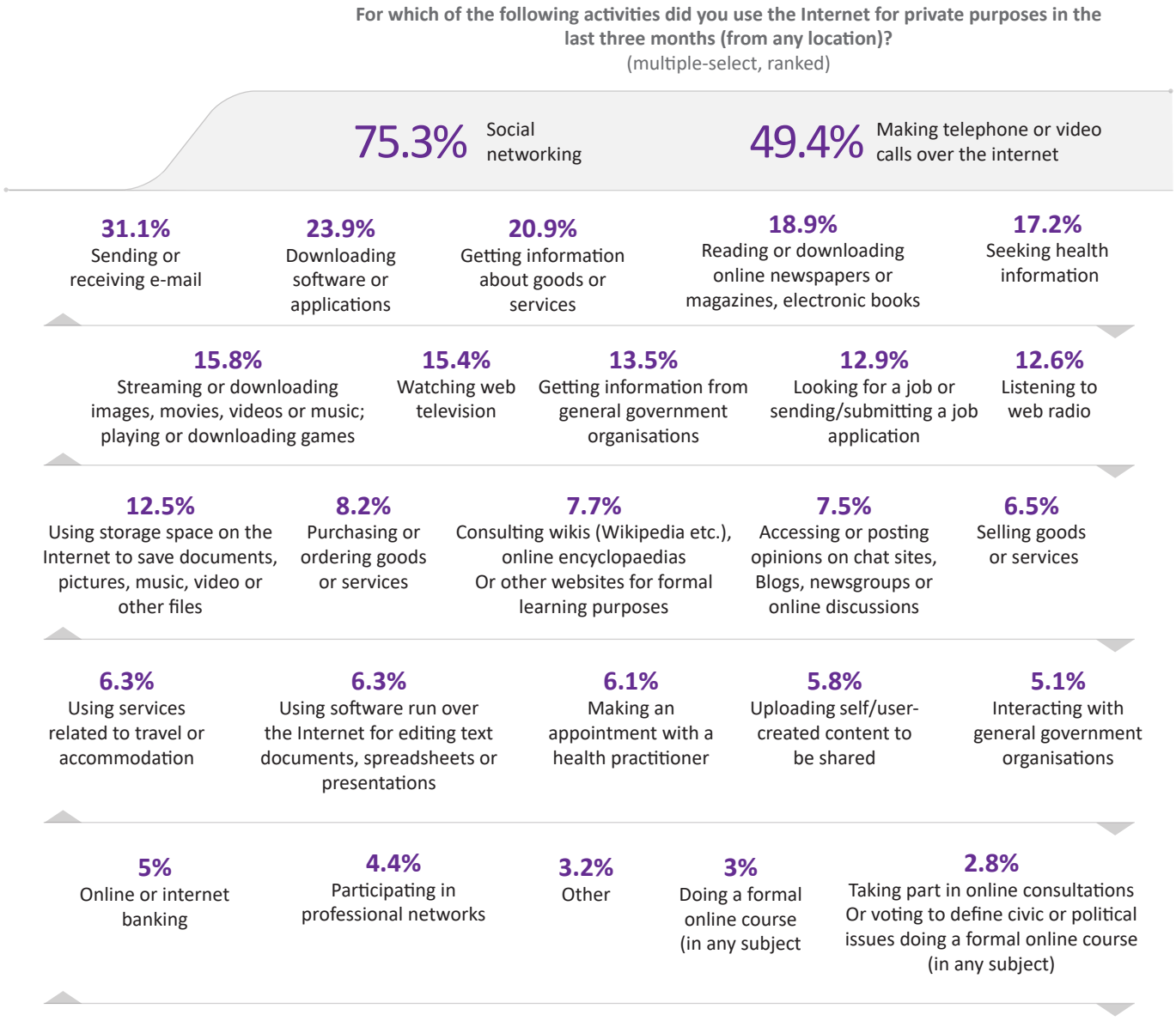


Figure 130: Individuals' internet activities for private purpose in the previous three months

Individuals that used the internet were also asked if they had used a wide range of internet-connected personal devices for private purposes. Most individuals (90.9%) that had used the internet indicated that they had not used any internet-connected devices. Figure 130 shows that only 7.3% individuals said they used a smart watch, fitness band, connected goggles or headsets, safety trackers, internet-connected accessories or internet-connected clothes or shoes. The second category, with only 2.7% users, was internet-connected devices for monitoring blood pressure or blood sugar levels, body weight or health and medical care. There is very limited use of internet–connected personal devices for private use, demonstrating that the market for such devices is still nascent in the country.

Barriers to Internet Use

The survey asked individuals that had used the internet to identify factors that limited their use of the internet (barriers). Overall, 'the internet is too expensive to use', or cost, emerged as the most-cited barrier (66.2%), followed by 'the internet is very slow', or speed (59.7%), as presented in Figure 131. These were the top two barriers cited in the 2017/18 edition of the survey, indicating that the government still has work to do in terms of addressing the high cost and slow speed of the internet in the country.

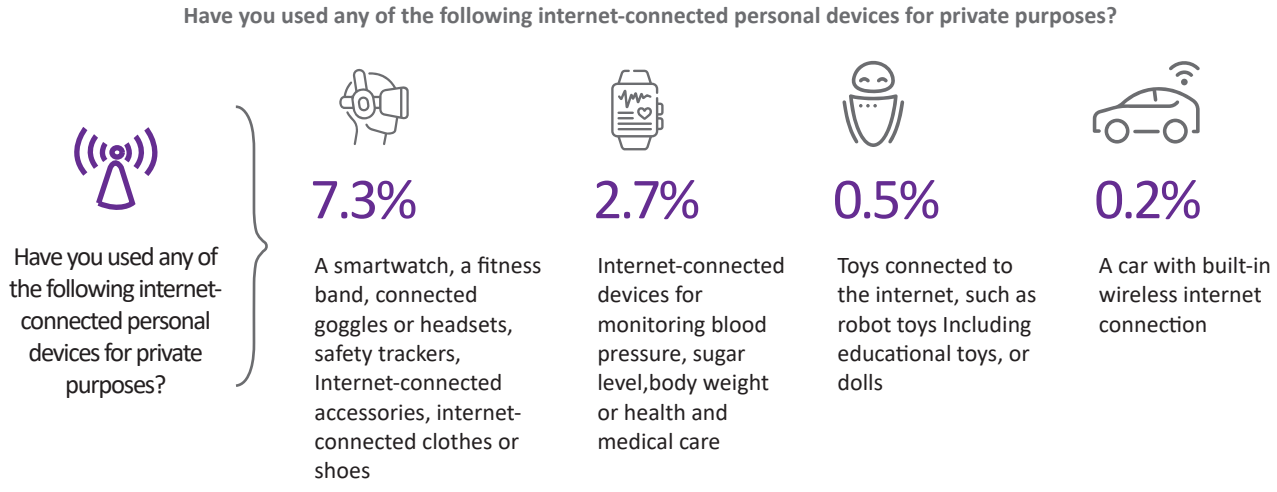


Figure 131: Individuals' use of internet-connected personal devices for private purposes

By location, more individuals in rural areas said that 'the internet is very slow' compared to counterparts in urban areas (66.5% vs. 54.8%, respectively) and that 'few people to communicate with via the internet' (9.9% vs. 4.3%, respectively). Conversely, more individuals in urban areas complained more about lack of local language content (7.0% vs. 1.0%, respectively) and lack of interesting content for them (6.5% vs. 0.7%, respectively).

By gender, more female individuals highlighted the expensive cost of the internet as a barrier compared to their male counterparts (67.5% vs. 65.2%, respectively). Other barriers cited by more female compared to male individuals included lack of interesting content (6.3% vs. 2.2%) and finding the internet difficult to use (3.9% vs. 0.8%), as indicated in Figure 133.

Conversely, more male compared to female individuals complained about few people to communicate with via the internet (8.6% vs. 4.2% respectively) and worries about viruses/malware (10.9% vs. 7.8%, respectively).

What is your main limitation for your use of the internet?
(multiple-select, ranked by all individuals)

The internet is too expensive to use	The internet is very slow	Lack of time	Other	Worried about getting virus/ malware	Few people to communicate with via the internet
Rural: 66.2%	**Rural:** 66.5%	**Rural:** 17.1%	**Rural:** 17.4%	**Rural:** 9.5%	**Rural:** 9.9%
Urban: 66.2%	**Urban:** 54.8%	**Urban:** 20.6%	**Urban:** 4.5%	**Urban:** 9.5%	**Urban:** 4.3%
Total: 66.2%	**Total: 59.7%**	**Total: 19.1%**	**Total: 10%**	**Total: 9.5%**	**Total: 6.6%**

Lack of local language content	There is no interesting content for me	Worried about surveillance/ Privacy invasion	I find it difficult to use	Someone restricting the use (e.g. family, spouse, parents)	None
Rural: 1%	**Rural:** 0.7%	**Rural:** 2.6%	**Rural:** 2.2%	**Rural:** 0.8%	**Rural:** 3%
Urban: 7%	**Urban:** 6.5%	**Urban:** 3.8%	**Urban:** 1.8%	**Urban:** 0%	**Urban:** 1.7%
Total: 4.5%	**Total: 4.1%**	**Total: 3.3%**	**Total: 2.4%**	**Total: 1.4%**	**Total: 4%**

Figure 132: Limitations to individual Internet use by location

What is your main limitation for your use of the internet?
(multiple-select, ranked by all individuals)

The internet is too expensive to use	The internet is very slow	Lack of time	Other	Worried about getting virus/ malware	Few people to communicate with via the internet
Female: 67.5%	**Female:** 59.1%	**Female:** 18.5%	**Female:** 6.6%	**Female:** 7.8%	**Female:** 4.2%
Male: 65.2%	**Male:** 60.2%	**Male:** 19.6%	**Male:** 12.7%	**Male:** 10.9%	**Male:** 8.6%
Total: 66.2%	**Total: 55.7%**	**Total: 19.1%**	**Total: 10%**	**Total: 9.5%**	**Total: 6.6%**

Lack of local language content	There is no interesting content for me	Worried about surveillance/Privacy invasion	I find it difficult to use	Someone restricting the use (e.g. family, spouse, parents)	None
Female: 5.7%	**Female:** 6.3%	**Female:** 4.2%	**Female:** 3.9%	**Female:** 0.8%	**Female:** 4.1%
Male: 3.4%	**Male:** 2.2%	**Male:** 2.6%	**Male:** 0.8%	**Male:** 1.8%	**Male:** 2.2%
Total: 4.5%	**Total: 4.1%**	**Total: 3.3%**	**Total: 2.2%**	**Total: 0%**	**Total: 3%**

Figure 133: Limitations to individual Internet use by gender

Satisfaction with Internet Services

The study asked individuals that had used the internet for feedback on their satisfaction in relation to various internet service characteristics. Figure 134 shows that, overall, less than half (48.2%) of the individuals were either satisfied or very satisfied with the internet services they received. Individual characteristics for which over half the individuals were either satisfied or very satisfied were the reliability of the internet service (50.4%) and the speed of the internet service (51%). Most individuals were either dissatisfied or very dissatisfied with the cost of their internet service (60.7%).

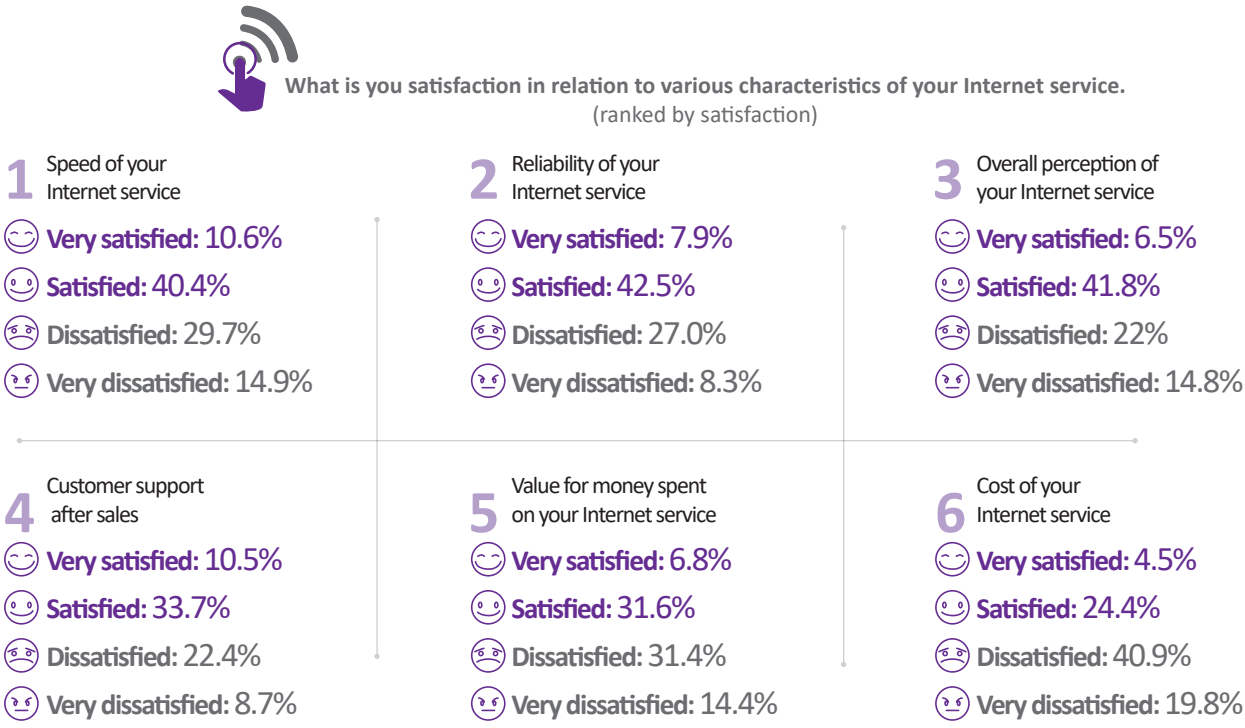


Figure 134: Individual satisfaction with different Internet service characteristics

Non-users of the Internet

The survey collected data on reasons for not using the internet amongst individuals that reported not using the internet. 'Do not know how to use it' (or lack of knowledge or skills) was the major reason for not using the internet (36.7%), followed by those that do not know what the internet is (20%), as shown in Figure 135 and Figure 136.

From a location perspective, the rural-urban gap was widest for 'do not know how to use it' (41.7% and 36.7%, respectively) and 'don't know what internet is' (23.2% and 20%, respectively).

From a gender perspective, the female-male gap was marginal for most reasons except for 'do not know how to use it' (41.7% and 31.1%, respectively) and 'don't know what internet is' (21.5% and 18.3%, respectively).

What are the reasons for not having used the Internet?
(multiple-select, ranked by all individuals)

Do not know how to use it	Don't know what Internet is	Cost of Internet use is too high	Do not need the Internet (not useful, not interesting)	Do not have internet-enabled Device/smartphone	Internet service is not available in the area
Rural: 41.7%	**Rural:** 23.2%	**Rural:** 18.6%	**Rural:** 10.9%	**Rural:** 6.8%	**Rural:** 4%
Urban: 36.7%	**Urban:** 20%	**Urban:** 19.1%	**Urban:** 11.1%	**Urban:** 7.1%	**Urban:** 3.4%
Total: 36.7%	**Total: 20%**	**Total: 19.1%**	**Total: 11.1%**	**Total: 7.1%**	**Total: 3.4%**

Lack of local content	Not allowed to use the Internet (service charges, etc.)	Other	Privacy or security concerns	Cultural reasons
Rural: 2%	**Rural:** 1.9%	**Rural:** 1.4%	**Rural:** 0.3%	**Rural:** 0.1%
Urban: 2.1%	**Urban:** 2.1%	**Urban:** 1.5%	**Urban:** 0.3%	**Urban:** 0.2%
Total: 2.1%	**Total: 1.9%**	**Total: 1.5%**	**Total: 0.3%**	**Total: 0.1%**

Figure 135: Reasons for Individuals that did not access the Internet by location

What are the reasons for not having used the Internet?
(multiple-select, ranked by all individuals)

Do not know how to use it	Don't know what Internet is	Cost of Internet use is too high	Do not need the Internet (not useful, not interesting)	Do not have internet-enabled Device/smartphone	Internet service is not available in the area
Female: 41.7%	**Female:** 21.5%	**Female:** 19.1%	**Female:** 11%	**Female:** 7.1%	**Female:** 2.6%
Male: 31.1%	**Male:** 18.3%	**Male:** 19.3%	**Male:** 10%	**Male:** 6.6%	**Male:** 4.3%
Total: 36.7%	**Total: 20%**	**Total: 19.1%**	**Total: 11.1%**	**Total: 7.1%**	**Total: 3.4%**

Lack of local content	Not allowed to use the Internet (service charges, etc.)	Other	Privacy or security concerns	Cultural reasons
Female: 1.7%	**Female:** 2.6%	**Female:** 1.7%	**Female:** 0.2%	**Female:** 0.3%
Male: 2.6%	**Male:** 1.1%	**Male:** 1.3%	**Male:** 0.3%	**Male:** 0%
Total: 2.1%	**Total: 1.9%**	**Total: 1.5%**	**Total: 0.3%**	**Total: 0.1%**

Figure 136: Reasons for Individuals that did not access the Internet by Gender

6.4 Social Media

The study asked individuals how they accessed their social media network(s). Figure 137 shows that access by smartphone was the most prominent, used by 95.9% of individuals. Neither the gap between rural (93.3%) and urban (97.3%) nor the gap between female (93.8%) and male (97.8%) was wide; still, more urban than rural and more male than female individuals accessed social media using smartphones. Access using desktop computers (5.8%) was the second most prominent method of social media access. By gender, there were 2% females compared to 9.3% males that accessed social media using desktop computers/laptops. By location, there were only 0.7% rural compared to 8.5% urban individuals that accessed social media using desktop computers/laptops.

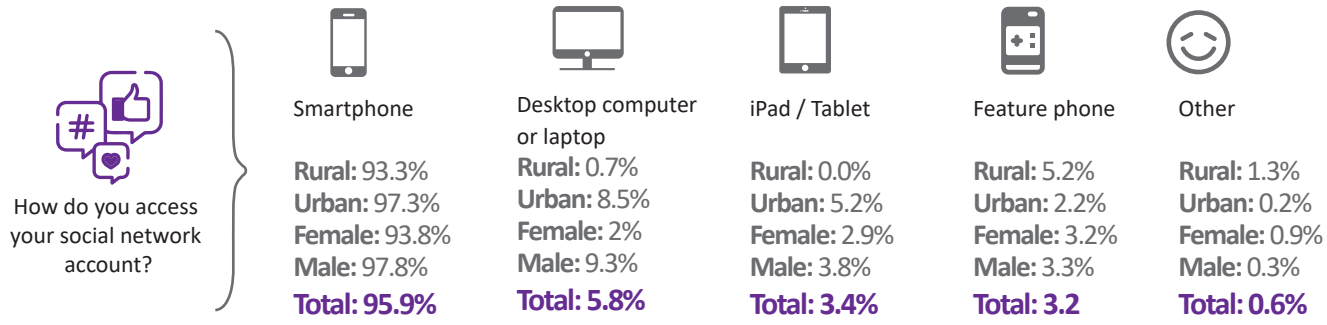


Figure 137: Devices used by individuals to access social media by location and gender

Individuals were also asked about their frequency of using social media/networking sites. Figure 138 shows that over half (56%) of individuals used social media networking sites every day or almost every day. By gender, more females (62.2%) used social media/networking sites every day or almost every day compared to males (50.1%). There was also a gap between rural (50.9%) and urban (58.7%) individuals who used these sites every day or almost every day.

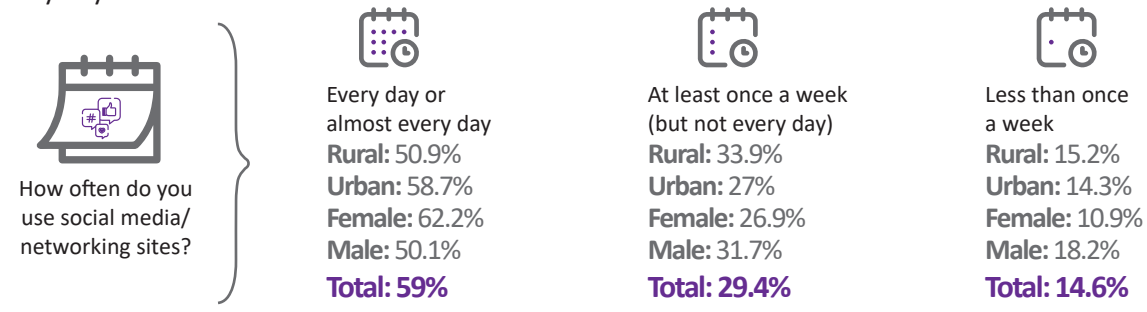


Figure 138: Frequency of individual social media access by location and gender

Individuals that indicated accessing social media/networking sites every day or almost every day were further asked how much time per day they spent doing so. Figure 139 shows that most individuals (61.6%) spent one to six hours on social media/networking sites. The difference by gender is marginal, but by location, more individuals in rural (72.9%) than in urban (56.4%) areas spent one to six hours on social media. Also, more individuals in urban (27.4%) compared to individuals in rural (15.5%) areas spent less than one hour on social media sites.

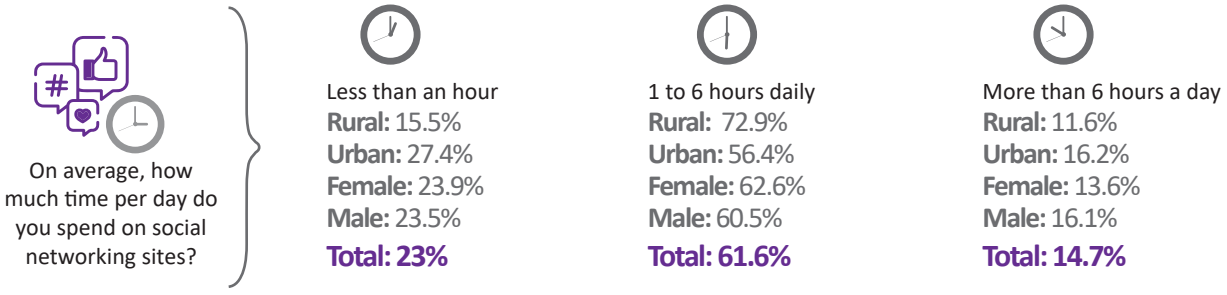


Figure 139: Daily frequency of individual social media access by location and gender

Social Networks

The study asked individuals on which social media/networking sites they had profiles. Social media sites included WhatsApp, Facebook, Twitter, Instagram, TikTok, LinkedIn, Pinterest and YouTube. Figure 153 shows that the three top social platforms were WhatsApp, mentioned by 94.8% of individuals; Facebook, mentioned by 77.7% of individuals; and YouTube, mentioned by 48.3% of individuals. As shown in Figure 140, by location, there were no differences between urban and rural individuals for those who had YouTube profiles. For WhatsApp, there were more urban individuals (99%) compared to rural individuals (90.6%). Facebook was also used by more urban (80%) than rural (76.5%) individuals. The gap between males and females is marginal.

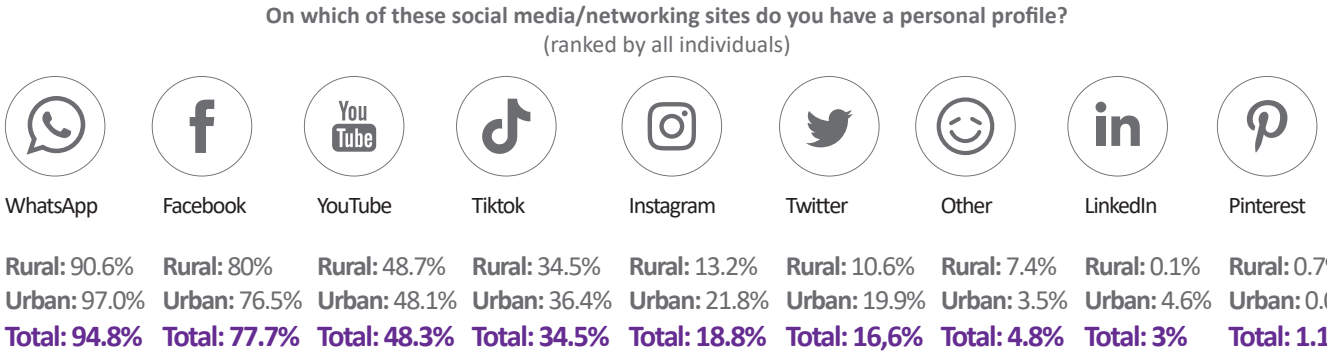


Figure 140: Social networks on which individuals had profiles by location

Social Connections

The survey asked individuals about the size of their social networks. Figure 141 shows that most individuals (33.5%) were in contact with 11 to 50 people on their main social network profile, while 29.5% were in contact with 51 to 100 people.

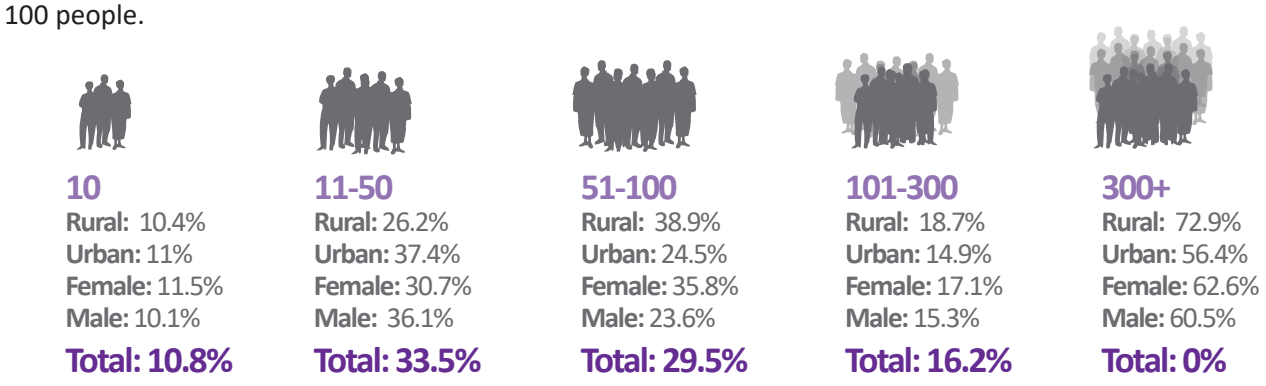


Figure 141: Individual social network size by location and gender

By location, for the social network size of 11 to 50 people, there were fewer individuals in rural areas (26.7%) compared to individuals in urban areas (37.4%), and for the social network size of 51 to 100 people, there were more individuals in rural areas (38.9%) compared to individuals in urban areas (24.5%). By gender, for the social network size of 11 to 50 people, there were fewer females (30.7%) compared to males (36.1%), and in the category with 51 to 100 people, there were more females (35.8%) compared to males (23.6%).

Use for Social Networks

Individuals were asked what they used social media for. Figure 142 shows the most outstanding use being chatting, by 90.6% of the individuals. By location, there were more individuals in urban (94.4%) compared to individuals in rural (83.4%) areas. Those making calls, staying in contact with friends and family and making new friends ranged between 53% and 57%. The gaps between urban and rural individuals were marginal. By gender – except for staying close with friends, reported by more females (62.3%) compared to males (50.2%) – gender differences in all cases were marginal

Why does this household not have a working internet connection?
(multiple-select, ranked by all households)

Chatting	Making calls	Staying in contact with friends and family	Making new friends	Sharing videos/ pictures/music
Rural: 83.6%	**Rural:** 52.1%	**Rural:** 54.4%	**Rural:** 53.9%	**Rural:** 47.6%
Urban: 94.4%	**Urban:** 58.4%	**Urban:** 56.9%	**Urban:** 55.4%	**Urban:** 45%
Total: 90.6%	**Total: 56.2%**	**Total: 56%**	**Total: 54.9%**	**Total: 47.6%**

Reading news	Playing games	Making professional and business contacts	Looking for educational content	Getting opinions/sharing your experience
Rural: 35.6%	**Rural:** 13.5%	**Rural:** 14%	**Rural:** 9.8%	**Rural:** 3.9%
Urban: 34.9%	**Urban:** 27.5%	**Urban:** 18.7%	**Urban:** 20%	**Urban:** 12.9%
Total: 35.2%	**Total: 22.7%**	**Total: 17.1%**	**Total: 16.5%**	**Total: 9.8%**

Following local politicians	Following government social media pages	Sharing my produced content	Marketing your products/services	Other
Rural: 5%	**Rural:** 1.8%	**Rural:** 1.4%	**Rural:** 2.9%	**Rural:** 2%
Urban: 12.2%	**Urban:** 12.2%	**Urban:** 10%	**Urban:** 8.9%	**Urban:** 2.6%
Total: 9.7%	**Total: 8.6%**	**Total: 7%**	**Total: 6.8%**	**Total: 2.4%**

Figure 142: Individual use of social media by location

6.5 E-Commerce Services

The survey collected information on individual e-commerce services and experiences. Attributes included types of goods and services purchased or sold, location of sellers, delivery and payment methods, frequency and costs of transactions and awareness of online consumer rights as well as challenges encountered.

Overall, 9% of all individuals that reported using the internet (10.3%) had made an online purchase within the previous 12 months. By location, more individuals in urban areas (13.4%) had made an online purchase in the previous 12 months compared to individuals in rural areas (2.8%), and by gender, 11.6% of male individuals had made an online purchase in the previous 12 months compared to 5.7% of female individuals, as highlighted in Figure 143. This shows an improvement compared to 2017/18, when only 1.7% of internet users reported having ever made any online purchase.

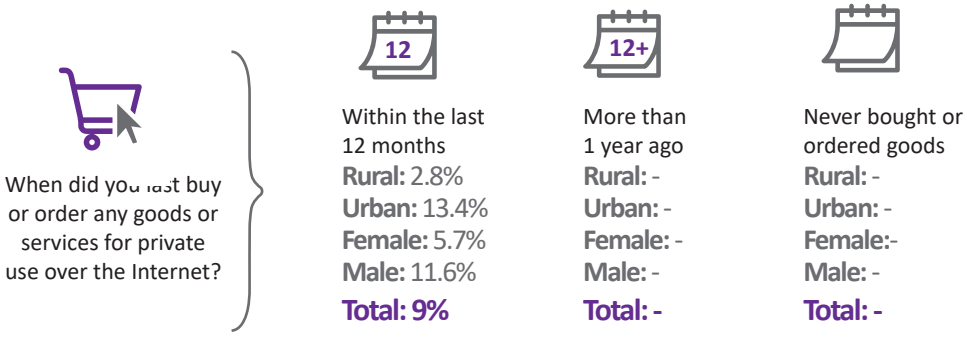


Figure 143: Individual online purchases in previous 12 months by location and gender

In terms of the frequency of online purchases, most individuals (64.9%) indicated having made purchases one to two times in the previous 12 months, as shown in Figure 144. By location, there were more rural (76.6%) than urban (63.1%) individuals. By gender, there were more female than male individuals (69.6% vs. 63%, respectively). Those who indicated having made purchases or received services three to five times were 19.9%. By location, there were more urban (20.3%) than rural (17.9%) individuals though the gap was marginal. By gender, there were more female (27.6%) compared to male individuals (16.9%). In both categories, females outnumbered males in terms of having made purchases or bought services.

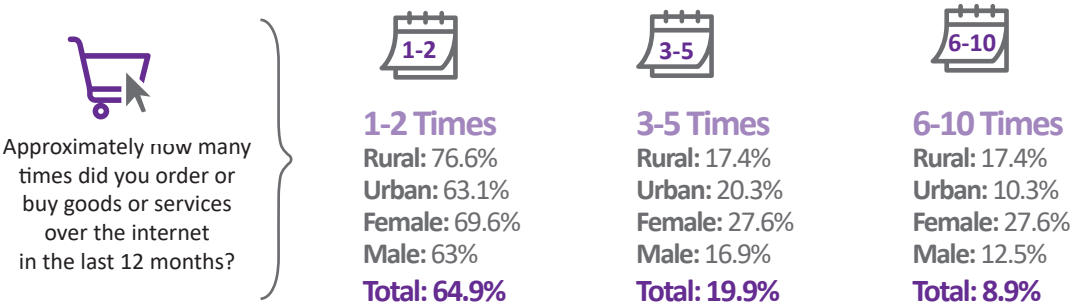


Figure 144: Individual frequency of online purchases by location and gender

Types of Goods and Services

Individuals that had made online purchases in the previous 12 months mostly bought from sellers in Uganda (96.7%). Individuals that had made online purchases mostly bought clothing, footwear, sporting goods or accessories (39%), followed by food, groceries, alcohol or tobacco (24%) and household goods (22.7%), as indicated in Figure 145.

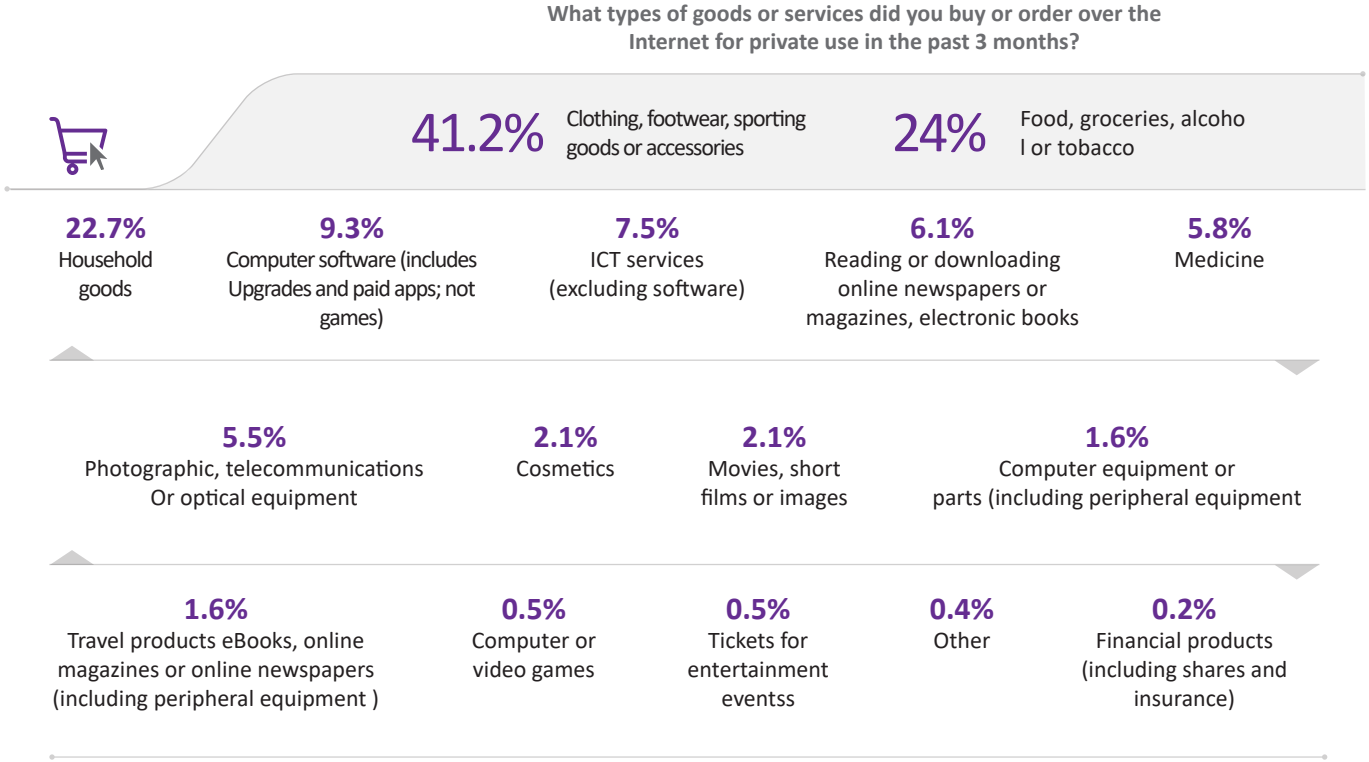


Figure 145: Type of goods and services purchased by individuals in the previous 12 months

Payments

In terms of expenditure, on average, most e-commerce users (63.4%) spent less than UGX 180,000 on online purchases in the previous 12 months, as indicated in Figure 146.

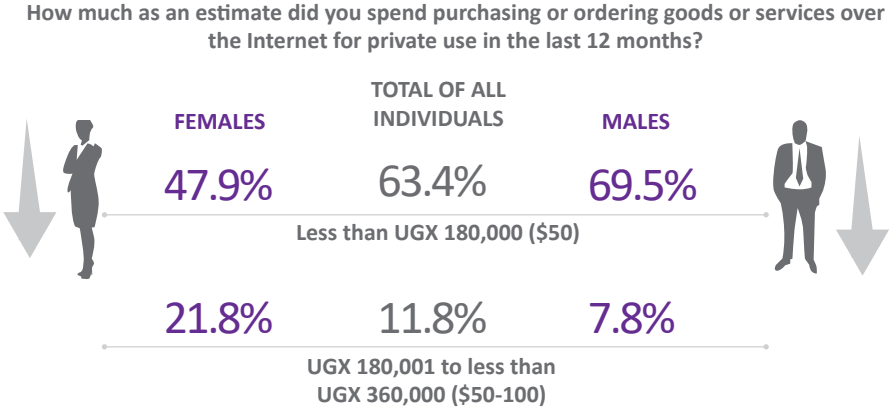


Figure 146: Amount spent on online purchases by individuals in the previous 12 months by gender

In terms of payment method, most e-commerce users paid cash on delivery/pickup (51.4%), followed by using a mobile money account (43%) to pay for online purchases in the previous 12 months as indicated in Figure 147.

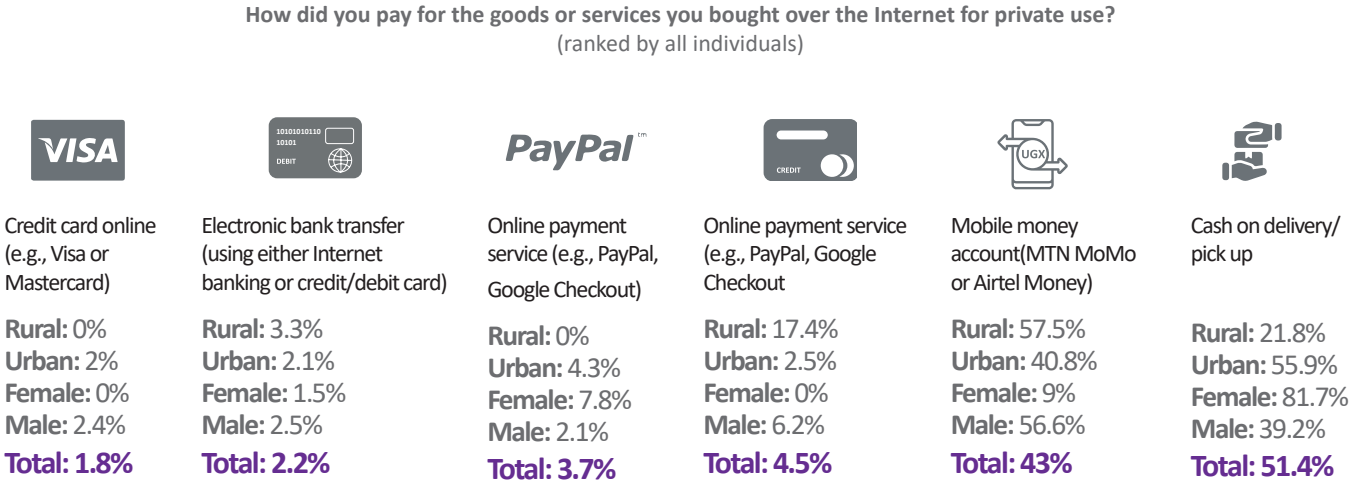


Figure 147: Payment methods used for online purchases by individuals in the previous 12 months

Considering location, e-commerce users in rural areas relied mostly on mobile money as the predominant payment method compared to their counterparts in urban areas (57.5% vs. 40.8%, respectively). E-commerce users in urban areas relied mostly on paying cash on delivery/pickup compared to users in rural areas (55.9% vs. 21.8%, respectively).

Considering gender, female e-commerce users used mainly cash on delivery/pickup as the predominant payment method for online purchases compared to their male counterparts (81.7% vs. 39.2%, respectively), and male e-commerce users relied mostly on mobile money to pay for online purchases compared to their female counterparts (56.6% vs. 9%, respectively).

Individuals that purchased goods and services over the internet received them in various ways – direct delivery to buyer using a boda-boda courier (72%), picking up from point of sale or service point (18.9%), direct delivery to the buyer using regular postal services (11.2%) and other forms of delivery (4.7%) or online/electronic delivery (1.7%).

Perceptions and Challenges

The survey asked e-commerce users about their awareness of their rights when they bought goods or services online. Only three out of 10 e-commerce users (31.6%) indicated awareness of any rights available to them when they buy goods or services online.

When asked about the advantages of buying goods and services online, all e-commerce users cited saving time and effort (100%). This was followed by the convenience it provides (56.6%) and good discounts/lower prices (45.3%), as indicated in Figure 148.

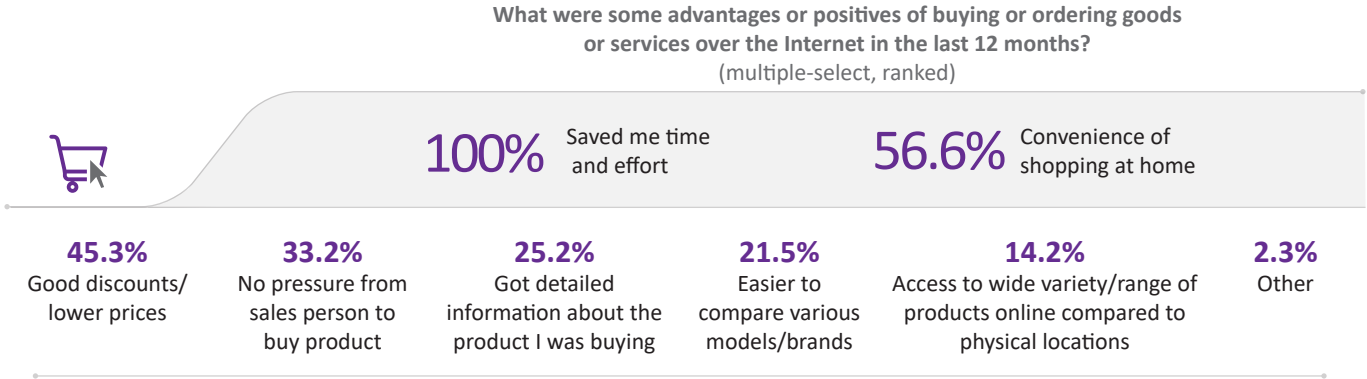


Figure 148: Advantages reported by individual e-commerce users

Four out of 10 individuals (39.8%) that had bought goods or services online in the previous 12 months, reported never having encountered any challenges when buying goods or services online. Figure 149 shows that among individuals that reported encountering challenges, delayed deliveries (26.3%) and faulty or damaged goods (16.7%) were the most common.

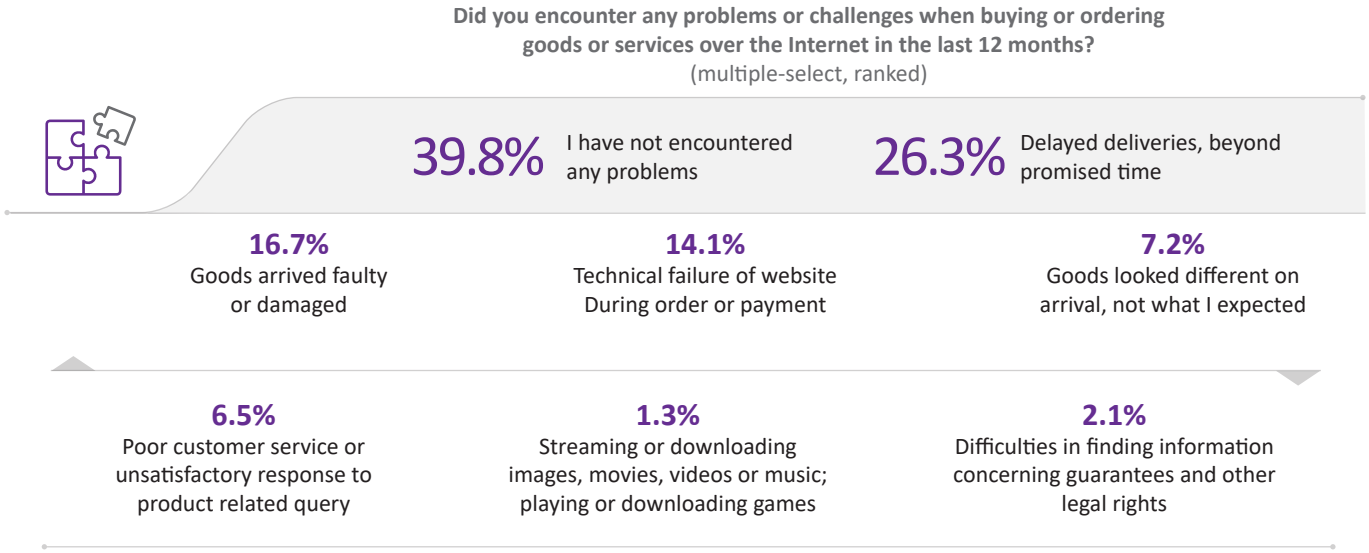


Figure 149: Challenges encountered by individual e-commerce users

Online Sellers

The majority of individual internet users (91.1%) reported that they had not advertised or sold any goods or services over the internet in the previous 12 months. Individuals that reported having advertised or sold any goods or services over the internet in the previous 12 months were asked about the goods or services they had sold. The 'clothing, footwear, sporting goods or accessories' category still emerged as most common, at 31.6%.

Individuals were asked how they received payment for the goods or services they had sold over the internet in the previous 12 months. The majority (83.7%) got paid using cash on delivery, followed by those paid using mobile money (31.4%).

The survey asked individuals about the challenges they encountered while selling online. Figure 150 shows that 27.7% of the individuals that had sold online indicated that sales had been below their expectations. Those who cited logistics challenges in delivering products to customers were 27.5%, while those who cited security issues were 24.5%.

Figure 150: Challenges encountered by individual online sellers

Non E-commerce Users

The majority of internet users (87.5%) reported that they have never made any online order or purchase. The survey collected their reasons for not purchasing any goods or services online, and these are summarised in Figure 151. Lack of confidence, knowledge or skills was cited as the most common reason (35.7%), followed by preference to shop in person (35.5%) and not being interested (32.9%).

Figure 151: Individual reasons for not purchasing any online goods/services

6.7 Digital Payments

The survey collected information on individuals' access to digital financial services and digital payment experiences. Some of the attributes explored included digital channels used, types of transactions and amounts involved as well as challenges encountered.

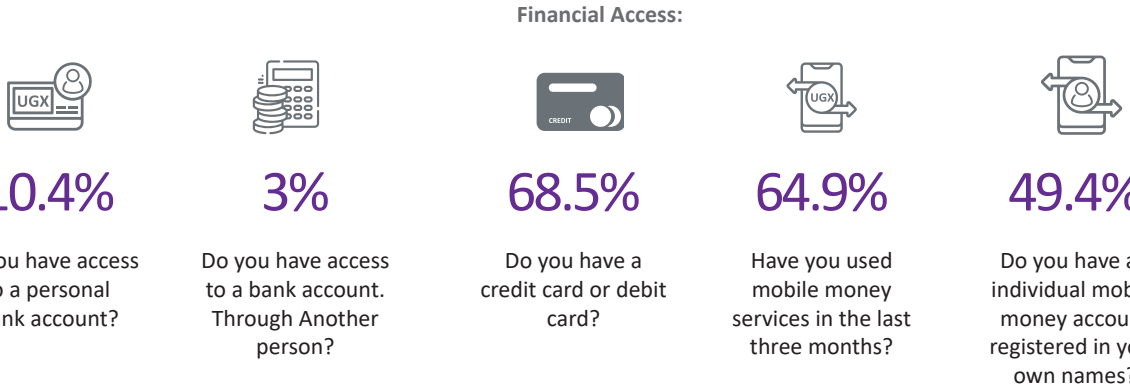


Figure 152: Individual access to different financial services

Access to Financial Services

The study asked individuals about the types of financial access they had. Figure 152 shows that very few individuals (10.4%) had access to a personal bank account. Among the individuals that lacked access to a personal bank account (89.4%), only 3% indicated that they had access to a bank account through another person. Among the individuals that had access to a personal bank account, only 68.5% reported having a debit or credit card.

Overall, 64.9% of all individuals had used mobile money services in the previous three months, and close to half (49.4%) had registered mobile money accounts in their own names, underscoring the high impact of mobile money on an otherwise largely unbanked population. The immediate future, especially unlocking access to financial services for the overwhelming percentage of the population, is clearly going to be digital.

Figure 153 shows individuals with registered mobile money accounts disaggregated by sub-regions. The Kampala and Elgon sub-regions had the largest number of individuals with registered mobile money accounts (63.1% and 63%, respectively), and the Karamoja and Busoga sub-regions had the lowest number of individuals with registered mobile money accounts (22% and 33.8%, respectively).

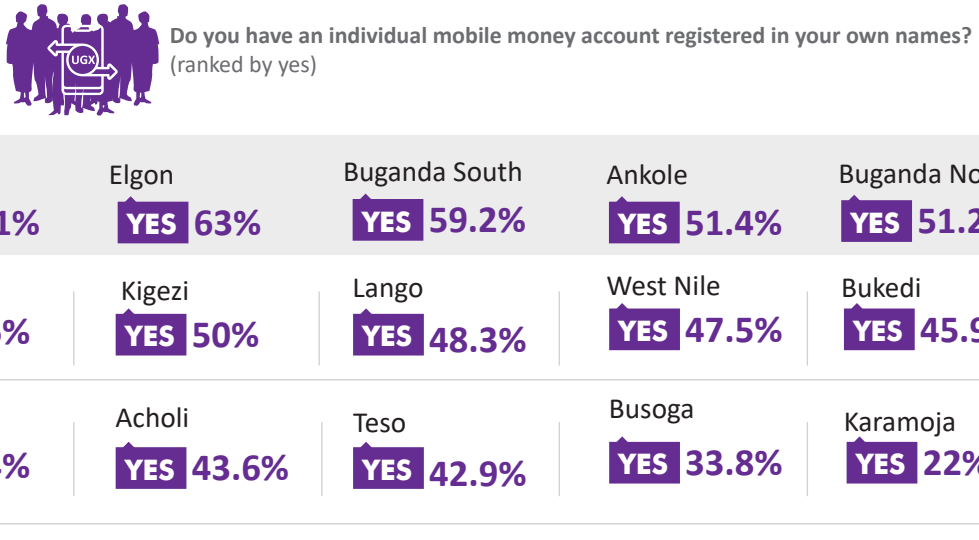


Figure 153: Individuals' access to registered mobile money accounts by sub-region

Individuals were asked what other digital payment instruments they had used in the previous three months. Instruments mentioned included debit and credit cards online, mobile banking platforms, online payment services and internet banking. Figure 154 shows that debit cards online (1.6%) and credit cards online (1.6%) were the two other digital instruments most mentioned. By location, there were more urban (3.3%) than rural (1%) individuals that used debit cards online as well as credit cards online (3% vs. 1.1%, respectively) compared to rural users.

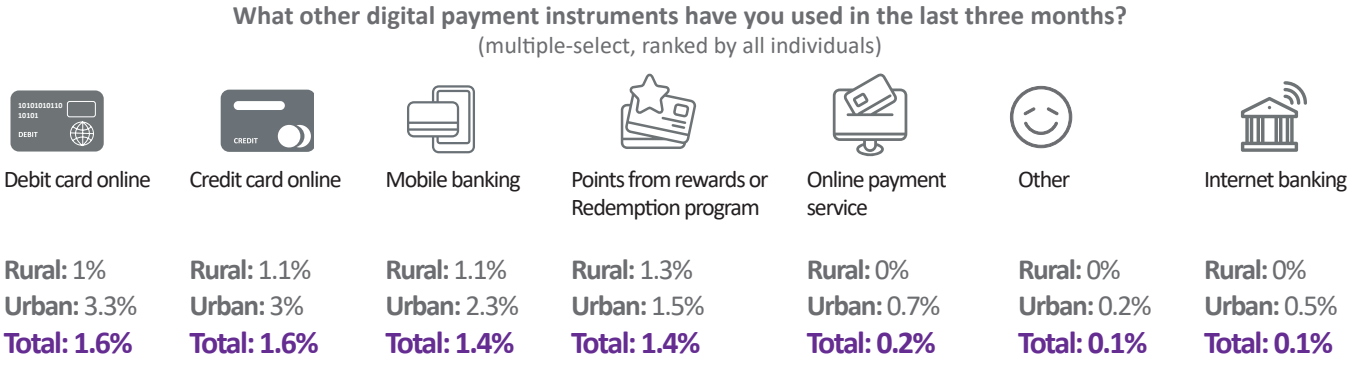


Figure 154: Individuals' use of mobile money by location

Use of Mobile Money

The study asked individuals about the various activities and transactions they had used mobile money for. Figure 155 shows that most individuals (93.6%) used mobile money for sending and receiving money from friends and family. There were no gaps between rural and urban individuals in terms of sending and receiving money from friends and family. The second most frequent use was topping up airtime or purchasing voice and data bundles, with 75.4% individuals, and with more urban (81.9%) compared to rural individuals (72.4%).

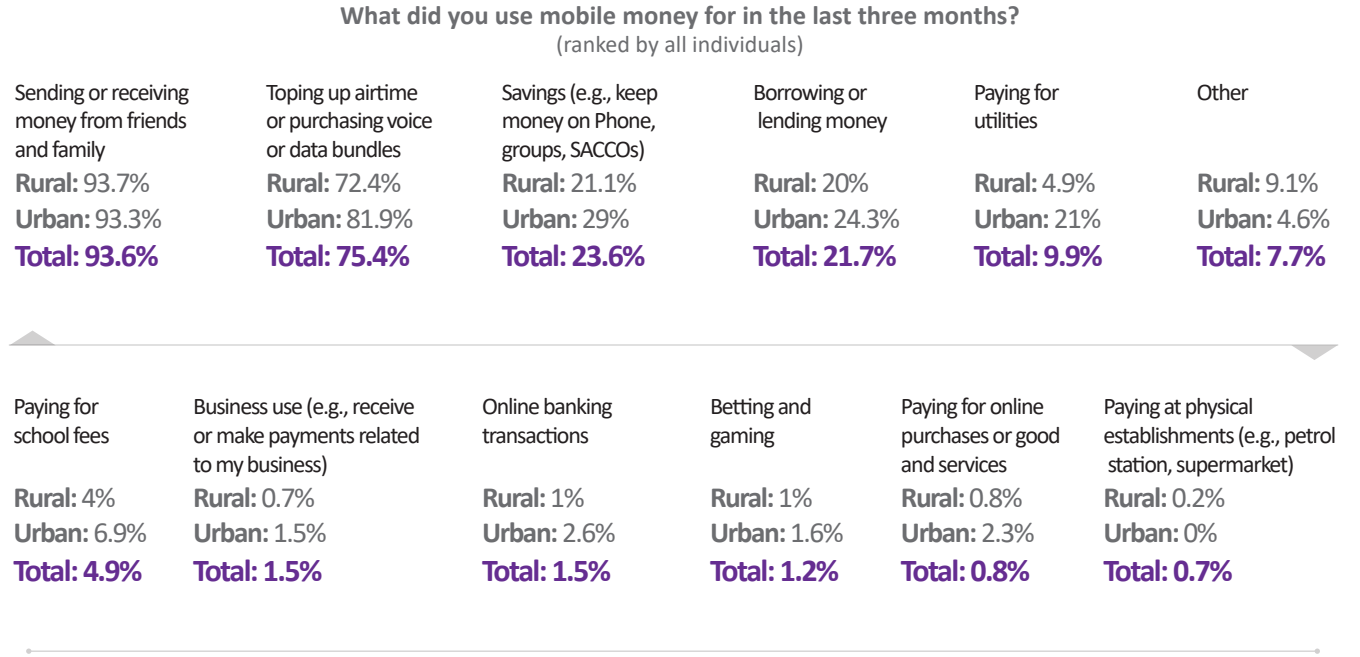


Figure 155: Individuals' use of mobile money by location

Figure 156 shows that by gender, there were more males (96%) compared to females (91.3%) sending and receiving money to/from friends and family. Conversely, for topping up airtime or purchasing voice and data bundles, there were more males (80.5%) compared to females (70.5%).

What did you use mobile money for in the last three months?
(ranked by all individuals)

Sending or receiving money from friends and family	Toping up airtime or purchasing voice or data bundles	Savings (e.g., keep money on Phone, groups, SACCOs)	Borrowing or lending money	Paying for utilities	Other
Female: 91.3%	**Female:** 70.5%	**Female:** 19.3%	**Female:** 19.3%	**Female:** 9.6%	**Female:** 7.5%
Male: 96%	**Male:** 80.5%	**Male:** 27.6%	**Male:** 24.2%	**Male:** 10.3%	**Male:** 7.8%
Total: 93.6%	**Total: 75.4%**	**Total: 23.6%**	**Total: 21.7%**	**Total: 9.9%**	**Total: 7.7%**

Paying for school fees	Business use (e.g., receive or make payments related to my business)	Online banking transactions	Betting and gaming	Paying for online purchases or good and services	Paying at physical establishments (e.g., petrol station, supermarket)
Female: 3.5%	**Female:** 0.8%	**Female:** 0.9%	**Female:** 0.1%	**Female:** 0.7%	**Female:** 0.1%
Male: 6.4%	**Male:** 2.3%	**Male:** 2.1%	**Male:** 2.3%	**Male:** 1%	**Male:** 0.4%
Total: 4.9%	**Total: 1.5%**	**Total: 1.5%**	**Total: 1.2%**	**Total: 0.8%**	**Total: 0.2%**

Figure 156: Individuals' use of mobile money by gender

Transaction Amounts

Individuals were asked how much they usually sent and how much they usually received in one transaction. Figure 157 shows that those sending up to UGX 5,000 were 32.4%. The majority (44.9%) sent within the range of UGX 5,001–30,000, while those who sent UGX 30,001–60,000 were 11.5%. The gap between urban and rural individuals in regard to sending transactions was marginal. By location, for the range up to UGX 5,000, there were more rural (34.7%) compared to urban (27.3%) individuals. For the range between UGX 5,001 and 30,000, there were more urban (48.8%) compared to rural (43.1%) individuals.

On average, how much money do you usually send/receive in one transaction?

0-5,000 UGX	5,001-30,000 UGX	30,001-60,000 UGX	60,001-125,000 UGX
Sending: 32.4%	**Sending:** 44.9%	**Sending:** 11.5%	**Sending:** 3.4%
Receiving: 18.6%	**Receiving:** 52.1%	**Receiving:** 14%	**Receiving:** 6.6%

125,001-250,000 UGX	250,001- 500,000 UGX	500,001- 1,000,000 UGX	100,001+ UGX
Sending: 1.4%	**Sending:** 1.7%	**Sending:** 0.1%	**Sending:** 4.6%
Receiving: 2%	**Receiving:** 1.7%	**Receiving:** 0.3%	**Receiving:** 4.7%

Figure 157: Individuals' mobile money amounts usually sent/received in one transaction

Figure 157 shows that those receiving up to UGX 5,000 were 18.6%. The majority (52.1%) received within the range of UGX 5,001–30,000. Those who received between UGX 30,001 and 60,000 were 14%. The gaps between urban and rural individuals were marginal.

The study also asked individuals how often they used mobile money. Figure 157 shows that the majority (41.7%) of individuals used mobile money a few times a month (but not weekly) and that close to a quarter (24.9%) used mobile money a few times a week (but not daily).

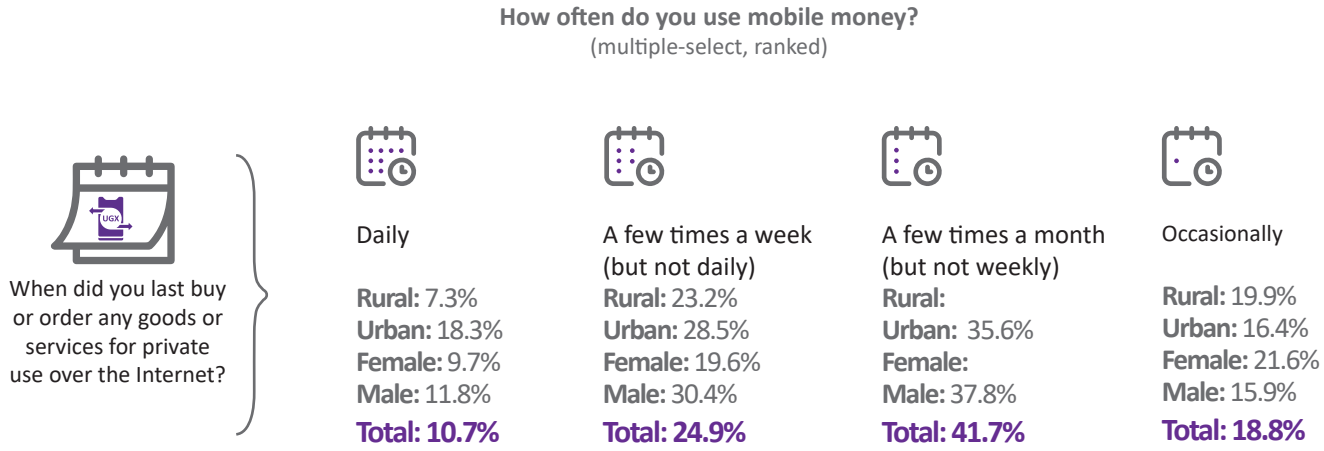


Figure 158: Frequency of mobile money transactions among individuals by location and gender

By location, a higher proportion of individuals in urban areas tend to use mobile money more frequently (e.g. daily or a few times per week) compared to individuals in rural areas. By gender, a higher proportion of male individuals tend to use mobile money more frequently (e.g. daily or a few times per week) compared to female individuals.

Challenges and Perceptions

Individuals were asked about challenges they encountered when using mobile money services in the previous three months. Figure 159 shows that 58% did not encounter any challenges. By location, there were more rural (61.5%) than urban (52%) individuals that reported no challenges. The most common problem mentioned, by 17% of the individuals, was 'mobile money service often down or not available'. The second was 'transaction failed to complete', mentioned by 10.8% of the individuals.

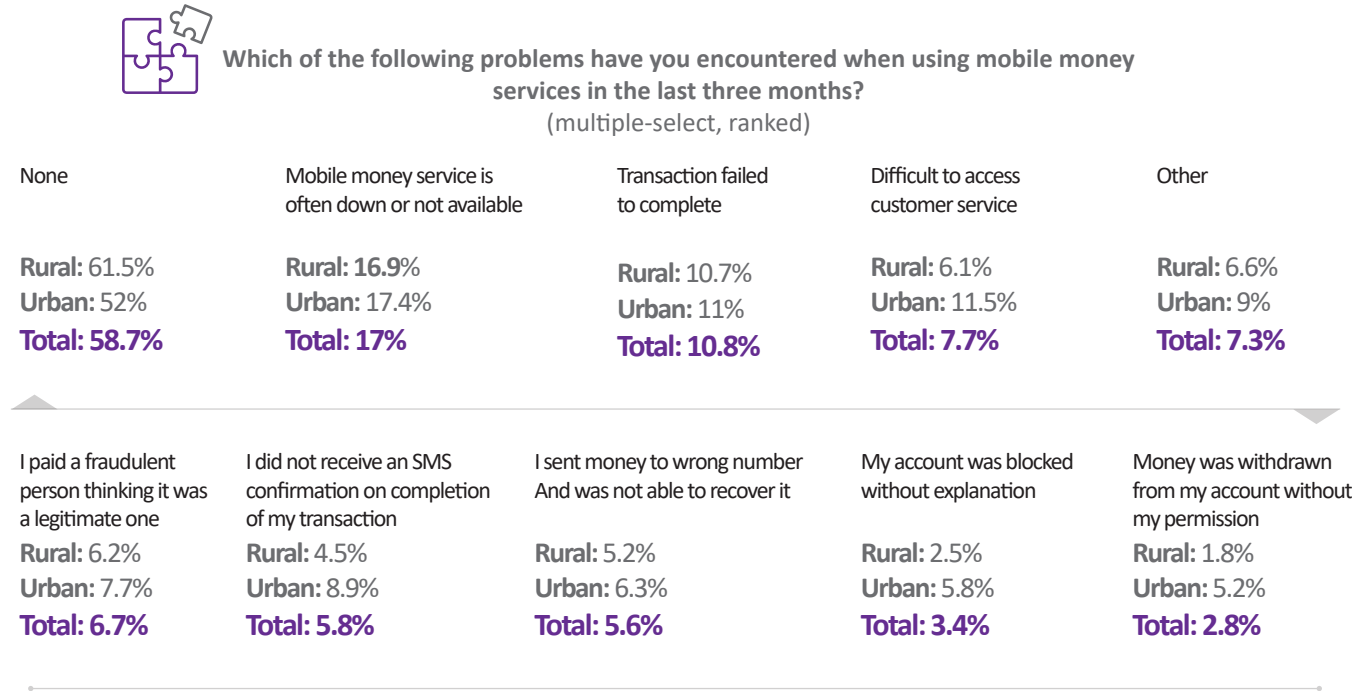


Figure 159: Individuals' challenges encountered using mobile money by location

Interviews with stakeholders corroborated the growing level of fraud reported by individuals, something that experts in the area worry may negate the progress made in terms of financial inclusion.[7]

The biggest gaps in terms of challenges cited by urban and rural individuals related to 'money was withdrawn from my account without my permission' (5.2% vs. 1.8%, respectively) and 'my account was blocked without explanation' (5.8% vs. 2.5%, respectively). These coupled with difficulty in accessing customer service (11.5% vs. 6.1%, respectively) highlight the need for concerted efforts to provide rural mobile money users with more customer support services and channels.

The study explored whether individuals had contacted anyone to resolve their mobile money-related problems. Figure 160 shows that close to one-third of the people (32.6%) had contacted someone about their mobile money problem. By location, rural-urban differences were marginal. By gender, there were more males (40.4%) compared to females (24.5%) who had contacted someone to resolve their mobile money service-related problem.

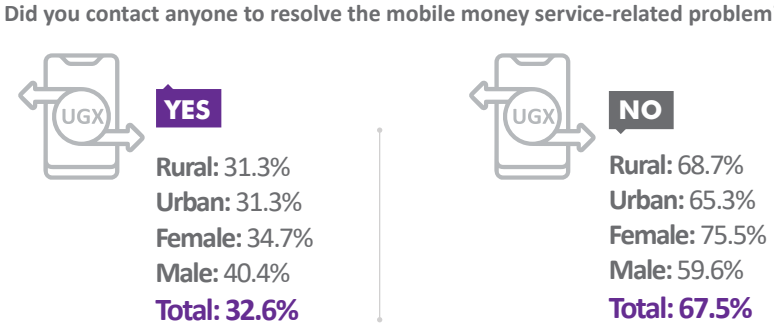


Figure 160: Proportion of individual mobile money users that had contacted someone about their mobile money problem by location and gender

Individuals were asked whom they had contacted to resolve their mobile money service-related problem. Most individuals (93.2%) contacted their mobile money service provider. By location, more rural individuals (97.1%) compared to urban (87%) had contacted the service provider, as indicated in Figure 161.

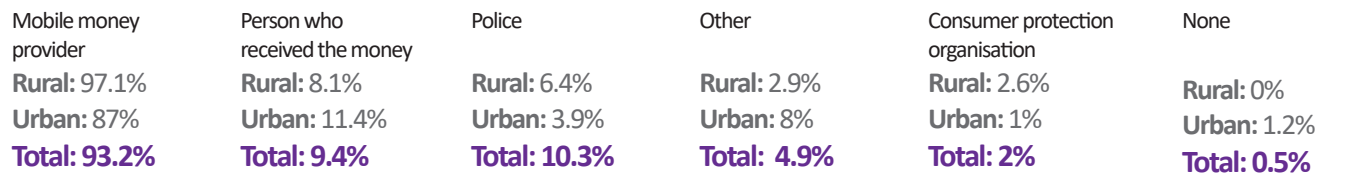


Figure 161: Entities contacts by individual mobile money users about their service problem

Individuals were asked about their reasons for using digital payments. Possible reasons included convenience, safety and security, ease in making transactions, and cost. Figure 162 shows that the majority (58.5%) of individuals cited convenience as the main reason for using digital payments. This was followed by mobile money being safe and secure (29.1%). By location, more urban (68.1%) than rural (53.7%) individuals cited the convenience of mobile money. Similarly, for safety and security, there were more urban (42.6%) compared to rural (22.3%) individuals.

7 https://www.cgap.org/events/mitigating-digital-finance-risks-consumers-sub-saharan-africa

What are the reasons for using digital payments?
(multiple-select, ranked by all individuals)

It is convenient

Rural: 6.2%
Urban: 7.7%
Total: 6.7%

It is safe and secure

Rural: 4.5%
Urban: 8.9%
Total: 5.8%

It is easier to make bank transactions

Rural: 21.1%
Urban: 29%
Total: 23.6%

It is cheaper

Rural: 72.4%
Urban: 81.9%
Total: 75.4%

Other

Rural: 93.7%
Urban: 93.3%
Total: 93.6%

Figure 162: Individuals' reasons for using digital payments by location

The survey explored changes that would encourage individuals to use digital payments more often, and only 10.3% or less indicated they would be encouraged by the suggested changes, as indicated in Figure 132. Fewer individuals responded 'no' to more a reliable internet connection (44.9%) compared to all of the other proposed changes, implying that improving internet reliability could result in greater use of digital payments compared to, for example, simplifying the terms and conditions of service (62.2%).

Would any of the following changes encourage you to use digital payments more often?
(ranked by no)

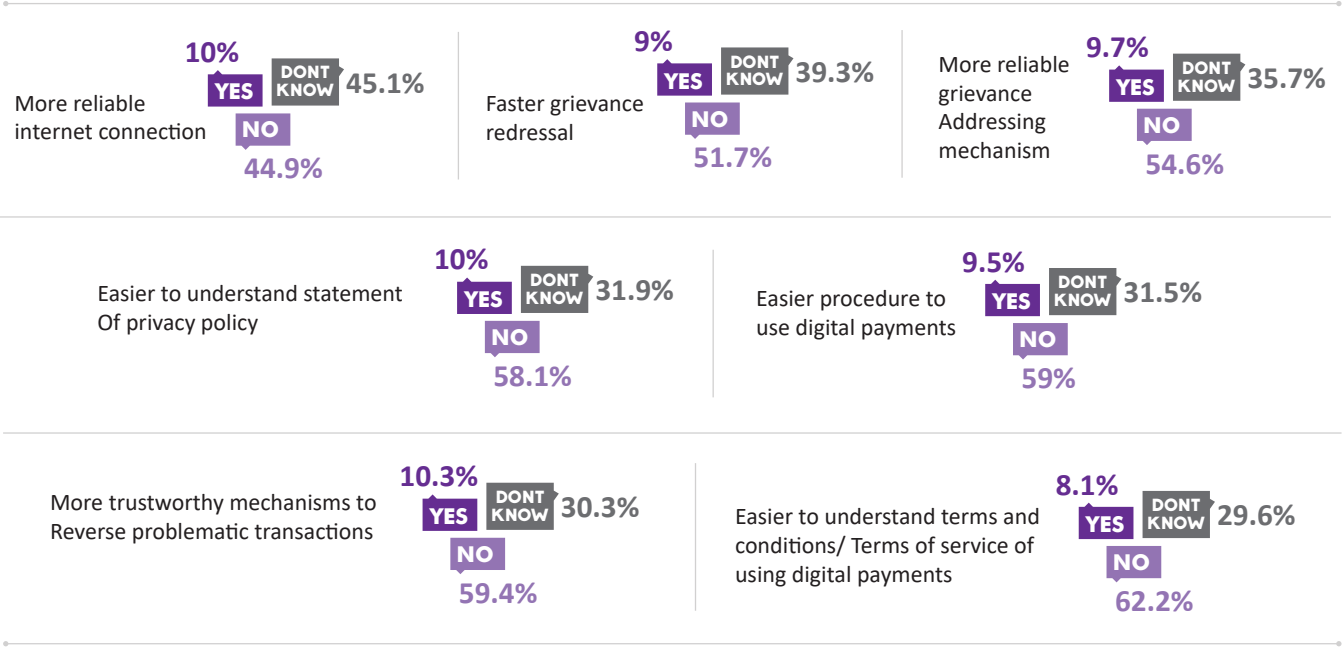


Figure 163: Changes that would encourage more frequent individual mobile money use

Non-users of Digital Payments

Individuals were asked about reasons for not having their own mobile money account. Figure 164 shows that the reason given by the largest proportion (51.5%) of individuals was 'having no national ID', followed by 'I have no phone' (20%) and 'I have no SIM card' (13.9%). This underscores the need to expedite and simplify the processes related to acquiring (and replacing) national IDs and other identifiers that can facilitate digital transactions.

What are the reasons for not having your own mobile money account?
(multiple-select, ranked by all individuals)

I do not have a National ID	I have no Phone	I have no SIM card	Other	Service fee too high	I have never heard/ don't know about mobile money
Rural: 49.9%	**Rural:** 24.3%	**Rural:** 14.1%	**Rural:** 12.9%	**Rural:** 5.1%	**Rural:** 6.6%
Urban: 66.8%	**Urban:** 16%	**Urban:** 15.7%	**Urban:** 9.3%	**Urban:** 8.7%	**Urban:** 3.5%
Total: 55.7%	**Total: 21.4%**	**Total: 11.1%**	**Total: 11.6%**	**Total: 6.4%**	**Total: 5.5%**

I am still too young	I don't want/need	I have no access to mobile network	I do not trust it/fear losing my money	Social / cultural issues
Rural: 3.4%	**Rural:** 3.3%	**Rural:** 0.9%	**Rural:** 0.2%	**Rural:** 0.2%
Urban: 4.9%	**Urban:** 0.9%	**Urban:** 3.1%	**Urban:** 0.9%	**Urban:** 0.2%
Total: 3.9%	**Total: 2.5%**	**Total: 1.7%**	**Total: 0.4%**	**Total: 0.3%**

Figure 164: Individuals' reasons for not having their own mobile money account by location

By location, the first reason, having no National ID, was cited by more individuals in urban areas (66.2%) compared to individuals in rural areas (44.2%). The reason of having no phone was given by more individuals in rural areas (23.1%) compared to individuals in urban areas (14.1%). The third reason, lacking a SIM card, had marginally more individuals in rural areas (15.3%) compared to individuals in urban areas (11.1%).

By gender, Figure 165 shows a gender gap for the reason 'I have no national ID', with more males (58.5%) than females (45.9%). The gender gaps for the second and third reasons are marginal.

What are the reasons for not having your own mobile money account?
(multiple-select, ranked by all individuals)

I do not have a National ID	I have no Phone	I have no SIM card	Other	Service fee too high	I have never heard/ don't know about mobile money
Female: 51.6%	**Female:** 23.2%	**Female:** 13.7%	**Female:** 13.9%	**Female:** 5%	**Female:** 4.4%
Male: 61%	**Male:** 19.2%	**Male:** 14.6%	**Male:** 8.8%	**Male:** 8.1%	**Male:** 7%
Total: 55.7%	**Total: 21.4%**	**Total: 14.1%**	**Total: 11.6%**	**Total: 6.4%**	**Total: 5.5%**

I am still too young	I don't want/need	I have no access to mobile network	I do not trust it/fear losing my money	Social / cultural issues
Female: 4.1%	**Female:** 3.5%	**Female:** 1.6%	**Female:** 0.3%	**Female:** 0.6%
Male: 3.9%	**Male:** 1.3%	**Male:** 1.8%	**Male:** 0.7%	**Male:** 0%
Total: 3.9%	**Total: 2.5%**	**Total: 1.7%**	**Total: 0.4%**	**Total: 0.3%**

Figure 165: Individuals' reasons for not having their own mobile money account by gender

6.8 E-government Services

The survey collected information, of all internet users, on individuals' awareness of and interaction with government MDAs through the use e-government services in the previous 12 months. The survey also collected information on the challenges encountered in such interactions as well as satisfaction with e-government services.

In terms of awareness, only one in five individuals (22.9%) reported being aware of any government services provided online, as indicated in Figure 166. There is a slight improvement compared to 2017/18, when 17.4% individuals reported being aware of any e-government services. By location, more individuals in urban areas reported being aware of e-government services compared to their counterparts in rural areas (26.6% vs. 17.9%, respectively). By gender, more female individuals reported being aware of e-government services compared to male individuals (24.2% vs. 21.8%, respectively).

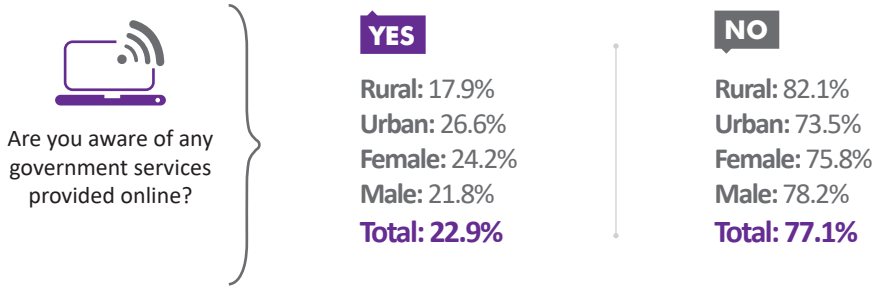


Figure 166: Individuals' awareness of e-government services by location and gender

Individuals that indicated awareness of e-government services online were asked to identify those services that they were aware of. The most-cited e-government service (51.6%) was applying for/renewing personal documents (passport, national ID or driving permit) or certificates (birth, marriage, death), as presented in Figure 166. This was followed by education services (39.2%), including enrolment (e.g. for university) and checking on examination results (e.g. UNEB results via SMS), and submitting or filing tax returns online (e.g. URA portal), at 36%.

In general, individuals in urban areas are more aware of e-government services compared to individuals in rural areas except for submitting information or a complaint to MDA (e.g. IGG, Judiciary, etc.) and applying for a business permit or trading licence.

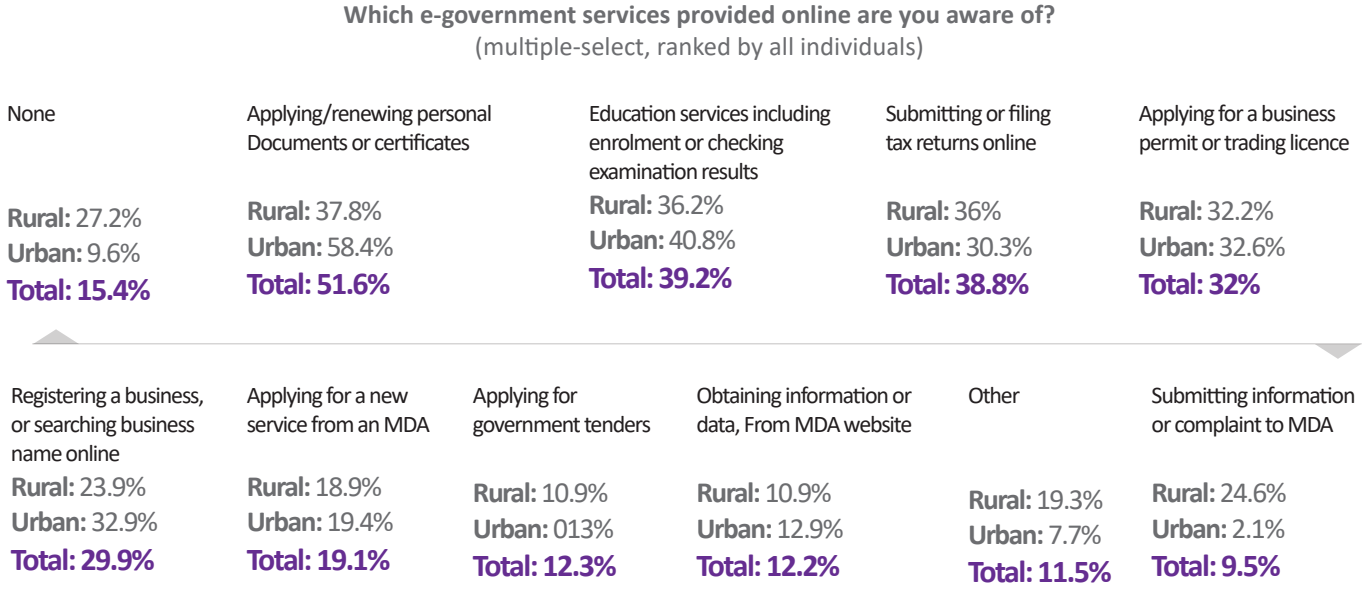


Figure 167: E-government services that individuals were aware of by location

Figure 168 shows a disaggregation of the awareness of e-government services by gender. It shows that regarding applying for/renewing personal documents and or certificates, there were more females than males (63.4% vs. 40.9%, respectively). Similarly, for education services, including enrolment (e.g. for university) and checking on examination results, there were more females (43.6%) compared to males (32.5%). Generally, there were more females than males aware of e-government services except for obtaining information from the MDA website and applying for government tenders.

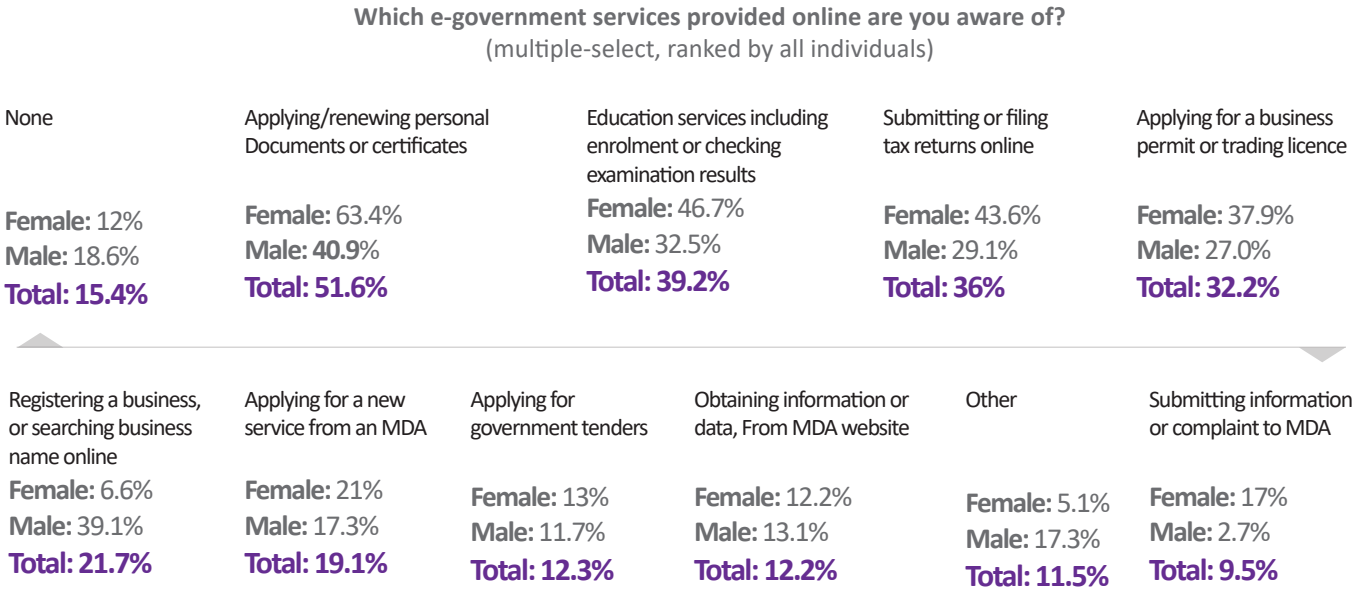


Figure 168: E-government services that individuals were aware of by gender

Interactions and Services

The survey collected information about types of individual interactions with MDAs using e-government services in the previous 12 months. The most common type of interaction involved submitting completed forms online (18.3%), as summarised in Figure 169.

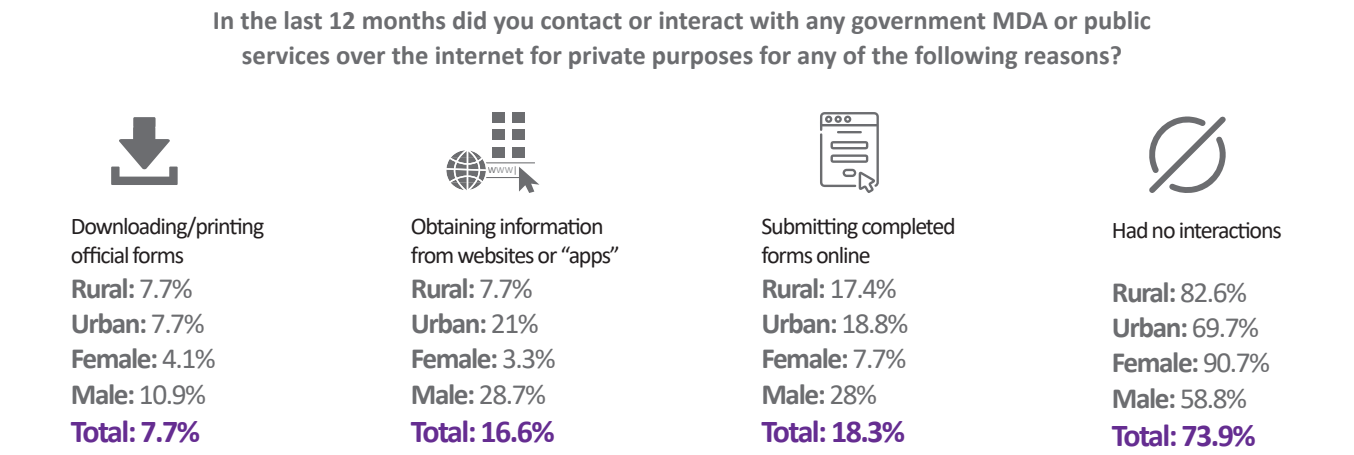


Figure 169: Types of individual interaction with MDAs by location and gender

Education services, including enrolment (e.g. for university) and checking on examination results (e.g. UNEB results via SMS), were the most-used e-government service by individuals (9.2%) in the previous 12 months. This was followed by applying for/renewing personal documents (passport, national ID or driving permit) or certificates (birth, marriage, death), at 5.2%, as indicated in Figure 170. Considering location, more individuals in urban areas had generally used more e-government services compared to individuals in rural areas.

Which of the following e-government services did you use over the internet for private purposes in the last 12 months?
(ranked by all individuals)

None	Education services including enrolment or checking examination results	Applying/renewing personal documents or certificates	Submitting or filing tax returns online	Applying for a new service from an MDA
Rural: 88.7%	**Rural:** 8.1%	**Rural:** 1.7%	**Rural:** 0.2%	**Rural:** 0%
Urban: 76.8%	**Urban:** 10%	**Urban:** 8.8%	**Urban:** 6.2%	**Urban:** 4.9%
Total: 81.9%	**Total: 9.2%**	**Total: 5.8%**	**Total: 3.6%**	**Total: 2.8%**

Applying for a business permit or trading licence	Registering a business, or Searching business name online	Applying for government tenders transactions	Other	Submitting information or complaint to MDA
Rural: 0.4%	**Rural:** 0%	**Rural:** 0%	**Rural:** 1%	**Rural:** 0.3%
Urban: 3.6%	**Urban:** 2.5%	**Urban:** 2%	**Urban:** 0.3%	**Urban:** 0.3%
Total: 2.2%	**Total: 1.4%**	**Total: 1.1%**	**Total: 0.6%**	**Total: 0.3%**

Figure 170: E-government services used by individuals in the previous 12 months by location

Considering gender, more male individuals reported having interacted with no e-government services in the previous 12 months compared to female individuals (84.4% vs. 78.5%, respectively). Female individuals were more active compared to male individuals for the top two most-used e-government services – applying for/renewing personal documents or certificates (6.9% vs. 4.9%, respectively) and education services, including enrolment or checking on examination results (11.9% vs. 7.2%).

Individuals that used e-government services were asked about their satisfaction with the different services. Individuals were most satisfied with submitting or filing tax returns online (22.2%), closely followed by education services, including enrolment or checking on examination results (21.7%), as shown in Figure 171.

Which of the following e-government services where you most satisfied with?
(ranked)

22.2%	21.7%	18%	8.7%	1.4%	0.3%
Submitting or filing tax returns online	Education services including enrolment or checking examination results	Applying/renewing personal documents or certificates	Applying for a new service from an MDA	Registering a business, or searching business name online	Obtaining information or data, from MDA website

Figure 171: Individuals' satisfaction with e-government services used in the previous 12 months

For the different e-government services that individuals indicated satisfaction with, the survey asked further questions on what components of their interaction generated satisfaction, as highlighted in Figure 172. Ease of finding information generated the most satisfaction, while support provided by MDAs in using e-government services generated the least satisfaction. This highlights the important need for MDAs to set up user support channels to help individuals use the various e-government services that the MDAs provide.

Please rate your satisfaction with the e-government service that you are most satisfied with

1 Ease of finding information
- **Very satisfied:** 9%
- **Satisfied:** 35.5%
- **Not Sure:** 10.4%
- **Dissatisfied:** 12.1%
- **Don't know:** 32.6%

2 Usefulness of the information Available/provided
- **Very satisfied:** 8.1%
- **Satisfied:** 31.6%
- **Not Sure:** 14.1%
- **Dissatisfied:** 7.6%
- **Don't know:** 38.6%

3 Ability to track the progress of your request, follow-up of request
- **Very satisfied:** 4.6%
- **Satisfied:** 20.6%
- **Not Sure:** 14.8%
- **Dissatisfied:** 12.2%
- **Don't know:** 43.8%

4 Ease of using e-government services
- **Very satisfied:** 6.2%
- **Satisfied:** 16.1%
- **Not Sure:** 16.1%
- **Dissatisfied:** 12.7%
- **Don't know:** 46.3%

5 Support provided by MDAs to use e-government services
- **Very satisfied:** 3.6%
- **Satisfied:** 11.4%
- **Not Sure:** 19.9%
- **Dissatisfied:** 12.8%
- **Don't know:** 49.2%

Figure 172: Level of satisfaction with e-government service that individuals were most satisfied with

Challenges and Perceptions of E-government Services

The survey asked individuals that had used e-government services about the challenges they encountered when using services during the previous 12 months. Overall, the high costs of the internet were cited as the biggest challenge (18.8%), followed by time delays (10.1%), as shown in Figure 173.

What challenges have you encountered when using e-government services over the Internet in the last 12 months?

None

Rural: 0%
Urban: 2%
Total: 1.1%

Using the internet costs too much

Rural: 0%
Urban: 2%
Total: 1.1%

Time delayss

Rural: 0%
Urban: 2%
Total: 1.1%

It is difficult to keep track of my request

Rural: 0%
Urban: 2%
Total: 1.1%

I worry about the privacy of my information

Rural: 0%
Urban: 2%
Total: 1.1%

I worry about my information getting lost

Rural: 0%
Urban: 2%
Total: 1.1%

Figure 173: Individuals' challenges experienced in using e-government services by location

By location, more individuals in urban areas reported the cost of using the internet as a challenge for using e-government services compared to individuals in rural areas (20.3% vs. 16.7%, respectively). By gender, more female individuals reported the cost of using the internet as a challenge when using e-government services compared to male individuals (23.9% vs. 14.6%, respectively).

Non-users of E-government Services

The survey sought to understand why some individuals had not contacted or interacted with any government MDA or public services over the internet for private purposes in the previous 12 months. Their reasons are summarised in Figure 174 and Figure 175. Most individuals reported preferring personal contact (22.8%), followed by individuals that did not know such services existed (20.7%). Both of these categories would need to be targeted with appropriate training and support in order for those groups of individuals to use e-government services.

By location for preferring personal contact, there were more rural (30%) than urban (18.7%) individuals, while for 'I did not know that such services existed', there were more urban (27.9%) than rural (8.2%) individuals. By gender for 'preferring personal contact', there were more females (26.2%) than males (18.1%). Similarly, for the reason 'I did not know that such services existed', there were more females (23.8%) than males (16.3%).

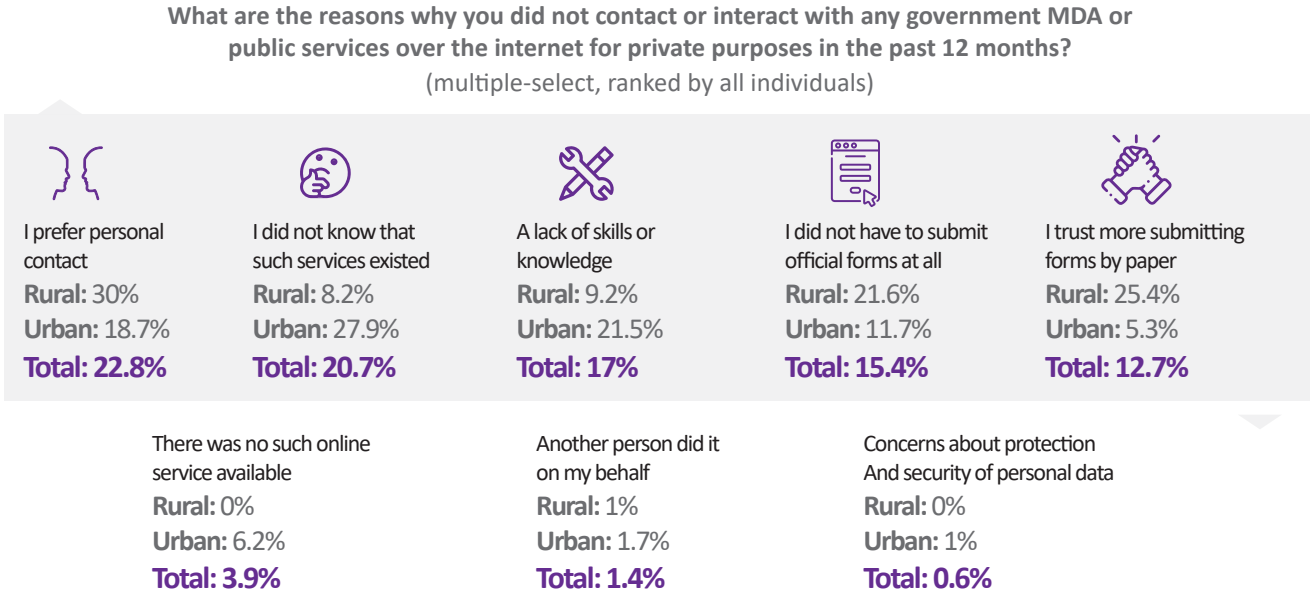


Figure 174: Reasons individuals gave for not using e-government services by location

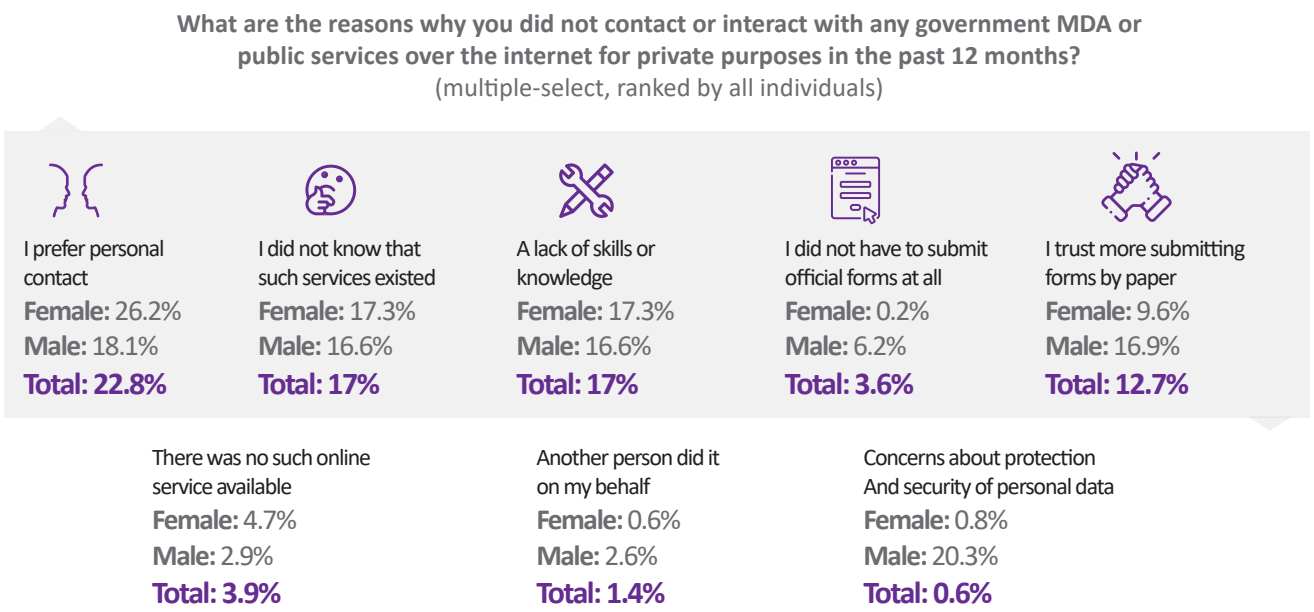


Figure 175: Reasons that individuals gave for not using e-government services by gender

6.9 Online Security and Privacy

The survey collected information on online security, data protection and privacy issues amongst individuals that had used the internet in the previous 12 months. The survey probed individuals' knowledge of the Ugandan Data Protection and Privacy Act and attendant Regulations, online risks and incidents, security measures undertaken and the reporting of online crimes and data protection and privacy-related complaints.

Figure 176 shows the types of personal information that individual internet users reported having submitted to online services in the previous three months. Most internet users (78.6%) reported that they did not provide any personal information over the previous three months. By location, more individuals in rural areas indicated not having provided any personal information compared to individuals in urban areas.

What type of personal information did you provide / submit over the Internet in the last three months?
(multiple-select, ranked by all individuals)

None, I did not provide any personal information	Personal identification details (e.g., name, date of birth, Identity card number)	Contact details (e.g., home address, phone number, e-mail address)	Other personal information (e.g., photos of you, current location,Information related to health, employment, income)	Payment details (e.g., credit or debit card number, Bank account number
Rural: 86.6%	**Rural:** 12.6%	**Rural:** 7%	**Rural:** 2%	**Rural:** 0.2%
Urban: 64.4%	**Urban:** 29.5%	**Urban:** 15.5%	**Urban:** 6.7%	**Urban:** 2.5%
Total: 78.6%	**Total: 18.7%**	**Total: 10%**	**Total: 3.7%**	**Total: 1.0%**

Figure 176: Types of personal information shared by individuals with online services in the previous 3 months by location

By gender, more male individuals tend to share more personal information online compared to female individuals, as indicated in Figure 177.

What type of personal information did you provide / submit over the Internet in the last three months?
(multiple-select, ranked by all individuals)

None, I did not provide any personal information	Personal identification details (e.g., name, date of birth, Identity card number)	Contact details (e.g., home address, phone number, e-mail address)	Other personal information (e.g., photos of you, current location,Information related to health, employment, income)	Payment details (e.g., credit or debit card number, Bank account number
Female: 80%	**Female:** 16.9 %	**Female:** 7.8 %	**Female:** 3.1%	**Female:** 0.8%
Male: 76.5%	**Male:** 20.7%	**Male:** 12.6%	**Male:** 4.3%	**Male:** 1.3%
Total: 78.6%	**Total: 18.7%**	**Total: 10%**	**Total: 3.7%**	**Total: 1%**

Figure 177: Types of personal information shared by individuals with online services in the previous three months by gender

Awareness of Personal Privacy

The survey collected information from individuals about their IT trust, security and Data Protection and Privacy Act and Regulations awareness. Most individuals (32.3%) indicated that they did not know who to report to in case their personal information was misused by any organisation or individual. This was followed by a lack of knowledge that for any person or organisation to collect or use personal information, they must have a valid lawful basis, at 28.5%.

IT trust, security and privacy awareness

Do you know who to report to in case your personal information is misused by any organisation or individual?
Rural: 32.3%
Urban: 30.3%
Total: 32.9%

Do you know that you can ask them to delete your personal information. If it is out of date or when they no longer have the authority to retain it?
Rural: 14.1%
Urban: 17%
Total: 15.4%

Do you know that you can ask them what personal information they have about you and with whom they have shared it with?
Rural: 15.5%
Urban: 20.3%
Total: 17.6%

Do you know that if they captured your personal information wrongly, you can ask them to correct it?
Rural: 21.9%
Urban:25%
Total: 23.2%

Do you know that for any person or organisation to collect or use your personal information must have a valid and lawful basis,such as obtaining your permission or be required by law?
Rural: 27.6%
Urban: 29.7%
Total: 28.5%

Do you know any laws and regulations in Uganda that protect your personal information?
Rural: 11.4%
Urban: 16.4%
Total: 13.6%

Figure 178: Individuals' awareness of IT trust, security and privacy issues by location

Figure 178 shows that by location, there was generally more awareness among urban compared to rural individuals. Figure 179 shows that by gender, there was more awareness among males compared to females along various dimensions.

IT trust, security and privacy awareness

Do you know who to report to in case your personal information is misused by any organisation or individual?
Female: 32.4%
Male: 32.1%
Total: 32.3%

Do you know that you can ask them to delete your personal information. If it is out of date or when they no longer have the authority to retain it?
Female: 14.2%
Male: 18.6%
Total: 15.4%

Do you know that you can ask them what personal information they have about you and with whom they have shared it with?
Female: 15.5%
Male: 23.4%
Total: 17.6%

Do you know that if they captured your personal information wrongly, you can ask them to correct it?
Female: 20.7%
Male: 30.5%
Total: 23.2%

Do you know that for any person or organisation to collect or use your personal information must have a valid and lawful basis,such as obtaining your permission or be required by law?
Female: 25.5%
Male: 36.9%
Total: 28.5%

Do you know any laws and regulations in Uganda that protect your personal information?
Female: 13.6%
Male: 13.6%
Total: 13.6%

Figure 179: Individuals' awareness of IT trust, security and privacy issues by gender

Individuals were asked if they had carried out any actions to manage access to their personal information on the internet in the previous three months. Most individuals (88.5%) indicated that they had not carried out any actions to manage access to their information. Figure 180 summarises some of the actions carried out by individuals to improve their online privacy.

Have you carried out any of the following to manage access to your personal information on the internet in the last three months?
(ranked by all individuals)

Read privacy policy statements before Providing personal information	Limited access to your profile or content on a Social network you are using	Refused allowing the use of personal Information for advertising purposes	Restricted access to your geographical location	Checked that a website where you needed to provide Personal information was secure	Asked websites or search engines to access the Information they hold about you to update or delete it.
Rural: 5.6%	**Rural:** 3.5%	**Rural:** 1.2%	**Rural:** 1%	**Rural:** 0.2%	**Rural:** 0.6%
Urban: 15.4%	**Urban:** 10.1%	**Urban:** 5.5%	**Urban:** 4.7%	**Urban:** 2.8%	**Urban:** 0.2%
Total: 9.1%	**Total: 5.9%**	**Total: 2.7%**	**Total: 2.3%**	**Total: 1.2%**	**Total: 1.2%**

Figure 180: Individuals' management of online personal information by location

Individuals were asked about the identification procedures they had used to access online services, such as banking, public websites or ordering goods or services. The most-cited procedure, by 17.2% of the individuals, was logging in with a username and password, as indicated in Figure 181. The second most common procedure, by cited 6.7% of the individuals, was 'using social media or email logon details to access other services'. By location, there were more urban (29.2%) than rural (10.5%) individuals who reported logging in with their username and password. The second most common procedure was used by more urban (11.8%) compared to rural (3.8%) individuals.

In the last three months, which of the following identification procedures have you used to access online services such as banking, public websites or ordering goods or services?
(ranked by all individuals)

Logging in with a username and password	Using my social media or email logon details To access other services	Entered a code sent to your Mobile phone by regular text (SMS)	Using a security token	Used a once only PIN code provided by A disposable card or scratch card	Other .	Using an electronic identification certificate or card and card reader combination
Rural: 10.5%	**Rural:** 3.8%	**Rural:** 3.7%	**Rural:** 3.2%	**Rural:** 0.5%	**Rural:** 0.5%	**Rural:** 0.1%
Urban: 29.2%	**Urban:** 11.8%	**Urban:** 7.5%	**Urban:** 3.2%	**Urban:** 2.9%	**Urban:** 0.4%	**Urban:** 0.9%
Total: 17.2%	**Total: 6.7%**	**Total: 5%**	**Total: 3.2%**	**Total: 1.4%**	**Total: 0.5%**	**Total: 0.4%**

Figure 181: Individuals' identification procedures used to access online services by location

Awareness of Cyber Laws

Individuals were asked if they were aware of any national cyber laws. Figure 182 shows that very few individuals were aware of Ugandan cyber laws. The proportion of individuals aware of different cyber laws ranged between 3.8% and 12.2%. In all cases, there was more awareness among urban compared to rural individuals.

Figure 182: Individuals' awareness of cyber laws by location

Cyber Risks and Crimes

Individuals that reported using the internet were asked if they had been victims of cybercrime in the previous 12 months. Only 1.3% of internet users indicated they had been victims of cybercrime. There were more urban than rural and more male than female victims, but the gaps were marginal.

The majority (42%) of those who reported experiencing cyber-dependent crimes had received unsolicited messages. Unsolicited messages were reported by more urban (55.8%) compared to rural (17.2%) individuals. The second most reported cyber-dependent crime was having viruses or other computer infections (29.5%), with more individuals in rural (43.5%) than in urban (21.7%) areas citing having viruses or other computer infections, as indicated in Figure 183.

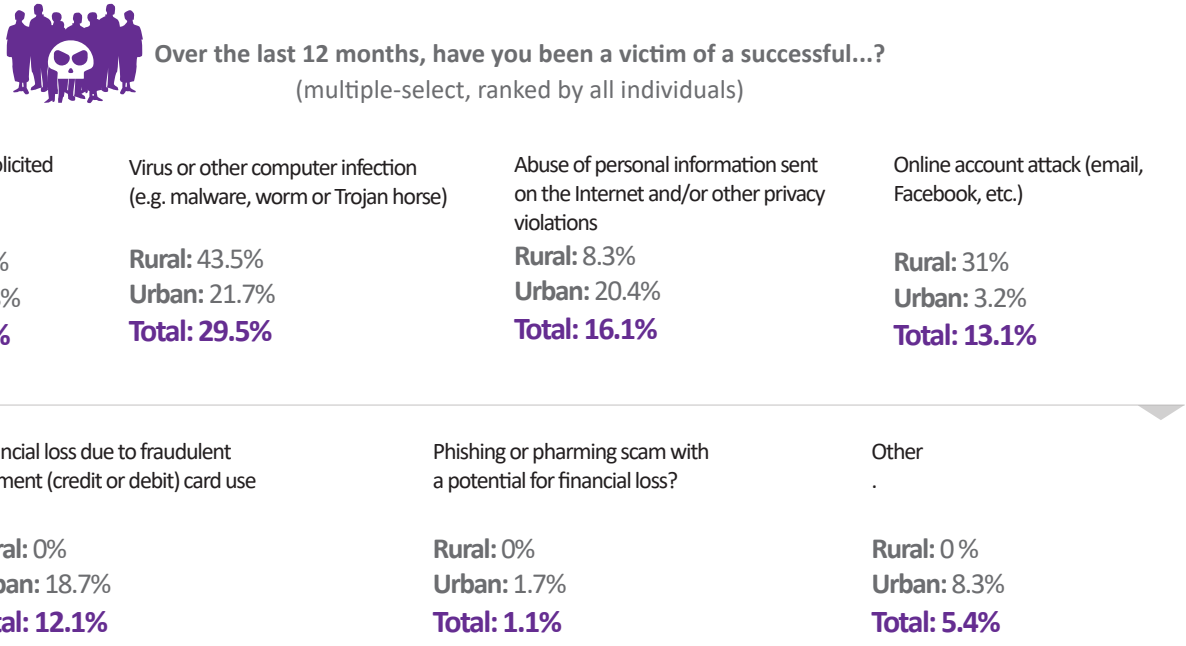


Figure 183: Individual victims of cyber dependent crimes by location

Individuals were also asked whether they had experienced any cyber-enabled crimes in the last 12 months. Figure 184 shows that the most individuals that had experienced cyberenabled crime reported being victims of online fraud and theft (46.7%). The second most common cyber-enabled crime was online harassment or bullying, with 38.8%, There were wide urban–rural gaps for both online fraud and theft (63.1% vs 17.2% respectively) and for online harassment (31.7% vs. 51.8% respectively) as indicated in Figure 185. The gender gap was wide for online fraud and theft (32.4% females compared to 59.3% males), but marginal for online harassment and bullying as indicated in Figure 185.

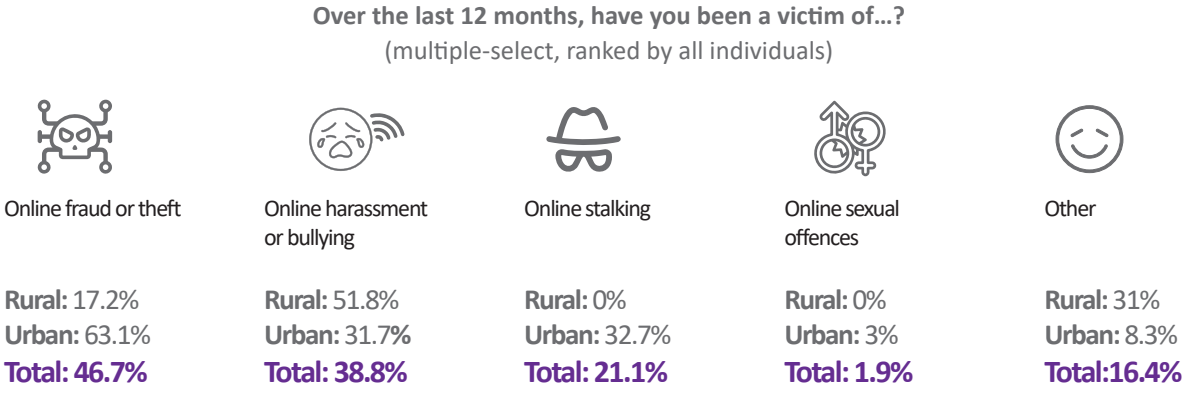


Figure 184: Individual victims of cyber-enabled crime by location

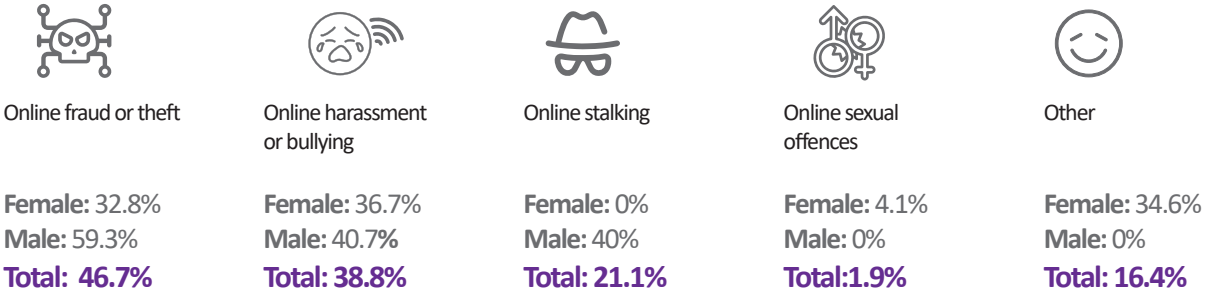


Figure 185: Individual victims of cyber-enabled crime by Gender

Reporting Cybercrime

The survey asked individual victims of online crimes, whether they had ever reported any online crimes committed against them and to whom they had reported. Figure 186 shows that only 12.2% of the cybercrime victims had ever reported the online crimes committed against them. Most individuals that had used the internet (99%) had never heard about the National CERT.UG/CC.

Among individual cybercrime victims that had reported, most individuals (82.9%) had reported to their ISPs, while the rest (17.2%) had reported to the police.

Figure 186: Internet users that were cybercrime victims, had ever reported cybercrimes or heard of CERT.UG

The survey asked individual internet users who had indicated they had not reported cybercrimes against them for reasons why they had not reported. Most (43.7%) indicated that they had fixed the problem themselves, followed by those that did not know who to report the cybercrime to or how to report it (38.7%), as summarised in Figure 200 and Figure 187.

If you have never reported any cybercrimes, what is your main reason?
(multiple-select, ranked by all individuals)

I fixed the problem myself	I did not know who to or how to report it	I did not know what the crime was	I felt it was a waste of time	Not applicable
Rural: 31%	**Rural:** 51.8%	**Rural:** 17.2%	**Rural:** 0%	**Rural:** 0%
Urban: 52.4%	**Urban:** 29.9%	**Urban:** 37.1%	**Urban:** 40%	**Urban:** 3.4%
Total: 43.7%	**Total: 38.7%**	**Total: 29%**	**Total: 23.8%**	**Total:2%**

Figure 187 Reasons why individuals did not report cybercrimes by location

From a location perspective, more individuals in urban areas indicated that they had fixed the problem compared to individuals in rural areas (52.4% vs. 31.0%, respectively). In addition, more individuals in rural areas indicated that they did not know who to report the cybercrime to or how to report it compared to individuals from urban areas (51.8% vs. 29.9%, respectively), as presented in Figure 187.

From a gender perspective, more male individuals indicated that they had fixed the problem compared to female individuals (67.6% vs. 23.3%, respectively). In addition, more female individuals indicated that they did not know who to report the cybercrime to or how to report it compared to male individuals (56% vs. 18.6%, respectively), as presented in Figure 188.

If you have never reported any cybercrimes, what is your main reason?
(multiple-select, ranked by all individuals)

I fixed the problem myself	I did not know who to or how to report it	I did not know what the crime was	I felt it was a waste of time	Not applicable
Female: 23.3%	**Female:** 56%	**Female:** 17%	**Female:** 0%	**Female:** 3.8%
Male: 67.6%	**Male:** 18%	**Male:** 43.2%	**Male:** 51.6%	**Male:** 0%
Total: 43.7%	**Total: 38.7%**	**Total: 29%**	**Total: 23.8%**	**Total: 2%**

Figure 188: Reasons why individuals did not report cybercrimes by gender

Online Security Measures

Individual internet users were asked about the security measures that they had taken to improve their online security in the previous 12 months. Most internet users (77.9%) indicated that they had taken no measures in the previous 12 months. More individuals in rural areas (85.8%) had taken no security measures compared to individuals in urban areas (63.6%).

For those that had taken measures, 8.5% indicated that they had stopped providing personal information to online social networks, followed by those that took the time to read carefully through privacy statements before subscribing to new online services or installing software (8%), as indicated in Figure 189.

What measures have you taken to improve your online security over the last 12 months?
(multiple-select, ranked by all individuals)

Stopped providing personal Information to online social networks **Rural:** 4.4% **Urban:** 15.7% **Total: 8.5%**	Take the time to read carefully through privacy statements before subscribing to new online services or installing software **Rural:** 4.6% **Urban:** 14.2% **Total: 8%**	Used different passwords for different websites and updated them regularly **Rural:** 2.5% **Urban:** 12.4% **Total: 6.1%**	Backed up my data or information periodically **Rural:** 1.5% **Urban:** 8.1% **Total: 3.9%**
Installed up-to-date antivirus software **Rural:** 2% **Urban:** 5.8% **Total: 3.4%**	Enabled my computer/smartphone to Automatically download and install updates **Rural:** 1% **Urban:** 5.1% **Total: 2.5%**	Limited access to my profile or Content on social networking sites **Rural:** 0.5% **Urban:** 4.7% **Total: 2%**	Used a firewall **Rural:** 0.3% **Urban:** 1.9% **Total: 0.9%**

Figure 189: Individual measures undertaken to improve online security by location

Individual internet users who had not taken any action to improve their personal online security were asked to give reasons why they had not done so. Over half (51.7%) said there was no need to do so. This was followed by those whose reason was 'lack of knowledge about IT protection tools' (35.8%). The large proportion of internet users that felt that there was no need to take any measures to improve their online security (51.7%) highlights the huge gap in awareness about the potential ramifications of cybercrime and the impact that it can have on individuals. Figure 190 shows that by location, those whose reason was 'no need' included more individuals in rural than in urban areas (51.7% vs. 38.8%, respectively). Conversely, for the reason 'lack of knowledge about IT protection tools', there were more individuals in urban than in rural areas (46.3% vs. 35.8%, respectively).

If you have not taken any measures to improve your online security over the last 12 months, what was the main reason?
(multiple-select, ranked by all individuals)





No need **Rural:** 57.1% **Urban:** 38.8% **Total: 51%**	Lack of knowledge about IT protection tools **Rural:** 35.8% **Urban:** 46.3% **Total: 38.9%**	Price too high **Rural:** 6.9% **Urban:** 11.6% **Total: 8.3%**	Other **Rural:** 4.9% **Urban:** 7.3% **Total: 5.6%**	Doubts on their efficiency **Rural:** 0.1% **Urban:** 1.7% **Total: 0.6%**

Figure 190: Reasons why internet users had not undertaken any security measures by location

6.10 Postal Access and Use

The survey collected information on individuals' interactions with the postal services in the previous 12 months. Attributes explored included whether individuals had sent or received mail, associated frequency therewith and the potential sources/destinations of their mail.

Sending and Receiving

Individuals were asked if in the previous 12 months they had sent a letter/mail via the postal service. Overall, only 0.5% of all individuals reported that they had sent a letter/mail via postal service in the previous 12 months. Among those who had sent letters, 31.7% of postal users had sent a letter/mail at least once every three months (but not every month), and 27.4% had sent a letter/mail once every week (but not every day). In terms of destination, most postal users (86.2%) reported that they had sent their letter/mail to a destination in Uganda.

Overall, almost all individuals (0.4%) reported that they had received a letter/mail via postal services in the previous 12 months. Among those who had received letters, 29.5% had received a letter/mail at least once every three months (but not every month), and 27.4% had received a letter/mail every week (but not every day). In terms of source, most postal users (77.7%) reported that they had received their letter/mail from Uganda.

No Use of Postal Services

The survey asked individuals who had not used postal services in the previous six months to give reasons why, which is summarised in Figure 191. The major reason cited by about half (40.2%) of all individuals was that they were not interested, followed by not knowing about the postal service (19.8%). By location, more individuals in urban areas (45%) were not interested compared to individuals in rural areas (38.4%).

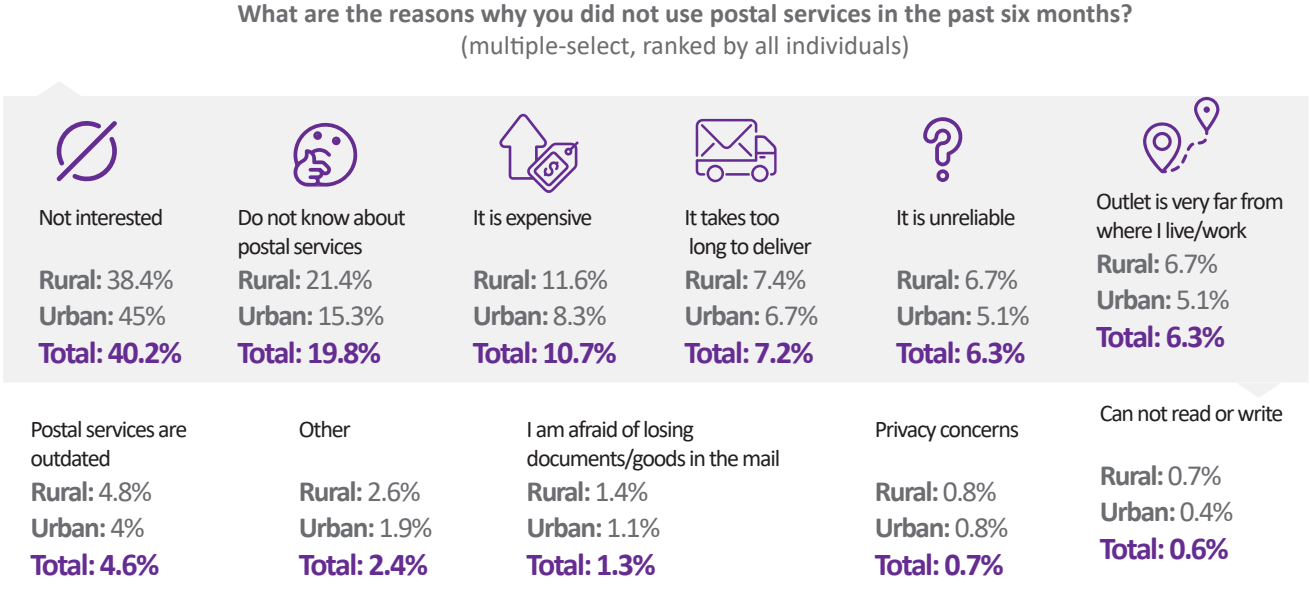


Figure 191: Individuals' reasons for not using postal services in the past six months by location

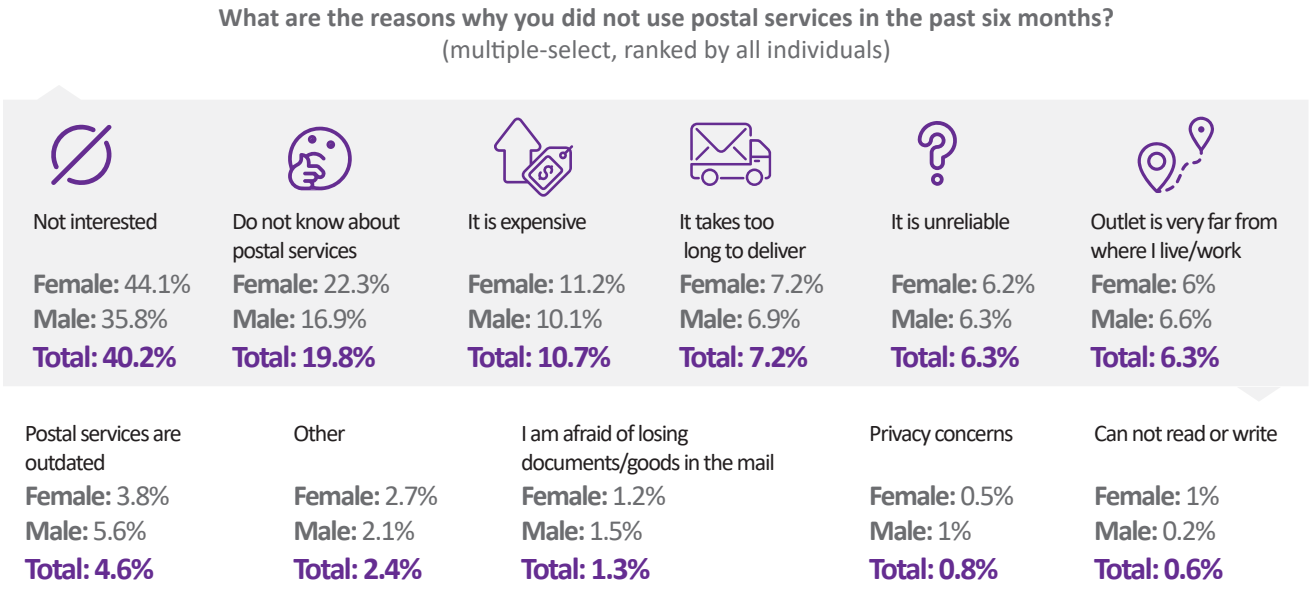


Figure 192: Individuals' reasons for not using postal services in the past six months by gender

More females (44.1%) were not interested compared to males (35.8%) and more females (22.3%) did not know about postal services compared to males (16.9%), as presented in Figure 192.

6.11 Perceptions about the ICT Sector

The survey asked individuals to rate their perceptions about different aspects of the ICT sector and services in Uganda. At the upper end, four out of every 10 (38.5%) individuals found the quality of the ICT services to be good or excellent, while at the lower end, two out of every 10 (22.7%) individuals found the affordability of the ICT services to be good or excellent, as summarised in Figure 193.

How would you rate the following aspects of the ICT sector in Uganda?
(ranked by excellent/good)

1 Your satisfaction with the quality of ICT services?
- **Excellent:** 4.8%
- **Good:** 33.7%
- **Fair:** 22.2%
- **Poor:** 7.8%
- **Very poor:** 7.8%
- **Don't know:** 23.7%

2 ICT infrastructure development across the country?
- **Excellent:** 3.1%
- **Good:** 31.4%
- **Fair:** 25.2%
- **Poor:** 7.2%
- **Very poor:** 4.8%
- **Don't know:** 28.4%

3 ICT service development across the country?
- **Excellent:** 3.6%
- **Good:** 31.1%
- **Fair:** 24.7%
- **Poor:** 6.8%
- **Very poor:** 4.9%
- **Don't know:** 28.9%

4 The reliability of ICT services you use currently?
- **Excellent:** 5.1%
- **Good:** 25.1%
- **Fair:** 28.2%
- **Poor:** 9.4%
- **Very poor:** 6.8%
- **Don't know:** 25.3%

5 Usability (ease of use) of the ICT services?
- **Excellent:** 6.5%
- **Good:** 24.2%
- **Fair:** 21.5%
- **Poor:** 9.4%
- **Very poor:** 7.6%
- **Don't know:** 30.9%

6 The affordability of ICT services at your place?
- **Excellent:** 3.8%
- **Good:** 18.9%
- **Fair:** 25.9%
- **Poor:** %
- **Very poor:** 14.1%
- **Don't know:** 26.3%

Figure 193: Individuals' rating of different aspects of Uganda's ICT sector

6.12 Summary of Findings and Implications

Overall, 74.1% of all individuals had used a mobile phone in the three months prior to the survey – with the percentage in urban areas (82.7%) being higher than that in rural areas (71%). A gender divide is also evident, the corresponding percentage for men and women being 80.2% and 69.2%, respectively. A total of 87% of those who had used phones owned a mobile phone, with the respective figures for rural and urban being 92.1% and 84.9%. While a gender divide still exists in phone ownership among those who had used phones, the gap is narrower, with 89.6% for men and 84.6% for women. Most individuals that had used but not owned mobile phones cited cost as the major impediment for not owning a mobile phone, with a higher proportion of females giving this as their primary reason.

A staggering 96.8% of individuals had not used any computing device in the previous three months, while only 1.3% of individuals owned a personal computer/laptop. Not surprising within this context, only 10.3% had used the internet for any purpose in the previous three months, with a very sharp urban-rural divide (22.9% and 5.9%, respectively). By gender, more male individuals had used the internet compared to female individuals (12.9% vs. 8.2%, respectively). By age range, most internet users were 25–34 years of age (14.5%), followed by individuals between 15 and 24 (13.5%). Among individuals that had not used the internet, lack of knowledge or skills was the biggest barrier (51%), followed by lack of knowledge about what the internet was (28%) and the high cost of internet access (26%).

About half of all individuals (49.4%) had a registered mobile money account in their names compared to one in 10 individuals (10.4%) that had a personal bank account, underscoring the high impact of mobile money on an otherwise largely unbanked population. The immediate future, especially unlocking access to financial services for the overwhelming percentage of the population, is clearly going to be digital. Among individuals that had used mobile money but did not have their own mobile money account, the biggest impediments were 'having no national ID' (51.5%), followed by 'I have no phone' (20%) and 'I have no SIM card' (13.9%). Given that only 75.9% of individuals reported owning a national ID, this highlights the need to expedite and simplify the processes related to acquiring (and replacing) national IDs and other identifiers that can facilitate digital transactions.

Only one in five individuals (22.9%) were aware of any government services provided online. Among these individuals, 26.1% reported some form of e-government interaction in the previous 12 months, the most common being submitting completed forms online (18.3%). Among individuals that had used e-government services, the high cost of the internet was cited as the biggest use impediment (18.8%), followed by time delays (10.1%). Among individuals that had not used any e-government services, most individuals reported preferring personal contact (22.8%), followed by lack of knowledge that such services existed (20.7%). The reasons cited by individuals that had not used any e-government services highlight the need for more awareness creation in order to increase usage.

Table 14 provides a summary of the key findings related to individuals' access to and use of ICT devices and services and potential implications as well as recommended actions that different stakeholders need to take to improve access to and use of ICT among individuals.

Table 14: Summary of key findings on individual access to and use of ICT and recommended actions

	Key Findings	Implications	Recommended Action
1	Overall, 74.1% of all individuals had used a mobile phone in the previous three months. Among these, 87% owned a mobile phone. Among individuals that owned a mobile phone, 57.1% had a basic phone, 26.1% had a feature phone, and 16.8% had a smartphone.	Mobile phones can help individuals to communicate and improve access to information and services as well as increasingly to access financial services. Mobile phones are the most common means through which individuals access the internet.	• Close the gap between the improved reach of mobile networks (geographical /population coverage) and the individual adoption and use of mobile devices. • Explore avenues and innovative funding schemes to improve the penetration of mobile phones with a bias towards smartphones.
2	Only 3.2% of individuals had used a computer in the previous three months. Only 1.3% of individuals owned a personal computer/laptop. There were significant urban-rural and male-female gaps in favour of the former.	It is evident that access to computers remains a major challenge. (Other than the visible challenge of cost, this could also point to many businesses being operated at the most basic levels.) The recurring theme of divides (male-female; rural-urban; rich-poor) remains a major barrier to national progress.	• Emphasise issues of digital inclusion (all individuals and communities have access to the internet and other ICT) and digital equity to address the glaring gaps (all individuals and communities have the digital skills and literacy to participate in society and the economy). • Explore avenues and innovative funding schemes to reduce the cost of digital access devices such as smartphones, computers, laptops, and tablets.
3	Only 10.3% of individuals had used the internet for any purpose in the previous three months. Amongst individuals that had not used the internet (89.7%), lack of knowledge or skills was the biggest barrier (50.8%), followed by lack of knowledge about what the internet was (27.7%) and the high cost of internet access (25.7%).	The limitation here is not just about ownership: it appears to point to a lack of awareness and/or of the requisite skills.	• Set clear goals on how to make internet access more affordable and to increase adoption. • Close the gap between the improved reach of mobile networks (geographical /population coverage) and individual adoption and use of the internet by building digital skills and literacy among individuals, driving down the cost of internet access, and incentivising the creation of local content. • Use incentives to induce providers to focus on affordability and adoption.
4	Most individuals had used the internet via a mobile phone via the telephone network (95.5%), and the most common activity for internet users was social media (75.3%).	This demonstrates the importance of the mobile phone (and in particular the smartphone) as the primary avenue through which individuals access the internet.	• Explore avenues and innovative funding schemes to reduce the cost of digital access devices such as smartphones, computers, laptops, and tablets

	Key Findings	Implications	Recommended Action
5	Among individuals that had used the internet (10.3%), only 9% had made an online purchase within the previous 12 months. Most online purchases were from local sellers in Uganda (96.7%) and were predominantly for clothing, footwear, sporting goods or accessories (39%), followed by food, groceries, alcohol or tobacco (24%) and household goods (22.7%).	Anecdotal evidence indicates some growth in local e-commerce activity during the COVID-19-induced lockdowns, but the proportion of e-commerce users is still minuscule compared to physical shopping in brick-and-mortar shops.	• Explore avenues to accelerate individual adoption of e-commerce by clearly communicating the value proposition. • Identify and support industries that are critical for the success of e-commerce, for example, delivery and logistics and digital payments.
6	Most e-commerce users (68.4%) were not aware of any rights available to them when they purchase goods or services online and most (60.2%) had encountered some challenges when buying goods or services online (Figure 162).	The delivery process is still largely inconvenient with most e-commerce users complaining of delayed deliveries, goods arriving damaged or looking different from what the customer saw online. Customers often also have to go and pick up the packages themselves.	• Increase awareness of consumers' rights and redress channels when it comes to e-commerce, for example, through developing consumer protection reference guides and ensuring that online market places and e-commerce sites provide links to appropriate legislation on consumer protection. • Improve customer fulfilment and delivery experience. • Work with consumer protection organisations to protect and enforce the rights of e-commerce consumers. • Monitor developments in e-commerce and update policies to maintain relevance.
7	Overall, 49.4% of individuals had a registered mobile money account in their names compared to one in 10 individuals (10.4%) that had a personal bank account. Most individuals (64.9%) reported having used mobile money services in the previous three months.	The future of financial services is going to be digital. Digital financial services which typically include a mobile wallet and an integrated payment system, such as mobile money, permit the transfer of resources quickly, cheaply, securely and over longer distances. Mobile money has also managed to reach a far bigger proportion of the population than traditional banking through the ubiquitous network of agents, creating opportunities to expand financial inclusion and resilience in the face of livelihood challenges.	• Increase awareness of digital financial innovations, benefits, and security through nationwide messaging. • Revise regulatory guidelines to improve interoperability between banks and mobile money operators. • Digitise benefit transfer payments, such as the Social Assistance Grant for Empowerment (SAGE) under the Social Protection Programme (ESP).[2] • Develop new policies and regulations to expand financial inclusion in frontier locations (low population size and density).[3] • Reduce the cost of using digital payments and services.

8 https://socialprotection.go.ug9
9 https://www.bcg.com/publications/2019/how-mobile-money-agents-can-expand-financial-inclusion

	Key Findings	Implications	Recommended Action
8	Among individuals that had used mobile money but lacked their own mobile money account, the biggest impediment was 'having no national ID' (51.5%).	Given that only 75.9% of individuals reported owning a national ID, this highlights the need to expedite and simplify the processes related to acquiring (and replacing) national IDs and other identifiers that can facilitate digital transactions	• Government needs to follow other countries that are now moving towards creating national digital identities and other digital attributes to facilitate authentication and digital transactions among citizens and between citizens and businesses as well as the government.
9	Four in five individuals (77.1%) were not aware of any government services provided online (Figure 179). Amongst individuals that were aware (22.9%), only 26.1% had had some form of e-government interaction in the previous 12 months (Figure 182).		• Increase awareness of e-government services through nationwide messaging. • Undertake dedicated studies to measure how satisfied citizens are with the performance of different e-government services.

CHAPTER 7

Businesses

This chapter summarises the findings on different indicators related to how businesses access and use different IT services. The indicators are organised into categories that include the penetration and use of computing devices; the penetration and use of internet access; the use of websites and social media, software applications and information systems; and the use of cloud applications as well business information security.

7.1 Characteristics

This section describes the characteristics of the businesses interviewed, business age and business size as well as their distribution across sectors.

Out of a sample of 600 businesses, enumerators were able to locate or successfully contact 344 businesses, which were approached to participate in the survey. Of these, 197 agreed to participate and provided full data, resulting in a response rate of 57.3%.

Business Age

Figure 194 shows that nearly one-quarter of the businesses (25.4%) were over 20 years old, while 21.8% were six to 10 years old.

Figure 194: Age of businesses

Business Size

Figure 195 shows that most businesses interviewed (31%) had 20-49 employees, followed by businesses with 10-19 employees (28.4%).

Figure 195: Number of employees in businesses

7.2 Digital Devices

Figure 196 shows the penetration of basic computing devices across businesses. Printers had the highest penetration (58.9%) among businesses, followed by desktop computers (57.9%) and laptop computers (52.8%). On the opposite end of the spectrum, there were no stand-alone fax machines, while VOIP phones (1%) and barcode readers (2.5%) had the least penetration among businesses.

Overall, none of the businesses reported providing any assistive technologies/equipment for employees with disabilities, and only 19.8% of businesses reported having a mobile payment platform such as a 'merchant/pay bill/ till number' during the previous three months.

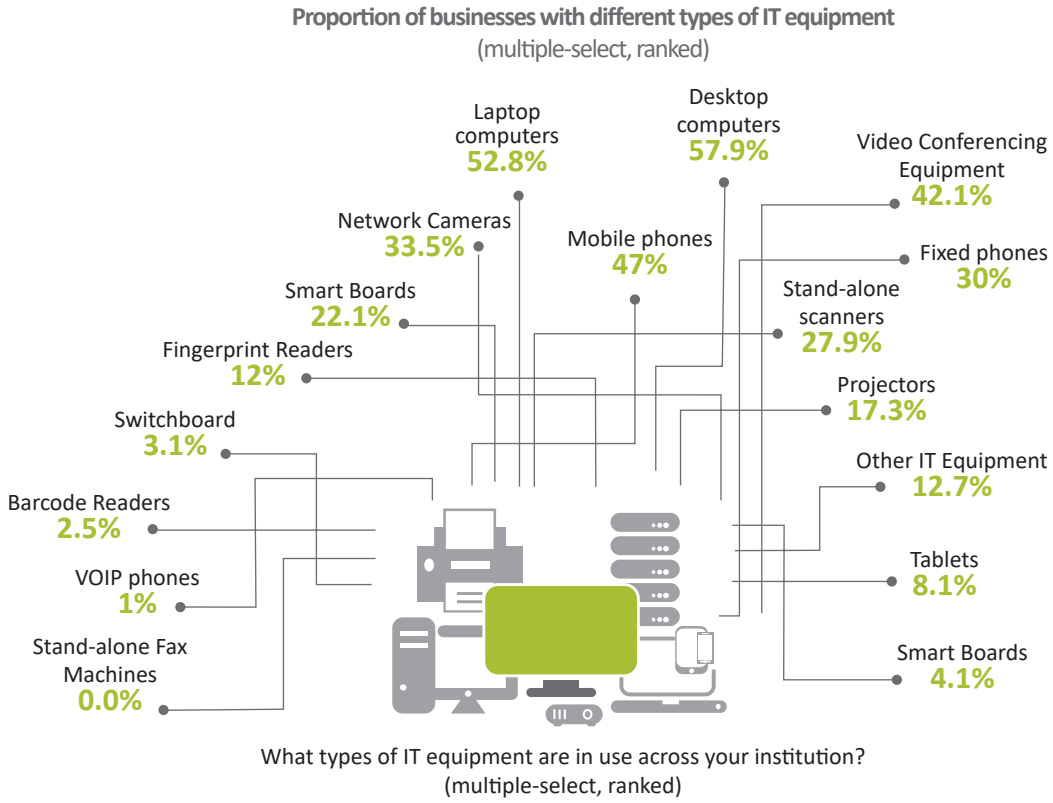


Figure 196: Penetration of Computing Devices across businesses

Businesses reported that 25.2%% of all their employees had a computer assigned to them at work (for work purposes) and that 28.4% routinely used computers at work (for work purposes).

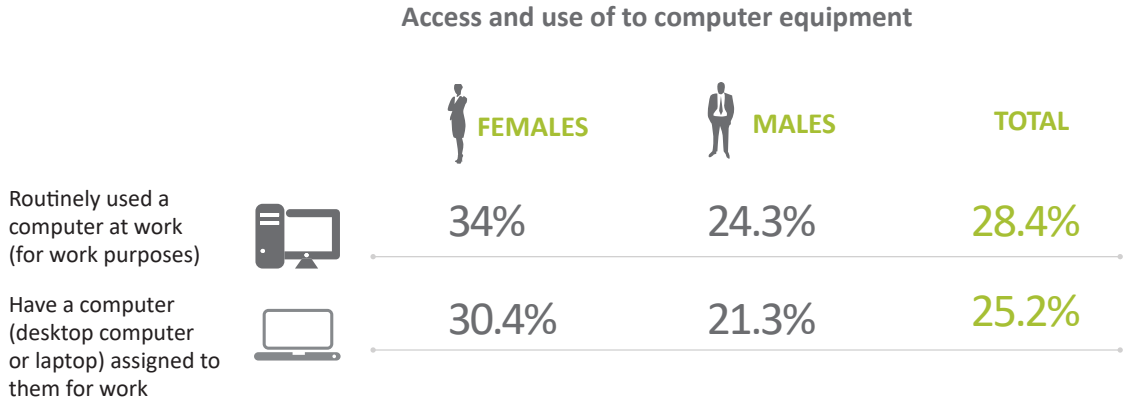


Figure 197: Proportion of business employees assigned and routinely using computers

Figure 197 shows that from a gender perspective, a higher proportion of female employees were assigned computers at work (30.4% vs. 21.5%, respectively) and routinely used computers at work (34% vs. 24.3%, respectively) compared to male employees.

No Computers

Overall, 39.6% of businesses reported owning no computers at all. Figure 198 shows the various reasons given by businesses that owned no computers. Most businesses (57.7%) indicated that computers were too expensive for them to afford, followed by businesses that did not need computers (33.3%). Among businesses that indicated 'Other' (20.5%) were businesses with plans to acquire computers, while others reported that employees or the proprietor had other locations at which they could access computers.

Figure 198: Reasons why businesses owned no computers

Business owning no computers were asked if they had any plans to provide employees with computers, and 51.3% of these indicated having plans. Figure 199 shows the timelines within which businesses that owned no computers expected to provide their staff with computers.

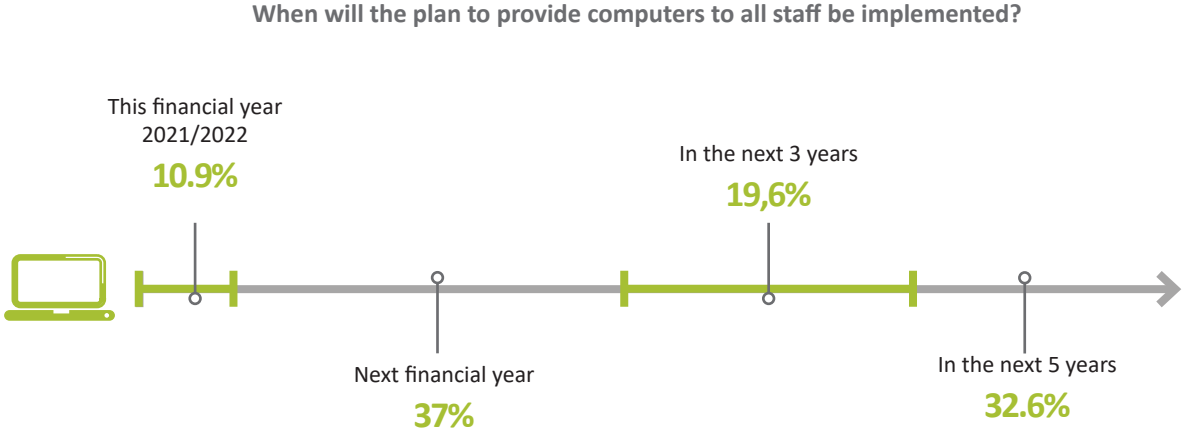


Figure 199: Businesses with future plans to provide employees with computers

7.3 Network Connectivity and Internet Access

The survey collected data about businesses' access to the internet, their ISPs, types of internet connections and perceptions on their Internet service. In addition, the survey explored how business employees access the internet. Figure 199 provides an overview of businesses with different ICT services.

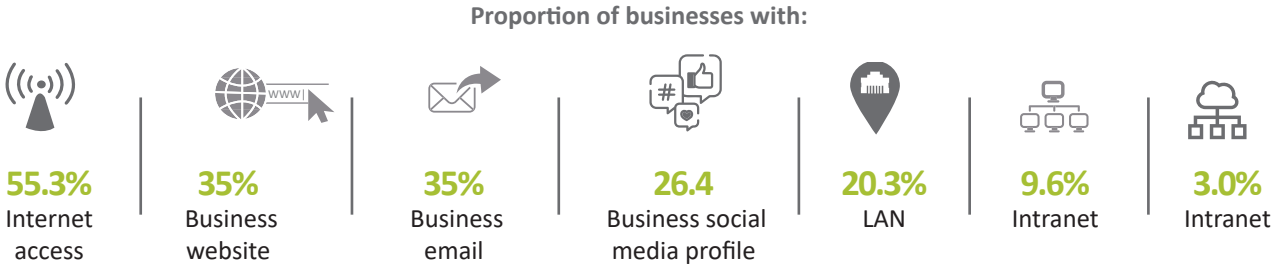


Figure 200: Proportion of businesses with various IT services

One in every two businesses (55.3%) reported having internet access, while one in every three businesses (35.0%) reported having a business website.

Internet Access and Type of Connection

Among businesses with internet access, most businesses (38.9%) reported using routers (using SIM cards) to connect to their ISP, followed by USB dongles/MiFis (28.7%), as highlighted in Figure 201.

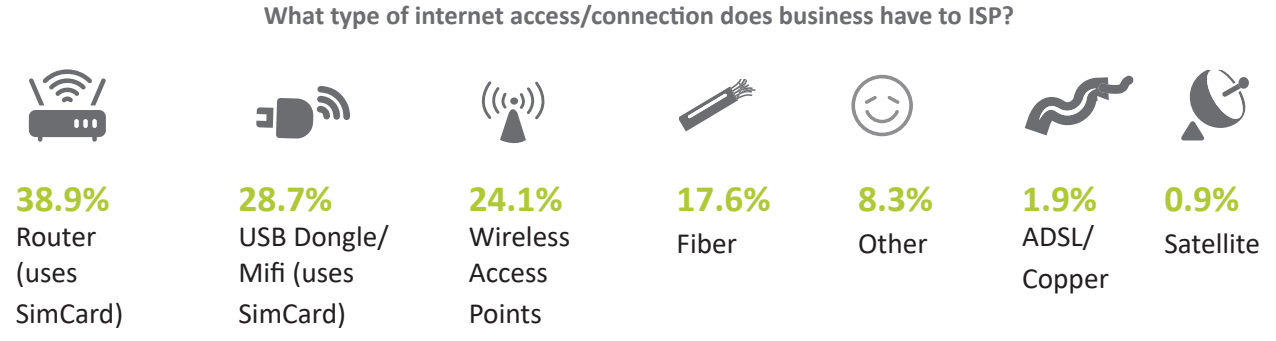


Figure 201: Types of Internet connection among businesses with internet access

Only 20.3% of businesses reported having LANs. Businesses used a variety of methods to provide staff with internet access for work-related purposes. Most businesses used Wi-Fi networks (75.2%), followed by USB modems (18.3%), as presented in Figure 202.

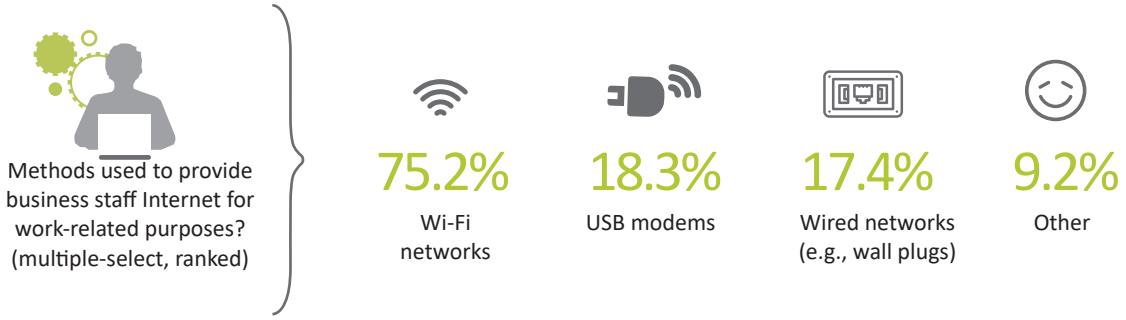


Figure 202: Methods used by businesses to provide staff with Internet access for work-related purposes

Figure 203: Activities for which business staff used the Internet at work

Internet Use by Business Staff

About one in three business employees (28.3%) routinely used the internet at work (for work purposes). These are split into 47.6% female and 52.4% male, showing a bias towards male business employees.

Figure 203 shows the different work-related activities that business employees used the internet for. From the survey findings, most business staff used the internet for sending and receiving email (74.3%), followed by providing services to the public (52.3%).

No Internet Access

The survey collected data from businesses that reported that they did not have internet access (44.7%) about the reasons for their lack of internet access. Figure 204 shows that the high cost of internet service was cited as the top-most reason (63.6%), followed by the high cost of internet equipment (58%) and having no need for internet (19.3%).

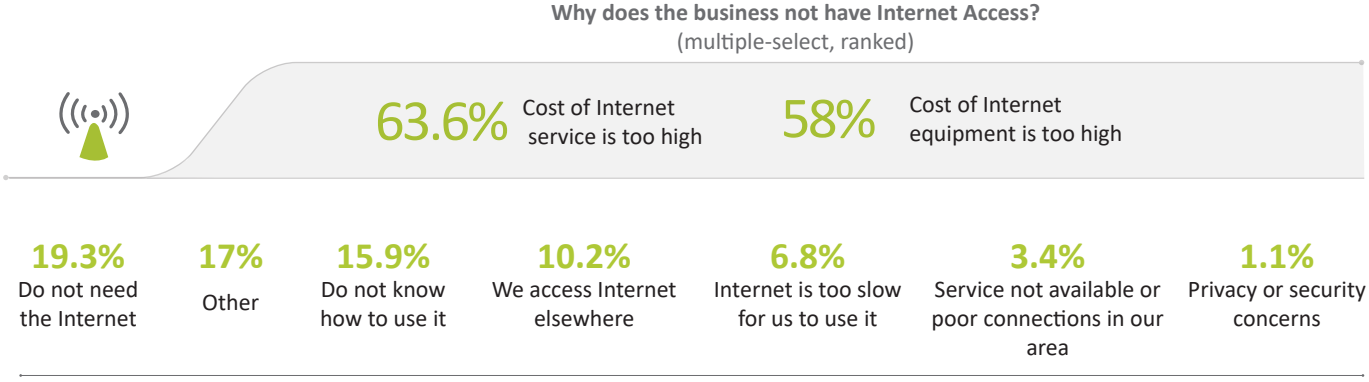


Figure 204: Reasons why businesses did not have Internet access

Overall, 52.3% of businesses that had no internet access indicated that they had plans in place to provide internet access for their staff. Most of these businesses (37%) planned to accomplish this within the next financial year, as indicated in Figure 203.

7.4 Sales and Purchases

Business with internet access were also asked if they had received orders (made sales) or placed orders (made purchases) for goods and services via the internet during the previous three months. Among these, 57.8% of businesses indicated that they had received orders, and 52.3% indicated that they had placed orders for goods and services via the internet during the previous three months.

Sales

Figure 205 shows how businesses received payment from customers for sales during the previous three months. Most customers (75.5%) paid using cash on delivery, followed by using mobile money (54.2%).

Figure 205: Methods through which businesses received payments for goods and services

Figure 206 shows how businesses delivered customer orders during the previous three months. For most orders (55.4%), buyers picked their goods up from a point of sale or service point, followed by orders physically delivered to the customer (33.1%).

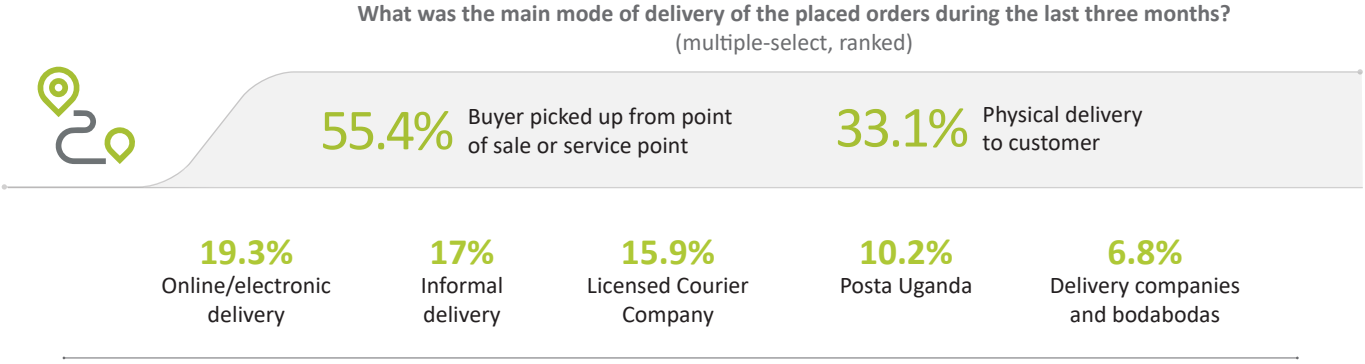


Figure 206: Mode of delivery for business sales

Purchases

Overall, Figure 207 shows how businesses made payments to suppliers for business orders during the previous three months. Most customers (73.6%) paid using cash on delivery, followed by using mobile money (39.6%).

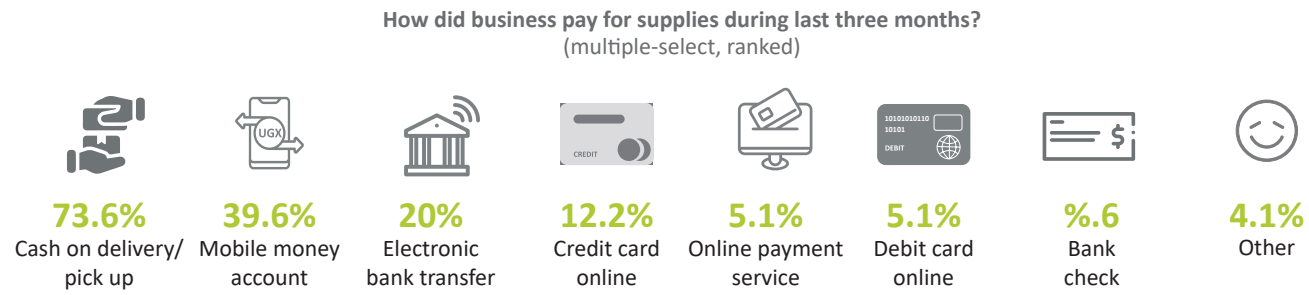


Figure 207: Methods through which businesses paid for supplies

Figure 208 shows how businesses received supplies during the previous three months. For most supplies (52.3%), businesses picked up from a point of sale or service point, followed by free or paid delivery by the supplier (21.3%).

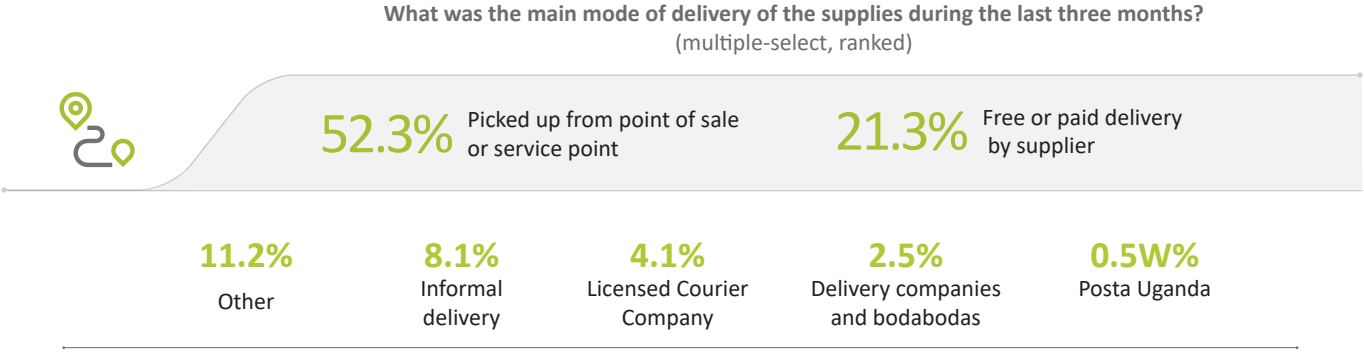


Figure 208: Mode of receiving business supplies

Obstacles to E-commerce

Businesses that had made both online sales and purchases were asked if any factors limited or prevented them from selling/buying online. Figure 209 shows the obstacles cited by businesses as limitations. Most of these businesses (40%) indicated that there was insufficient customer demand for online purchases, followed by those that preferred to maintain face-to-face interaction (35%).

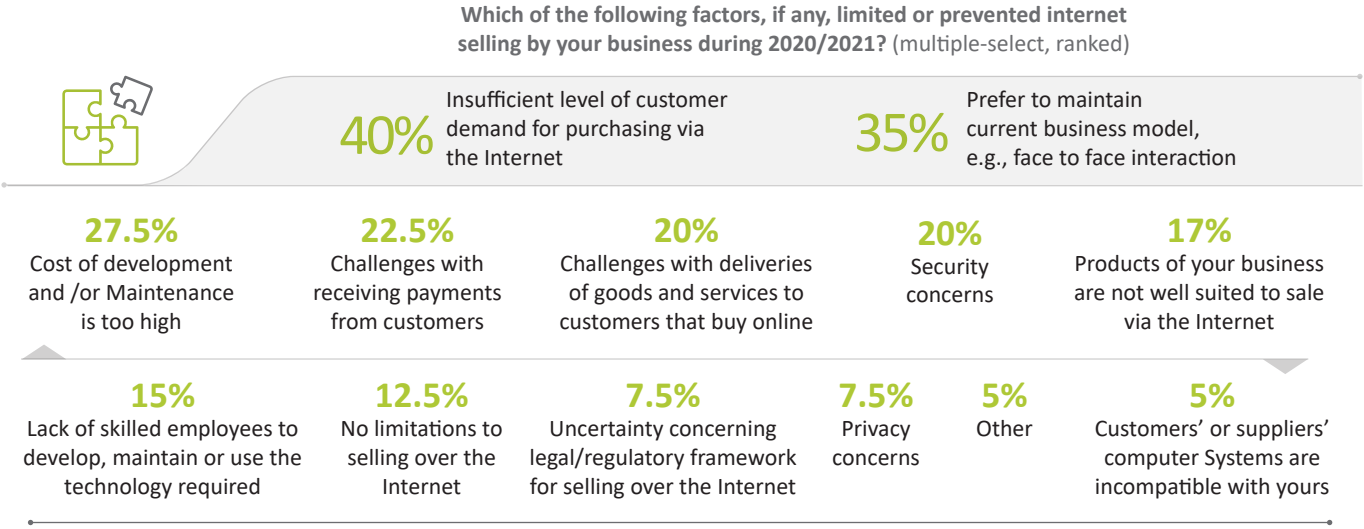


Figure 209: Factors limiting online sales among businesses

7.5 Websites and Social Media

The survey collected data about the online presence of businesses and how they used social media.

Websites

One in every three businesses (35%) reported owning a business website. The business websites provided different features, which are summarised in Figure 210. Most business websites (76.8%) provided a catalogue of products and services, followed by links to business social media profiles (46.4%).

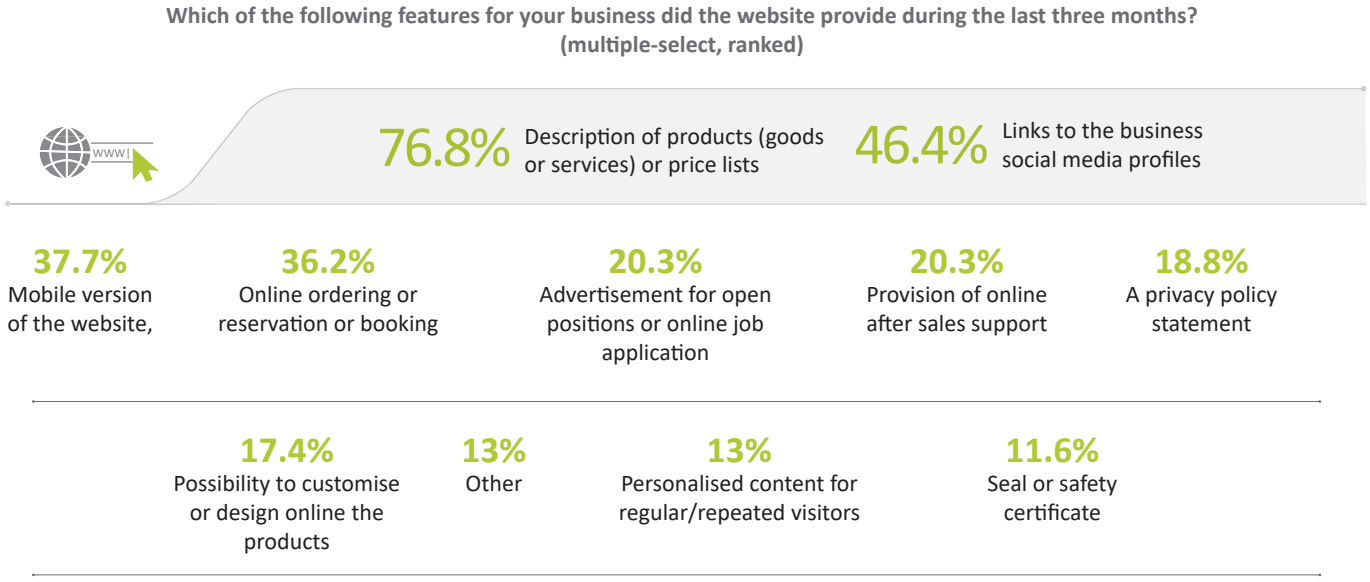


Figure 210: Features provided by business websites

Only 11.6% of business websites provided a website seal or safety certificate to indicate the use of an encrypted connection. This highlights the need to create more awareness among businesses about the need to secure websites and how to go about the process.

One in every three (34.8%) businesses selected 'Other' to indicate that they updated their websites after more than three months or when the need arose. This was followed by businesses that updated their websites at least once every three months, but not every month (29%) as summarised in Figure 211.

Figure 211: Frequency of updating the business website

Businesses without websites (65%) cited a number of reasons as to why they did not have any business website. The most common reason cited by businesses without a website was high setup and maintenance costs (46.9%), followed by lack of internal technical expertise (35.2%), as shown in Figure 212. This highlights the need to create mechanisms that lower the barrier for businesses to get online with minimal technical skills and at lower cost.

Figure 212: Reasons why business did not have a website

Advertising

Overall, 60.6% of businesses that had access to the internet also indicated that they implemented advertising. Figure 213 shows the advertising channels used by such businesses. Most businesses (40.9%) reported using their presence on social media, followed by other media (e.g. TV and print media).

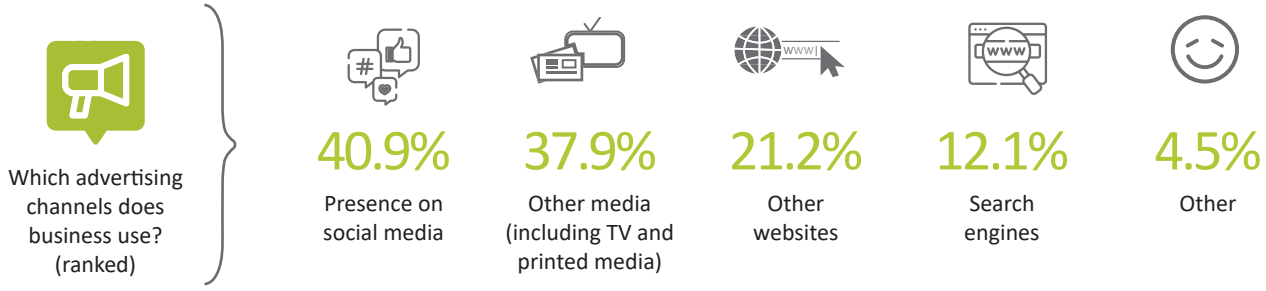


Figure 213: Advertising channels used by businesses with Internet access that advertised

Social Media

Most businesses (67.5%) reported having at least one profile on different social networks. Figure 214 shows the different social networks on which these businesses had profiles. Most businesses (78.9%) reported having business profiles on Facebook, followed by WhatsApp (64.7%) and Twitter (28.6%), as summarised in Figure 214.

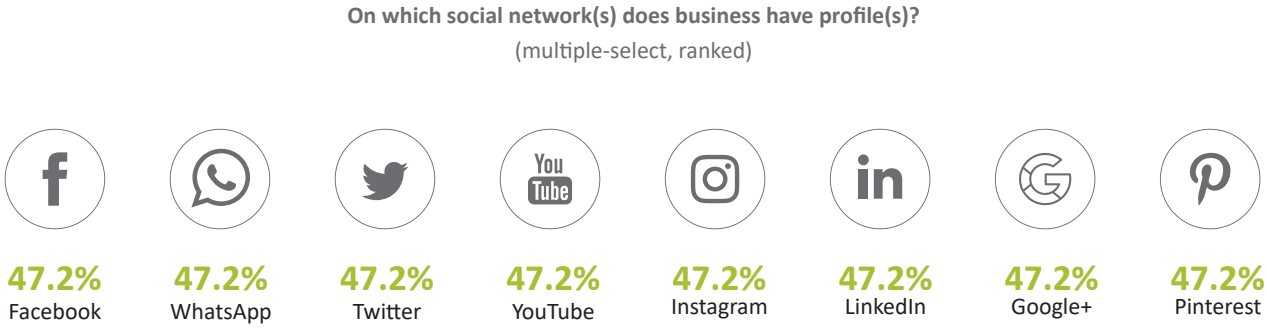


Figure 214: Social networks used by businesses

Businesses were also asked to select the one social media platform that they used most often. Facebook (45.6%) and WhatsApp (41.2%) emerged as the dominant platforms, as presented in Figure 214.

7.6 Software and Information Systems

This section highlights the survey findings on business software and information systems including the different types of systems and software applications deployed by businesses as well as the level of systems integration methods.

Software Applications

Three out of every five businesses (58.9%) reported software applications used in the business (officially supported). Figure 215 shows the different software applications reported by businesses. Most businesses (82.8%) reported using anti-virus software, followed by database management software (52.6%).

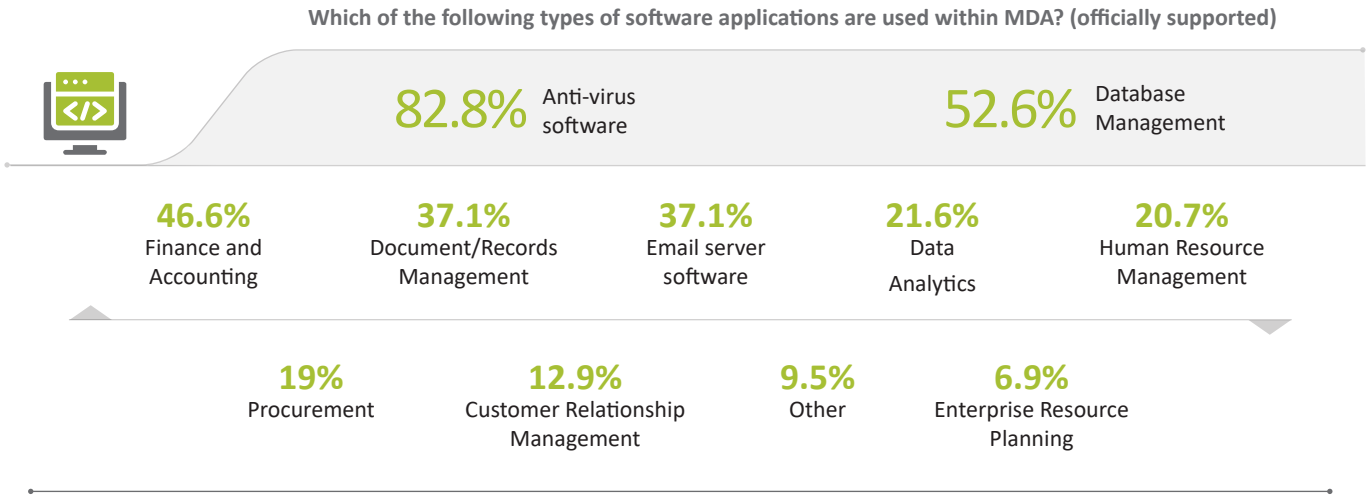


Figure 215: Software applications used by different businesses

Most businesses (58%) among those with software applications indicated that none of their applications in the above categories had been developed in-house (as opposed to being procured off-the-shelf). Figure 216 shows businesses that had applications in different categories developed in-house. The largest category of software applications that businesses developed in-house was database management systems (15.5%), followed by finance and accounting solutions (13.8%).

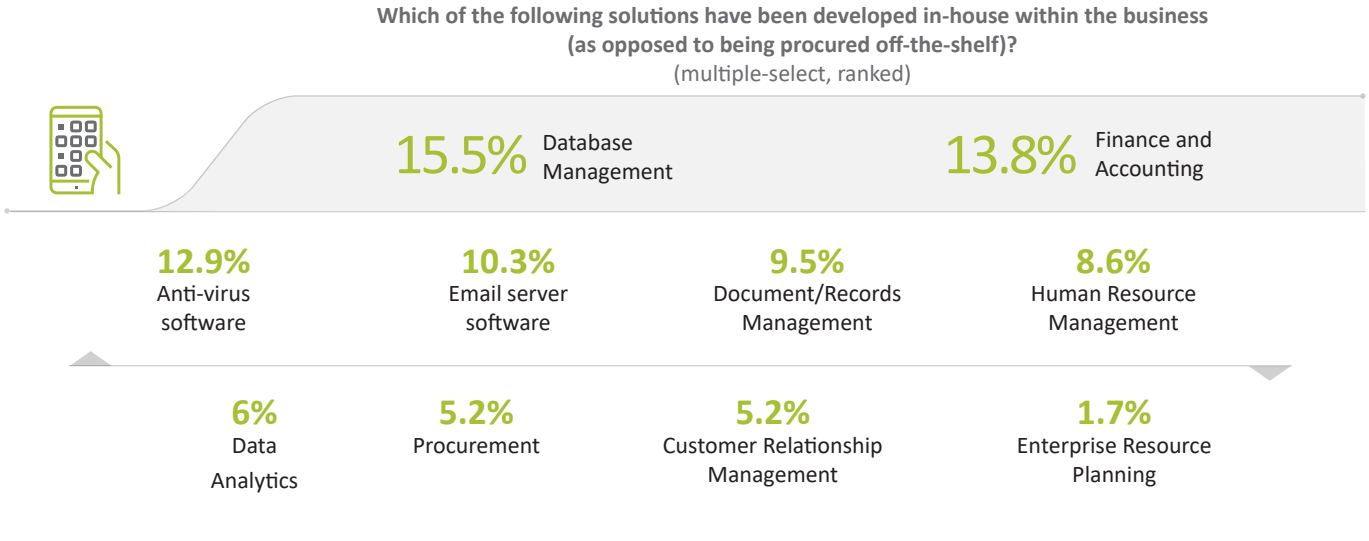


Figure 216: Software developed in-house by businesses

Among the businesses that reported having different software solutions, only 19.3% indicated having some form of integration between different software. Most of these businesses reported passing flat files between systems (64.7%) and using direct database queries (47.1%) as a form of system integration.

Overall, 36.6% of all businesses reported that they used mobile applications for day-to-day business activities. Figure 217 shows some of the benefits cited by businesses in using mobile applications for their business.

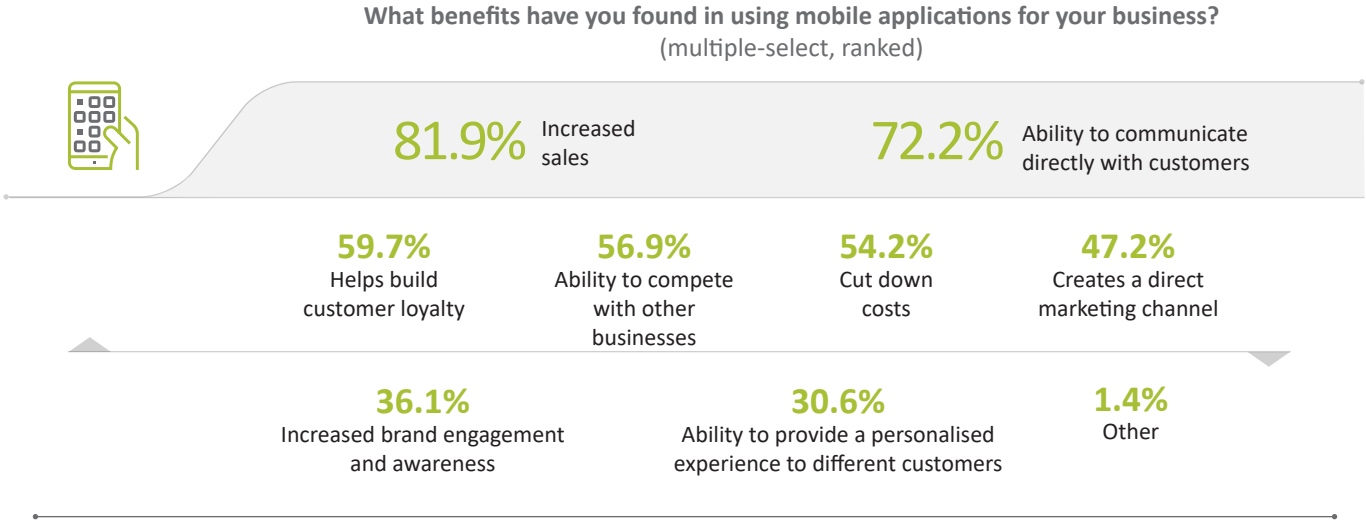


Figure 217: Business benefits of using mobile applications

7.7 Cloud Computing

Only one in three businesses (34.5%) has embraced the cloud and reported buying any computing services over the internet. Of these, 51.5% had bought desktop/office and email and messaging software, followed by data or file storage (36.8%), as indicated in Figure 218.

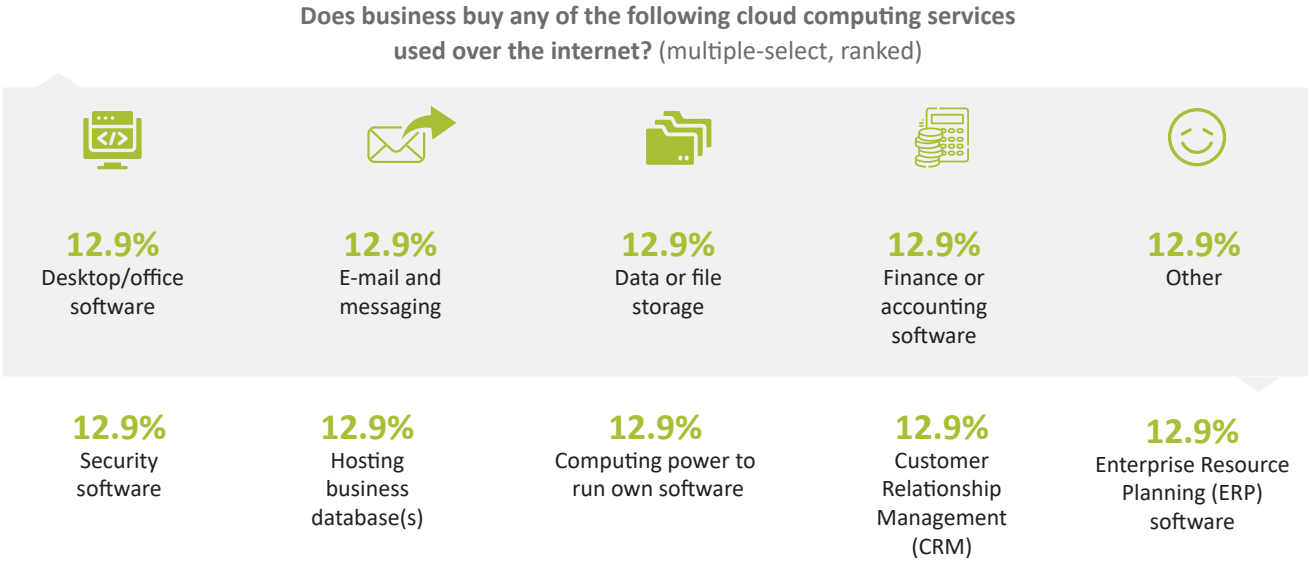


Figure 218: Cloud computing services bought by businesses

Cloud Benefits

Businesses that had adopted cloud computing services identified a number of benefits. Figure 219 shows that the most common benefit was improved security (57.4%), followed by more flexibility in up- and down-scaling services (54.4%) and reduction of ICT-related costs (54.4%).

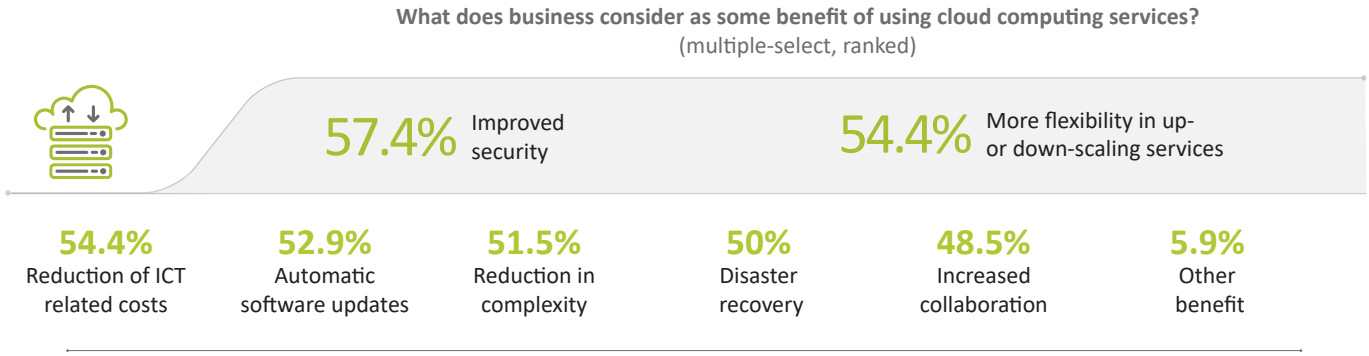


Figure 219: Cloud computing benefits identified by businesses

Cloud Barriers

Figure 220 shows the barriers reported by businesses that limited their use of cloud computing services. The high cost of services (33.8%) was cited as the top-most barrier, followed by security concerns (26.5%).

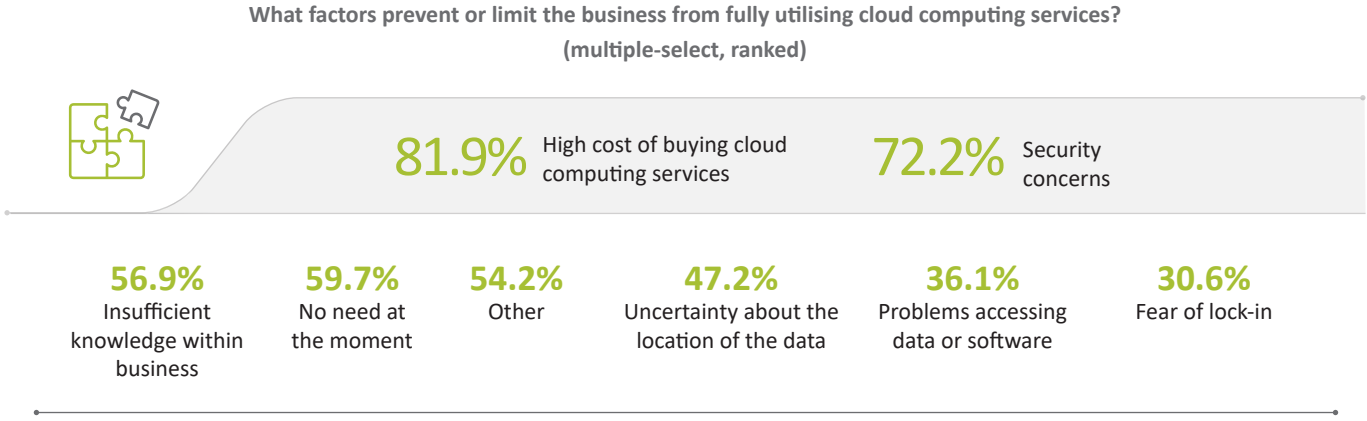


Figure 220: Barriers to cloud computing reported by businesses

7.8 IT Management and Security

This section highlights the survey findings from businesses related to ICT policies formally developed, approved and implemented within business operations. The section also highlights IT security incidents experienced by businesses and the counter measures adopted to mitigate reoccurrence.

ICT Policies

Overall, most businesses (72.1%) reported that they still lacked any kind of formal ICT policies or plans used to drive business operations. Among businesses with formal ICT policies, IT training policies were most common (13.7%), followed by policies on the acceptable use of business IT resources (13.2%) and IT policy/strategy/master plan (11.7%), as indicated in Figure 221.

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

Policy area	2017/18	2022
IT Training	13.7%	13.2%
IT Policy/Strategy/Master Plan	11.2%	11.7%
Information Security Policy	9.6%	8.6%
IT Disaster Recovery and/or Business Continuity	4.1%	3%
Other	2%	1%
Institutional Enterprise Architecture	0.5%	0%

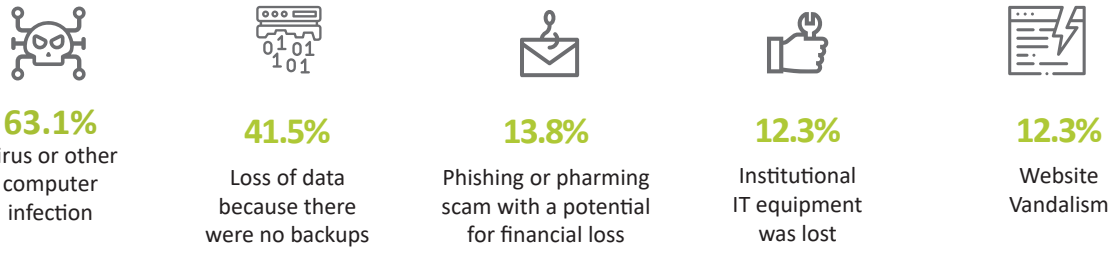
Figure 221: ICT policies formally approved and in use by different businesses

Two out of every five businesses (39.6%) also reported maintaining an up-to-date register of all important IT assets.

IT Security Incidents

Overall, most businesses (67%) reported not having experienced any type of IT security incident during the previous 12 months. Among the businesses that had experienced some type of IT security incident (33%), the most common IT security incidents related to viruses or other computer infections (63.1%), followed by a loss of data due to a lack of backup (41.5%), as highlighted in Figure 221. The least common IT security incident reported was financial loss due to the fraudulent use of business payment tools or credentials (3.1%).

Which of these IT security incidents did the business experience during the last 12 months?
(multiple-select, ranked)



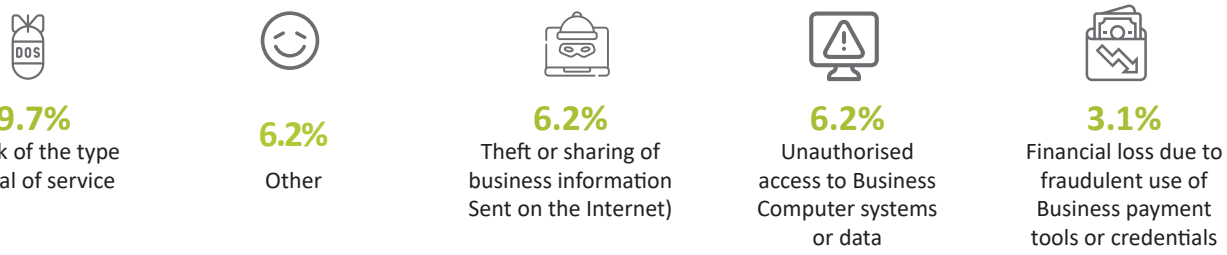


Figure 222: Proportion of businesses that experienced different security incident(s)

Amongst businesses that experienced some kind of IT security incidents (33%), only one in three (27.7%) reported the IT security incident(s) to some entity. Half of these (50%) reported to the Uganda Police (or other law enforcement agency), followed by 'Other' (33.3%), largely composed of internal entities inside the business as indicated in Figure 223.

Most businesses reported ICT security incidents to the police as opposed to NITA-U or the National CERT.UG/CC – another indication of the need to build more awareness on the role that these institutions can play in investigating and mitigating future IT security incidents.

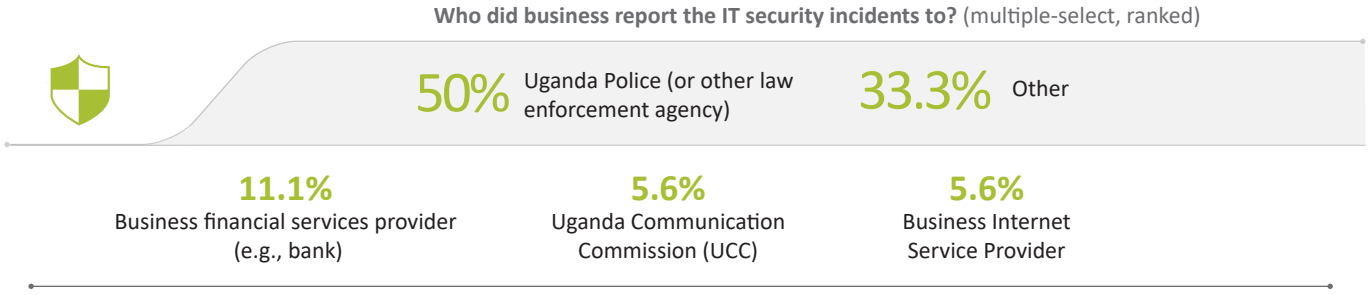


Figure 223: Entities to which businesses reported security incident(s) they experienced

Among businesses that experienced security incidents but did not report them (63.3%), about half (46.8%) indicated that they had fixed the problem internally, followed by not knowing who to report to or how to report the incident(s) (23.4%), as presented in Figure 224.

Figure 224: Reasons why business had not reported any security incident(s)

Overall, only 4.1% of businesses were aware of the National CERT.UG/CC.

IT Security Measures

Overall, only one in three (30.5%) businesses reported that they had implemented some IT security measures within their institutions to minimise the impact of IT security incidents. The most common IT security measure was subscription to anti-virus software (70%), followed by implementing firewalls (46.7%) and making regular full backups of critical business data (35%), as summarised in Figure 225.

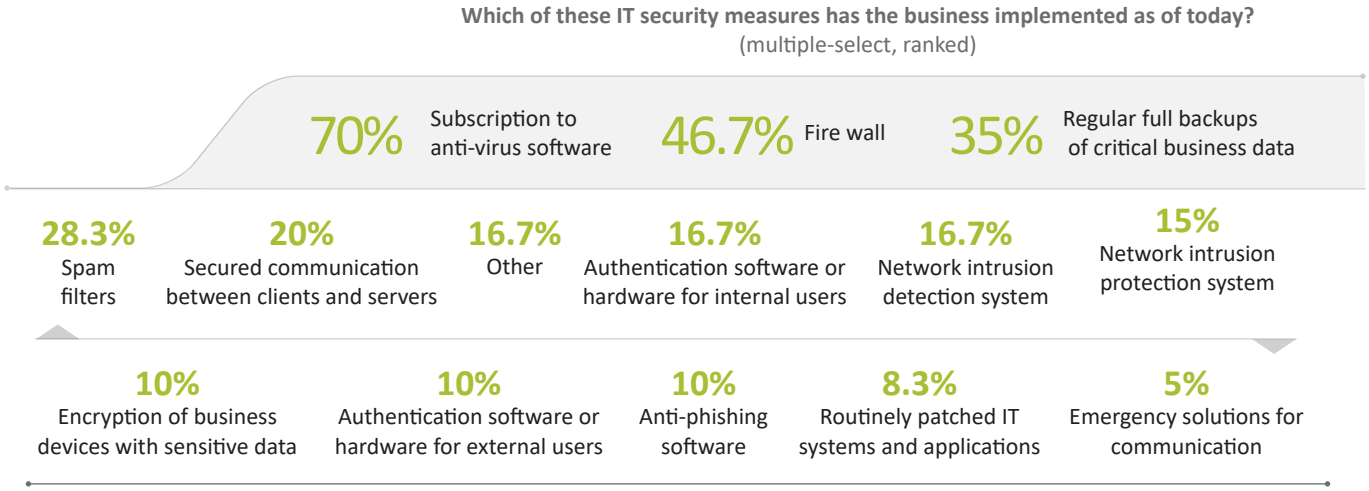


Figure 225: Various ICT security measures implemented by businesses

7.9 Awareness of Cyber Laws

Figure 226 shows businesses' awareness of Ugandan laws governing electronic communications and transactions (sometimes called cyber laws). Overall, businesses were more aware of the Electronic Signatures Act, 2011 (49.2%), compared to the other legislation.

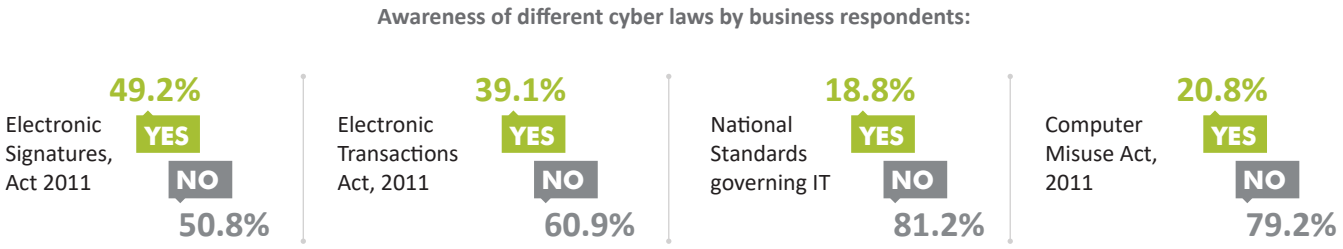


Figure 226: Business awareness of different cyberlaws

The survey asked business respondents that were aware of the cyber laws how they had learned about these laws. Most (58.1%) had become aware of the laws through TV, followed by word of mouth (51.3%) and radio (50.4%), as indicated in Figure 227.

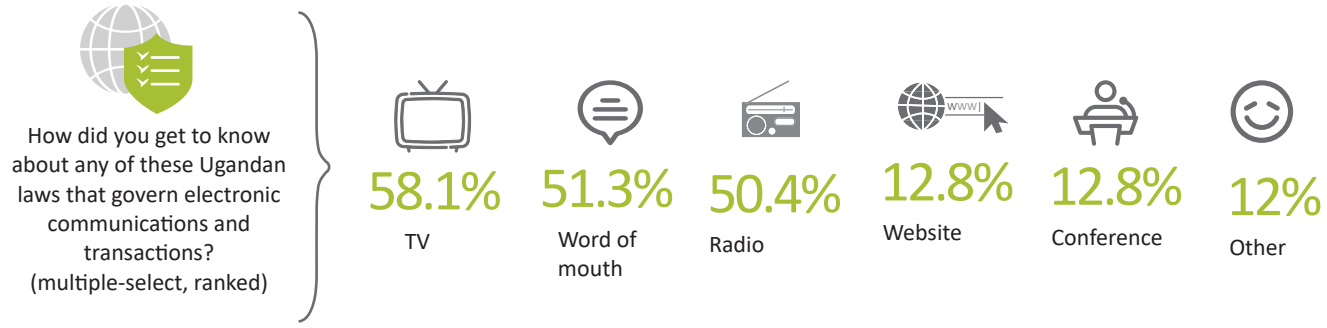


Figure 227: Channels through which businesses learnt about cyberlaws

In terms of risk perception, over half of all businesses (58.9%) indicated not feeling at risk of cybercrime, as highlighted in Figure 228.

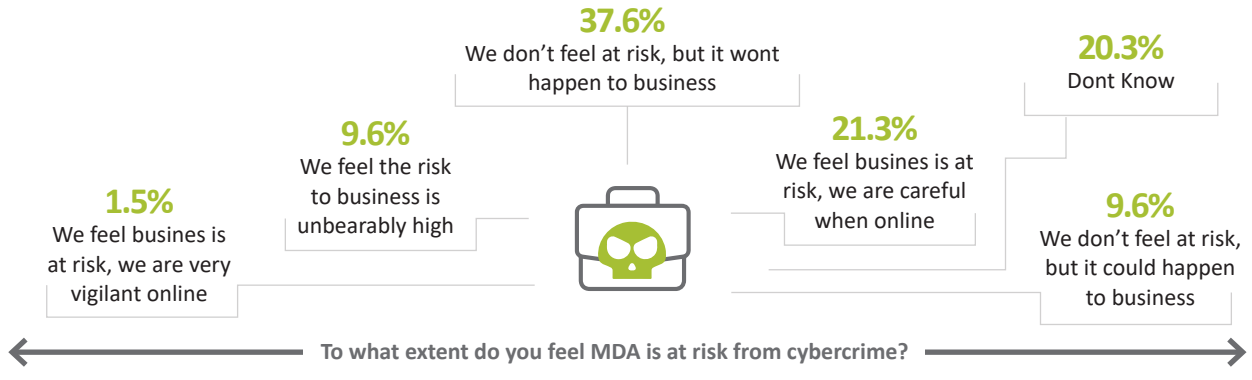


Figure 228: Perception of cybercrime risk among businesses

Over the previous 12 months, most businesses (71.6%) reported that they had not been victims of any cyber-dependent crimes (can only be committed using IT). Figure 229 shows that among businesses that reported being victims of cyber-dependent crimes (28.4%), a virus or other computer infection (65.1%) was the most common occurrence, followed by receiving unsolicited messages (17.5%).

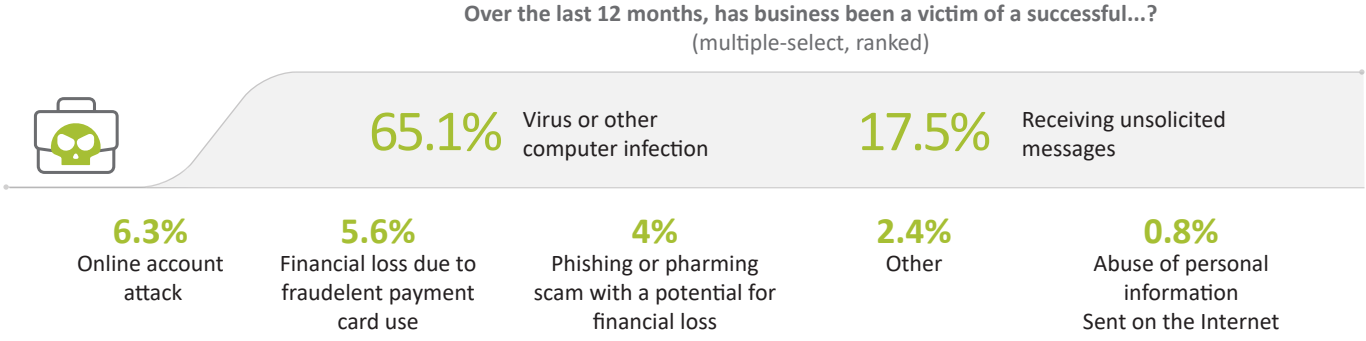


Figure 229: Business victims of cyber-dependent crime over the previous 12 months

Overall, 90.4% of businesses reported that they had not been victims of any form of cyber-enabled crimes (IT increases their scale and form, but they could be committed without use of IT) over the previous 12 months. Figure 230 shows that among businesses that reported being victims of cyber-enabled crimes, online fraud or theft (4.1%) was the most common occurrence, followed by online stalking (3.6%).

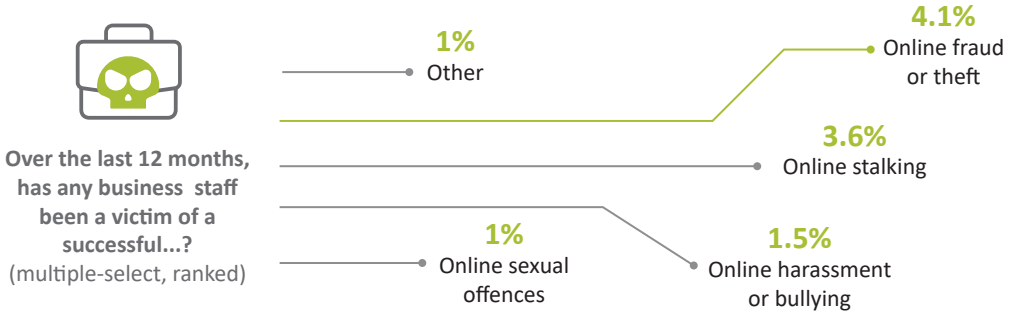


Figure 230:Business victims of cyber-enabled crime over the previous 12 months

Overall, only 3.1% of all businesses had ever reported any online crimes committed against the business or their staff. Of these, 66.7% had reported to the Uganda Police, while 16.7% had reported to NITA-U.

The major reason why the majority of businesses (97%) had never reported any online crimes, given by 79.1% of the businesses, was that it was not applicable (e.g., no crime had been committed against them), and 9.4% reported that they had fixed the problem by themselves.

Figure 231 shows the different security measures implemented by businesses to improve their online security. Most businesses (35.5%) reported taking no measures whatsoever, while using up-to-date antivirus software (33.5%) was reported as the most common measure.

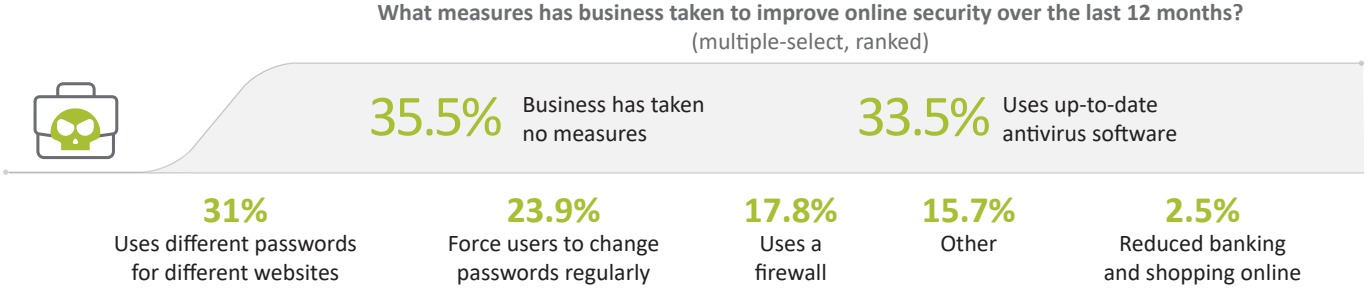


Figure 231: Measures undertaken by businesses to improve online security

7.10 Perceptions

Figure 232 shows businesses' perceptions on a number of aspects in the ICT sector.

On the positive side, businesses perceived the cost of making business calls as affordable (64%) and the quality of the mobile network as good (63.5%). On the negative side, only 18.8% of businesses felt that IT equipment for the business was affordable.

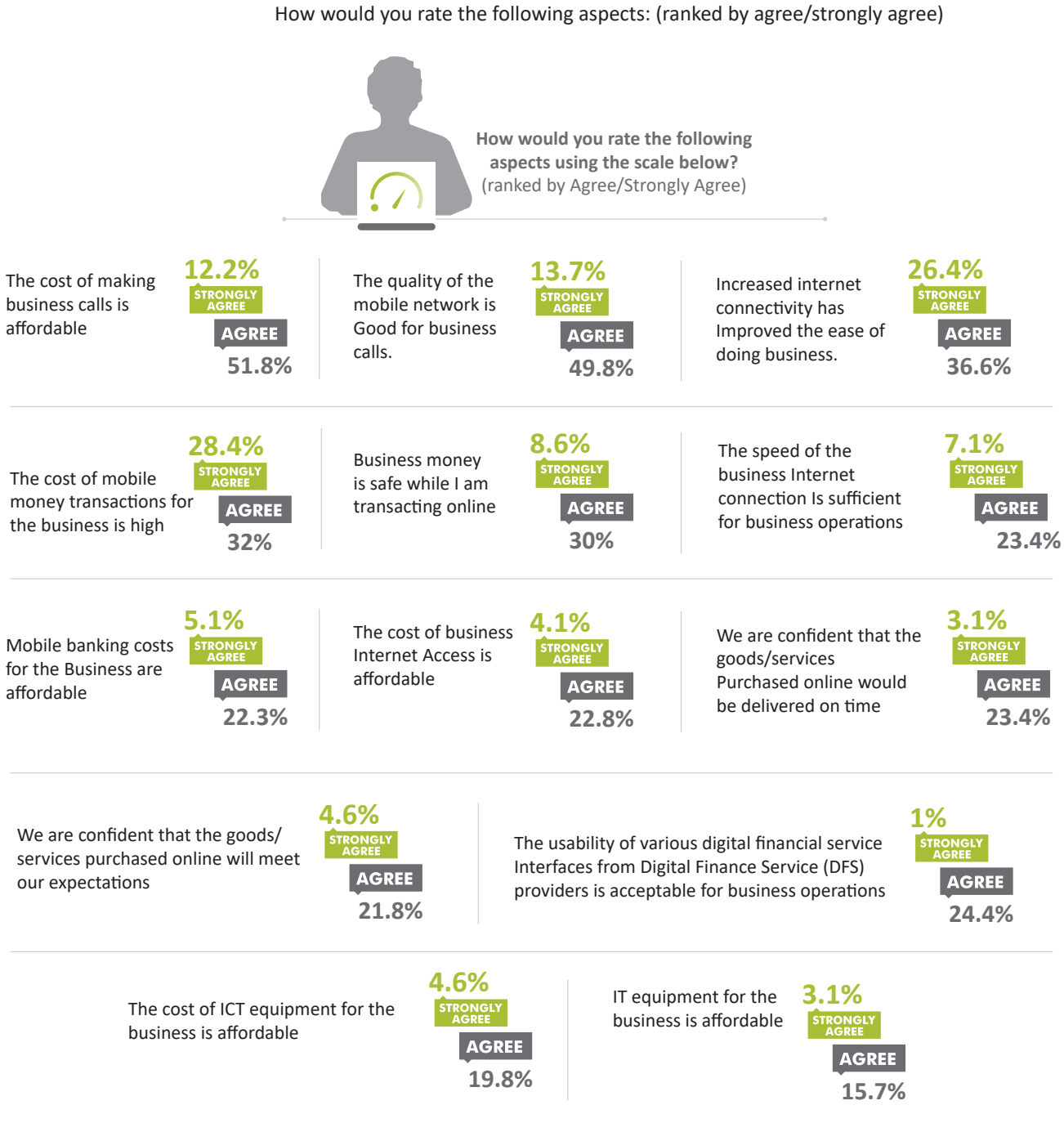


Figure 232: Businesses' perceptions of different aspects in the ICT environment

7.11 Summary of Findings and Implications

Over half of all businesses reported having access to basic computing devices, such as desktop computers (57.9%), laptop computers (52.8%) and printers (58.9%). But the proportion of employees assigned a computer at work (for work purposes) (25.2%) and the proportion that routinely used computers at work (for work purposes) (28.4%) were still low. About one in three business employees (28.3%) routinely used the internet at work (for work purposes), closely matching the proportion of staff that routinely used computers at work. Cost was cited as the biggest impediment for access to both computing devices and the internet, corroborating feedback from other stakeholders such as MDAs, LGAs, households and individuals.

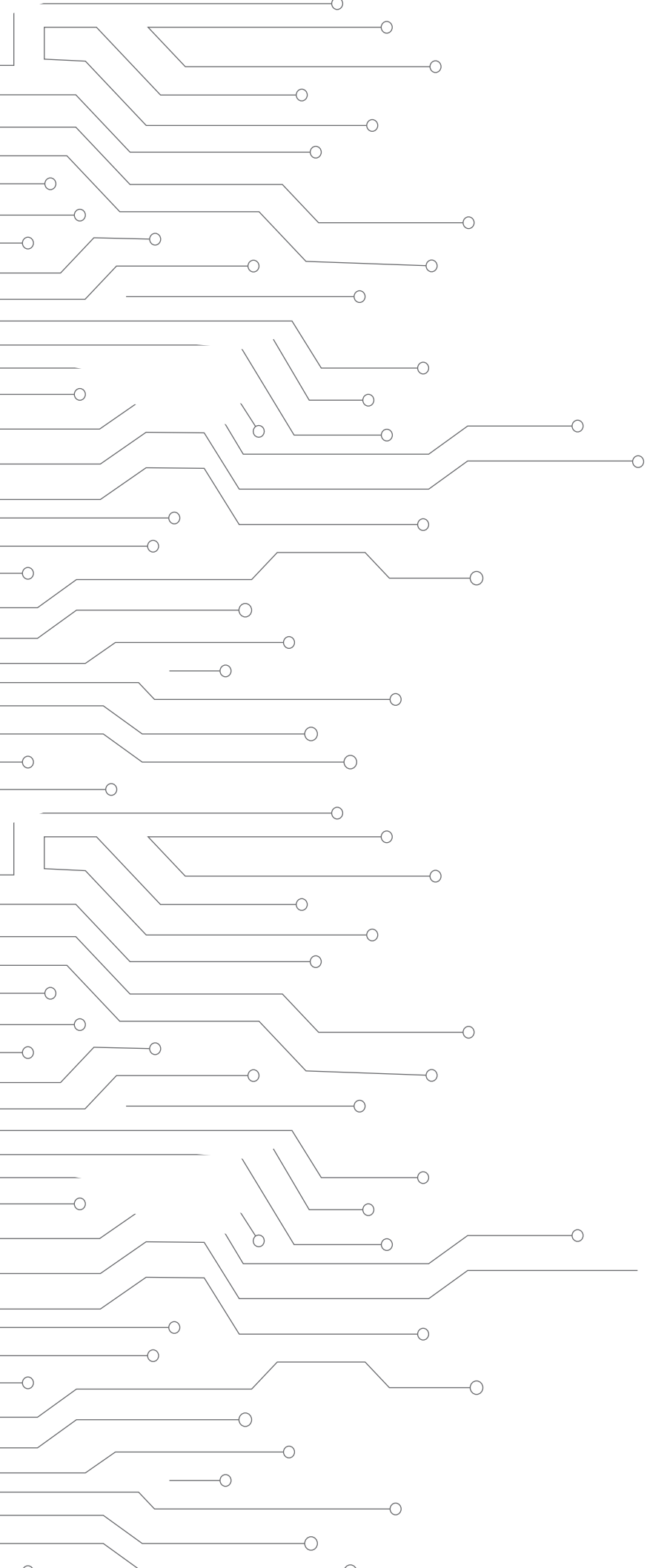
While one in two businesses (55.3%) had internet access, only one in every three businesses (35.0%) had a business website. Among the businesses with internet access, 57.8% had received orders, while 52.3% had placed orders for goods and services via the internet during the previous three months. While the use of mobile money is high, businesses largely relied on cash on delivery/pickup for both sales and purchases. This highlights the need to develop both digital payments and delivery logistics systems to facilitate trade. These are cited as top limitations by businesses that had made online sales and/or purchases along with the low level of customer demand for online purchases.

Table 15 provides a summary of the key findings across businesses in relation to ICT access and use and their potential implications for the ICT landscape as well as recommended actions that different stakeholders need to take to remedy the situation.

Table 15: Summary of key findings on businesses' access to and use of ICT and recommended actions

	Key Findings	Implications	Recommended Action
1	Among businesses with internet access (55.3%), 57.8% had received orders while 52.3% had placed orders for goods and services via the internet during the previous three months.		• Promote and market e-commerce to small businesses and build awareness of potential e-commerce benefits. • Require government agencies to use e-procurement to buy goods and services. • Create a one-stop e-business portal for small businesses to obtain information about e-commerce, such as appropriate apps, training opportunities, and financial incentives.
2	25.2% of business employees were assigned a computer at work (for work purposes) and 28.4% of business employees routinely used computers at work (for work purposes). One in three business employees (28.3%) routinely used the internet at work (for work purposes), closely matching the proportion of staff that routinely used computers at work.	Using computers and the internet in business can help increase efficiency, reduce downtime and improve sales. Computers and the internet can help businesses to improve communications and business management and to organise and analyse data as well as to manage customer and partner relationships.	• Develop a programme that explores and increases awareness among businesses about the benefits of the internet and other digital tools. • Develop programmes to equip businesses with the capacity to take full advantage of digital tools such as data analytics and more sophisticated online tools. • Explore avenues to lower the cost of computers, software and internet for businesses.
3	High cost was cited as the biggest impediment for access to both computing devices (Figure 211) and the internet (Figure 217).	This was the same case for other categories such as MDAs, LGAs, households and individuals.	

	Key Findings	Implications	Recommended Action
4	While one in two businesses (55.3%) had internet access, only one in every three businesses (35.0%) had a business website. 67.5% of businesses had at least one profile on different social networks.		• Support businesses to create websites as a way to build an online presence and to extend their physical shop to tap into the growing e-commerce market. • Develop programmes to equip businesses with the capacity to leverage social media to reduce advertising costs and increase customer engagement and sales.
5	While the use of mobile money is high, businesses largely relied on cash on delivery/pickup for both sales (Figure 219) and purchases (Figure 221).	Cash still dominates transaction payments despite the high handling costs and potential risks involved. But as businesses explore e-commerce, payment limitations and poor delivery logistics systems were cited as top limitations along with the low level of customer demand for online purchases (Figure 223).	• Support financial technology startups innovating and building platforms to address challenges in this space.
6	33% of businesses experienced some type of IT security incident during the previous 12 months. The most common security incidents related to viruses or other computer infections (63.1%), followed by loss of data due to lack of backups (41.5%) (Figure 237)	This number should likely be much higher to keep in line with global trends given the push towards remote and online working brought on by the COVID-19 pandemic. Business are even more vulnerable to cybercrime, which has become more rampant and sophisticated than before.	• Develop a programme to improve the awareness of businesses on cybersecurity, data protection and consumer protection issues. • Improve the planning, coordination and implementation of national cybersecurity policy/strategy and related information security initiatives among pertinent stakeholders.



8
CHAPTER

Recommendations and Conclusion

This chapter provides headline summaries of the previous chapters and the key recommendations based on the study findings.

8.1 MDAs and LGAs

The streamlined and mission-focused use of ICT services and systems starts with ICT policy, and there has been progress in that 75%[1] of the MDAs reported having such policies in place. The situation among LGAs is worse, with only 56% having any such policies in place. NITA-U needs to extend the required support to ensure that the remaining gap is addressed to reach the desired 100%. A caveat here is that this survey did not examine the quality and sufficiency of policies with respect to both back-end operations and front-end service delivery.

There is urgent need to recruit senior IT staff within MDAs and LGAs. The government can define minimum qualification requirements for such officers and ensure that they possess policy-level competence. These along with other business process leaders should constitute an institutional IT governance committee.

The government goal to connect all MDA offices and all district headquarters to fibre still has a long way to go. While the government has made progress on MDAs, the proportion of district headquarters that are still unconnected is high. Potential obstacles to a wider use of the internet for work purposes cited by LGAs included high cost (or inadequate budget), slow and unreliable internet, inadequate number of computers for staff and lack of access to electricity. It is difficult to see a realisation of digitalisation that will enable an efficient Parish Development Model level until these glaring gaps with respect to access are addressed. While there is increased satisfaction about the sufficiency of internet bandwidth among MDAs, most of them are still concerned about the cost and affordability of internet. It is evident that NITA-U needs to continue driving down the cost of internet bandwidth for MDAs, which would also have a positive impact on the general cost of internet access in the country.

While MDAs/LGAs indicated high interest in shared platforms and infrastructure, the sharing of information database(s) with other MDAs/LGAs or open data with the public is still minimal. To exacerbate the problem, only 6% of MDAs have an IEA, and 4% have IT interoperability frameworks – both critical as the government shifts towards the integration and interoperability of MDA systems to enhance efficiencies through whole-of-government digital investments. Both cultural and operational barriers to the sharing of data, both intra- and inter-MDA/LGA, need to be addressed as a matter of urgency. The absence of consistent and accurate data across the government disables both planning and service delivery and, in addition, leads to gaps and inconsistencies in reporting to international organisations. Revising legal frameworks that hinder interoperability and data sharing while encouraging the use of shared infrastructure will make it easier to integrate and to share data.

10 Percentages in the Recommendations have been rounded to two significant figures.

The growing rate of digital transformation within the economy has increased cyber threats and facilitated the emergence of new attack vectors and opportunities for cybercriminals. In contrast, the level of awareness among institutions and individuals as well as the perception of risks emanating from cyber threats was low. There is a general decline in the proportion of different security incidents that occurred during the preceding 12 months of this survey compared to the 2017/18 edition. While this may reflect improvements in terms of IT security skills and infrastructure across MDAs, it may also be a result of reduced detection, for example, due to the increased sophistication of attacks. There is a continuing need to increase security awareness amongst MDAs/LGAs to be alert to the various dangers and risks, both social and technical, related to working and delivering services online. In addition, there is a need to undertake periodic/regular information security audits and assessments of MDA/LGA ICT infrastructure to ensure compliance with best practices.

In line with the rationalisation of ICT services across the government, NITA-U should continue the quest to provide an integrated suite of applications that make it easier for MDAs/LGAs to transition to the use of digital services to serve the public in a flexible and incremental manner. Where such services already exist, for example, a government UMCS, the aim should be to develop sufficient capacity and then make it mandatory for all government MDAs/LGAs to use such services. While most MDAs (64%) have applications and/or databases hosted in the cloud provided by NITA-U, they still have concerns about the high cost and security issues that they see as major barriers. Ideally, the utilisation of NITA-U cloud services by MDAs/LGAs should be 100%. To achieve this, NITA-U needs to address both real and perception barriers to the utilisation of the services.

The government needs to provide avenues that enable MDAs/LGAs to leverage economies of scale to buy more computers, software and internet access while taking into account the autonomy that some institutions have over their budgets. This could be accomplished through the use of various mechanisms, including approved suppliers, equipment types and established competitive prices, helping to decrease costs and increase numbers of staff with access to computers and the internet within the existing context where institutions still lack sufficient resources and have many competing challenges for the scarce resources on hand.

MoICT&NG needs to create a platform to enable MDAs/LGAs to curate and share information and experiences about implementing ICT for public service delivery both locally and regionally. Besides learning from each other, this can lead to collaboration and provide peer pressure to encourage improvement. Besides providing case studies, such a platform can provide toolkits and templates that MDAs/LGAs can use as a foundation to innovate and use ICT to better serve the public.

There is a major gap in the adoption and utilisation of the opportunities provided by 4IR technologies to improve both back-end operations and decision-making, and front-end public service delivery, with only 21% of the MDAs indicating steps in this direction. Uganda's National 4IR Strategy provides a good reference document for addressing this major gap.

8.2 Households and Individuals

There are still major challenges in access to power, a major factor in access to online services. Only 20% of the households nationally have access to the electricity grid (55% for urban and 8% for rural). The importance of solar power is reflected by the reversal of access dominance, with almost 50% of rural households having such access compared to 28% urban. This points to the direction that needs to be taken for the required rapid extension of access to power. Power is needed at two levels – backbone and distribution – which calls for coordination and working with the power companies and the regulatory authorities in the power sector in rolling out backhaul and distribution infrastructure.

The government needs to close the gap between the improved reach of mobile networks (geographical /population coverage) and the household and individual adoption and use of mobile devices and the internet. The focus should be on digital inclusion (all communities have access to the internet and other ICTs) and digital equity (all communities have the digital skills and literacy to participate in society and the economy). Potential activities may include building digital skills and literacy among individuals, incentivising licensed providers to focus on affordability and adoption and incentivising the creation of local content.

A miniscule proportion of households owned at least one working desktop computer (0.4%), at least one working laptop (2.5%) or at least one working tablet (0.6%), with more urban households than rural having such devices. A staggering 97% of individuals had not used any computing device in the previous three months, and only 1.3% of individuals owned any personal computer/laptop. A much higher proportion of households, about 50%, reported owning a working radio, and about 20% reported owning a working TV. These figures make a statement about the effectiveness, or otherwise, of using radio or TV as key channels for information dissemination or service delivery (for example, educational programmes), especially since the reality is compounded by a high urban-rural divide.

Not surprising within this context, 94% of households had no internet access, while only 10% of individuals had used the internet for any purpose in the previous three months, with a very sharp urban-rural divide (13% vs. 3% for households, respectively, and 23% vs. 6% for individuals, respectively). The main reasons for not having internet access at home given by close to half (48%) of the households was that the 'cost of equipment is too high', followed by 37% of households indicating that the 'cost of service is too high'. In addition, most individuals that had used but did not own mobile phones cited cost as the major impediment regarding not owning a mobile phone, with more females than males giving this as their primary reason. The government needs to explore avenues and innovative funding schemes to reduce the cost of digital access devices such as smartphones, computers, laptops and tablets, especially for the poorer sections of society. This may include lowering the high level of taxes and creating the opportunity of increased gross taxation over the years as the digital economy expands faster.

About half of all individuals (49%) had a registered mobile money account in their names compared to one in 10 individuals (10%) that had a personal bank account, underscoring the high impact of mobile money on an otherwise largely unbanked population. The immediate future, especially unlocking access to financial services for the overwhelming percentage of the population, is clearly going to be digital. Among individuals that had used mobile money but did not have their own mobile money account, the biggest impediments were 'having no national ID' (52%), followed by 'I have no phone' (20%) and 'I have no SIM card' (14%). Given that only 76% of individuals reported owning a national ID, the government needs to expedite and simplify the processes related to acquiring (and replacing) national IDs because it has become a barrier to accessing services and participating in digital transactions. In addition, the government needs to explore the direction of other countries that are now moving towards creating national digital identities and other digital attributes to facilitate authentication and digital transactions among citizens and between citizens and businesses as well as the government.

Only one in five individuals were aware of any government services provided online. Amongst these individuals, 26% reported some form of e-government interaction in the previous 12 months, the most common being submitting completed forms online (18%). Among the individuals that had used e-government services, the high cost of the internet was cited as the biggest impediment (19%), followed by time delays (10%). Among individuals that had not used any e-government services, most individuals reported preferring personal contact (23%), followed by lack of

knowledge that such services existed (21%). The government needs to increase awareness on e-government services among individuals through nationwide messaging. This may include undertaking dedicated studies to measure how satisfied citizens are with the performance of different e-government services.

The government needs to explore avenues to accelerate the nationwide adoption of e-commerce. On the demand side, the government can clearly communicate the value proposition to citizens, increase awareness of consumers' rights and redress channels and work with consumer protection organisations to protect and enforce such rights. On the supply side, the government can promote and market e-commerce to small businesses, support critical infrastructure for the success of e-commerce (e.g., delivery and logistics and digital payments) and create a one-stop e-business portal for small businesses to obtain information about e-commerce, such as appropriate apps, training opportunities and financial incentives. Enforcing the requirement for government agencies to use e-procurement to buy goods and services can also go a long way in helping to grow a local e-commerce ecosystem.

Overall, it is apparent that a small proportion of households and individuals had access to and used digital computing devices and the internet. These households and individuals tend to be more from urban than from rural areas. There is a need to expand infrastructure to ensure wider coverage and access and to sensitise households in regard to the availability of and potential of using digital services.

8.3 Recommended Priority Action Areas

The report highlights various areas where action is required. The following recommendations are highlighted as critical to breaking down the barriers to access and utilisation:

i. NITA-U should make it a priority to guide and ensure that all MDAs and LGAs have guiding ICT policies. This will help ensure the effective deployment and use of ICT in institutional core business processes and in public service delivery.

ii. Increase the penetration of computers and computer usage at the MDA and LGA levels. This may include providing BYOD guidance for MDAs/LGAs to address the voluntary use of employees' personal digital devices for government related work, while taking into account data privacy and protection.

iii. The cost of internet access remains a major challenge and calls for collaborative action across both government and the private sector. The target should be affordability not just in government but among the poorer sectors of the population.

iv. Uganda's National 4IR Strategy should be used as a guide for using such technologies to improve both back-end operations and decision-making and front-end public service delivery.

v. Both cultural and operational barriers to the sharing of data, including intra- and inter-MDA, need to be addressed as a matter of urgency to improve both planning and service delivery and to enable consistent and accurate reporting to the international organisations that Uganda is part of.

vi. There is a continuing need to increase security awareness among MDAs and LGAs to be alert to the various dangers and risks, both social and technical, related to working and delivering services online. Cybersecurity needs to be addressed across the board – MDAs, LGAs and the general public.

vii. The extension of fibre across the country, starting with all district headquarters, is a priority. The National Broadband Baseline Study and Infrastructure Blueprint provides a good roadmap for this down to the sub-county level.

viii. The government needs to develop and enforce an integrated approach to the acquisition of both hardware and software within MDAs and LGAs in order to minimise both operational and running costs.

ix. Initiatives aimed at increasing access to solar power in rural areas, along with other strategies to bring down the costs of devices and services, would be major enablers for higher inclusion, especially riding on top of the improved access highlighted in these recommendations. This relates to all online services, including access to mobile money.

x. Awareness and user skills among the general population are still very limited, and NITA-U will need to develop major nationwide interventions, in collaboration with other stakeholders, to address this. This can be combined with addressing the awareness and utilisation gaps with respect to government services.

xi. Businesses need specific targeting and training so that they can seize and fully exploit the opportunities provided by e-commerce through channels such as social media.

8.4 Conclusion

This survey showed that significant progress has been achieved in terms of the overall penetration and utilisation of IT services. However, the unequal access to and use of such services across the country remains a major challenge, especially with rural-urban-, gender- and income-based divides (that relate to affordability of service) remaining as challenges. Gaps also exist at the sub-regional levels. Given these findings, the government needs to double down on programmes and policies designed to improve access and affordability to achieve the level of digital inclusion expected under the Sustainable Development Goals.

Annexes

A

Annex 1 ICT Indicators

Annex A1 MDA Indicators

Below are the findings for the core list of indicators for ICT access and use by government Ministries, Departments and Agencies (MDAs).

Proportion of MDAs with access to different IT services	
Dimension	**Value (%)**
MDA website	97.9
MDA email	94.7
MDA social media profile	81.1
Computers	97.9
Internet access	100
Local Area Network (LAN)	98.9
Intranet	44.2
IT Service/Help desk	76.8

Proportion of MDA employees routinely using computers and the Internet		
	Computers (%)	**The Internet (%)**
Total	60.5	64.7
Female	66.7	69.5
Male	56.3	61.4

Type of internet access/connection MDA had to ISP?	
Type of Connection	**Value (%)**
USB Dongle/MiFi (uses SimCard)	12.6%
Router (uses SimCard)	7.4%
ADSL/Copper	4.2%
Fibre	97.9%
Satellite	3.2%
Wireless Access Points	11.6%
Other	2.1%

Annex A2 LGA Indicators

Below are the findings for the core list of indicators for ICT access and use by Local Government Administrations (LGAs)

Proportion of LGAs with access to different IT services	
Dimension	**Value (%)**
LGA website	70.1
LGA email	35.1
LGA social media profile	54.8
Computers	95.2
Internet access	60.6
Local Area Network (LAN)	35.4
Intranet	7.9
IT Service/Help desk	72.4

Proportion of LGA employees routinely using computers and the Internet		
	Computers (%)	**The Internet (%)**
Total	5.6	2.5
Female	4.8	2.1
Male	6.3	2.7

Type of internet access/connection LGA had to ISP?	
Type of Connection	**Value (%)**
USB Dongle/MiFi (uses SimCard)	10.4%
Router (uses SimCard)	28.6%
ADSL/Copper	2.6%
Fibre	39.0%
Satellite	2.6%
Wireless Access Points	53.2%
Other	7.8%

Annex A3 Households and Individual

Below are the findings for the core list of indicators for ICT access and use by households and individuals.

HH1	Proportion of households with a radio	Value
	National	48.8%
	Urban	55.0%
	Rural	46.8%

HH2	Proportion of households with a TV	Value
	National	21.1%
	Urban	46.3%
	Rural	12.8%

HH3	Proportion of households with Telephone	Value
	National	32.1%
	Urban	30.9%
	Rural	32.5%
	Working Landline	1.0%
	Working Mobile phone	33.4%
	Smartphone (proportion of HHs with working mobile phone)	17.3%

HH4	Proportion of households with a computer	Value
	National	2.7%
	Urban	6.4%
	Rural	1.4%
	Desktop computer(s)	0.4%
	Laptop(s)	2.3%
	Tablets(s)	0.6%

HH5	Proportion of individuals using a computer	Value
	National	3.2%
	Urban	8.6%
	Rural	1.3%
	Female	2.5%
	Male	4.2%

HH6	Proportion of households with Internet	Value
	National	5.7%
	Urban	13.4%
	Rural	3.2%

HH8	Proportion of individuals using the Internet, by location	Value
HH7	**Proportion of individuals using the Internet (National)**	**10.3%**

	Urban	22.9%
	Rural	5.9%
	sub-regions:	
	Kampala	45.9%
	Buganda South	16.4%
	Elgon	12.1%
	Acholi	9.6%
	Buganda North	8.8%
	Busoga	8.6%
	Bukedi	8.4%
	Bunyoro	8.0%
	Kigezi	6.9%
	West Nile	6.7%
	Toro	6.2%
	Teso	4.8%
	Ankole	4.0%
	Lango	3.6%
	Karamoja	2.3%

HH9	Proportion of individuals using the Internet, by type of activity	Value
	Access to information	
	Getting information about goods or services	20.9%
	Seeking health information	17.2%
	Getting information from general government organisations	13.5%
	Using services related to travel or accommodation	6.3%
	Downloading software or applications	23.9%
	Reading or downloading online newspapers Or magazines, electronic books	18.9%
	Communication, civic participation and collaboration	
	Sending or receiving e-mail	31.1%
	Making telephone or video calls over the internet	49.4%
	Social networking	75.3%
	Making an appointment with a health practitioner	6.1%
	Interacting with general government organisations	5.1%
	Taking part in online consultations Or voting to define civic or political issues	2.8%
	Accessing or posting opinions on chat sites, Blogs, newsgroups or online discussions	7.5%
	Electronic commerce, trade, and transactions	
	Purchasing or ordering goods or services	8.2%
	Selling goods or services	6.5%
	Online or internet banking	5.0%
	Doing a formal online course (in any subject)	3.0%

	Consulting wikis (Wikipedia etc.), online encyclopaedias Or other websites for formal learning purposes	1.1%
	Looking for a job or sending/submitting a job application	12.9%
	Participating in professional networks	4.4%
	Listening to web radio	12.6%
	Watching web television	15.4%
	Streaming or downloading images, movies, videos or music; playing or downloading games	15.7%
	Uploading self/user-created content to be shared	5.8%
	Using storage space on the Internet to save documents, pictures, music, video or other files	12.5%
	Using software run over the Internet for editing text documents, spreadsheets or presentations	6.3%
	Other	6.7%

HH10	Proportion of individuals using a mobile cellular telephone	Value
	National	74.1%
	Urban	82.7%
	Rural	71.0%
	Female	69.2%
	Male	80.2%

HH11	Proportion of households with Internet, by type of service	Value
	Mobile phone or Smartphone as modem	61.4%
	USB Dongle/MiFi (uses SimCard)	26.5%
	Other	13.8%
	Router (uses SimCard)	2.9%
	ADSL (uses a fixed telephone line)	0.7%
	Fibre optic cable	0.0%

HH12	Proportion of individuals using the Internet, by frequency	Value
1	Every day or almost every day	57.9%
2	At least once a week (but not every day)	30.9%
3	Less than once a week	11.2%

Based on using Internet via a mobile phone & telephone network (using the SIM/mobile data), used by 95.5% of Internet users

HH13	Proportion of households with multichannel television, by type	Value
	Dstv	69.0%

HH14	Barriers to household Internet access	Value
	Cost of equipment too high	48.0%
	Cost of service too high	37.0%
	Do not need the internet	14.2%
	Have access to internet elsewhere	1.3%
	Internet not available in the area	3.2%
	Do not know how to use it	33.2%
	Privacy or security concerns	0.3%
	Cultural reasons	0.1%
	Lack of local content	2.2%
	No electricity in the household	21.7%
	Other	12.6%

HH15	Proportion of individuals with ICT skills, by type of skills	
	Using copy and paste tools to duplicate or move data, information and content in digital environments	54.3%
	Sending messages (e.g., e-mail, messaging service, SMS) with attached files	69.9%
	Using basic arithmetic formulas in a spreadsheet	37.3%
	Connecting and installing new devices (e.g., modem, camera, printer)	40.0%
	Finding, downloading, installing and configuring software	26.9%
	Creating electronic presentations with presentation software	15.5%
	Transferring files or applications between a computer and other devices	46.6%
	Setting up effective security measures	26.5%
	Changing privacy settings on your device, account or app to limit the sharing of personal data and information	27.2%
	Verifying the reliability of information found online	19.1%
	Writing a computer program using a specialised programming language	4.6%

HH16	Household expenditure on ICT	Value
	UGX 0-10,000	72.4%
	UGX 10,001-20,000	13.0%
	UGX 20,001-30,000	6.0%
	UGX 30,001-40,000	2.2%
	UGX 40,001-50,000	2.2%
	UGX 50,001-100,000	2.9%
	UGX 100,000+	1.4%

Based on monthly expenditure, which includes household phone bill, dstv and internet costs

HH17	Proportion of individuals using the Internet, by type of portable device and network used to access the Internet	Value
	...a mobile phone via the telephone network (using the SIM/mobile data)?	95.5%
	...a mobile phone via WiFi?	29.9%
	...a tablet via SIM card or USB modem?	10.8%
	...a tablet via WiFi?	6.7%
	...a portable computer (laptop, notebook, chromebook) via SIM card or USB modem?	14.1%
	...a portable computer (laptop, notebook, chromebook) via WiFi?	13.8%
	...a desktop computer via SIM card or USB modem?	16.3%
	...a desktop computer via WiFi?	17.0%
	...other portable devices (e.g., game consoles, ebook readers, watches, etc.) via SIM card or USB modem?	7.4%
	...other portable devices (e.g., game consoles, ebook readers, watches, etc.) via WiFi?	5.9%

HH19	Proportion of individuals not using the Internet, by type of reason	Value
	Do not need the Internet (not useful, not interesting)	15.0%
	Do not know how to use it	50.8%
	Cost of Internet use is too high (service charges, etc.)	25.7%
	Privacy or security concerns	0.4%
	Internet service is not available in the area	4.4%
	Cultural reasons	0.2%
	Don’t know what Internet is	27.7%
	Not allowed to use the Internet	2.5%
	Lack of local content	2.8%
	Other	13.9%

HH20	Proportion of individuals who purchased goods or services online, by type of good and service purchased	Value
	eBooks, online magazines or online newspapers	1.6%
	Clothing, footwear, sporting goods or accessories	39.0%
	Computer equipment or parts (including peripheral equipment)	2.1%
	Computer or video games	1.6%
	Computer software (includes upgrades and paid apps; not games)	9.3%
	Cosmetics	5.5%
	Financial products (including shares and insurance)	0.2%
	Food, groceries, alcohol or tobacco	24.0%
	Household goods	22.7%
	ICT services (excluding software)	7.5%
	Medicine	6.1%
	Movies, short films or images	2.1%

	Music as a streaming service or downloads	0.0%
	Photographic, telecommunications or optical equipment	4.4%
	Tickets for entertainment events	0.5%
	Travel products	0.5%
	Other	4.1%

HH21	Proportion of individuals who purchased goods or services online, by type of payment channel	Value
1	Cash on delivery/pick up	51.4%
2	Credit card online (e.g., Visa or Mastercard)	1.8%
3	Debit card online (e.g., Visa or Mastercard)	4.5%
4	Electronic bank transfer (using either Internet banking or credit/debit card)	2.2%
5	Mobile money account (MTN MoMo or Airtel Money)	43.0%
6	Online payment service (e.g., PayPal, Google Checkout)	3.7%
7	Prepaid gift card or online voucher	0.0%
8	Points from rewards or redemption program (e.g., Air Miles)	0.0%
97	Other (e.g., bank check by post, etc.)	0.0%

HH22	Proportion of individuals who purchased goods or services online, by method of delivery	Value
	Delivery directly to the buyer using regular postal services	11.2%
	Delivery directly to the buyer using boda boda courier	72.0%
	Delivery directly to the buyer using other forms of delivery	4.7%
	Picked up from point of sale or service point	18.9%
	Online/electronic delivery	1.7%
	Other	0.0%

HH23	Proportion of individuals who did not purchase goods or services online, by type of reason	Value
	Not interested	32.9%
	Prefer to shop in person	35.5%
	Security concerns	2.3%
	Privacy concerns	4.0%
	Technical concerns	1.2%
	Trust concerns	11.8%
	Lack of confidence, knowledge or skills	35.7%
	High delivery / transportation / shipping costs	12.4%
	Other	6.6%

Annex A4 LGA Indicators

Below are the findings for the core list of indicators for ICT access and use by Local Government Administrations (LGAs)

Proportion of LGAs with access to different IT services	
Dimension	**Value (%)**
LGA website	70.1
LGA email	35.1
LGA social media profile	54.8
Computers	95.2
Internet access	60.6
Local Area Network (LAN)	35.4
Intranet	7.9
IT Service/Help desk	72.4

Proportion of LGA employees routinely using computers and the Internet		
	Computers (%)	**The Internet (%)**
Total	**5.6**	**2.5**
Female	4.8	2.1
Male	6.3	2.7

Type of internet access/connection LGA had to ISP?	
Type of Connection	**Value (%)**
USB Dongle/MiFi (uses SimCard)	10.4%
Router (uses SimCard)	28.6%
ADSL/Copper	2.6%
Fibre	39.0%
Satellite	2.6%
Wireless Access Points	53.2%
Other	7.8%

B

Annex B1 Detailed Survey Process

The national IT Survey 2022 went through several steps before the dissemination of final findings. These steps included: survey planning, stakeholder consultations, survey and sampling design, development of instruments, pretesting and finalisation of instruments, recruiting and training of enumerators, data collection, data validation and processing, data analysis; report writing and production.

In this section, we highlight some major steps as well as the key activities undertaken as part of the study.

1.1 Sample Design

Households and Individuals

For the sampling frame for the households and individuals part of the survey, the consultants worked with Uganda Bureau of Statistics (UBOS), which has a master sample frame for the Uganda Population and Housing Census which was conducted on August 20141, also used to derive a sample for this study. The sampling frame consists of a complete list of census Enumeration Areas (EAs) created for the census and subsequent studies covering the whole country. As of July 2020, Uganda was divided into 135 districts and 11 cities that include the capital city of Kampala, all grouped into four administrative regions. Each district is sub-divided into counties and municipalities, each county into sub-counties, each sub-county into parishes, and each parish into villages.2

The households and individuals sample size was determined by the accuracy required for the survey estimates for each domain, resources and operational constraints. The National IT Survey sample was designed to produce reliable indicators at the national-level, the residence-level (urban vs. rural), the gender-level (female vs. male) and the sub-regions. The districts were organised into 15 sub-regions on the basis of common socio-demographic characteristics as shown in Table 18.

Table 16: Classification of districts into sub-regions

Sub-region	Districts
Acholi	Agago, Amuru, Gulu, Kitgum, Lamwo, Nwoya, Pader and Omoro
Ankole	Buhweju, Bushenyi, Ibanda, Isingiro, Kiruhura, Mbarara, Mitooma, Ntungamo, Rubirizi and Sheema
Buganda South	Bukomansimbi, Butambala, Gomba, Kalangala, Kalungu, Lwengo, Lyantonde, Masaka, Mpigi, Rakai, Ssembabule, Wakiso and Kyotera
Buganda North	Buikwe, Buvuma, Kayunga, Kiboga, Kyankwanzi, Luwero, Mityana, Mubende, Mukono, Nakaseke and Nakasongola and Kasanda
Busoga	Bugiri, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, Namayingo, Namutumba and Bugweri
Bukedi	Budaka, Busia, Butaleja, Kibuku, Pallisa, Toororo and Butebo
Bunyoro	Buliisa, Hoima, Kibaale, Kiryandongo, Masindi, Kagadi, Kakumiro and Kikuube
Elgon	Bududa, Bukwo, Bulambuli, Kapchorwa, Kween, Manafwa, Mbale, Sironko and Namisindwa
Kampala	Kampala
Karamoja	Abim, Amudat, Kaabong, Kotido, Moroto, Nakapiripirit, Napak and Nabilatuk
Kigezi	Kabale, Kanungu, Kisoro, Rukungiri, Rubanda and Rukiga
Lango	Alebtong, Amolatar, Apac, Dokolo, Kole, Lira, Otuke, Oyam and Kwania
Teso	Amuria, Bukedea, Kaberamaido, Katakwi, Kumi, Ngora, Serere, Soroti and Kapelebyong
Tooro	Bundibugyo, Kabarole, Kamwenge, Kasese, Kyegegwa, Kyenjojo, NTooroko and Bunyangabu
West-Nile	Adjumani, Arua, Koboko, Maracha, Moyo, Nebbi, Yumbe, Zombo and Pakwach

Source: UBOS, 2022

1 Population and Housing Census (PHC 2014) conducted by the Uganda Bureau of Statistics (UBOS)1

2 Districts of Uganda, http://www.statoids.com/uug.html

A two-stage stratified sampling design was used:

At the first stage, the national census sample frame was split into 10 strata identified in Table 19. From these strata, Enumeration Areas (EAs) were drawn with Probability Proportional to Size (PPS) taking the measure of size as the working-age population (those aged 14 to 64 years) in Uganda for the different strata. This resulted in 264 EAs spread across 135 Districts and 11 Cities. The sample size calculation included non-response adjustments, therefore there was no need to replace households that refused to participate.

A research team visited each district with selected EAs to update the EA map from UBOS in terms of structures accommodating households. For each EA, household listings were automatically generated by a computer using submissions from teams in the field and served as the sample frame for household selection within the EA.

At the second stage, households were drawn using Systematic Random Sampling (SRS) from each household listing for each EA.

From all household members 15 to above, the study generated a household roster from which an individual respondent was randomly selected using the data collection device.
The overall sample is detailed in Table 19 below.

Table 17: Sample allocation for different strata

Strata name	Strata code	Measure of size	Share (%)	No of EAs	No. of Households
Kampala City	1	1,316,445	4.6	20	300
Other Cities	2	1,550,204	5.5	22	330
Central Urban	3	2,438,753	8.6	26	390
Central Rural	4	3,981,137	14.0	32	480
Eastern Urban	5	817,422	2.9	18	270
Eastern Rural	6	6,052,331	21.3	38	570
Northern Urban	7	633,920	2.2	16	240
Northern Rural	8	4,654,268	16.4	34	510
Western Urban	9	1,164,241	4.1	20	300
Western Rural	10	5,760,328	20.3	38	570
Total		**28,369,049**	**100**	**264**	**3,960**

Source: UBOS, 2022

The survey covered a total of 264 EAs resulting in a total of 3,960 households and individuals, and was conducted the survey in accordance with the UBOS Censuses and Surveys Rules and Guidelines.[3]

MDAs and Local Governments

NITA-U provided a curated list of 132 government MDAs, that were all included as part of the survey. The Enumeration Areas (EAs) sampled for the survey covered 128 districts, which in-turn provided the representative sample for Local Government Administrations (LGAs).

3 UBOS (2018), Censuses and Surveys Rules and Guidelines https://www.ubos.org/wp-content/uploads/publications/07_2020UBOS_Censuses_and_Surveys_Rules_2018.pdf

Business Establishments

UBOS was in the process of conducting a Census of Business Establishments (COBE) to update its Business Register for establishments. As part of this process, UBOS had developed a sample frame that covered all the divisions of International Standard Industrial Classification (ISIC) Rev 4.[4] UBOS derived a sample of 600 businesses to be interviewed for the national IT survey using an implicit stratified sampling procedure, combining elements of both systematic sampling and stratified sampling. The procedure included:

i. Sorting all businesses based on the number of employees as an indicator of formality. All establishments with less than 10 employees were considered informal and dropped from the frame.

ii. Stratification of the frame based on economic sector of the business (using ISIC section code as the stratification variable).

iii. Allocation of the sample to each stratum using the power allocation method based on the number of businesses per stratum.

iv. Arranging the businesses in the frame according to district and other geographical locations, which provided implicit stratification.

v. Selecting a specified number of businesses independently within each stratum using equal probability selection method.

Table 20 shows the distribution of sampled businesses from the frame ranked alphabetically by economic activity (ISIC category).

Table 18: Distribution of sampled businesses

Economic Activity	No of sampled businesses	Percentage (%)
Accommodation and food service activities	67	11.2%
Activities of extraterritorial organisations and bodies	3	0.5%
Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	3	0.5%
Administrative and support service activities	17	2.8%
Agriculture, forestry and fishing	15	2.5%
Arts, entertainment and recreation	12	2.0%
Construction	12	2.0%
Education	79	13.2%
Electricity, gas, steam and air conditioning supply	1	0.2%
Financial and insurance activities	28	4.7%
Human health and social work activities	31	5.2%
Information and communication	17	2.8%
Manufacturing	95	15.8%

4 ISIC Rev. 4 https://unstats.un.org/unsd/classifications/Econ/isic

Mining and quarrying	6	1.0%
Other service activities	27	4.5%
Professional, scientific and technical activities	17	2.8%
Public administration and defence; compulsory social security	4	0.7%
Real estate activities	3	0.5%
Transportation and storage	21	3.5%
Water supply; sewerage, waste management and remediation activities	5	0.8%
Wholesale and retail trade; repair of motor vehicles and motorcycles	137	22.8%
Total	**600**	**100.0%**

Source: UBOS, 2022

1.2 Survey Instruments

Households and Individuals

The National IT Survey questionnaire for households and individuals was designed in line with the International Telecommunication Union (ITU) Manual for measuring ICT access and use by households and individuals (third edition, 2020).[5] In addition, a number of indicators were included by NITA-U based on stakeholder consultations and ongoing discussions within the Expert Group on ICT Household Indicators (EGH) and Expert Group on Telecommunication/ICT Indicators (EGTI).

The survey instrument was designed to take into account feedback that NITA-U had received from different stakeholders during consultations. The instrument collected household and individual information that included the following:

i. Household Access to ICT

ii. Individual access to and use of mobile phones and computers

iii. Individual access to and use of mobile money and other digital financial services

iv. Individual access to and use of the Internet

v. Individual access to and use of social media

vi. Individual access to and use of e-commerce

vii. Individual access to and use of e-government services

viii. Existence of individual IT trust, security and privacy

ix. Individual access to and use of postal services.

A copy of the final instrument is included in the digital files.

MDAs and Local Governments

Both the National IT Survey questionnaire for MDAs and the questionnaire for LGAs were designed in line with previous instruments used by NITA-U in the 2017/18 study. In addition, the instrument included guidelines from Manual for measuring e-government, United Nations Economic Commission for Africa (UNECA);[6] the UN E-Government survey 2020[7] and the manual for the production of statistics on the information economy, from United Nations Conference on Trade and Development (UNCTAD). Additional national indicators were included to meet domestic requirements for planning and policymaking.

5 ITU Manual for Measuring ICT Access and Use by Households and Individuals, https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual.aspx
6 https://www.itu.int/en/ITU-D/Statistics/Documents/partnership/eGovernment_Manual_Final_2014.pdf
7 https://www.un.org/development/desa/publications/publication/2020-united-nations-e-government-survey

The survey instruments, which were designed to take into account stakeholder feedback to NITA-U collected information that included the following:

i. Institutional Information
ii. Institutional access to and use of ICT Devices
iii. Institutional access to and use of Internet
iv. Institutional access to and use of websites and social media services
v. Institutional provision of e-government services to the public
vi. Institutional access to and use of software and information systems
vii. Institutional access to and use of applications and data hosting
viii. Institutional uptake of shared e-government services
ix. Existence of institutional IT management and security
x. Existence of institutional IT e-waste management and disposal
xi. Existence of institutional IT security awareness
xii. Institutional perceptions around different parameters and issues related to access and use of IT

A copy of the final instrument is included in the digital files.

Business Establishments

The National IT Survey questionnaire for businesses was designed in line with the UNCTAD manual for the production of statistics on information economy. In addition, a number of indicators were adopted and domesticated from Organisation for Economic Co-operation and Development (OECD) and Eurostat manuals to respond to local needs.

The survey instrument was designed to take into account stakeholder feedback to NITA-U and collected information that included the following:

i. General business information
ii. Ownership and use of ICT devices
iii. Access and use of the Internet for business purposes
iv. Use of websites and social media services
v. Use of software and information systems
vi. Use of applications and data hosting
vii. Existence of IT management and security
viii. Existence of IT security awareness
ix. Expenditure on ICT in businesses
x. Use of advanced computing like Fourth Industrial Revolution (4IR) technologies

A copy of the final instrument is included in the digital files.

Training Enumerators and Pretesting Instruments

The survey team recruited 24 experienced enumerators to assist with data collection in the field and trained them on the use of the various instruments designed for the survey. Enumerator teams were assigned to cover different regions of the country as a way to minimise movement and to ease supervision. Enumerators were allocated to a team based on their native language, which often was the dominant language spoken in a given region assigned to the team. All enumerators were also fluent in English.

The MDA instrument was pretested with staff at NITA-U while the rest of the instruments were pretested in one urban and one rural EA in Wakiso district to ensure that the questions were clear and understood by the respondents and to detect any discrepancies in the instruments. The pretest also offered an opportunity to test out the field logistics to ensure the adequacy of the field procedures they would deliver.

Enumerator teams were provided with medical masks and sanitiser bottles, and given health training to ensure that they complied with COVID-19 Standard Operating Procedures (SOPs).

1.3 Data Collection and Processing

For data collection, the survey deployed a private instance of KoBotoolbox, a free and open source platform for collecting data accurately, quickly, offline and at scale with smart forms on mobile devices such as phones and tablets.[8] Leveraging tablets and cloud servers, KoBo helped the survey team to digitise the data collection process, supporting the necessary question branching, skipping and looping, while providing data validation at the same time.

Data Collection

Field data collection was spread over a 3 months period between January and April 2022 to avoid the long Christmas holiday when individuals migrate to their villages for the holiday, which would have skewed the data (especially rural vs urban analysis) and after the COVID-19 lockdowns had been lifted.

The survey team simultaneously dispatched enumerator teams to different parts of the country. Each enumerator was issued with a 10" android tablet (and a power bank) to facilitate data collection in the field. Each enumerator team was also given a generator and a 12-socket extension dock that could be used to recharge the tablets in areas that had no access to the power grid, particularly during the night.

On arrival in each district with sampled EAs, the enumerator team would visit the Chief Administration Officer (CAO) at the District offices, to introduce the study and the team using a letter from the NITA-U Executive Director. The CAO would receive the original letter and stamp on a copy for the team to use later when they visited each EA. The CAO's office would then authorise the district IT Officer or another appropriate employee to provide information for the district as part of the LGA survey. The CAO's office would also provide contact details for the LC 1 Chairperson within whose village the sampled EA was located.

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.

Data Processing and Management

Using digital data collection improved the timeliness of data collection for the survey, enabling the survey team to implement a wide range of data quality measures and support the collection of new types of information that would otherwise be more difficult with a paper-based data collection system. For example, GPS was used to guide enumerators to the right EA and households for the interview, and each digital questionnaire was designed to capture the GPS coordinates of the household/interview location.

All enumerator tablets were data-enabled, allowing them to use the mobile network (both Airtel and MTN) to submit real-time data to the server. The system also supported an offline-capable mode to allow 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. A central team provided feedback and corrections to enumerator teams in the field in close-to-real-time using instant messaging channels.

For MDAs, the survey team sent URLs of the online-questionnaires to the IT officers in advance to facilitate them to collect data from the other departments (e.g., human resource and finance) across their institution, so that they could populate the questionnaire as they assembled the necessary data. For businesses, enumerators visited their location after establishing contact using the mobile phone number that was provided as part of sample data.

From the server, the survey team exported data in raw CSV files, from where it was imported into R and Stata for further checks and quality assurance as well as for generation of statistical tables and analysis.

8 KoBotoolbox, https://www.kobotoolbox.org/

Response Rates

Out of a sample of 132 government Ministries, Departments and Agencies (MDAs) contacted by NITA-U for the survey, 95 provided data, a response rate of 72%. For local governments, out of 128 districts sampled for the survey, 95 provided full data; a response rate of 72.4%. The data also includes responses from 17 municipalities and 10 town councils found within the sampled districts.

Enumerators were able to traverse and cover 263 of the 264 EA sampled for households and individuals. One EA in Bunyoro sub-region refused to participate in the survey due to ongoing land conflicts despite pleas from the CAO. In total, enumerators listed 19,700 households across the 263 successful EAs. From these EAs, the survey team randomly selected 3,945 households to be interviewed. Among the sampled households, 72.6% provided full data (both household and individual), 13.6% provided partial data (only household data, but sampled individual was not available for interview), 2.9% were home but refused to consent to the survey, while 10.9% were closed with no one at home. The sample had been drawn by UBOS taking into account non-response and therefore replacements for both households and individuals were not necessary.

For businesses, the survey team was provided with location names and mobile phone contacts for the sample of 600 businesses. Enumerators were able to locate or contact 344 businesses, which were approached to participate in the survey. Of these, 197 agreed to participate and provided full data, resulting in a response rate of 57.3%.

Annex C Digital Files

The following digital files have been submitted as part of this report on separate media:

1. Instruments 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

d) Final Business 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 server

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

d) Business 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

d) Business cleaned data in both Comma Separated Values (CSV) and Stata (DTA) file formats

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