2018 NATIONAL SURVEY ON ACCESS AND USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES BY HOUSEHOLDS AND INDIVIDUALS

A Demand Side Assessment of Access and Usage of ICTs in Zambia

REPUBLIC OF ZAMBIA
Central Statistical Office
www.zamstats.gov.zm

ZAMBIA INFORMATION AND COMMUNICATIONS TECHNOLOGY AUTHORITY
www.zicta.zm

REPUBLIC OF ZAMBIA
Ministry of Transport and Communications
www.mtwsc.gov.zm

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PREFACE

It is my pleasure to present to you the findings of the 2018 National Survey on Access and Usage of Information and Communication Technologies (ICTs) by households and individuals in Zambia. This is the third wave of data collection undertaken in Zambia for one of the most comprehensive demand side assessments that focusses on various attributes of access and usage of ICTs. Prior surveys with a similar scope were undertaken in 2013 and 2015 by the Authority in collaboration with the Ministry of Transport and Communications and the Central Statistical Office.

A number of issues relating to access and usage of ICTs that build on the data collected in previous assessments were considered in the 2018 survey. These included but were not limited to the extent of ownership of ICT related devices, usage of ICT services as well as the quality of experience when using various ICT related services. The 2018 survey extended the scope of prior assessments as more detailed insights about gender and ICTs as well as various attributes related to the management of electrical and electronic waste were investigated.

Notwithstanding, the survey collected information related to new developments related to digital financial services, risks connected with the online environment and the associated mitigation strategies and barriers to increased access and usage of ICTs. For the first time, an assessment of individuals' skills related to ICTs was also undertaken in 2018.

This survey is a critical resource that will inform the effectiveness of the various strategies adopted by many state and non-state actors in nurturing the digital society. The insights presented in the report provide input for measuring progress towards the attainment of various targets espoused in key national strategic documents such as the Seventh National Development Plan and the Vision 2030. The global 2030 Agenda for Sustainable Development Goals also places great importance on ICTs for development. Particularly, indicators covering six targets under Goals 4, 5, 9, and 17 reflect the priority placed on ICTs in achieving the global development agenda.

Undertaking demand side assessments of the magnitude and scope of the 2018 national survey on access and usage of ICTs is a costly exercise. The survey received financial support from the Government of the Republic of Zambia through the Zambia Information and Communications Technology Authority (ZICTA) and the Government of Sweden through the Swedish International Development Assistance. We would like to take this opportunity to appeal to other stakeholders to complement our efforts in undertaking similar assessments in the future. I am hopeful that you will find the insights highlighted in this report useful for shaping programmes and

strategies aimed at leveraging on the full potential of ICTs for the achievement of socio-economic development for all.

Patrick M. Mutimushi
Director General
Zambia Information and Communications Technology Authority

FOREWORD

Since 2013, the Central Statistical Office (CSO) has been collaborating with the Zambia Information and Communications Technology Authority (ZICTA) in carrying out the Information and Communication Technology (ICT) Survey. The 2018 ICT Survey is the third in the series. The first Survey was conducted in 2013 and the second one in 2015. CSO as the focal point for national statistics has endeavored to provide the requisite support in order to ensure the successful implementation of all the ICT Surveys undertaken so far.

As the demand for quality statistics increases, CSO has a critical role in providing technical support to various sectors in data collection and validation. The collaboration between CSO and ZICTA in data generation has been very productive as it has provided great opportunity for capacity building in both institutions for data processing and analysis. The data produced has been useful in the development of national indicator framework for implementation of the national development plan. The 2018 data set will add to the wealth of existing data on ICTs.

I would like to commend ZICTA for consistency in conducting the surveys according to the set periodicity, in order to keep up to speed with the demand for ICT data and statistics. It is inevitable that ZICTA continues being proactive in mobilization of resources for data production as there is a lot of demand for statistics to track progress being made towards meeting the targets that are set in the 7NDP, the SDGs and the Vision 2030.

It is my sincere hope that this report will be useful in formulating public ICT policies that promote adequate access to ICTs for everyone.

Goodson Sinyenga
Acting Director of Census and Statistics
Central Statistical Office

ACKNOWLEDGEMENTS

The 2018 National Survey on Access and Usage of ICTs by Households and Individuals was undertaken by the Zambia Information and Communications Technology Authority (ZICTA) in collaboration with the Central Statistical Office and the Ministry of Transport and Communications.

The three implementing organisations wish to thank the various households and individuals that participated in the survey. We would also like to thank the various organisations that made very important technical contributions during the implementation of the survey. Particularly, we are grateful to the Bank of Zambia and the Financial Sector Deepening Zambia for their useful insights especially on issues relating to digital financial services. We are also grateful to the United States Agency for International Development for providing technical assistance on matters related to Gender and ICTs. The report also benefitted from consultations and feedback by staff from the three implementing institutions and other external stakeholders.

We are entirely thankful to the Government of Sweden through the Swedish International Development Cooperation Agency (SIDA) for the financial support provided towards the implementation of the survey.

EXECUTIVE SUMMARY

The 2018 Survey on access and usage of Information and Communication Technologies (ICTs) was aimed at measuring progress in the uptake of ICT products and services across the country. This follows prior assessments undertaken in 2013 and subsequently 2015 with a similar overall scope. The survey investigates various attributes relating to quality of experiences, barriers to access, affordability, diversity of services as well as the challenges experienced during usage. For the first time, the 2018 survey considers aspects related to electronic waste management among households and individuals as well as provides a more extensive assessment o aspects relating to gender and ICTs. The survey maintained its national scope and provides regional and provincial estimates on all the aspects evaluated. Robust estimates are provided based on a response rate of 99.9 percent of all the households selected in the sample. The key findings from the survey are outlined below:

a) Access to Electricity by Households

A key feature on households investigated was the access to electricity which has possible causal influence on uptake of ICTs. Only 32.9 percent of the households indicated that they source power through a utility company. This reflects less extensive connections in the country and could negatively affect the extent of uptake of ICT services. The problem is particularly pronounced in rural areas where only 6 percent of the households receive electricity from utility companies while 65.5 percent of households based in urban areas have access to electricity through power utility companies.

b) Access and Usage of Television and Radio Broadcasting Services

The proportion of households across the whole country with a working television set increased from 33 percent to 37 percent between 2015 and 2018. The proportion of households across the country that own a working radio reduced from 45 percent in 2015 to 40 percent in 2018. ZNBC television stations remain the most widely accessed local television stations by households that own working television sets in Zambia. On the other hand, the majority of households in the country that own working radios indicated that they access community radio stations. GoTV and Topstar recorded the highest frequency of households that indicated that they owned a working television set which was used to access broadcasting services and had access to pay television channels constituting 56.5 percent and 28.4 percent respectively.

c) Ownership of Computers by Households

There was a minute improvement in the ownership of computers by households. The proportion of households that owned computers increased from 7.1 percent observed in 2015 to 8.1 percent in 2018. Notable imbalance was observed between urban and rural areas as 14.7 percent of households in urban areas indicated that they owned a

computer while only 2.7 percent of households based in rural areas owned a computer.

d) Access to internet Services by Households

Access to internet services among households increased from 12.7 percent reported in 2015 to 17.7 percent in 2018. The survey established that mobile broadband services accessed through a mobile phone were the most prominent source of internet services by households. Less than 2.7 percent of the households accessed internet services through fixed internet services. The main challenges cited by households in service provision related to complaint resolution and internet speeds offered by service providers. The identified barriers to increased uptake of internet services by households included but were not limited to lack of skills, the cost of devices as well as the cost of the service offers on the market.

e) ICT skills among Individuals

Only 6.8 percent of individuals across the country reported to know how to use a computer. The majority of individuals across the country had basic computer skills and mainly undertook basic activities on the computer. The proportion of individuals across the country with relatively more advanced ICT skills was low. The distribution of individuals according to their sex based on the type of ICT skills revealed that the majority of individuals with the identified skills were mainly male.

f) Ownership and Usage of Mobile phones

It was estimated that 53.5 percent of all the individuals across the country were active users of mobile cellular telephones established by estimating the proportion of individuals that had used a mobile cellular telephone in the last three months prior to the survey. A sizeable proportion of individuals that were active users of mobile telephone services, constituting 83.4 percent, owned mobile devices that were subscribed to at least one local mobile cellular network. The proportion of individuals that owned a smartphone as a share of all the people that had owned a mobile phone that was subscribed to a local network increaded from 13.5 percent to 29.6 percent between 2015 and 2018. The most prominent complaints cited by individuals that indicated that they used mobile cellular phone services was poor clarity of voice calls as well as intermittent network availability or network outages.

g) Access to Internet Services by individuals

The proportion of individuals who indicated that they had used the internet before was 14.3 percent in 2018. This finding represents an increase in the proportion of individuals that had used the internet from 8.8 percent reported in 2015. Most of the individuals that indicated that they had used internet services before accessed the service through mobile broadband internet services via mobile cellular phones and modems. The main reason cited for not using the internet by individuals was lack of

knowledge on how to use the internet accounting for 70.1 percent of the individuals that indicated that they had never used the internet. Other barriers to the uptake of internet services by individuals included lack of appropriate devices, lack of interest in the services as well as lack of access to the services.

h) Online risks and mitigation by households

The survey revealed that 34.7 percent of the households that indicated that they had access to internet services at home, had a member of the household who was responsible for monitoring the content accessed online by other members of the household. The survey established that the proportion of households that indicated that they used tools or strategies to mitigate exposure to illicit content was very low accounting for 14.5 percent of the total number of households that reported that they have access to the internet at home.

i) Online risks, incident and mitigation by Individuals

The survey estimated the proportion of individuals across the country with access to the internet that were aware of the risks associated with online activities at 52.9 percent. The incidence of fake news and pornographic material were reported to be the most prevalent risks that users of internet services encountered while online, accounting for 59 percent and 46.5 percent respectively, of the total number of users of internet services that reported that they encountered identified risks while online. Exposure to fake news and pornography were the most prevalent incidents that individuals reported to encounter while using social media. The survey revealed that only 30.4 percent of the individuals that use internet services know how to activate security or privacy settings on social media or a web browser.

j) Access and Usage of Digital Financial Services by Households

The survey revealed that the most widely held formal financial services accounts were electronic wallets accounting for 21.5 percent of individuals aged above the age of 10 years. The survey established that at least 48.9 percent of all the households across the country had used digital financial services before. The majority of the households reported using Digital Financial Services for Receiving and Sending Money representing 92.8 percent and 77.6 percent respectively.

k) Access and Usage of Digital Financial Services by Individuals

The level of awareness on the existence digital financial services currently on offer in Zambia among all individuals aged 10 years and older was estimated at 67.2 percent. The survey estimated that about 29.5 percent of individuals in the country have transacted before using digital financial services. The main reason cited by individuals that had not used digital financial services was that they had no resources to use the services or they were not registered accounting for 54.4 percent and 39.1 percent of all the individuals that had not used digital financial services before. The most prominent challenges experienced while using digital financial services were system failure and

insufficient float by agents accounting for 55.7 percent and 39.2 percent of individuals that had used digital financial services and experienced some challenges.

l) Regulation of Digital Financial Services

Only 3.2 percent of all the individuals across the country indicated that they were aware of an institution that is responsible for the regulation of digital financial services in Zambia. Further, only 14.2 percent of individuals that indicated that they had transacted using digital financial services indicated that they were aware of channels of redress in the event of a problem during usage of the services. The most prominent areas cited for the improvement of delivery of digital financial services were related to increasing the number of pay points and minimising on network outages.

m) Electrical or Electronic Waste management

The survey estimated that 48.9 percent of all the households across the country had disposed of some electronic or electrical items which were damaged or were no longer useful to the households. An assessment of the number of electrical or electronic items that were disposed by households revealed that mobile phones and radios were the most widely disposed items by households. The most prominent method of disposal for electronic and electrical waste by individuals was putting away of the electrical or electronic waste that was deemed unfit for use as well as donating of the devices. The survey established that only 10 percent of the population aged 10 years and older indicated that they had knowledge about the dangers associated with unsafe disposal of electronic and electrical waste.

In view of the foregoing, the following policy and regulatory recommendations are drawn for consideration:

i. There is need to continue exploring avenues for extending access to electricity supplied by utility companies if increased adoption of ICTs is to persist. The survey estimates that only 32.9 percent of the households across the country access electricity through a utility company. Greater focus should be on rural areas as only 6 percent of the households in the rural areas had supply through a utility company compared to 65.5 percent of households based in urban areas.

ii. Interventions aimed at increasing awareness need to be structured with the demographic composition of the population in mind. Particularly, over 78 percent of the population was below 35 years of age. At the same time, 52 percent of the population are female. Similarly, Lusaka and Copperbelt province account for the largest proportion of the population. There were noted imbalances in access and usage of ICTs with respect to the geographical distribution of individuals and to a limited extent across sex groups.

iii. There is need to explore avenues for enhancing the quality of television reception for the national broadcaster, which is the most widely adopted television station. Further, the adoption of ZNBC set top boxes remains low despite the progress on the initiatives related to digital migration. Further, while community radio stations are the most widely adopted radio services, the quality of the reception was not the most favourable. More oversight may be useful to enhance the quality of radio services received by households.

iv. The improvement in the adoption of fixed line services, partly explained by the use of SIM card based fixed telephones, provides an innovative prospect for the market segment. The market segment could be opened up to more innovative options such as fibre based services to complement the emergence of the SIM card based fixed lines.

v. Deliberate policy actions aimed at increasing the uptake of computers in the country will be necessary. For instance, fiscal incentives aimed at either the importation of computers or the assembly of computers could provide a more affordable avenues for accessing the devices.

vi. ICT skills remain nascent especially outside secondary school going individuals. Further, advanced ICT skills were notably low with the majority of individuals exhibiting basic skills. It will be useful to extend interventions aimed at enhancing ICT skills to primary schools as well as enhancing the depth of the curriculum on ICT training at all levels of education.

vii. As smartphone ownership is expanding, exposure to online risks is expected to increase. It will be useful to enhance efforts aimed at increasing awareness on online risks as well as the mitigation measures for the risks. Particularly, fewer households were aware of the filters that can be provided by the internet service provider.

viii. ZICTA must enhance quality of experience with increased monitoring of service dimensions such as network availability, quality of voice call clarity, internet speeds, dropped call rates, complaint resolution and accuracy in billing. For instance, more periodic audits on the billing platforms could be undertaken. At the same time, more extensive tests on the quality of service could be considered.

ix. The regulator could consider enhancing its efforts in mitigating the risks associated with fake news and exposure to pornography. This is especially

prominent on social media platforms. Consideration could be given to increasing awareness on mitigation measures, channels of redress as well as more responsible use of the internet and social media in particular.

x. Efforts to extend financial inclusion through increased uptake of digital financial services will be useful. There is still a lot of scope to leverage on the increased adoption of ICTs to enhance financial inclusion. Much of the effort should be directed at increasing awareness about the services as well as clarifying misconceptions on the appeal of the service to the wealthy.

xi. Regulatory oversight of digital financial services should include but not be limited to improving the network quality and availability, mitigating challenges with float as well as monitoring key performance indicators on transmission of funds. There is also need to stimulate the agent networks coverage.

xii. Awareness on safe disposal of electronic or electrical waste remains a huge gap in Zambia. The Zambia Environmental Management Agency (ZEMA) working with other stakeholders must enhance its awareness efforts to sensitise the public on the dangers of electronic waste as well as the alternative options for safer disposal of electronic and electrical waste. This may also entail developing more platforms for safe disposal of electronic and electrical waste. The increased accumulation of electronic and electrical waste from mobile cellular phones, chargers and batteries raises concern on the quality of electronic and electrical devices/products available on the market. More oversight on the adherence to quality standards that could enhance the useful life of the devices is needed to mitigate the growing challenge.

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LIST OF ABBREVIATIONS

BoZ	Bank of Zambia
CAPI	Computer Assisted Personal Interviewing
CSO	Central Statistical Office
DFS	Digital Financial Services
EAs	Enumeration Areas
E-Commerce	Electronic Commerce
FNB	First National Bank
FTTH	Fibre –to-the Home
GRZ	Government of the Republic of Zambia
ICF	International Classification of Functioning, Disability and Health
ICT	Information and Communications Technology
ITU	International Telecommunications Union
MNO	Mobile Network Operator
OTT	Over-the-Top
PPS	Probability Proportional to Size
SDGs	Sustainable Development Goals
SEAs	Standard Enumeration Areas
7NDP	Seventh National Development Plan
SIDA	Swedish International Development Agency
SIM	Subscriber Identity Module
SZI	SMART Zambia Institute
UNO	United Nations Organisation
ZANACO	Zambia National Commercial Bank
ZICTA	Zambia Information and Communications Technology Authority
ZNBC	Zambia National Broadcasting Corporation

1.0. Background to the 2018 National Survey on Access and Usage of Information and Communication Technologies in Zambia

1.1. Introduction

The 2018 National Survey on Access and Usage of Information and Communication Technologies (ICTs) by households and individuals in Zambia was undertaken by the Zambia Information and Communications Technology Authority (ZICTA) in collaboration with the Ministry of Transport and Communications and the Central Statistical Office. The survey was financially supported by the Government of the Republic of Zambia and the Government of Sweden through the Swedish International Development Agency (SIDA). This is the third nationwide assessment aimed at establishing the extent of access and usage of ICTs by households and individuals undertaken by the three implementing institutions. Similar assessments were undertaken in 2013 and 2015 based on the existing country context at the time.

Innovation continues to take centre stage in the ICT sector as consumer tastes and preferences continuously evolve with the changes in technologies. For instance, online news has evidently gained prominence in the country as consumers have an opportunity to gain real time updates on new developments. Over-the-top (OTT) applications such as WhatsApp, Facetime, Messenger and Viber have equally gained prominence on account of their convenience, cost effectiveness as well as versatility and appeal. There have also been some noted changes related to affordability of ICT services arising from more innovative pricing strategies[1]. At the same time, a number of providers of ICT services have continued to invest in new areas as well as new technologies motivated by the need to extend their coverage and the improve quality of service..

Some recent policy initiatives are also expected to have translated into changes in the uptake of ICT products and services. Following the introduction of compulsory ICT subjects in schools by the government in 2015, barriers related to ICT literacy are anticipated to reduce[2]. The removal of customs duties on smart phones by the government is also likely to support the uptake of the devices. The Government has also continued to invest in ICT infrastructure aimed at extending coverage and enhancing reliability of ICT services across the country. For instance the government through the SMART Zambia initiative is scheduled to install up to 1009 communication towers across the country[3] by the year 2020.

Notwithstanding, as uptake of ICT products and services continues to surge, cyber related risks and incidents are also expected to be on the rise. Particularly, the advent of digital financial services has presented new challenges relating to consumer protection. Cyber related risks and incidents have also been associated with the adoption of electronic commerce (e-commerce) transactions.

1.2. Survey Objectives

The 2018 national survey on access and usage of ICTs by households and individuals was aimed at establishing the level of access and usage of diverse ICT services and products in Zambia including the perceptions on quality of service and affordability. The survey also examined the

[1] http://www.techtrends.co.zm/mtn-airtel-zamtel-speak-data-bundle-reduction/
[2] http://www.daily-mail.co.zm/ict-exams-compulsory/
[3] http://www.daily-mail.co.zm/a-major-leap-to-bridge-digital-divide/

extent of online risks, incidents and mitigation measures by households and individuals. An assessment of the extent of access and usage of digital financial services in Zambia was also undertaken. Further, an evaluation of the gender dimensions related to access and usage of ICTs in Zambia was made. For the first time in 2018, an attempt was made to identify the behavioural aspects of electronic/electrical waste (e-waste) generation and awareness on the management of e-waste by households and individuals. Ultimately, all these attributes were investigated with a view of providing recommendations related to increasing access and usage of ICTs in the country.

1.3. Survey Methodology

In conducting the survey, the implementing agencies relied on international best practice in undertaking similar surveys. Specifically, the survey was based on the 2014 Manual for Measuring ICT Access and Use by Households and Individuals developed by the International Telecommunications Union (ITU), a specialised agency of the United Nations[4]. The survey was conducted in all the ten provinces of the country covering both rural and urban areas. A total of 6,150 households were targeted in the nationally representative sample with a response rate of 99.9 percent achieved. The households were drawn from 246 Standard Enumeration Areas (SEAs) selected from the universe of SEAs in the country, identified during the Census of Population and Housing conducted of 2010.

Face to face interviews were conducted using the Computer Assisted Personal Interviewing (CAPI) among all the household members aged 10 years and above that were present at the time of interview in the selected households. The Survey Solutions application for Android, a software package for capturing/digitizing data from censuses and surveys developed by the World Bank was used on the CAPI devices. A mixture of closed, open-ended, single and multiple response questions were elicited to respondents during the survey[5]. The diversity of responses assisted in bringing out distinct attributes associated with access and usage of ICTs by households and individuals[6].

1.4. Context and Rationale for the Survey

The findings of the 2018 National Survey on access and usage of ICTs by households and individuals have particular importance to the country's development aspirations. The 2030 Agenda for Sustainable Development recognizes that "The spread of information and communication technology and global interconnectedness has great potential to accelerate human progress, to bridge the digital divide and to develop knowledge societies[7]". While none of the Sustainable Development Goals (SDGs) is specifically about ICTs, several targets make reference to ICTs.

In Zambia, the Seventh National Development Plan (7NDP) equally recognises the importance of ICTs as a catalyst for socio-economic development by enhancing competitiveness as well as being an enabler of good governance[8]. A number of strategies aimed at leveraging on ICTs for

[4] https://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-ITCMEAS-2014-PDF-E.pdf
[5] See annexure 1 for Household level and Individual level Questionnaires
[6] See Annexure 2 for detailed methodology
[7] https://www.itu.int/en/ITU-D/Statistics/Pages/intlcoop/sdgs/default.aspx
[8] http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiB

development are identified in the medium term development strategy. Recently, the Ministry of Finance published the financial sector development policy which underscores the importance of digital platforms to accelerate financial inclusion[9]. Another prominent development has been the initiative by the Ministry of Agriculture to facilitate access to farming inputs for targeted farmers using electronic platforms[10]. As a key actor in the ICT sector, ZICTA has also identified a number of actions in its strategic plan for the period 2017-2021 aimed at contributing to the transformation of the country into a digital information society. All these initiatives point to the growing importance of ICTs in the country.

The estimates from the survey will also provide insights on the effectiveness of the initiatives adopted by various state and non-state actors in promoting access and usage of ICTs. Further, the insights gathered from households and individuals will form a basis for realigning the current sectorial policy and regulatory strategies for increasing the uptake of ICT products and services in the country.

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[9] http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwj40ZbmuIHgAhVkonEKHWvsDBsQFjAAegQICRAC&url=http%3A%2F%2Fwww.boz.zm%2FNational-Financial-Sector-Development-Policy-2017.pdf&usg=AOvVaw29dxHpAVvco2CWCZQk_X6N

[10] https://www.lusakatimes.com/2015/10/12/president-lungu-launches-fisp-e-voucher/

2.0. Demographic and Socio-Economic Characteristics of the Survey

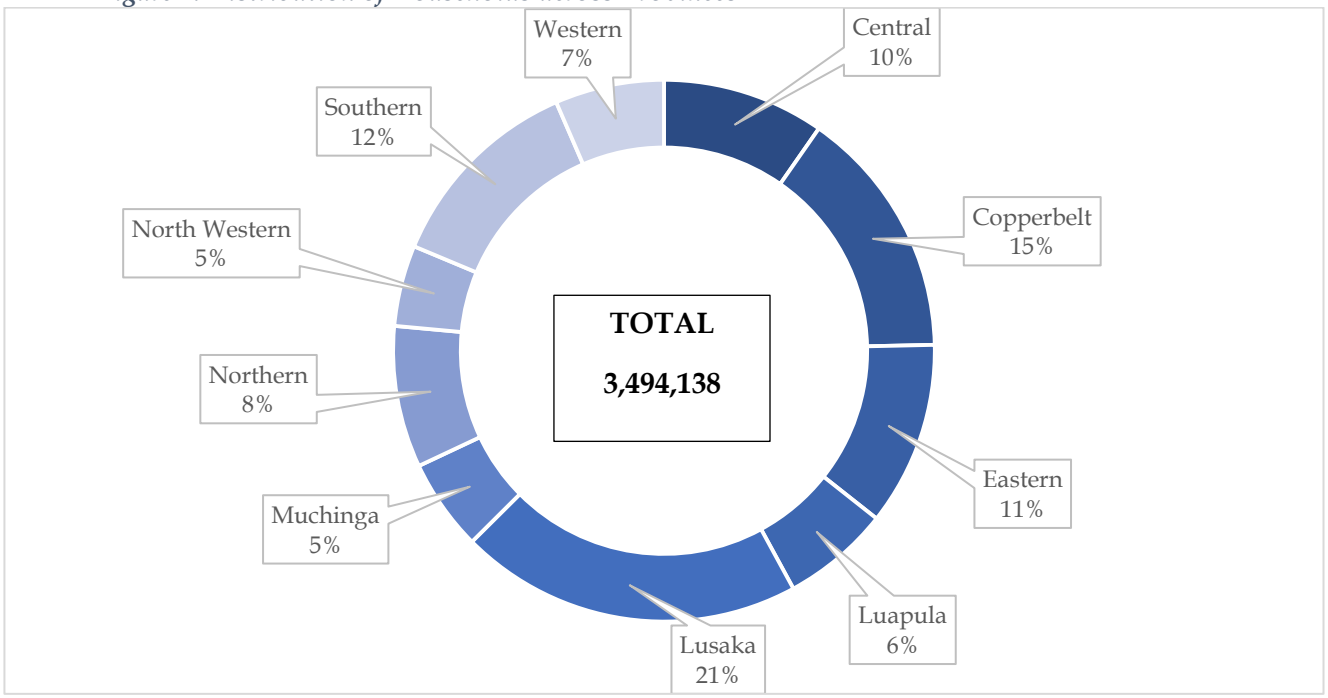
This chapter provides insights into the demographic and socio-economic characteristics of all the households and individuals across the country at the time of the survey. The demographic and socio-economic characteristics that are presented include but are not limited to the distribution of households across the country, distribution of households with access to electricity, distribution of household heads by sex, distribution of households by region as well as the distribution of individuals disaggregated by sex, age, literacy, disability, employment status and level of education attained. The demographic and socio-economic characteristics of the population are considered as they have potential to influence access and usage of ICTs among households and individuals. They also provide a context to the prevailing environment where the overall assessment on access and usage of ICTs was undertaken.

2.1. Demographic and Socio-Economic Characteristics of Households

2.1.1. Distribution of Households

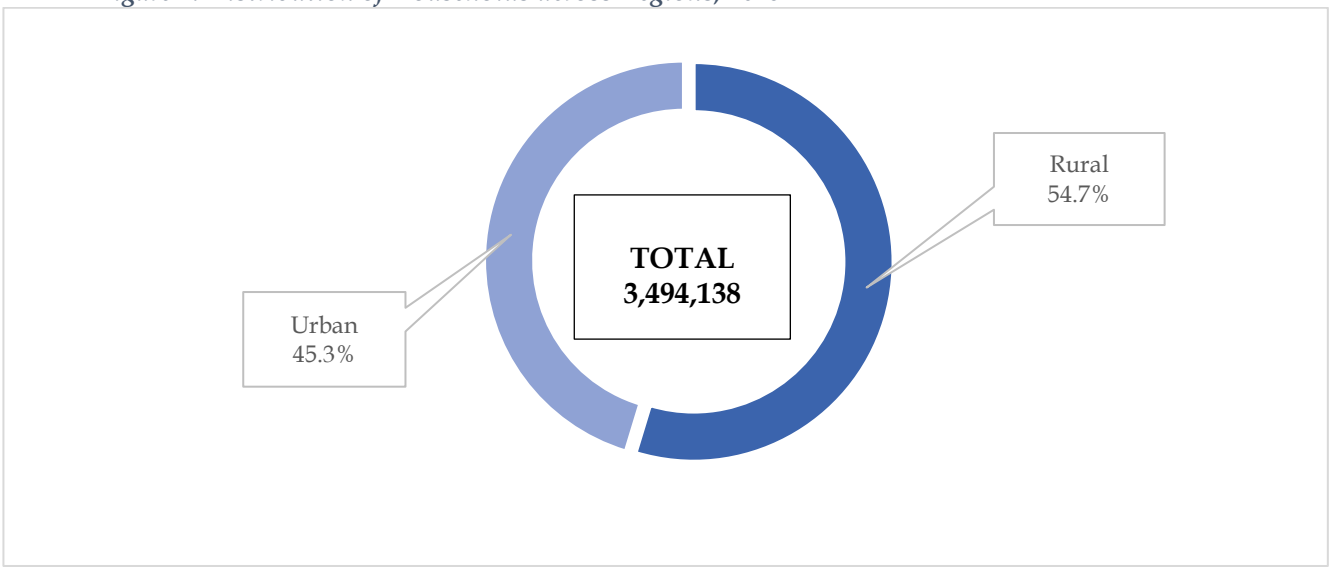
The survey relied on the prescribe definition of a household in the compendium of Statistical concepts and Definitions for the National Statistical System which is a group of people who normally live and eat together. They may or may not be related by blood, marriage or adoption, but make common provision for food or other essentials for living and they have only one person whom they all regard as head of household. The survey estimated that there were a total of 3.5 million households spread across the whole country. It was further established that Lusaka Province accounted for the largest proportion of households in the country constituting 20.5 percent, followed by the Copperbelt province which accounted for 15.0 percent. North-Western Province and Muchinga province accounted for the least proportions of the total number of households constituting 4.8 percent and 5.5 percent respectively.

Figure 1: Distribution of Households across Provinces



There were relatively more households in rural areas than urban areas. Specifically, 54.7 percent of the total number of households across the country were estimated to be located in rural areas while 45.3 percent of the total number of households were located in urban areas.

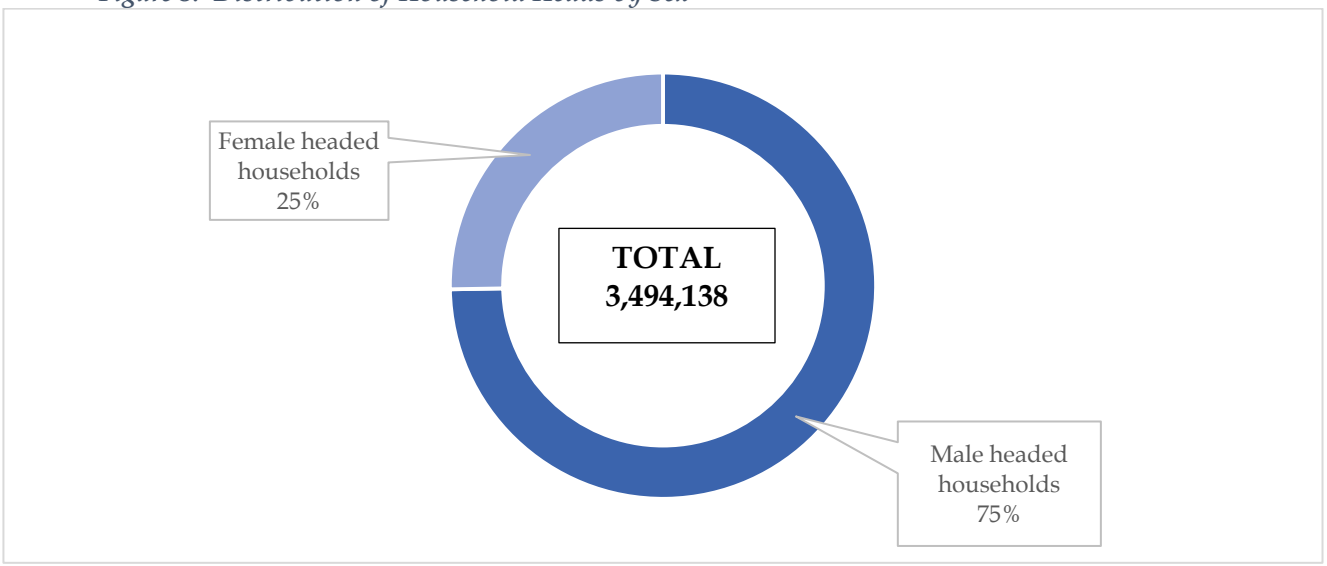
Figure 2: Distribution of Households across Regions; 2018



2.1.2. Distribution of Heads of Households by Sex

There were relatively more male headed households than female headed households across the country. Specifically, 74.6 percent of the households were headed by males while only 25.6 percent of the households were headed by females.

Figure 3: Distribution of Household Heads by Sex



2.1.3. Average Size of Households

The average size of a household in Zambia was estimated at 4.8 (approximately 5 people). The average size of households was relatively comparable between rural areas and urban areas. Specifically, the average size of a household in rural areas was 5.1 (approximately 5 people) while the average size of a household in urban areas was 4.6 (approximately 5 people) people. However, households headed by males had a larger average size of the household amounting 5.1 (approximately 5 people) compared to the average size of the household headed by a female that amounted to 4 people.

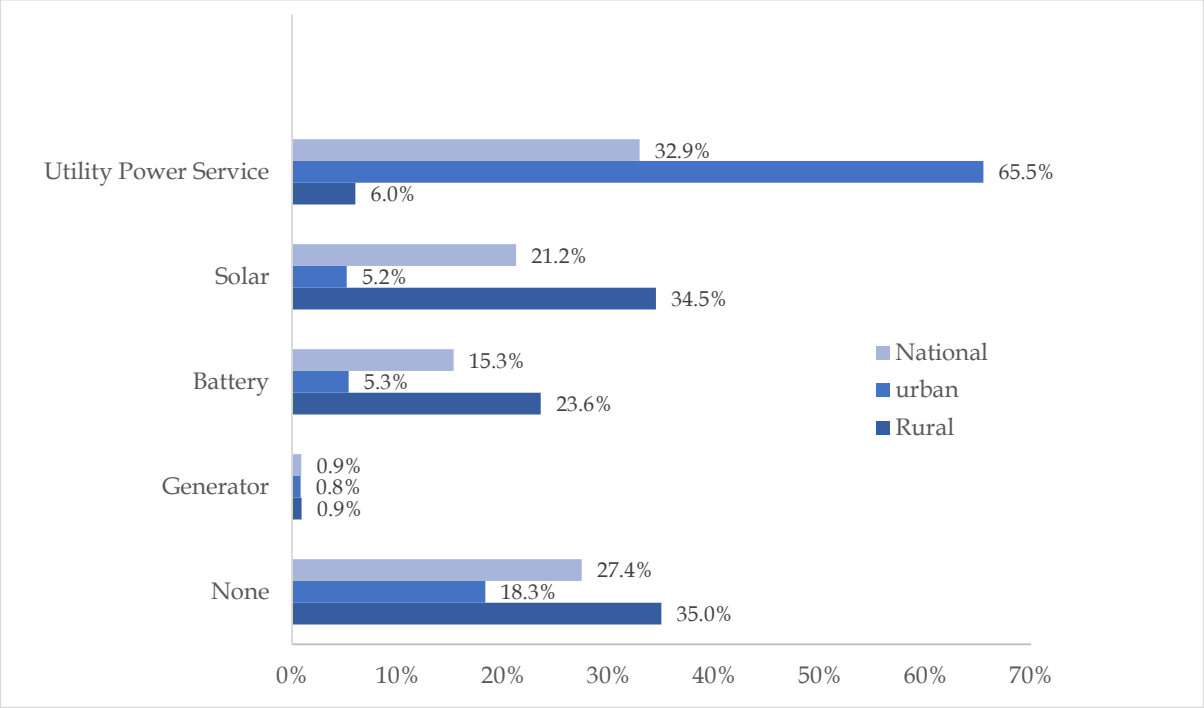
Table 1: Average Size of Households by Sex of Head of Household and Region

Region	All Households	Male Headed Households	Female Headed Households
Total	4.8	5.1	4.0
Rural	5.1	5.4	4.0
Urban	4.6	4.8	4.0

2.1.4. Distribution of Households by Access to Electricity

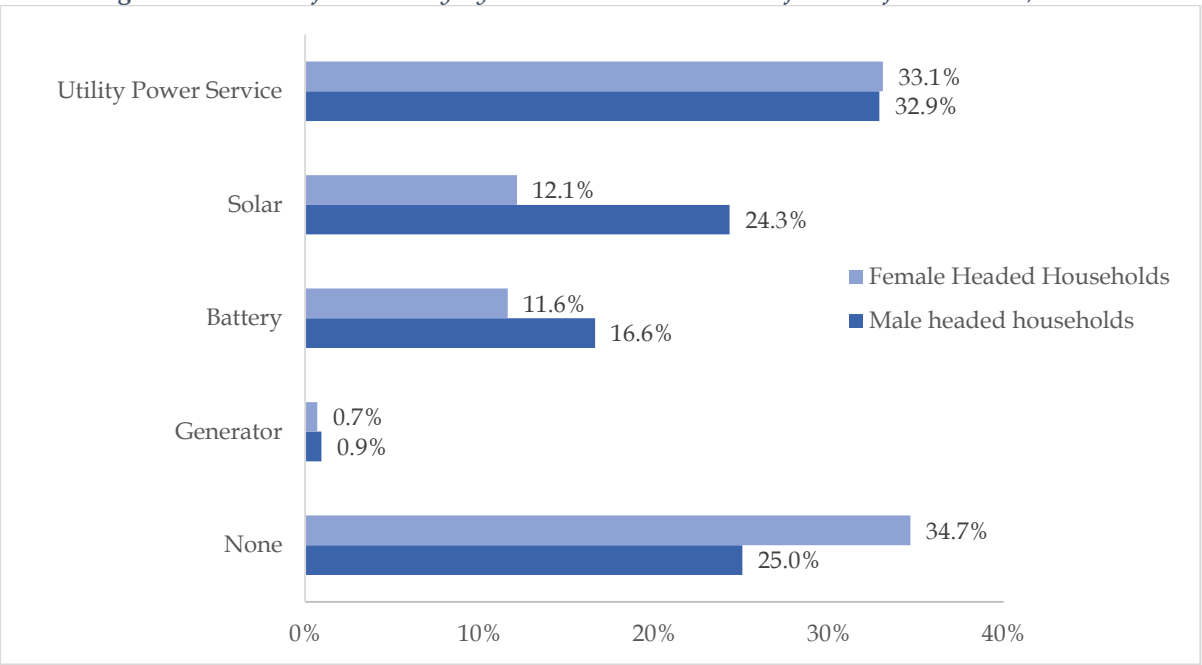
The most widely accessed source of electricity was supplied by utility companies to households, accounting for a proportion of 32.9 percent of the total number of households across the country. Further, 65.5 percent of the households based in urban areas reported that they had access to electricity supplied by power utility companies while only 6 percent of the households based in rural areas indicated that they had access to electricity supplied by power utility companies. On the other hand, Generators were the least utilised source of electricity by households accounting for less than 1 percent of the total number of households in the country. It was also established that 27.4 percent of the households across the country do not have access to any source of electricity.

Figure 4: Access to Electricity by Households across Type of Source of Electricity



There was a very minimal diffrence in the proportion of households headed by males that indicated that they had access to electricity[11] supplied by power utility companies compared to households headed by females that reported that they had access to electriicty supplied by power utility companies. Specifically, 33.1 percent of the households headed by females indicated that they had access to electricity supplied by power utility companies while 32.9 percent of the households headed by males indicated that they had acces sto electriicty supplied by power utility companies. However, a larger proportion of households headed by females accounting for 34.7 percent of the total number of households headed by females indicated that they had no access to any source of electricity compared to the proportion of households headed by males who reported that they did not access to electriicty supplied by power utility companies constituting 25 percent.

Figure 5: Sources of Electricity by Households across Sex of Head of Household; 2018



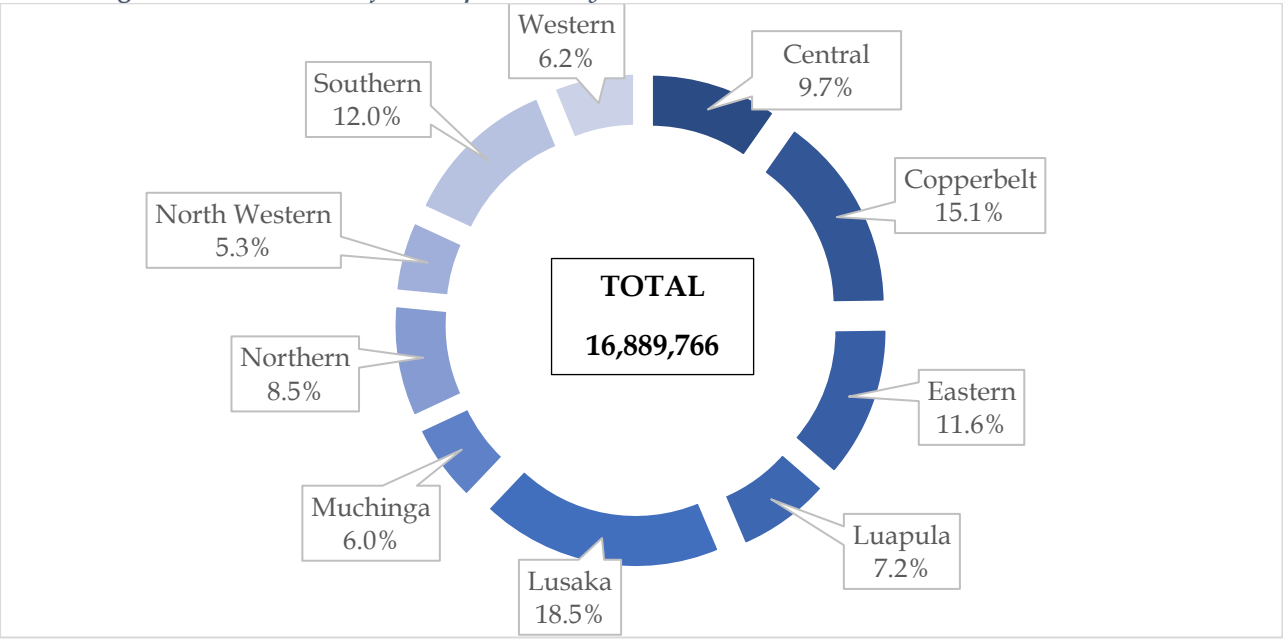
2.2. Distribution of the Population

2.2.1. Distribution of the Population by Province

The survey had a national coverage encompassing all the ten provinces of Zambia. The estimated population size was 16.9 million and was based on a weighting procedure adopted to extrapolate the results to the population of 10 years and older, Lusaka Province accounted for the highest proportion of the population accounting for 18.5 percent followed by Copperbelt Province which accounted for 15.1 percent. North – Western Province and Muchinga province accounted for the smallest proportion of the total population estimated constituting 5.3 percent and 6.0 percent respectively.

[11] Electricity supplied by power utility companies

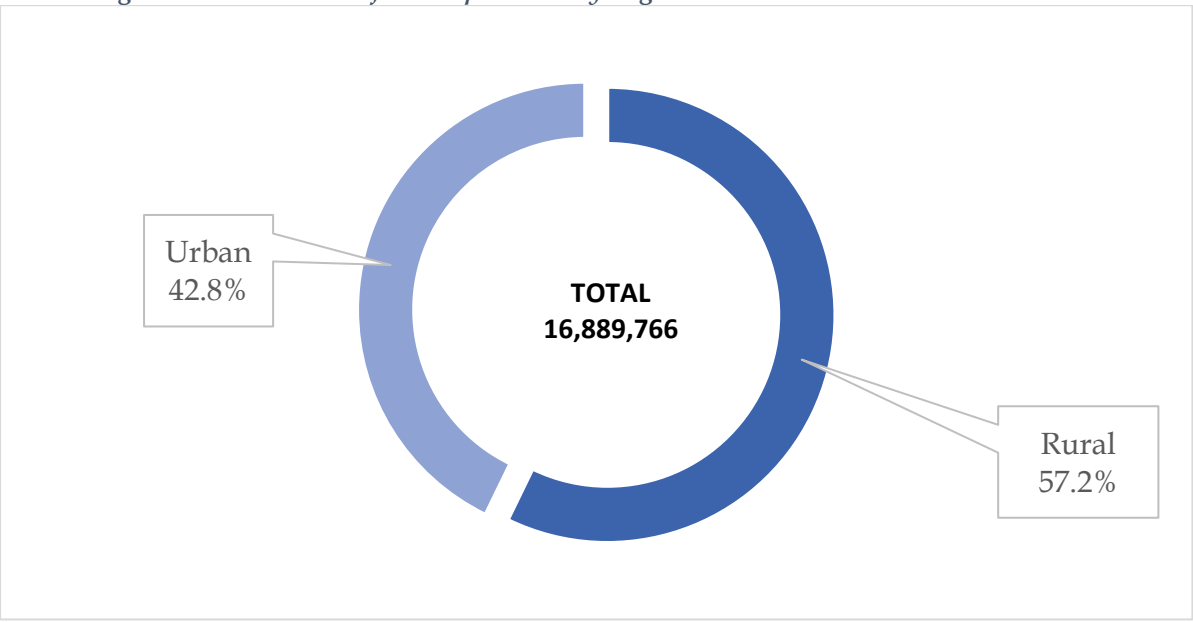
Figure 6: Distribution of the Population by Province



2.2.2. Distribution of the Population by Region

The majority of individuals in the country were based in rural areas compared to urban areas. Specifically, 57.2 percent of the population were based in rural areas while 42.8 percent were based in urban areas.

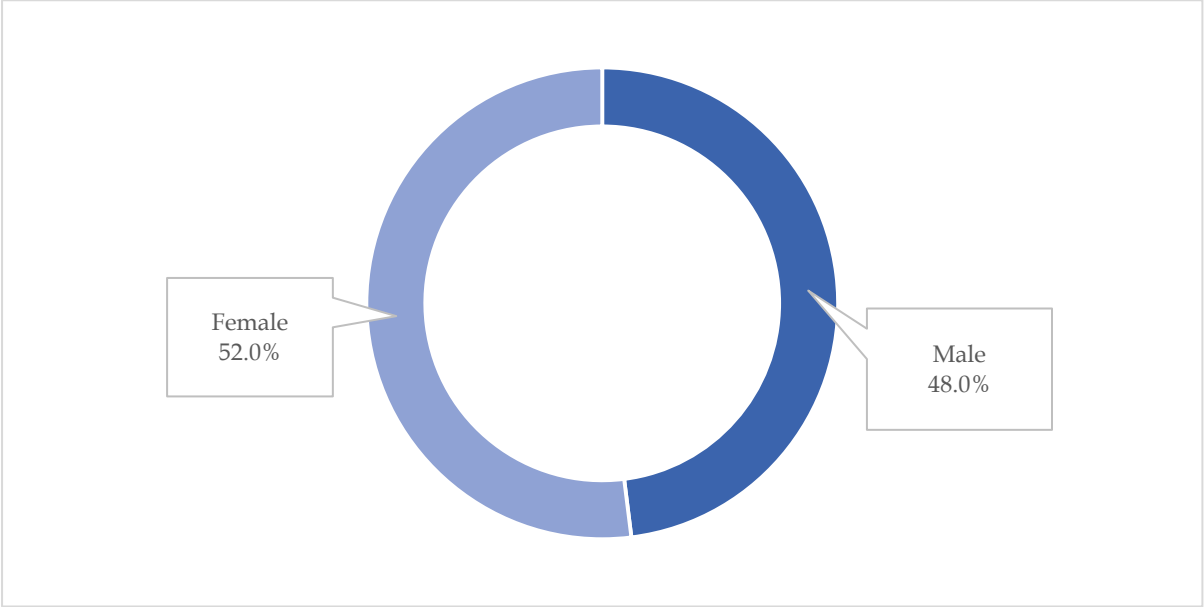
Figure 7: Distribution of the Population by Region



2.2.3. Distribution of the Population by Sex

The distribution of the population according to the individuals' sex revealed that 52.0 percent of the population were females while 48.0 percent were males.

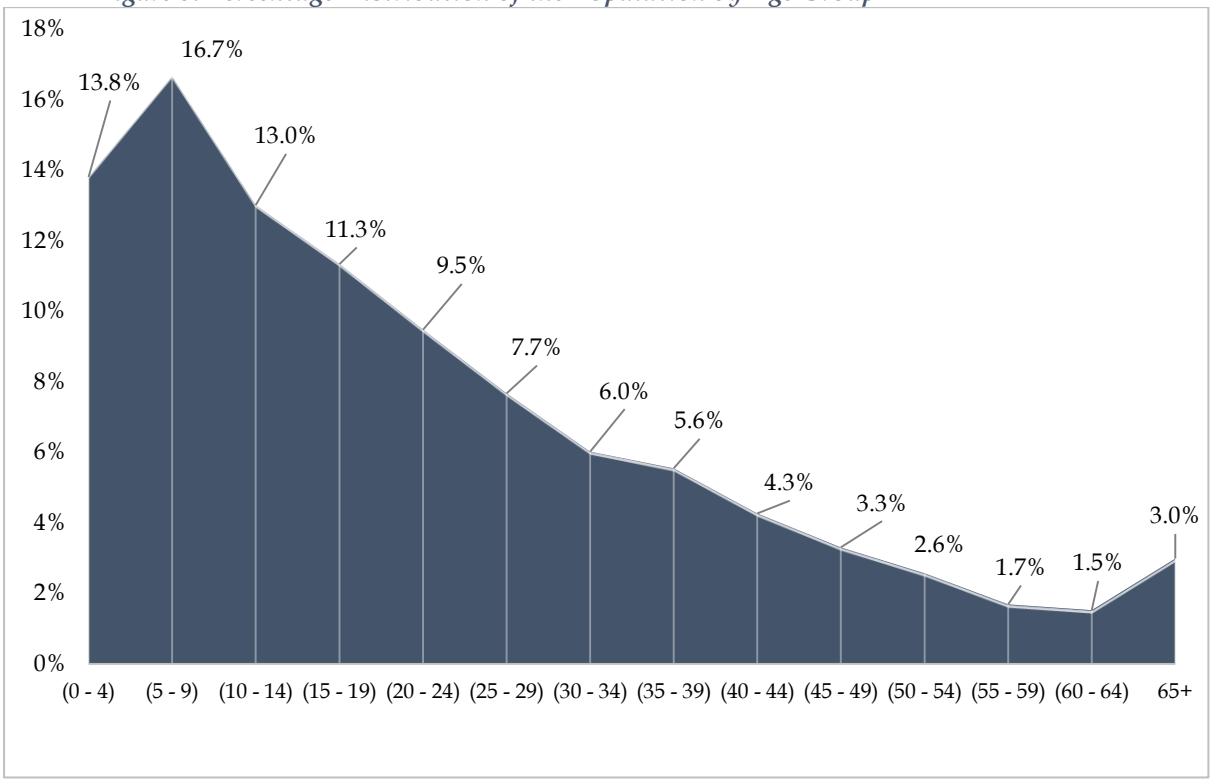
Figure 8: Distribution of the Population by Sex



2.2.4. Distribution of the Population by Age Group

The country's population was largely young with the highest proportion of the population aged between 5 and 9 constituting 16.7 percent of the total population[12]. Over 78 percent of the population was aged below 35 while less than 5 percent of the population were aged above 65 years.

Figure 9: Percentage Distribution of the Population by Age Group



[12] The Population age groups were arranged in intervals of 5 years

2.2.5. Distribution of the Target Population by Education Attainment Levels

The largest proportion of the population aged 10 years and above reported that they had attained primary education accounting for 49.0 percent of the total population. On the other hand, the percentage of the population aged 10 years and above that indicated that they had completed tertiary education accounted for the least proportion amounting 5.5 percent. Noteworthy also, is that 8.3 percent of the population aged 10 years and above had not attained any level of education.

There was a relatively higher proportion of males that indicated that they had attained secondary and tertiary education while more females indicated that they had attained primary education. Further, the proportion of females who had not attained any level of education was higher compared to males. Specifically, 41.2 percent of the males indicated that they had attained secondary education compared to 33.6 percent of the females while 6.3 percent of males reported that they had attained tertiary education compared to 4.8 percent of females. On the other hand 51.5 percent of females indicated that they had attained primary education compared to 46.2 percent of males while 10.1 percent of females had not attained any level of education compared to 6.3 percent of males.

Table 2: Distribution of the Target Population by Education Attainment Levels

	All	Male	Female
None	8.3%	6.3%	10.1%
Primary	49.0%	46.2%	51.5%
Secondary	37.2%	41.2%	33.6%
Tertiary	5.5%	6.3%	4.8%

2.2.6. Distribution of the Population by Disability

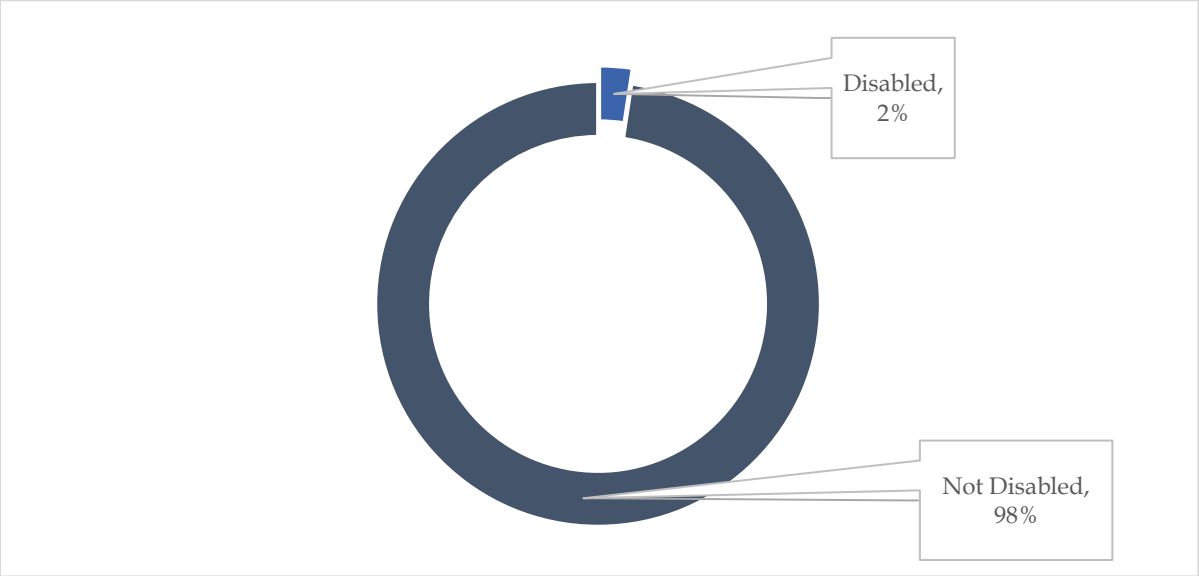
The International Classification of Functioning, Disability and Health (ICF) classifies disability in three areas that are inter-related:

> ***Impairments:*** *problems in body function or changes in body structure such as blindness;*
> ***Activity limitations****: difficulties in doing certain activities such as walking or eating;*
> ***Participation limitations****: societal restrictions with regards, involvement in any area of life such as being discriminated against in employment or transportation.*

Formally, disability refers to problems faced in any or all three areas of functioning[13]. The proportion of the entire population that reported that they had a disability was estimated at 2.4 percent.

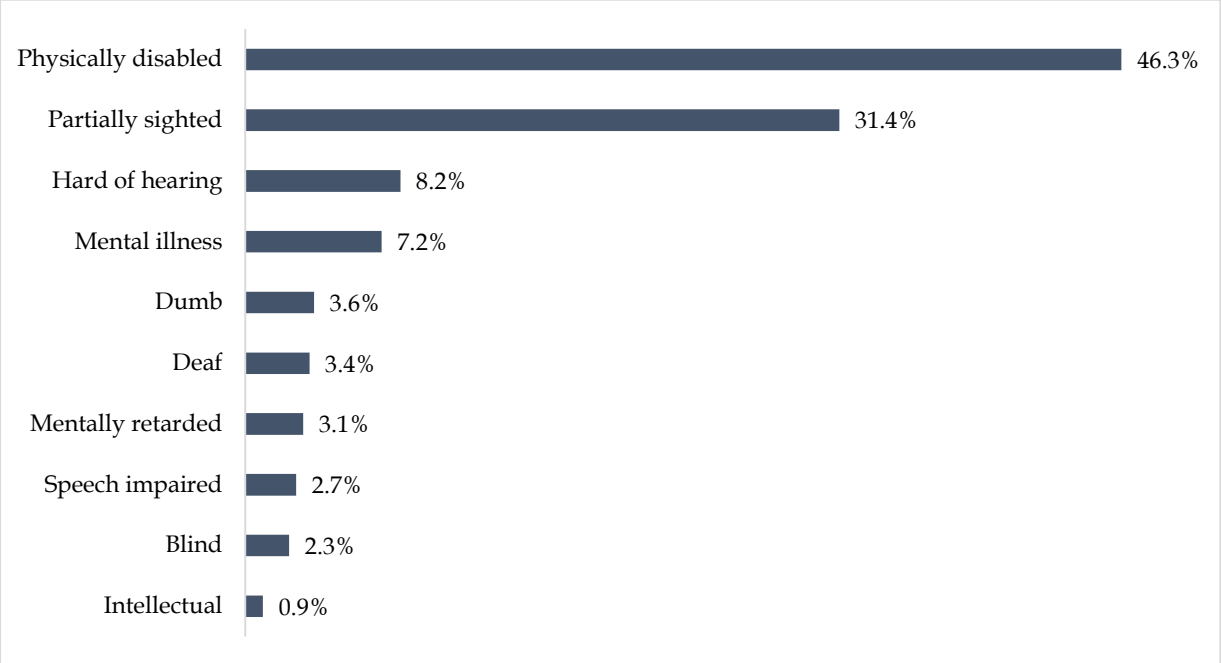
13 https://apps.who.int/iris/bitstream/handle/10665/43737/9789241547321_eng.pdf;jsessionid=1AB7A8A70B5AB060C7EA6252656D55F4?sequence=1

Figure 10: Distribution of the Population by Disability; 2018



Physical disability was the most prevalent type of disability reported accounting for 46.3 percent of the total number of people that indicated that they had a disability, followed by partial sightedness accounting for 31.4 percent of the total number of people that reported that they had a disability. The least prevalent type of disability was intellectual disability accounting for 0.9 percent of the total number of people that reported that they had a disability.

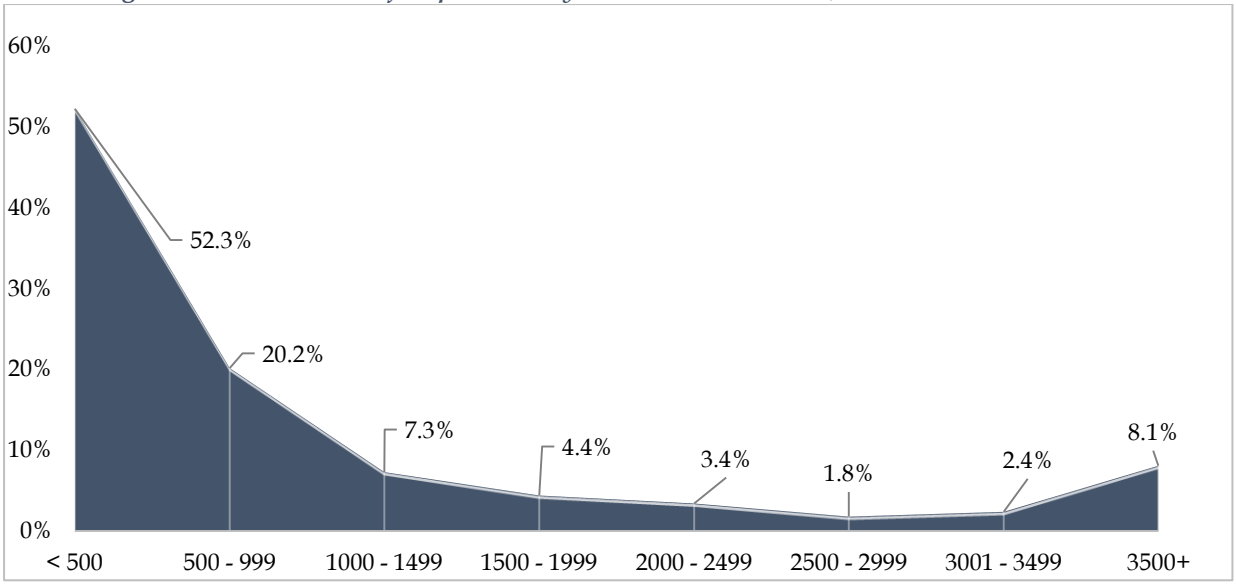
Figure 11: Distribution of the Population by Type of Disability; 2018



2.2.7. Distribution of the Population by Income Level

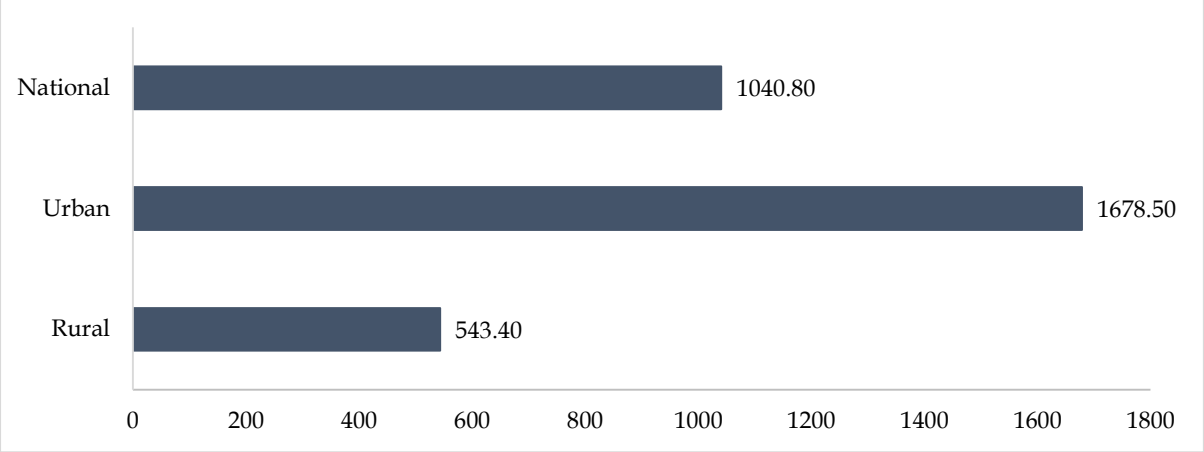
More than half of the individuals aged 10 years and older were estimated to have income levels from all sources that were less than ZMW500. It was also established that the proportion of individuals aged 10 years and above progressively declined with higher earnings. Only 8.1 percent of the individuals had incomes that exceeded ZMW3500.

Figure 12: Distribution of Population by Income Level 'ZMW'; 2018



The average income from all sources for individuals aged 10 years and above was estimated at ZMW 1,040.80. Individuals aged 10 years and above that were based in urban areas had a relatively higher average income from all sources compared to individuals aged 10 years and above that were based in rural areas. Specifically, the average income from all sources for individuals aged 10 years and above that were based in urban areas was 1,678.50 while the average income for rural-based individuals aged 10 years and above was ZMW543.40.

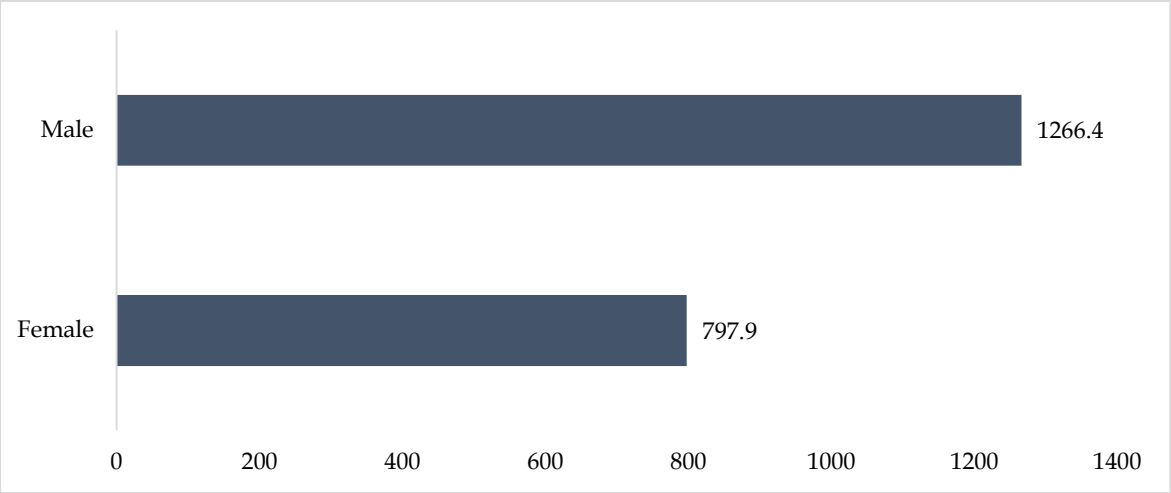
Figure 13: Distribution of Incomes for Individuals across Regions, 'ZMW'; 2018



The average income for male individuals aged 10 years and above was relatively higher than the average income of individuals aged 10 years and above that were female. Specifically, the average income for male individuals aged 10 years and above was ZMW

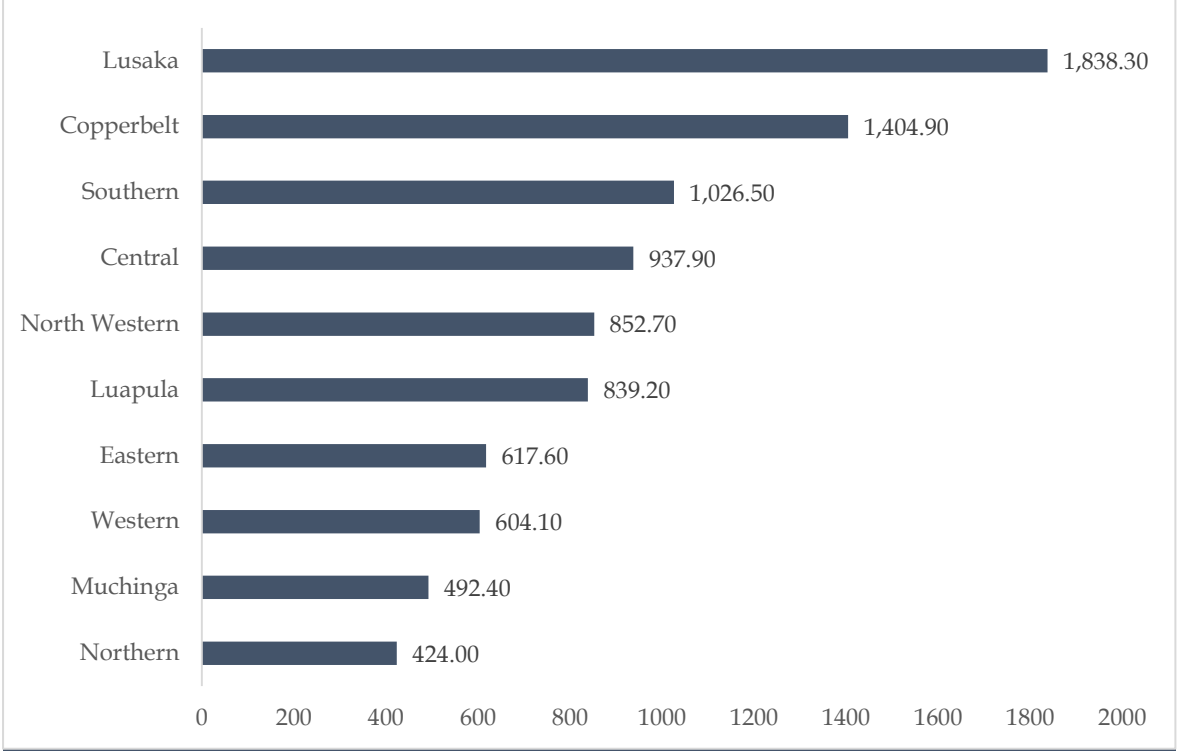
1,266.40 while the average income of female individuals aged 10 years and above was estimated at ZMW 797.90

Figure 14: Average Income of Individuals by Sex 'ZMW'; 2018



Average Incomes were established to be highest in Lusaka province and Copperbelt province and Southern province estimated at ZMW 1838.30, ZMW 1,404 and ZMW 1,026.50 respectively. Western province, Muchinga province and Northern Province had the lowest average income for individuals aged 10 years and above amounting at ZMW 604.10, ZMW 492.40 and ZMW424 respectively.

Figure 15: Average Income of Individuals aged above 10 Years by Province 'ZMW'; 2018



3.0. Access and Usage of ICT Products and Services

This chapter discusses the extent of access and usage of diverse ICT products and services by households and individuals in Zambia. It highlights key trends in access and usage of ICT products and services over the period 2013, 2015 and 2018. An attempt is also made to explain some of the key constraints to increased access and usage of ICT products and services in the country. The chapter also provides some insights relating to quality of experience and challenges faced by users of ICT products and services in the country. Information presented in this chapter is disaggregated by region and in some instances further analysis is provided across various demographic and socio-economic characteristics. Particularly, the gender aspects relating to access and usage of ICT products and services are evaluated.

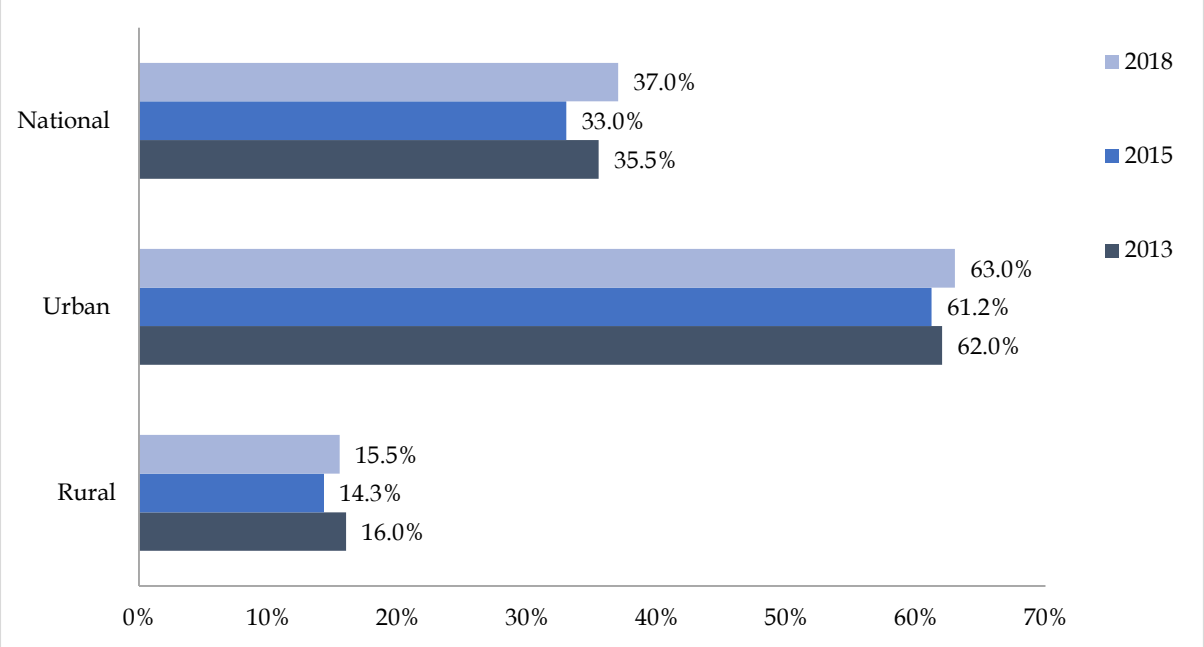
3.1. Access and Usage of ICTs by Households

3.1.1. Ownership of Television Sets and Access to Broadcasting Services

3.1.1.1. Ownership of Television Sets

The proportion of households across the whole country with a working television set increased from 33.0 percent to 37.0 percent between 2015 and 2018. The distribution of ownership of television sets across regions remained consistent with previous surveys as 63.0 percent of the households located in urban areas reported that they own a working television set while only 15.5 percent of households located in rural areas indicated that they owned a working television set.

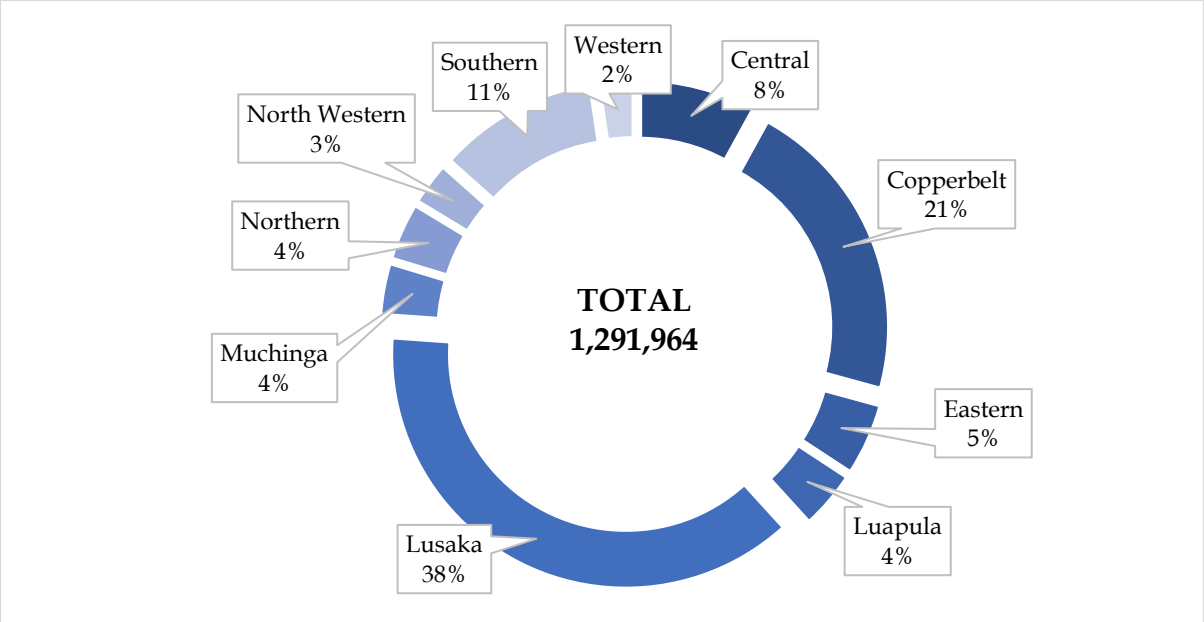
Figure 16: Distribution of Ownership of Working Television Sets by Region; 2013-2018



The largest proportion of households that own working television sets were based in Lusaka province and Copperbelt province constituting 38.0 percent and 21.0 percent of the total number of households that own a working television set respectively. The

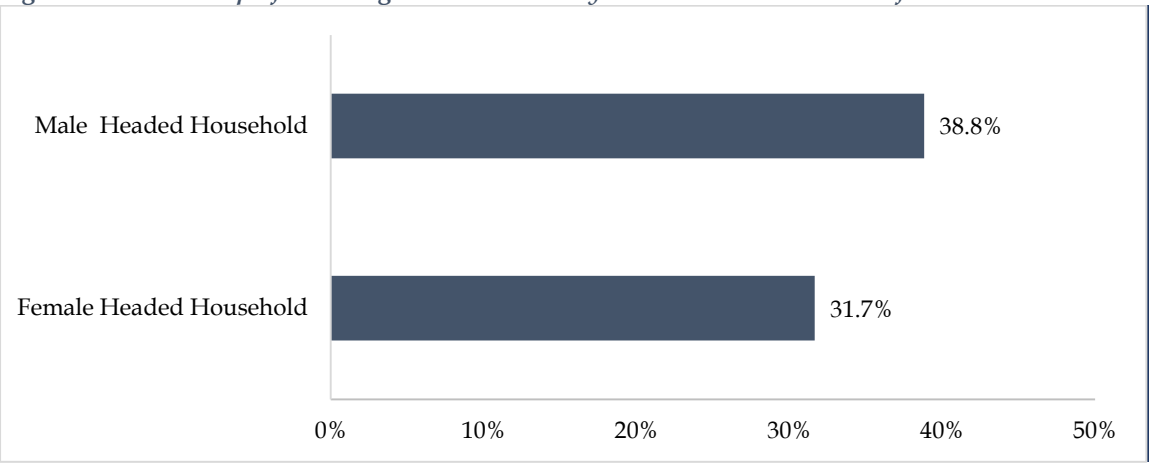
provinces with the least number of households that own a working television set were Western province and North-Western province accounting for 2.0 percent and 3.0 percent of the total number of households that own a working television set respectively.

Figure 17: Distribution of Ownership of Working Television Sets by Province; 2018



There were relatively more male headed households that owned a working television set compared to the proportion of female headed households that owned a working television set. Specifically, 38.8 percent of the male headed households across the country reported that they owned a working television set while only 31.7 percent of the female headed households across the country indicated that they owned a working television set.

Figure 18: Ownership of Working Television Set by Households across Sex of Household Head

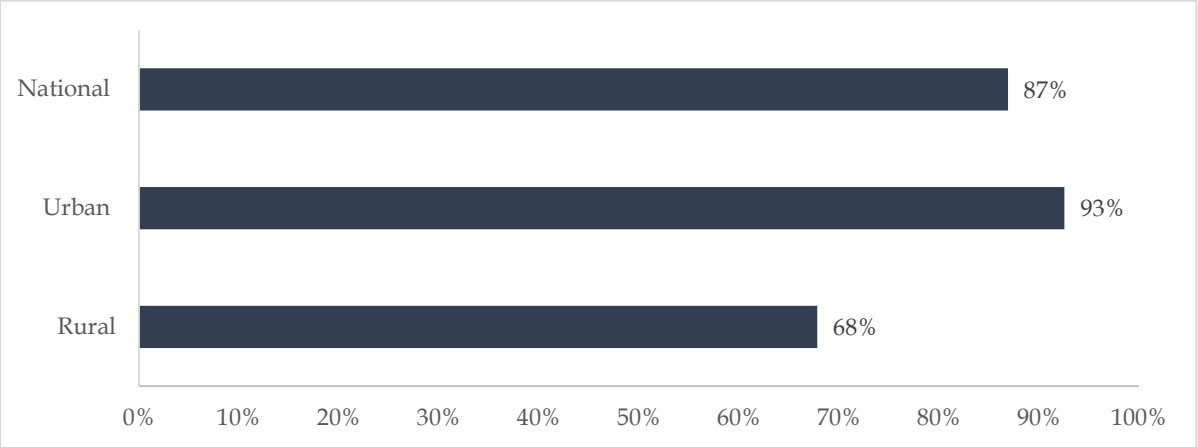


3.1.1.2. Access to Television Broadcasting Services

Considering only those households that reported that they owned television sets across the whole country, 87.0 percent of these households indicated that they had access to

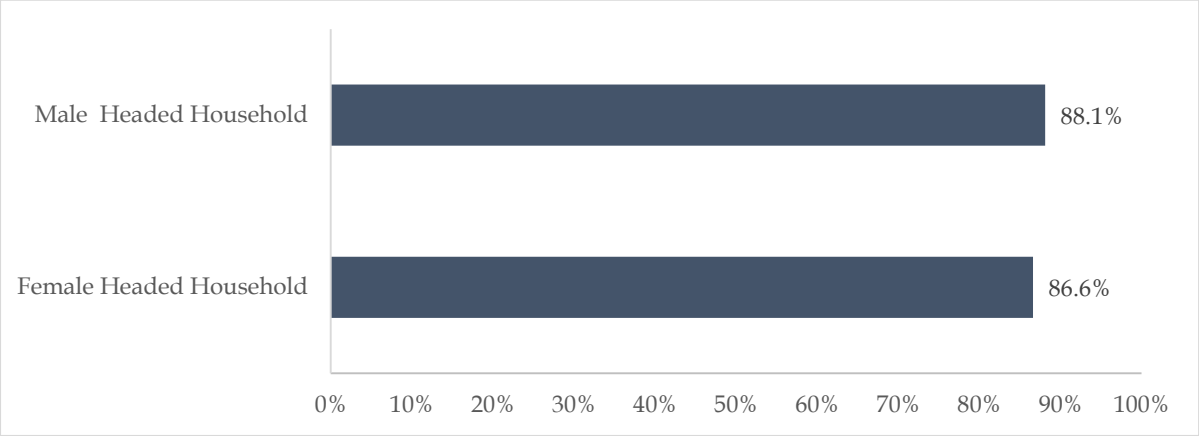
broadcasting services. There were relatively more households based in urban areas that reported that they owned television sets and had access to broadcasting services constituting 92.6 percent compared to only 67.8 percent of the households based in rural areas that indicated that they owned television sets and had access to broadcasting services.

Figure 19: Access to Broadcasting Services by Households that Own Television Sets by Region; 2018



There were very minimal differences observed between female headed households that owned television sets and male headed households that owned television sets regarding access to broadcasting services. Specifically, 88.1 percent of the male headed households that reported that they owned television sets had access to broadcasting services compared to 86.6 percent of the female headed households that indicated that they owned television sets and had access to broadcasting services.

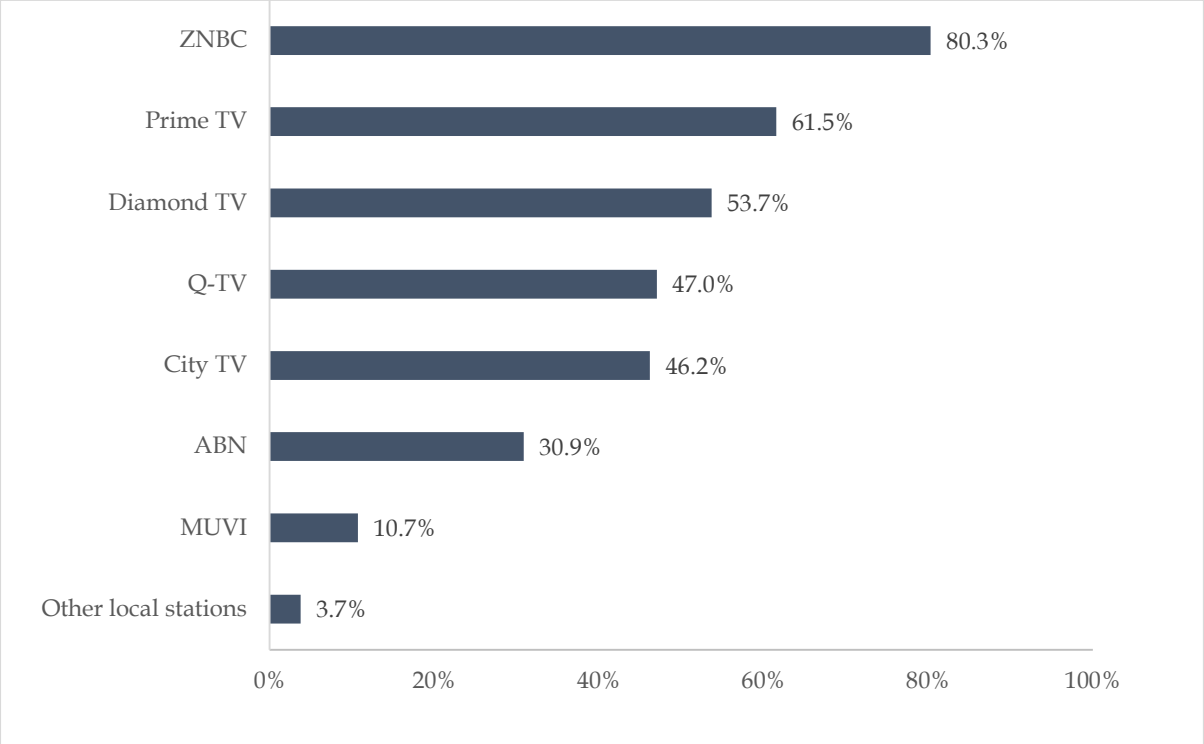
Figure 20: Access to Television Stations by Households that own Television Sets by Sex of Household Head



ZNBC television stations remain the most widely accessed local television stations by households that own working television sets in Zambia. Specifically, 80.3 percent of the households that own working television sets in the country have access to at least one ZNBC television station. Prime TV, Diamond TV and Q-TV equally had a larger proportion of households that own working television sets and have access to local

television stations constituing 61.5 percent, 53.7 percent and 47.0 percent respectively. Muvi TV was among the least accessed local television stations by households that owned a working television set accounting for 10.7 percent.

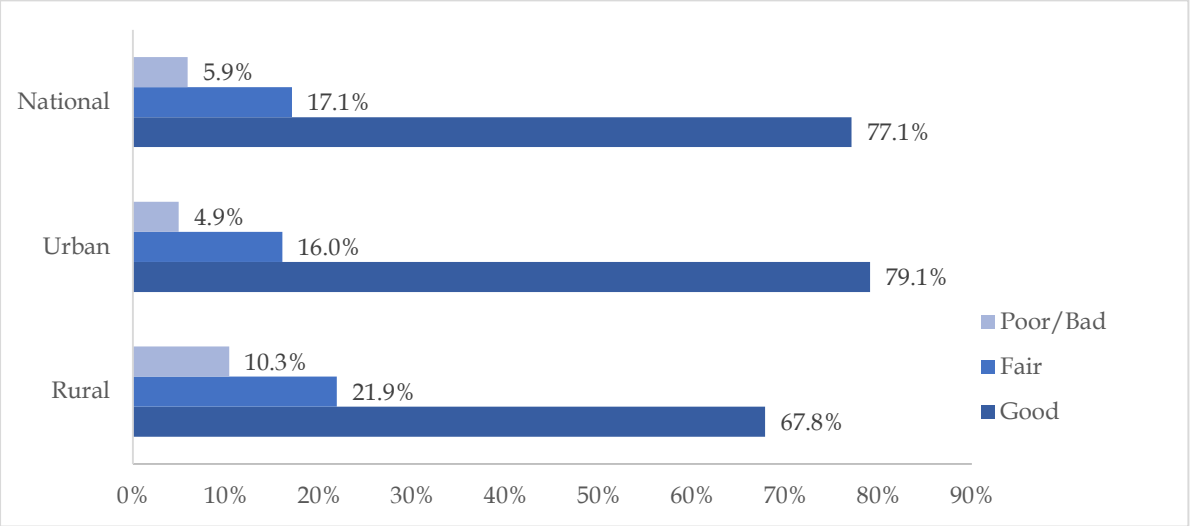
Figure 21: Access to Local Television Channels by Households with Working Television Sets; 2018



3.1.1.3. Perceptions on Quality of Experience for Television Broadcasting Services

The majority of the households that reported to have access to ZNBC television stations rated the quality of the reception as good. Specifically, 77.1 percent of the households that indicated that they had access to ZNBC television stations rated the quality of the reception as good. However, the proportion of households that rated the quality of the reception for ZNBC television services as good was relatively higher in urban areas than in rural areas. 79.1 percent of the households in urban areas that had access to ZNBC television services rated the quality of the reception as good while only 67.8 percent of the households in rural area that had access to ZNBC television services rated the quality of the reception as good.

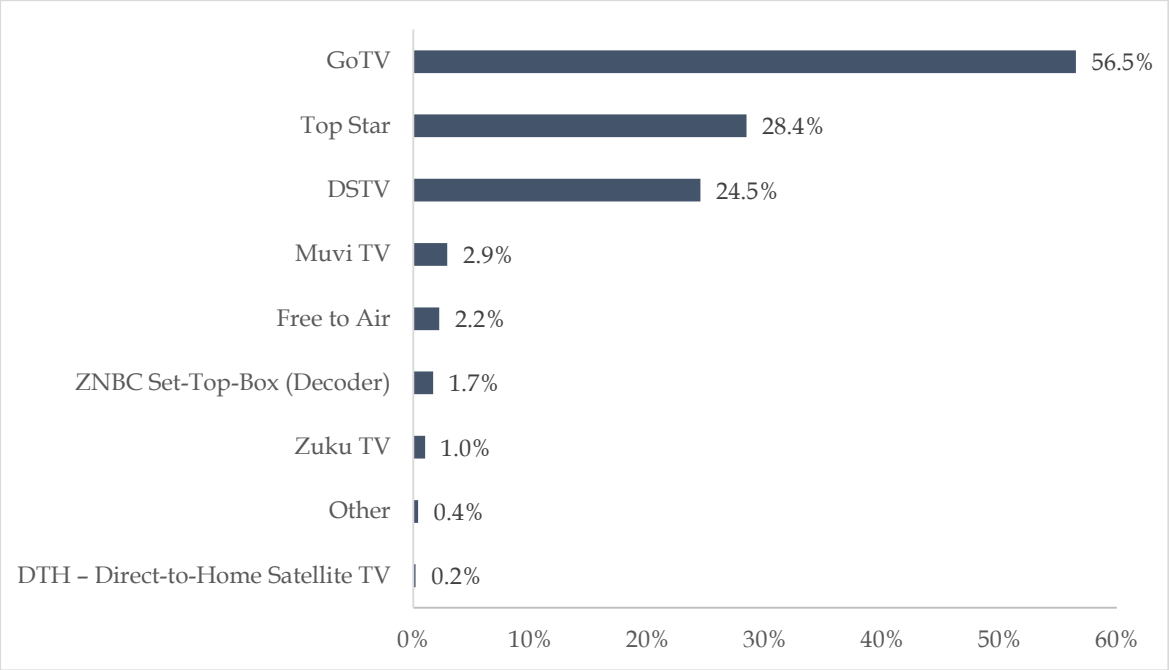
Figure 22: Perceptions on Quality of Reception for ZNBC Television Services by Households across Regions; 2018



3.1.1.4. Access to pay Television Services

GoTV and Topstar recorded the highest frequency of households that indicated that they owned a working television set which was used to access broadcasting services and had access to pay television channels constituting 56.5 percent and 28.4 percent respectively. Direct to Home Satellite television services were the least accessed pay TV services accounting for less than 1 percent of households that indicated that they owned a working television set which was used to access broadcasting services. Access to ZNBC Set-Top-Boxes was relatively lower than most pay TV services accounting for 1.7 percent of the households that indicated that they owned a working television set which was used to access broadcasting services.

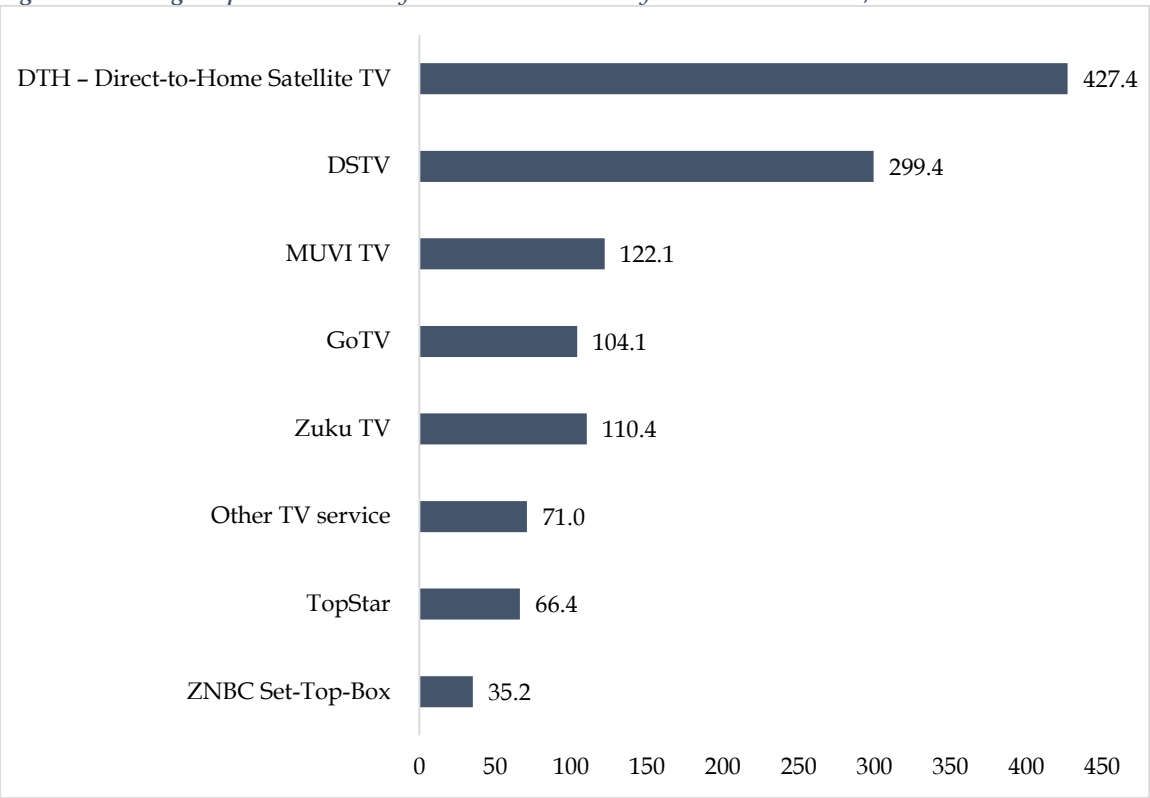
Figure 23: Access to Pay Television Services by Households



3.1.1.5. *Affordability of Pay Television Channels*

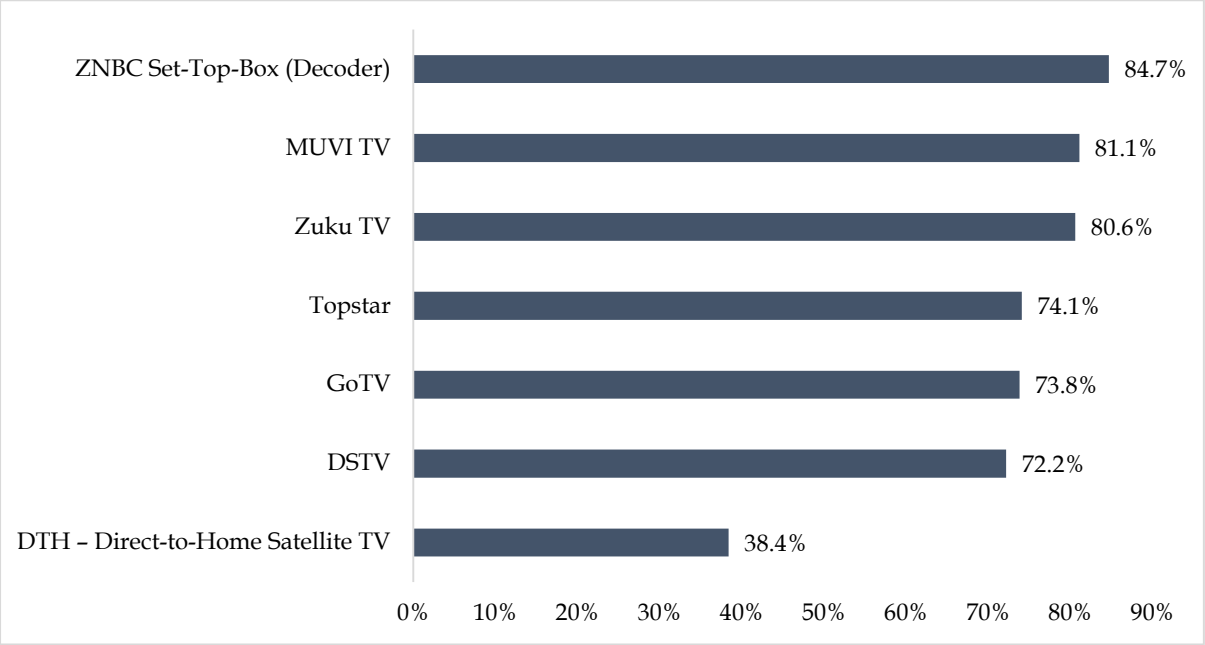
Direct-to-Home satellite television services and DSTV services were reported to have the highest average expenditure per month among households that access broadcasting services amounting ZMW 427.40 and ZMW 299.40 respectively. On the other hand, the lowest expenditure incurred on Pay television services per month by households that access broadcasting services was reported towards ZNBC Set-Top-Box subscriptions and TopStar subscriptions amounting ZMW 35.20 and ZMW 66.40 respectively.

Figure 24: Average Expenditure on Pay Television Services by Households 'ZMW'; 2018



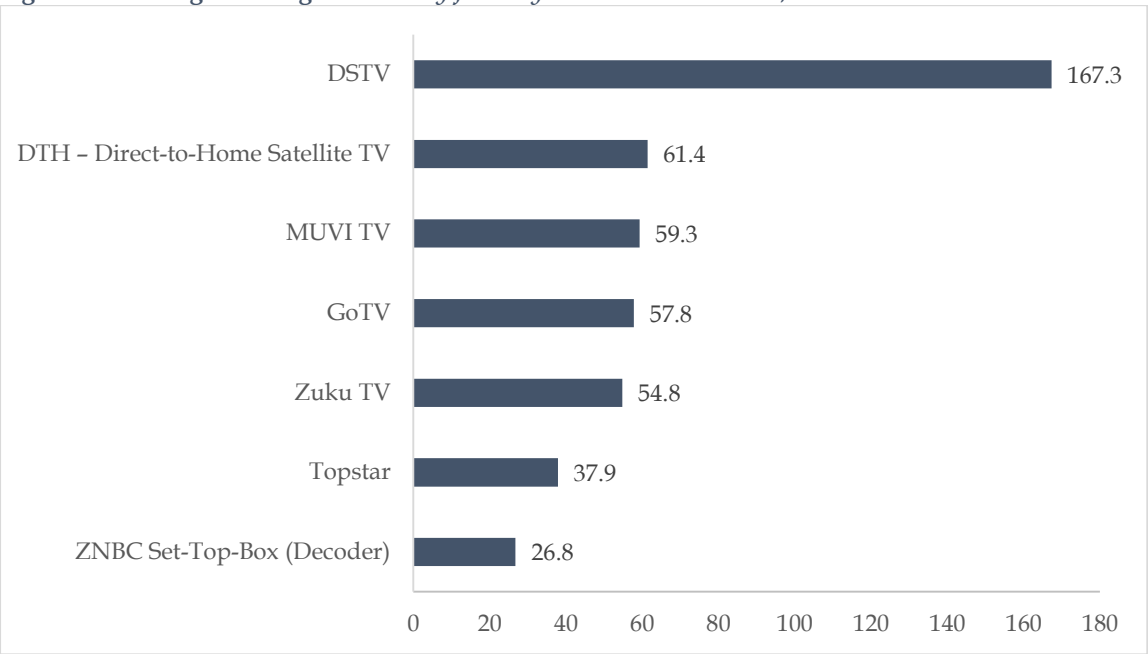
Affordability, which encompasses both a household's income endowment and pricing, is an important attribute to access and usage of ICTs. Most of the households that access pay television services were of the view that pay television services were affordable. However, Direct-to-Home satellite television services had recorded the lowest proportion of households that perceived the services to be affordable constituting 38.4 percent of the households that access direct to home satellite television services. All the pay television services considered had a proportion of more than 70 percent of the households that access the services report that the services were affordable. The majority of households access ZNBC Set-top Box, Muvi television and Zuku television constituting 84.7 percent, 81.1 percent and 80.6 percent respectively.

Figure 25: Proportion of Households that reported that Pay Television Services are Affordable; 2018



Households that indicated that the pay television services that they accessed were not affordable, provided estimates of their maximum willingness to pay for the television services they accessed. DSTV services and Direct-to-Home Satellite television services had the highest average amount that households accessing the service were willingness to pay of ZMW 167.30 and ZMW61.40 respectively. On the other hand, ZNBC set-top box and Topstar had the least average amount that households that accessed the services were willing to pay.

Figure 26: Average Willingness to Pay for Pay Television Stations; 2018

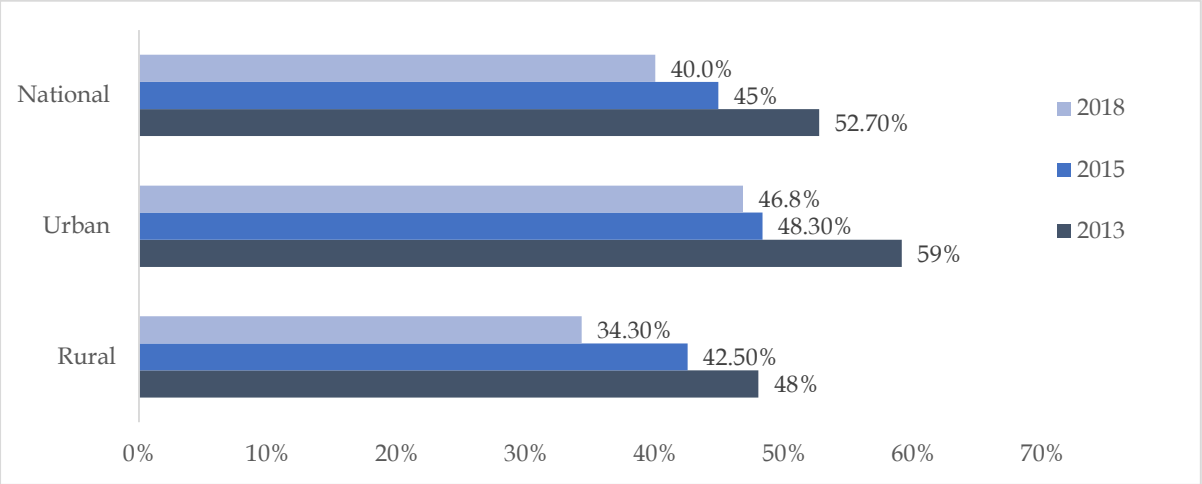


3.1.2. Ownership of Working Radios and Access to Radio Stations

3.1.2.1. Ownership of Working Radios

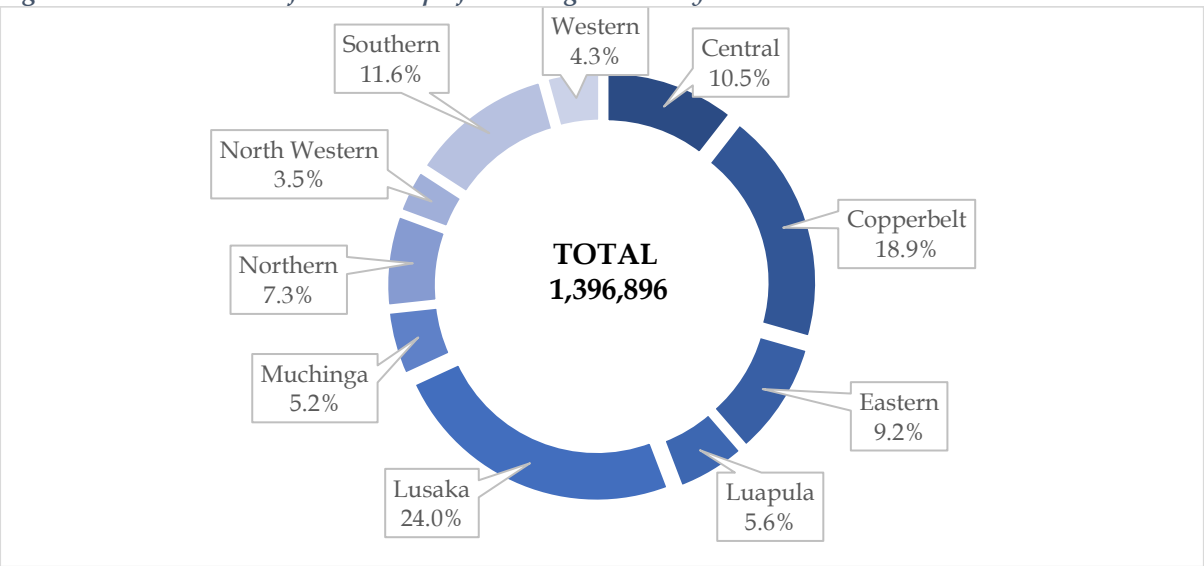
The ownership of working radios by households continued to decline in 2018 consistent with the findings in earlier surveys. The proportion of households across the country that own a working radio reduced from 45 percent in 2015 to 40 percent in 2018. This pattern of ownership of working radios was consistent within regions. However, there were some notable differences in the ownership of radios across regions. 46.8 percent of the households located in urban areas reported to own a working radio while only 34.3 percent of households located in rural areas indicated that they owned a working radio.

Figure 27: Ownership of Working Radios by Households across Regions; 2018



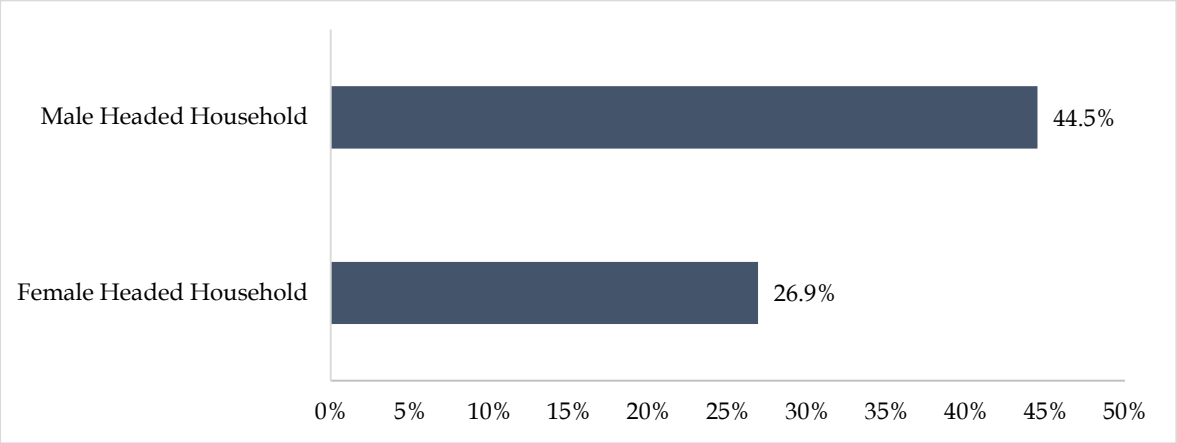
The largest proportion of households that reported that they owned a working radio were based in Lusaka province, Copperbelt province and Southern province accounting for 24 percent, 19 percent and 12 percent respectively. The provinces with the least proportion of households that own a working radio were Western and North Western accounting for 4.3 percent and 3.5 percent respectively.

Figure 28: Distribution of Ownership of Working Radios by Households across Provinces



The proportion of households headed by males that indicated that they own a working radio was relatively higher than the proprotion of households headed by females that indicated that they own a working radio. Specifically, 44.5 percent of the male headed households indicated that they own a working radio while only 26.9 percent of the households headed by females indicated that they own a working radio.

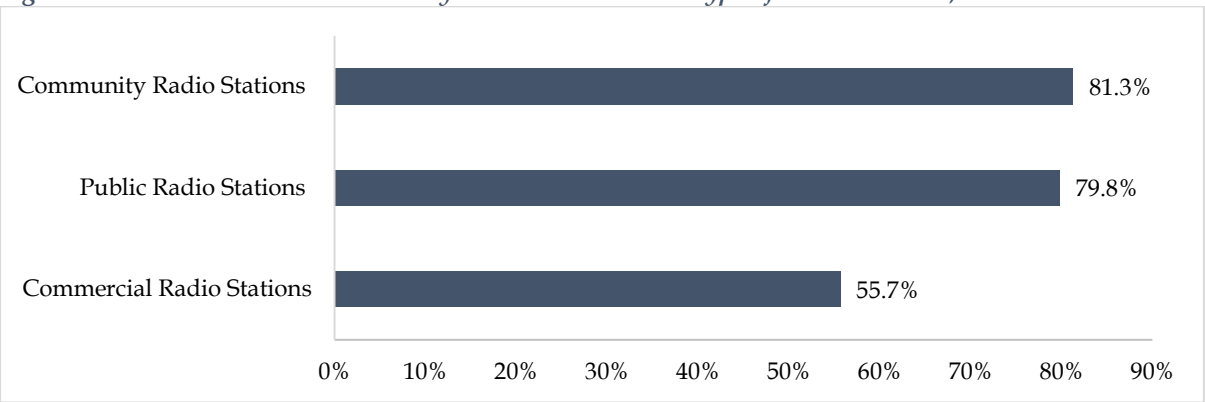
Figure 29: Ownership of Working Radios by Households across Sex of Household Head; 2018



3.1.2.2. Access to Radio Stations

The majority of households in the country that own working radios indicated that they access community radio stations compared to the proportion of households that access public radio stations and commercial radio stations. Specifically, 81.3 percent of the households that own working radios access community radio stations while only 79.8 percent and 55.7 percent access public radio stations and commercial radio stations respectively.

Figure 30: Access to Radio Stations by Households across Type of Radio Station; 2018



3.1.2.3. Perceptions on Quality of Radio Reception

The quality of radio reception was reported to be relatively better on commercial radio stations and community radio stations than the public radio stations. Specifically, 77.2 percent of the households that indicated that they own a working radio and have access to commercial radio stations reported that the quality of radio reception was good while

75.1 percent of the households that indicated that they own a working radio and have access to community radio stations rated the quality of the reception as good. On the other hand, only 61.8 percent of the households that indicated that own a working radio and reported that they have access to public radio stations indicated that the quality of the radio reception was good. Similarly, 12.8 percent of the households that indicated that they own a working radio and have access to public radio stations reported that the quality of the reception was poor. On the other, only 4.4 percent of the households that indicated that they own a working radio and have access to commercial radio stations reported that the quality of the reception was poor while 4.1 percent of the households that indicated that they own a working radio and have access to community radio stations reported that the quality of the reception was poor.

Table 3: Perceptions on Quality of Radio Reception by Households

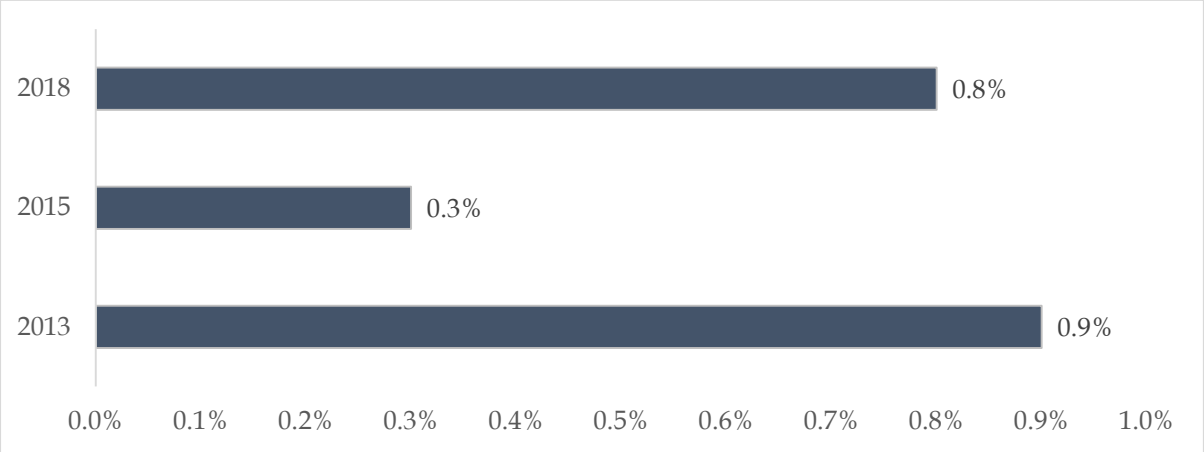
Quality Of Radio Reception	Commercial Radio Stations	Community Radio Stations	Public Radio Stations
Good	77.20%	75.10%	61.80%
Fair	19.10%	21.70%	26.40%
Poor/Bad	4.40%	4.10%	12.80%

3.1.3. Access and Usage of Fixed Telephone Line Services

3.1.3.1. Ownership of Fixed Telephone Lines

The proportion of households that reported that they owned a fixed telephone line remained negligible accounting for less than 1 percent of the total number of households across the country. However, there was some noted improvement in the proportion of households that had access to fixed telephone lines from 0.3 percent to 0.8 percent between 2015 and 2018[14].

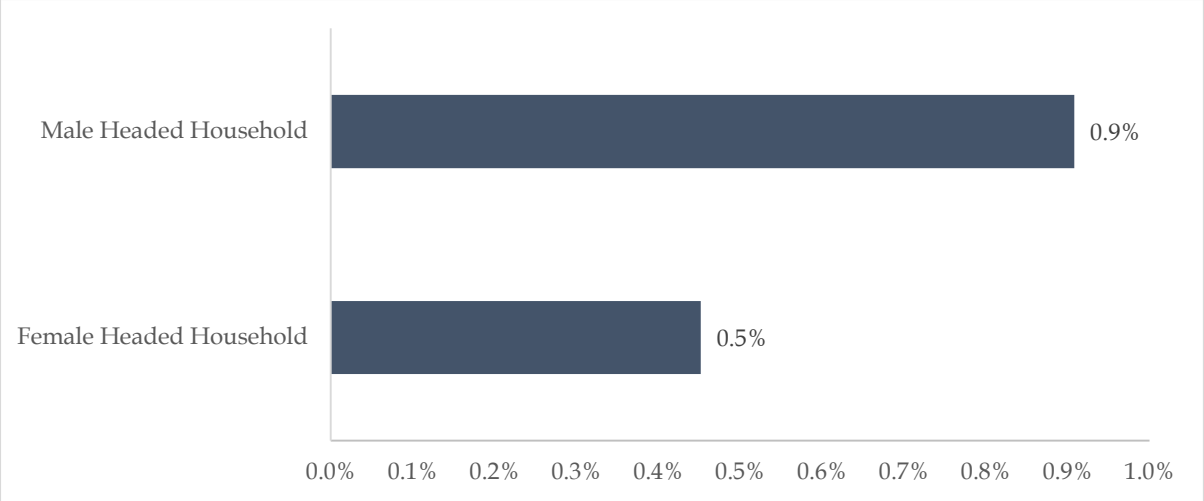
Figure 31: Ownership of Fixed Telephone Lines by Households; 2015-2018



[14] In the 2018 survey, fixed telephone lines were not limited to PSTN as the case in previous surveys but also included SIM card based fixed telephones and Internet Protocol (IP) fixed telephones owned by households.

The proprotion of male headed households that reported that they own a fixed telephone line was relatively higher than the proportion female headed households that reported that they own a fixed line. Specifically, 0.9 percent of the male headed households reported that they own a fixed line while only 0.5 percent of the female headed households indicated that they own a fixed telephone line.

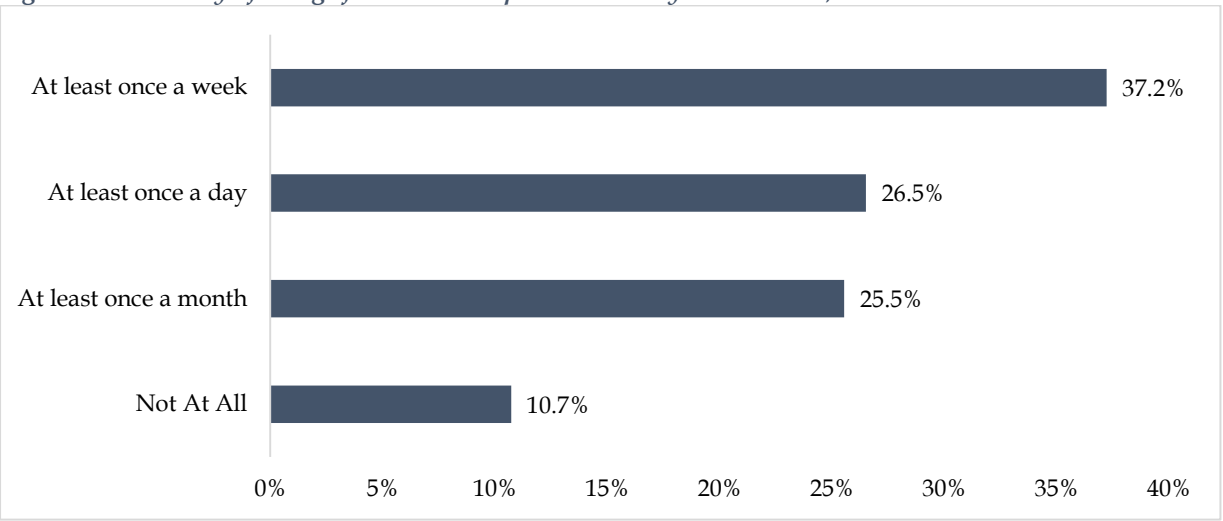
Figure 32: Ownership of Fixed Telephone Lines by Households across Sex of Household Head; 2018



3.1.3.2. Usage of Fixed Telephone Lines

The majority of households that reported to own a fixed telephone line that was operational, only used the device at least once a week, accounting for 37.2 percent of the total number of households that own a fixed line that is operational. However, it was also noted that about 10.7 percent of the households that own a fixed telephone line that is operational never use the facilities. Only 26.5 percent of the households that own a fixed telephone line that is operational indicated that they use the devices at least once a day.

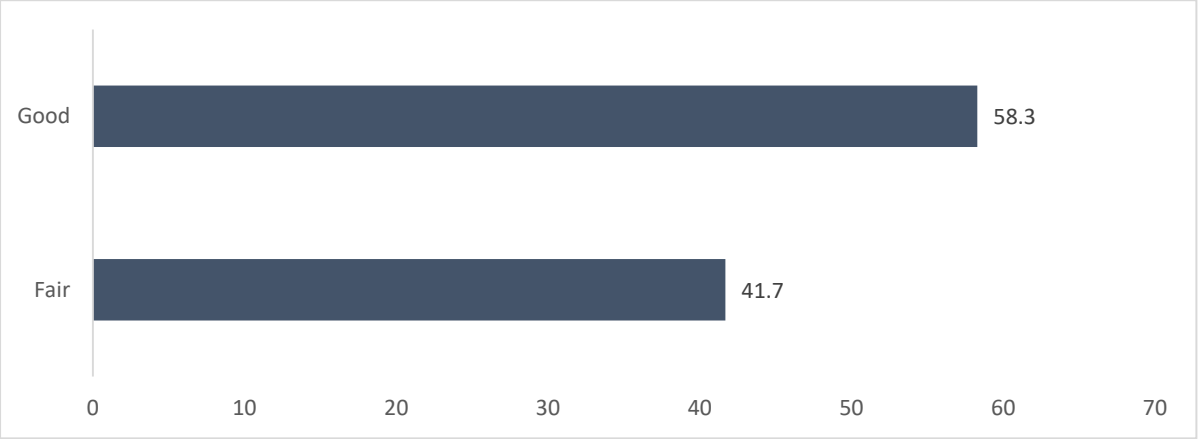
Figure 33: Intensity of Usage for Fixed Telephone Lines by Households; 2018



3.1.3.3. *Quality of Experience for Fixed Telephone Lines*

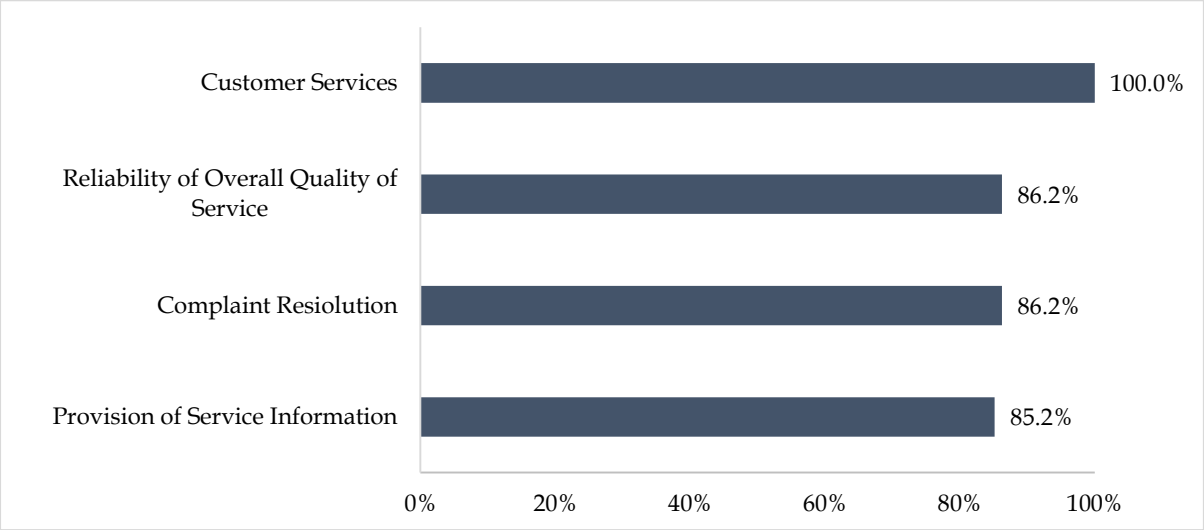
All the households that indicated that they own fixed telephone lines that are functional and have used the lines before, had either a fair or good rating of the quality of the fixed line services. Specifically, 58.3 percent of all the households that indicated that they own fixed lines that are functional and have used the lines before indicated that the quality of the fixed line services are good while the remainder indicated that they are fair.

Figure 34: Perceptions on Quality of Services for Fixed Telephone Lines by Households; 2018



Most of the households that indicated that they own fixed lines that are functional and have used the lines before were very satisfied with the various attributes of service delivery that were investigated. For instance, all the households that indicated that they own fixed lines that are functional and have used the lines before reported that they were satisfied with customer services. 86.2 percent of the households that indicated that they own fixed telephone lines that are functional and have used the lines before reported that they were satisfied with the reliability of overall quality of service.

Figure 35: Proportion of Households Satisfied with Fixed Line Services; 2018



The majority of the households that indicated that they own fixed telephone lines that are functional and have been used before, accounting for 83.1 percent, indicated that they find

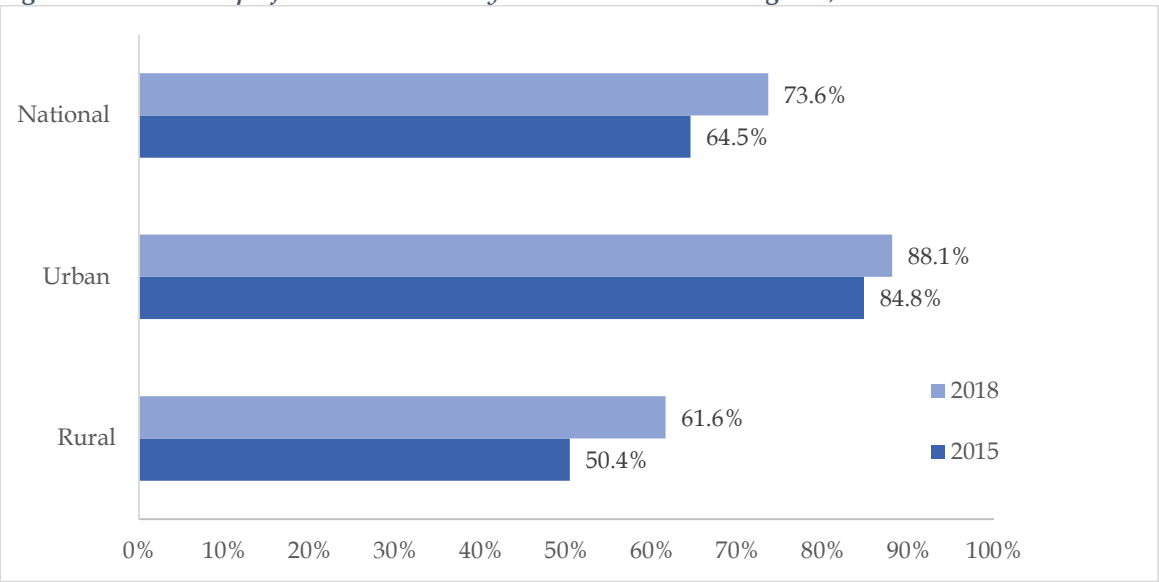
fixed telephone line services affordable. The average monthly expenditure on fixed telephone line services was reported at ZMW 144.00 by households that indicated that they own fixed telephone lines that are functional and have been used before. The average willingness to pay for fixed telephone line services per month reported by those households that indicated that they own fixed telephone lines that are functional and have been used before but found the service not affordable, was ZMW 100.00.

3.1.4. Access and Usage of Mobile Cellular Line Services by Households

3.1.4.1. Ownership of Mobile Cellular Telephone by Households

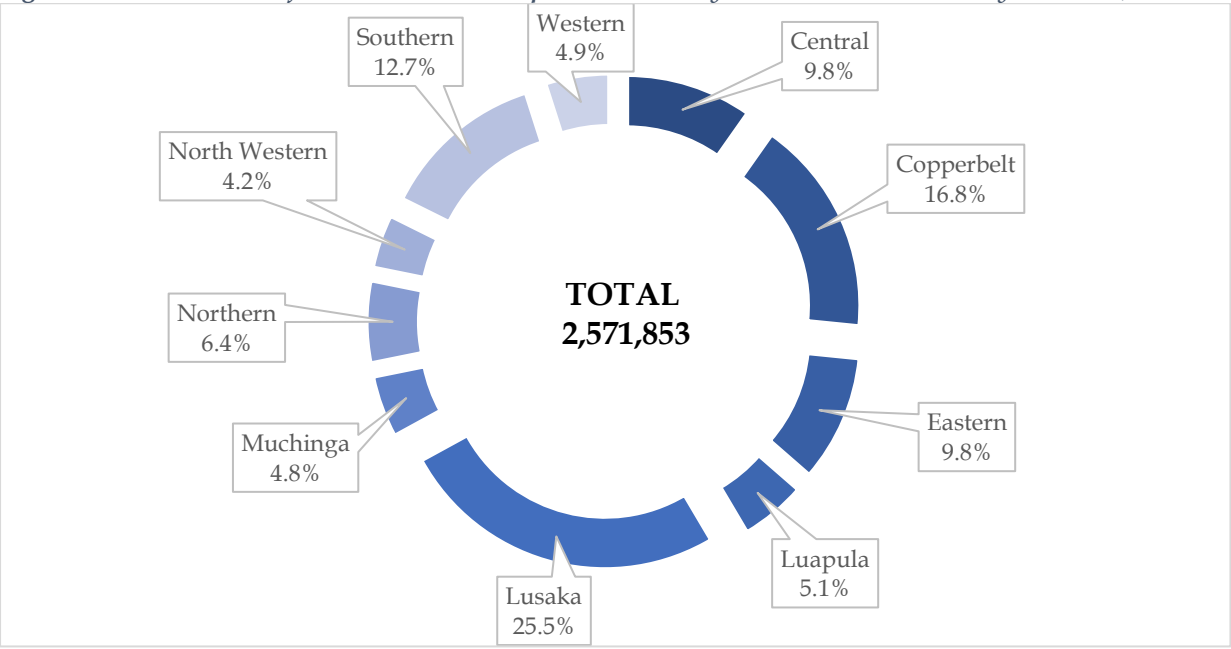
Ownership of mobile cellular telephones by households in the country increased from 64.5 percent reported in 2015 to 73.6 percent in 2018. The disparity in ownership of mobile cellular telephones by households across regions persisted with a relatively higher proportion of households that are located in urban areas indicating that they own a mobile telephone compared to households situated in rural areas. Specifically, 88.1 percent of the households that are located in urban areas indicated that they own a mobile cellular telephone while only 61.6 percent of the households based in rural areas indicated that they own a mobile cellular telephone.

Figure 36: Ownership of Mobile Phones by Households across Regions; 2015-2018



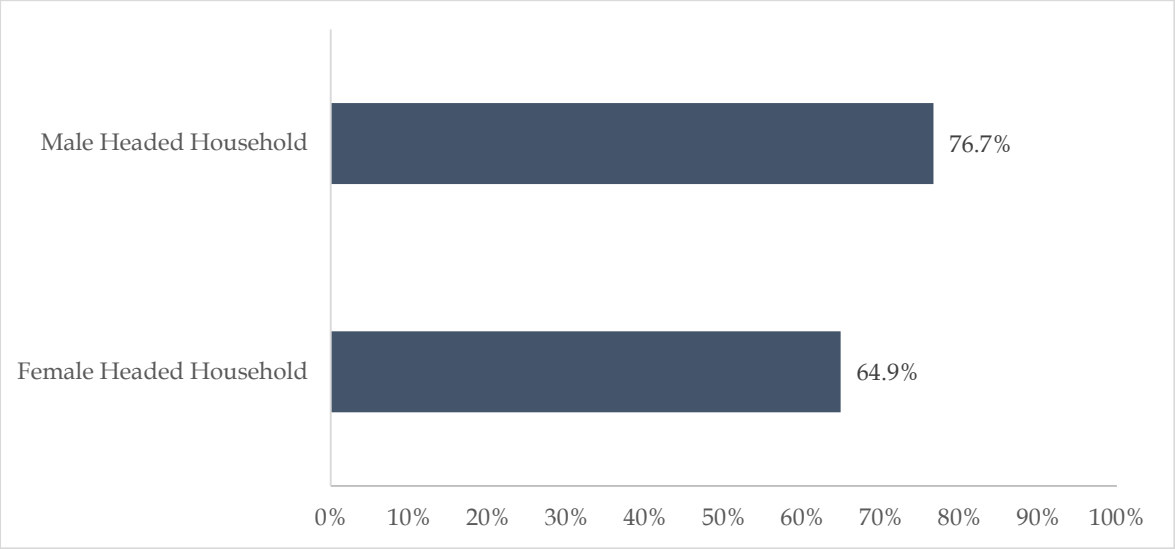
The majority of the households that reported to own a mobile cellular telephone are located in Lusaka province, Copperbelt province and Southern province accounting for 25.5 percent, 16.8 percent and 12.7 percent respectively. Western, Muchinga and North Western province accounted for the smallest proportion of households that indicated that they own a mobile phone constituting 4.9 percent, 4.8 percent and 4.2 percent respectively.

Figure 37: Distribution of Households that reported that they own a Mobile Phone by Province; 2018



The proportion of male headed households that indicated that they own a mobile cellular telephone was relatively higher than the proportion of female headed households that reported that they own a mobile cellular telephone. Specifically, 76.7 percent of the male headed households indicated that they own a mobile cellular telephone while only 64.9 percent of the female headed households indicated that they own a mobile cellular telephone.

Figure 38: Proportion of Households that Own a Mobile Cellular Telephone by Sex of Head of Household; 2018

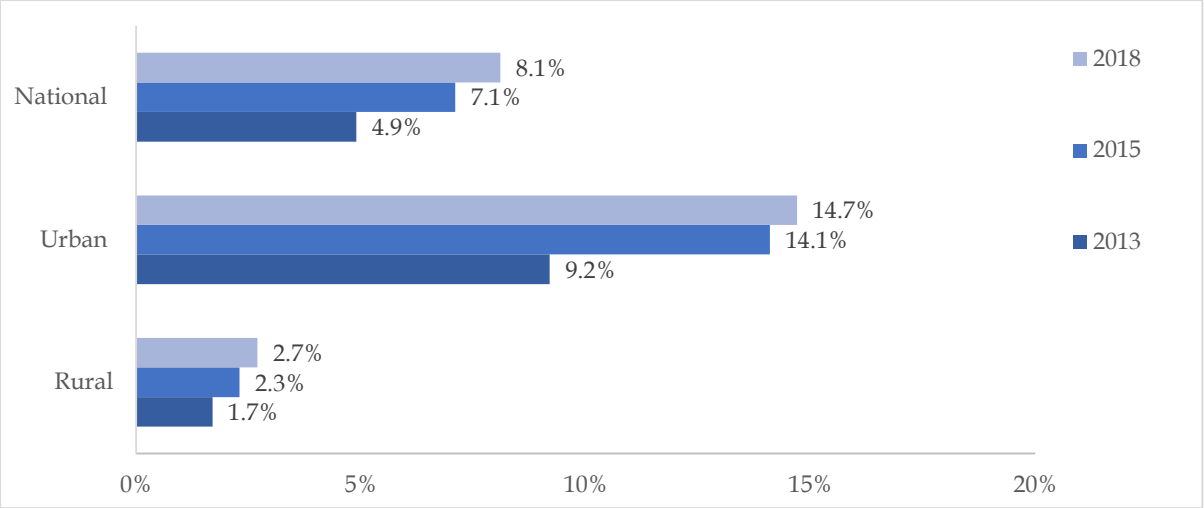


3.1.5. Access and Usage of Computers by Households

3.1.5.1. Ownership of Computers by Households

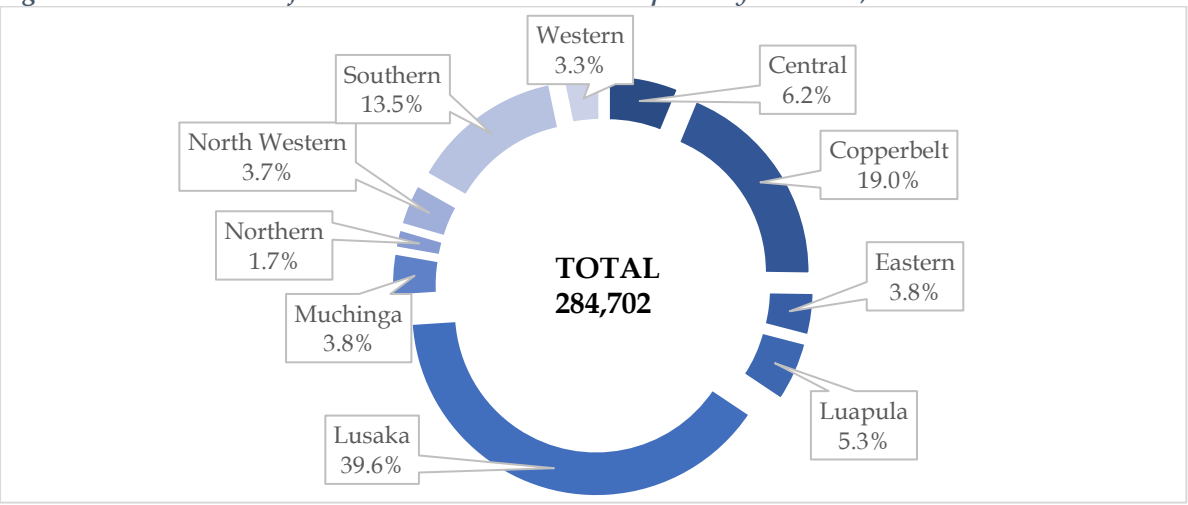
The proportion of households across the country that indicated that they own a computer increased from 7.1 percent to 8.1 percent between 2015 and 2018 reflecting a continued improvement in ownership of computers by households in Zambia. However, the imbalance between households that are situated in rural areas that own a computer relative to households that are based in urban areas persisted. Specifically, 14.7 percent of the households in urban areas own a computer while only 2.7 percent of households based in rural areas own a computer.

Figure 39: Ownership of Computers by Households across Regions; 2013-2018



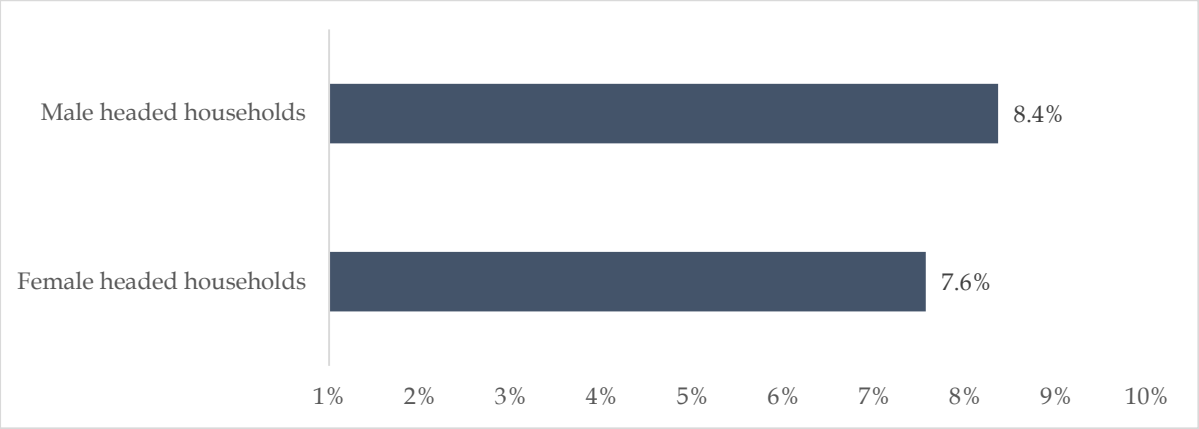
The majority of the households that indicated that they own a computer were located in Lusaka Province, Copperbelt Province and Southern Province constituting 39.6 percent, 19 percent, and 13.5 percent of the total number of households that indicated that they own a computer respectively. Northern Province, Western Province and North-western Province accounted for the smallest proportion of households that indicated that they own a computer constituting 1.7 percent, 3.3 percent and 3.7 percent of the total number of households that indicated that they own a computer respectively.

Figure 40: Distribution of Households that Own a Computer by Province; 2018



The proportion of male headed households that indicated that they own a computer was relatively higher than the proportion of female headed households across the country that reported that they own a computer. Specifically, 8.4 percent of the male headed households across the country indicated that they owned a computer while 7.6 percent of the female headed household reported that they owned a computer.

Figure 41: Ownership of Computers by Households across Sex of Head of Household; 2018

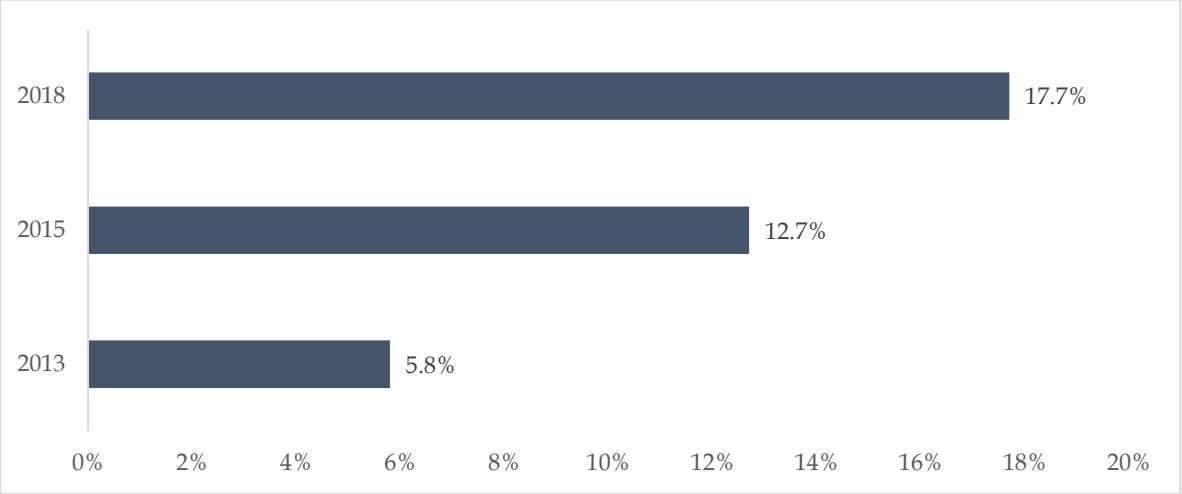


3.1.6. Access and Usage of Internet Services by Households

3.1.6.1. Access to Internet Services by Households

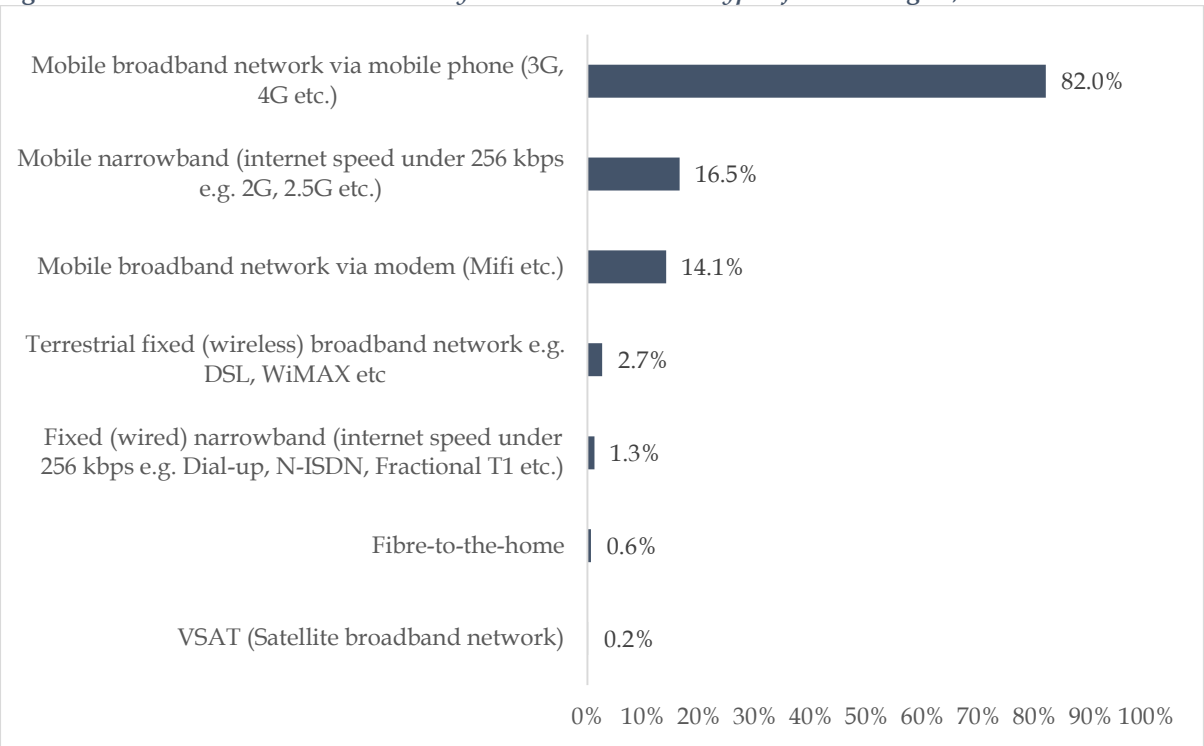
Access to internet services by households increased between 2015 and 2018 from 12.7 percent to 17.7 percent. This is consistent with the improvement recorded between 2013 and 2015 highlighting continued increased access to internet services by households across the country. 31.2 percent of the households in urban areas indicated that they have access to internet services while only 6.6 percent of the households in rural areas had access to internet services. An equal proportion of 17.8 percent of households headed by males or females reported that they had access to internet services.

Figure 42: Access to Internet Services by Households; 2013- 2018



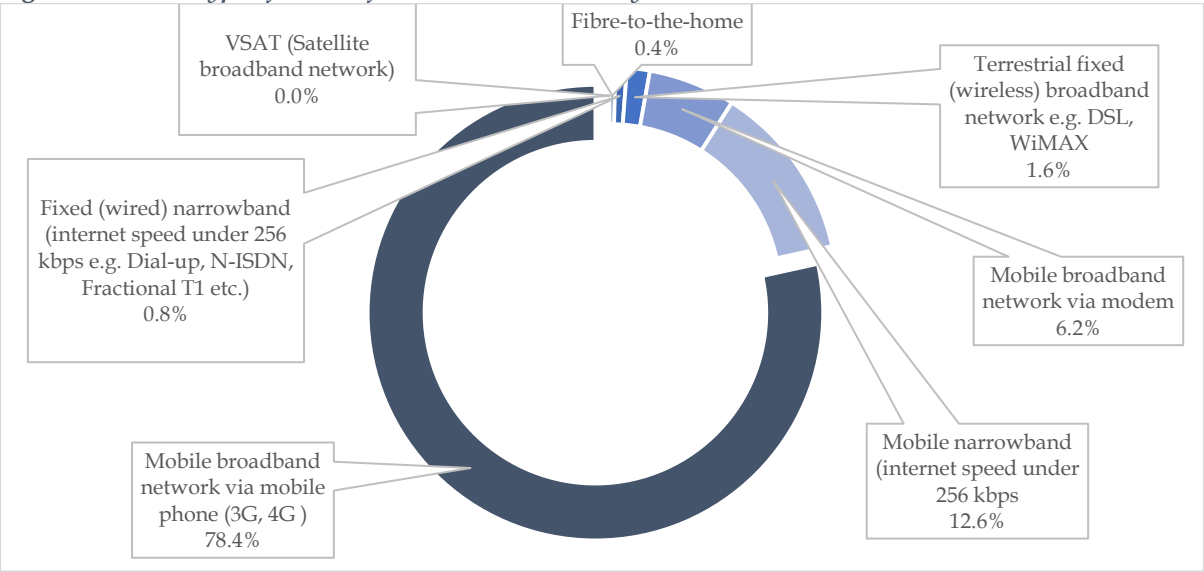
The majority of the households with access to internet services, accounting for 82 percent of the total number of households with access to internet services, access mobile broadband services using a mobile phone. A sizeable number of households also access mobile narrowband services and mobile broadband services using a modem accounting for 16.5 percent of the total number of households with access to internet services and 14.1 percent of the total number of households with access to internet services respectively. Only 2.7 percent of the households with access to the internet access fixed wireless broadband services while 1.3 percent of the total number of households with access to internet services using fixed wired narrowband technologies. Access to Fibre-to-the-home (FTTH) technologies and VSAT technologies by households was very minimal accounting for less than 1 percent of the total number of households with access to internet services.

Figure 43: Access to Internet Services by Households across Type of Technologies; 2018



The main type of technology adopted by households as their main source of internet services was reported to be mobile broadband network via mobile phone accounting for 78.4 percent of the total number of households that access internet services. VSAT and FTTH accounted for the least proportion of households that indicated that the technologies were their main source of internet services.

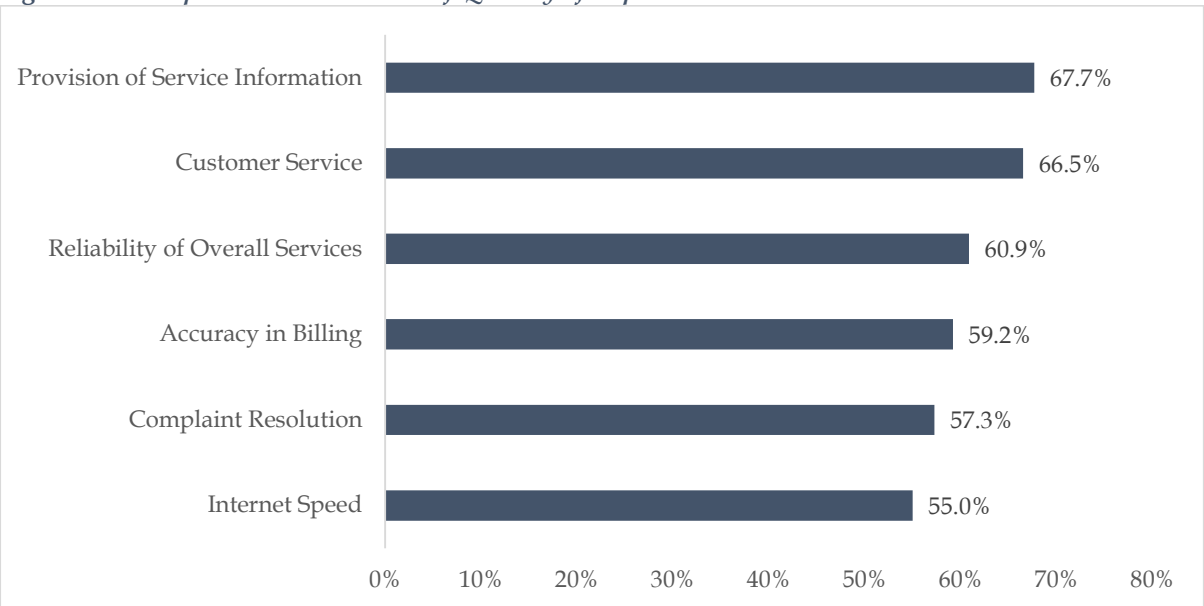
Figure 44: Main Type of Source for Internet Services by Households



3.1.7. Perceptions on Quality of Experience for Internet Services

The majority of households that had access to internet services were satisfied with various attributes of service delivery. Particularly, most households that reported that they had access to internet services were satisfied with attributes of service delivery relating to provision of service information, customer service and overall reliability of services accounting for 67.7 percent of the households that had access to internet services, 66.5 percent of the households that had access to internet services and 60.9 percent of the households that had access to internet services respectively. The proportion of households that indicated that they had access to internet services and were satisfied with internet speed and complaint resolution were relatively low accounting for 55.0 percent of the households that had access to internet services and 57.3 percent of the households that had access to internet services.

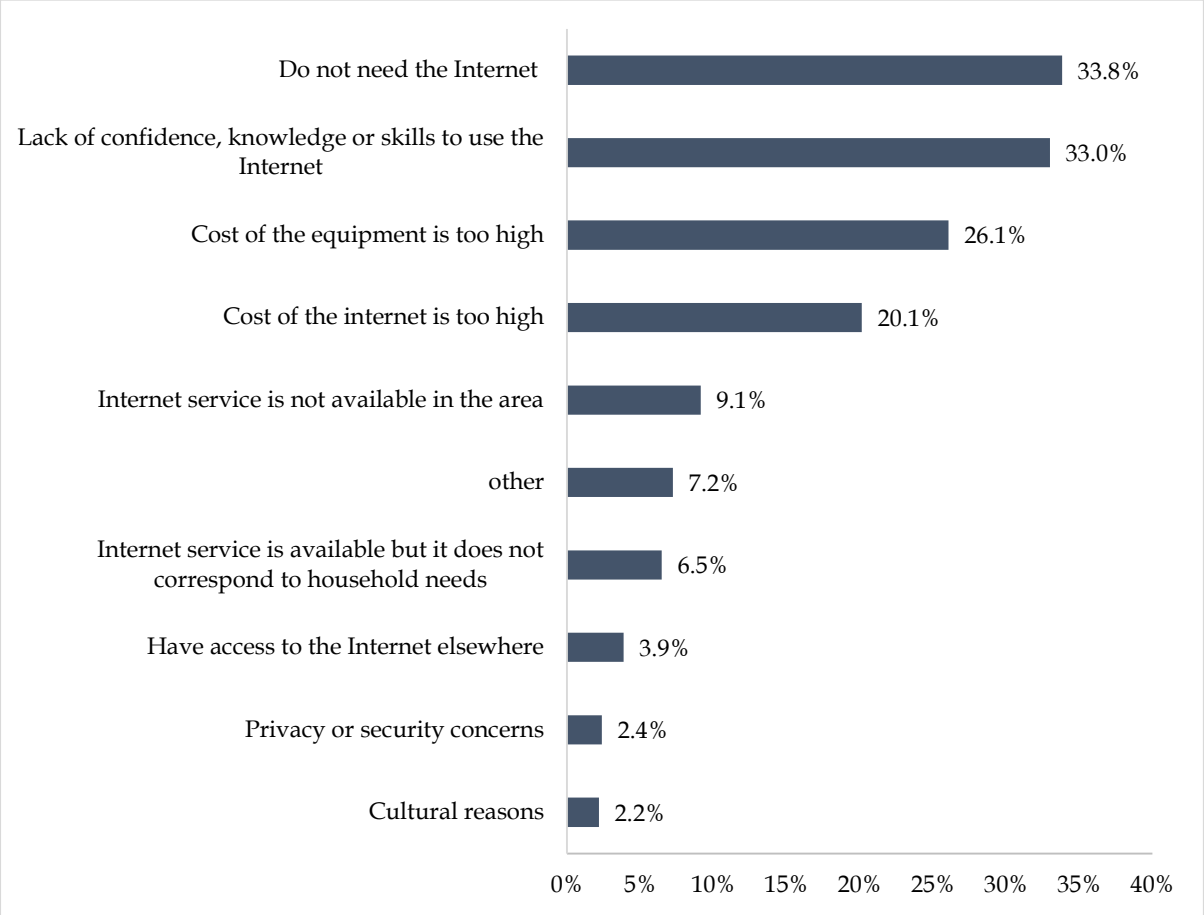
Figure 45: Perceptions on Attributes of Quality of Experience



3.1.8. Barriers to Access to Internet Services

The main barriers to access to internet services cited by households included a lack of appreciation of the need for internet, lack of skills to use the services and the high cost of the required equipment accounting for 33.8 percent, 33 percent and 26.1 percent of the total number of households that indicated that they do not have access to internet services respectively.

Figure 46: Barriers to access to Internet Services by Households; 2018

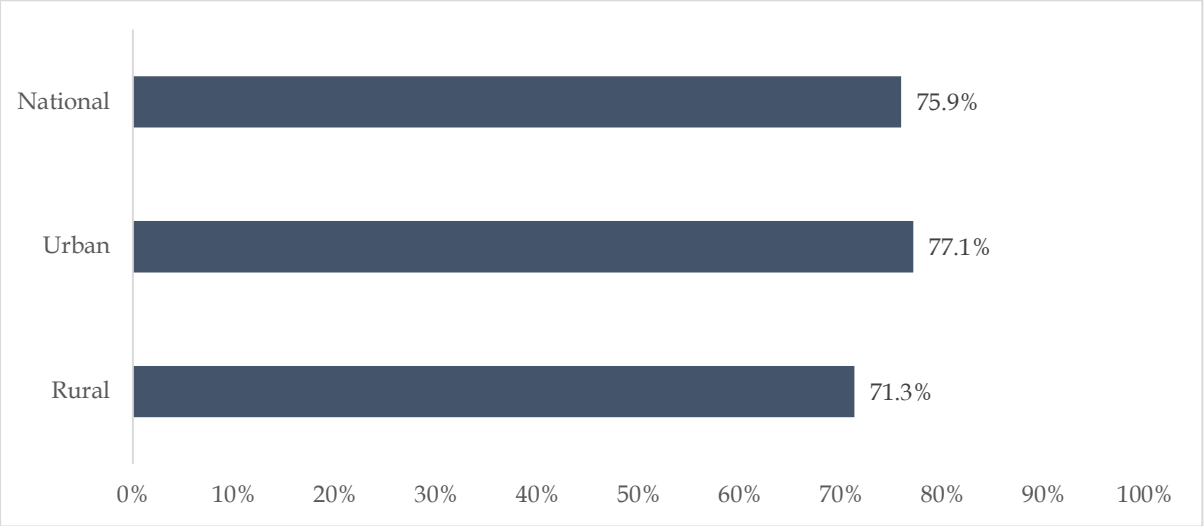


3.1.9. Affordability of Internet Services

3.1.9.1. Perceptions on Affordability of Internet Services

The majority of households across the country that have access to internet services were of the view that internet services are affordable. Specifically, 75.9 percent of the households that indicated that they had access to internet services had the perception that internet services were affordable. Similarly, there were more households in both rural and urban areas that had access to internet services and held the view that the services were affordable accounting for 77.1 percent and 71.3 percent respectively.

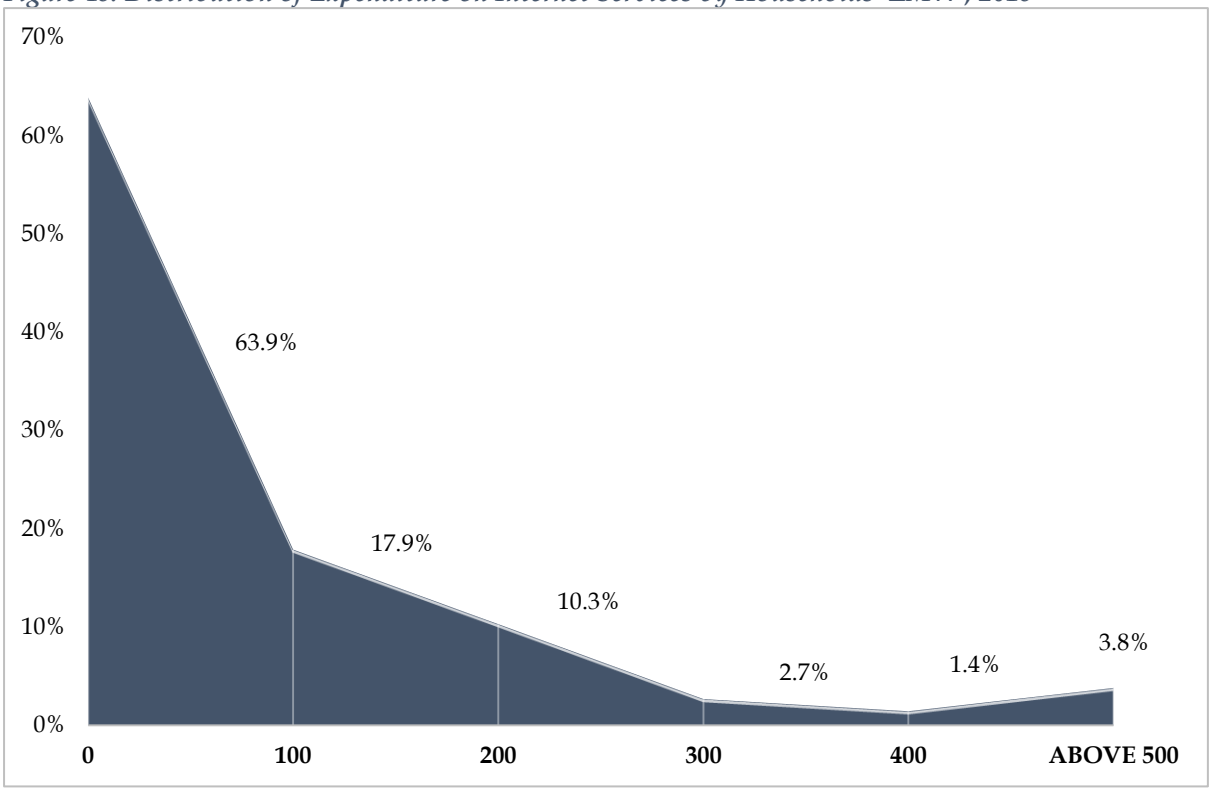
Figure 47: Perceptions on Affordability of Internet Services by Households; 2018



3.1.9.2. Expenditure on Internet Services

The majority of households that access internet services indicated that they spend less than ZMW 100.00 per month on internet services. The proportion of households declines with increased expenditure on internet service. Less than 5 percent of the total number of households that indicated that they have access to internet services reported that they spend more than ZMW500.00 per month on internet services.

Figure 48: Distribution of Expenditure on Internet Services by Households 'ZMW'; 2018



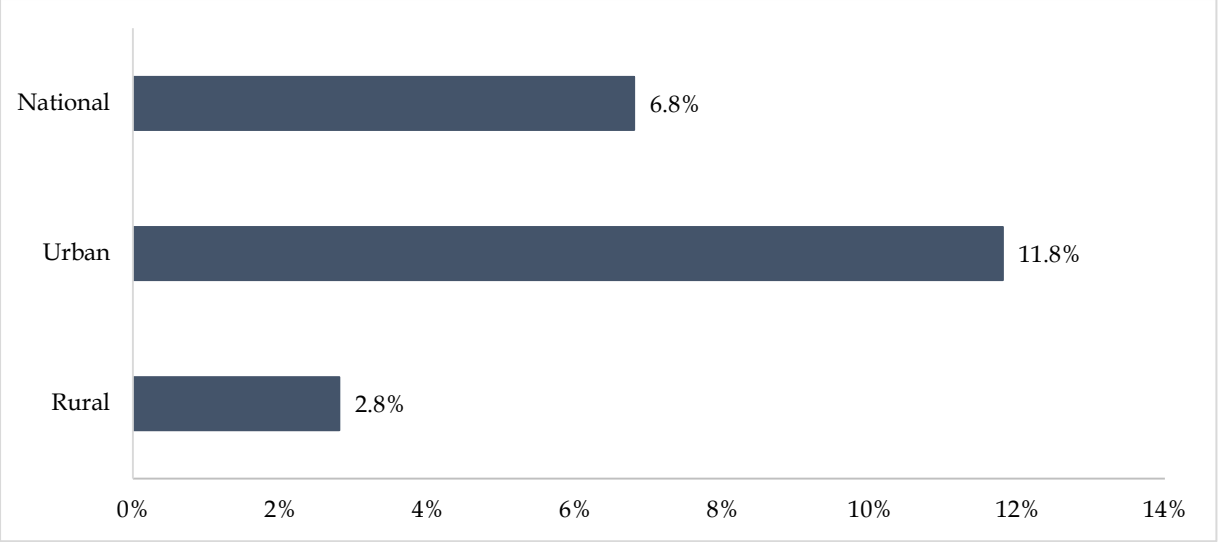
3.2. Access and Usage of ICTs by Individuals

3.2.1. ICT Skills among Individuals

3.2.1.1. Knowledge on how to Use a Computer

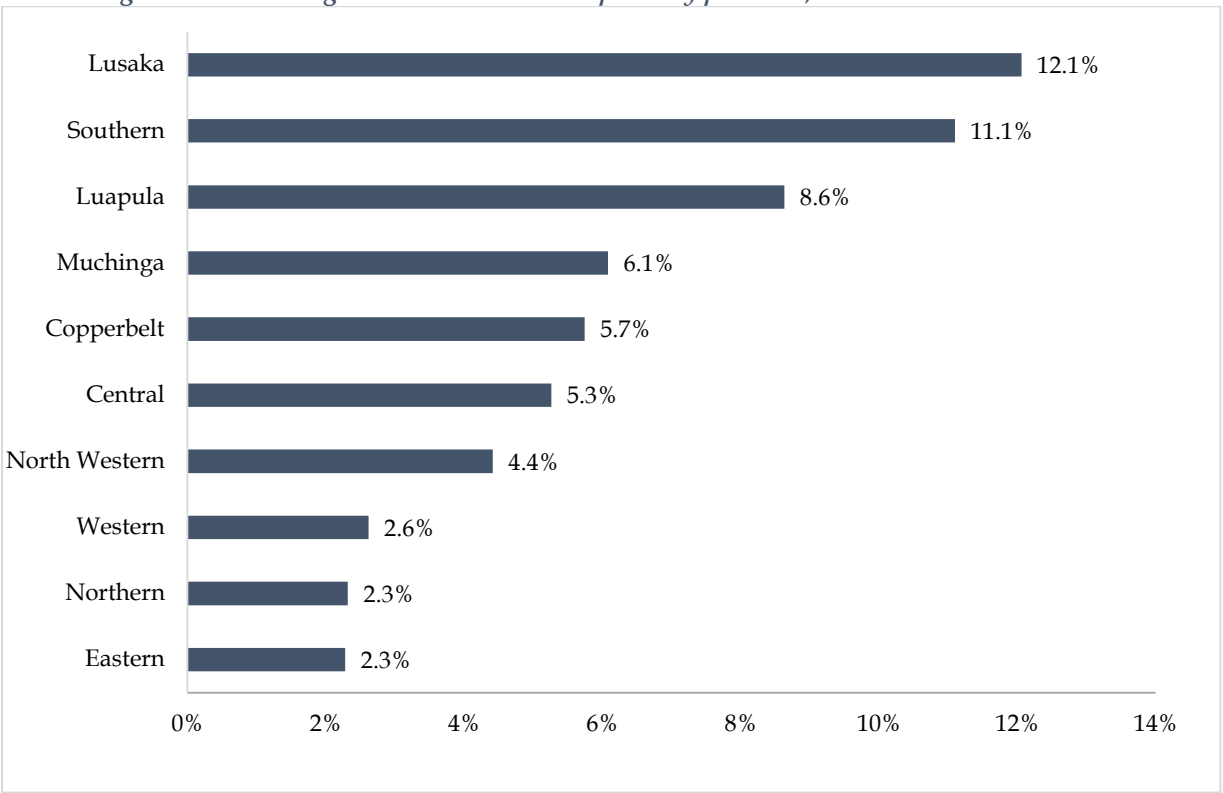
The survey established that only 6.8 percent of individuals across the country aged 10 years and above knew how to use a computer. The proportion of individuals that knew how to use a computer was relatively lower in rural areas compared to urban areas. Specifically, only 2.8 percent of individuals based in rural areas indicated that they knew how to use a computer while 11.8 percent of individuals based in urban areas indicated that they knew how to use a computer.

Figure 49: Knowledge on Usage of Computers within Regions; 2018



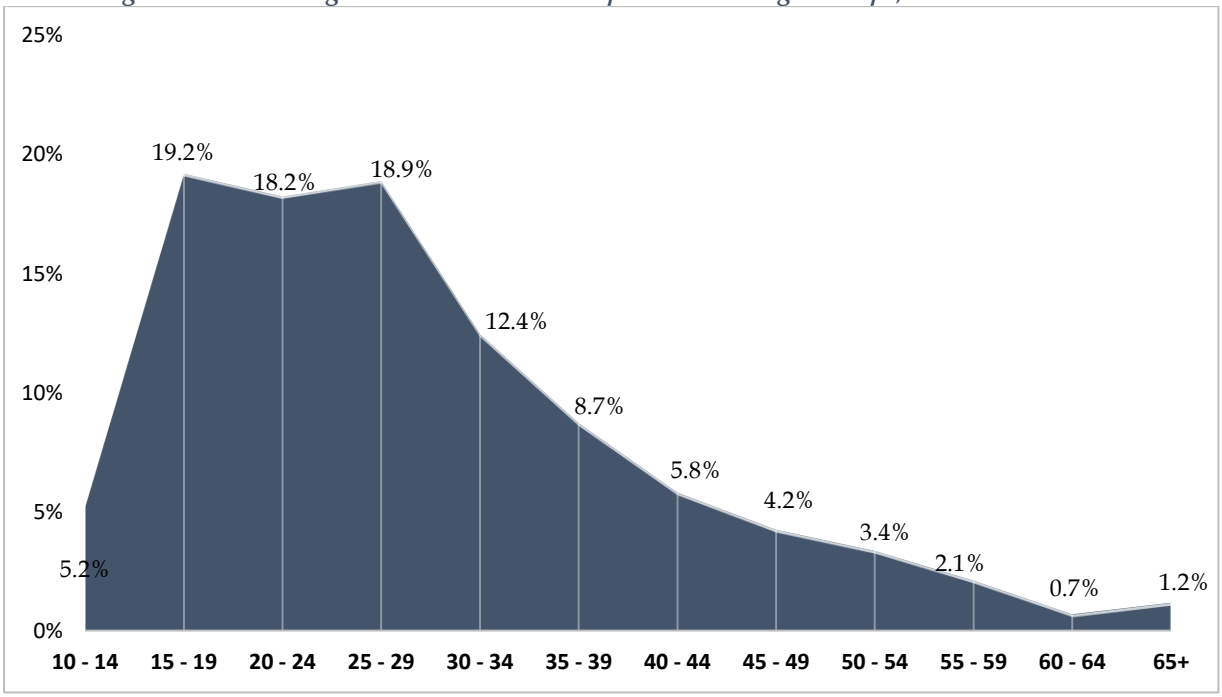
Lusaka province and Southern province had the highest concentration of individuals that indicated that they knew how to use a computer accounting for 12.1 percent and 11.1 percent respectively. The smallest concentration of individuals that indicated that they knew how to use computers were eastern province and Northern Province constituting 2.3 percent each.

Figure 50: Knowledge on how to use a computer by province; 2018



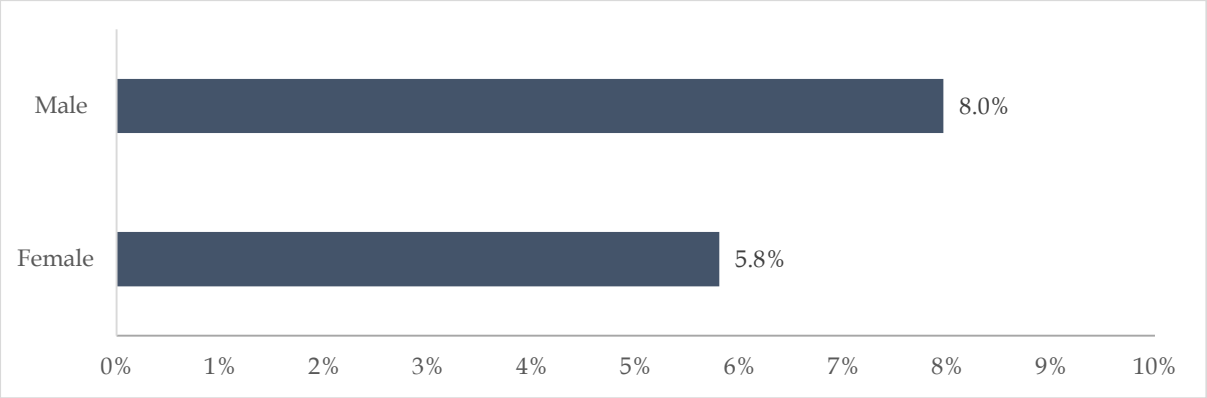
About 74 percent of the individuals that indicated that they knew how to use a computer were aged below 35 years. On the other hand, less than 5 percent of the individuals that indicated that they knew how to use a computer were aged above 55 years.

Figure 51: Knowledge on how to use a Computer across Age Groups; 2018



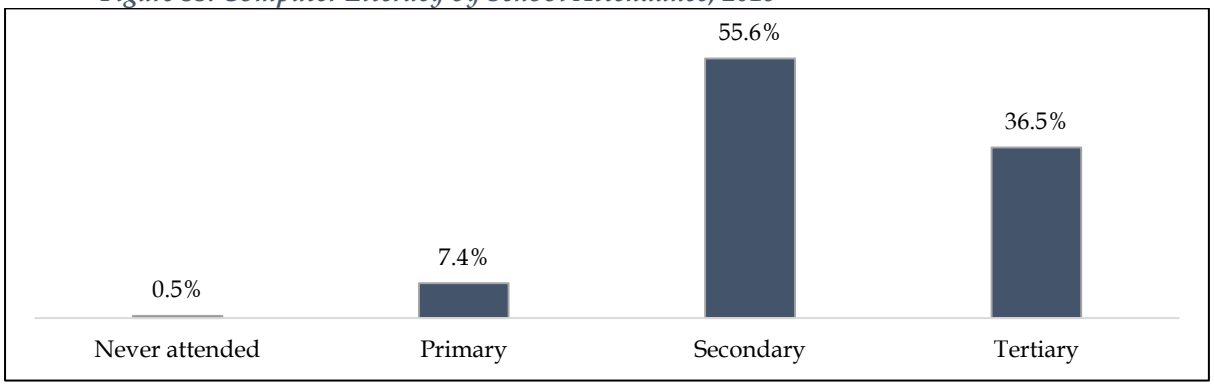
It was noted that there was a relatively larger proportion of males that that indicate that they knew how to use a computer compared to the proportion of females that reported knowledge of how to use a computer. Specifically, 8.0 percent of all the males indicated that they knew how to use a computer while 5.8 percent of females indicated that they knew how to use a computer.

Figure 52: Knowledge of how to Use a computer within sex groups; 2018



The majority of the indiviudals that indicated that they knew how to use a computer had attained some level of secondary eduction and tertitiary education accounting for 55.6 percent and 36.5 percent respectively. Less than 1 percent of the individuals that indicated that they knew how to use a computer had never attended school.

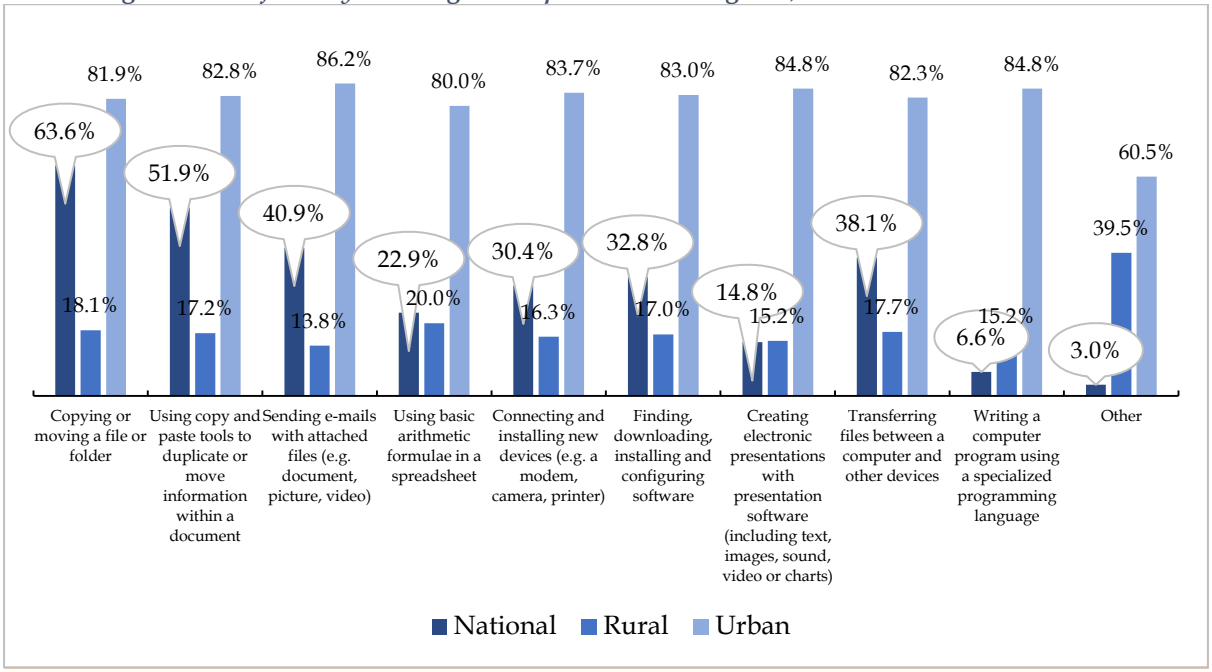
Figure 53: Computer Literacy by School Attendance; 2018



3.2.1.2. Proficiency in Using a Computer

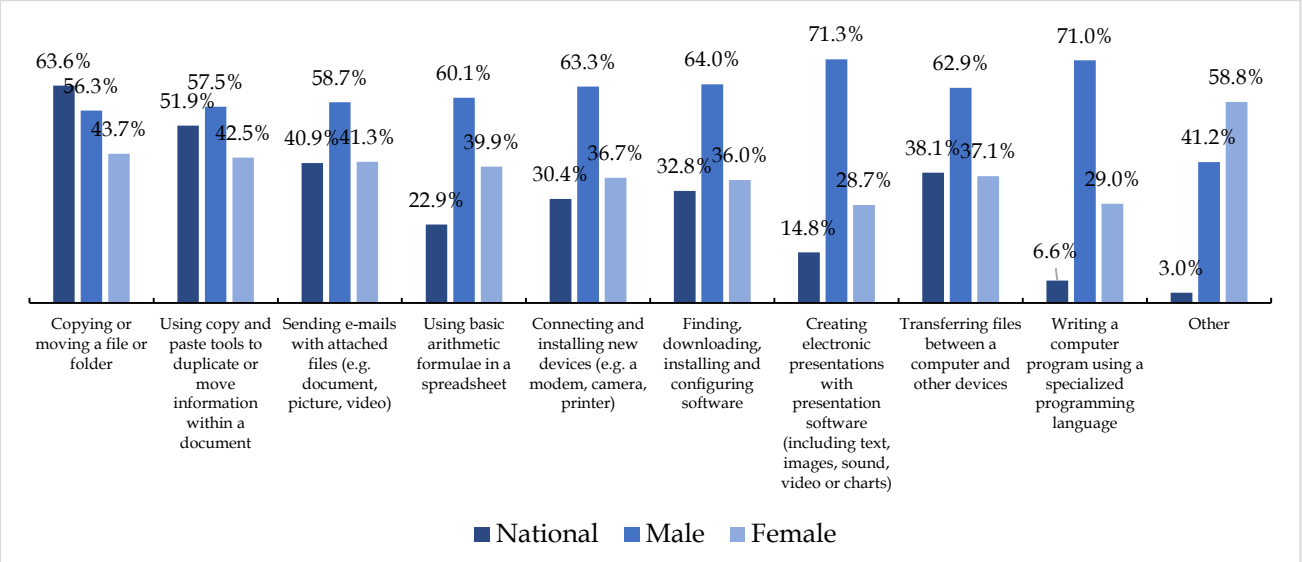
The most prominent skills reported among individuals were related to copying or moving a file or folder and using copy and paste tools to replicate information in a document accounting for 63.6 percent and 51.9 percent of individuals that know how to use a computer. There was a noted imbalance in the proportion of individuals with identified skills that are based in the rural area and urban areas. Specifically, fewer individuals that had identified skills using a computer were based in rural areas compared to urban areas.

Figure 54: Proficiency in Using a Computer across Regions; 2018



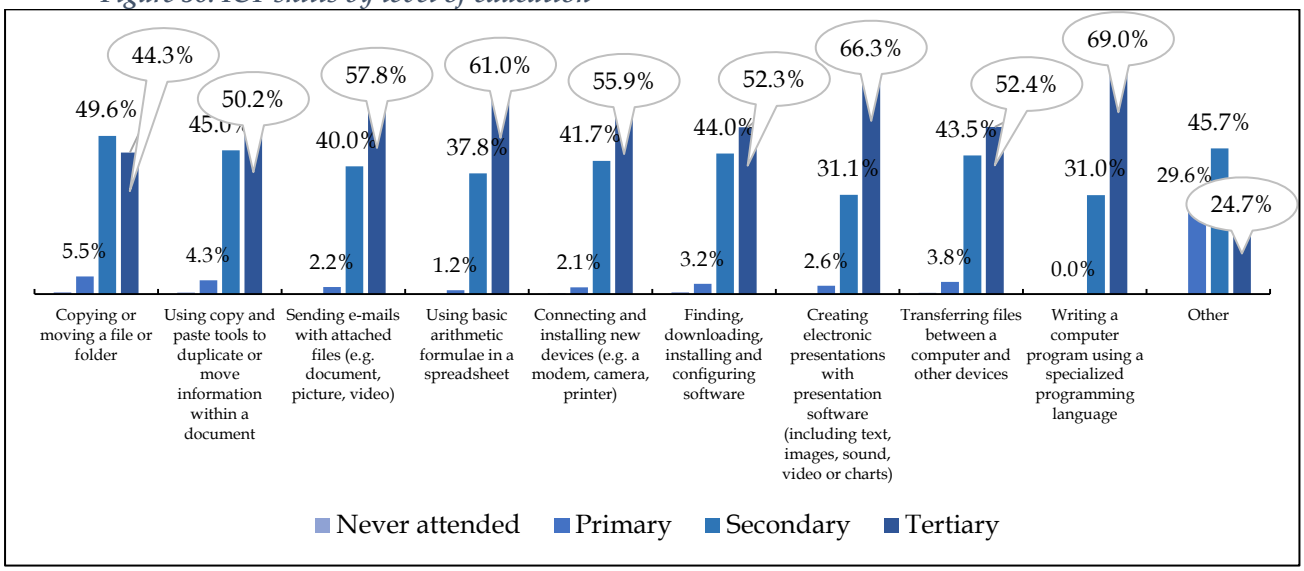
However, the majority of individuals across the country had basic computer skills and mainly undertook basic activities on the computer. The proportion of individuals across the country with relatively more advanced ICT skills was low. The distribution of individuals according to their sex based on the type of ICT skills revealed that the majority of individuals with the identified skills were mainly male. For instance, 56.3 percent of the individuals that indicated that they knew how to use a computer and were able to copy or move a file or folder were male while only 43.7 percent were female. Similarly, 63.3 percent of the people that knew how to connect and install new devices such as modems or cameras were male while only 36.7 percent were female.

Figure 55: Distribution of individuals with Identified ICT skills by Sex; 2018



It was observed that individuals with higher levels of education attainment had higher proficiency in ICT skills. For instance, 69.0 percent of individuals who could write a computer program using a specialized programming language had tertiary education. It was also established that individuals that had attained tertiary level education constituted the largest proportion across most of the activities. Particularly, these proportions increased with the complexity of skills.

Figure 56: ICT skills by level of education



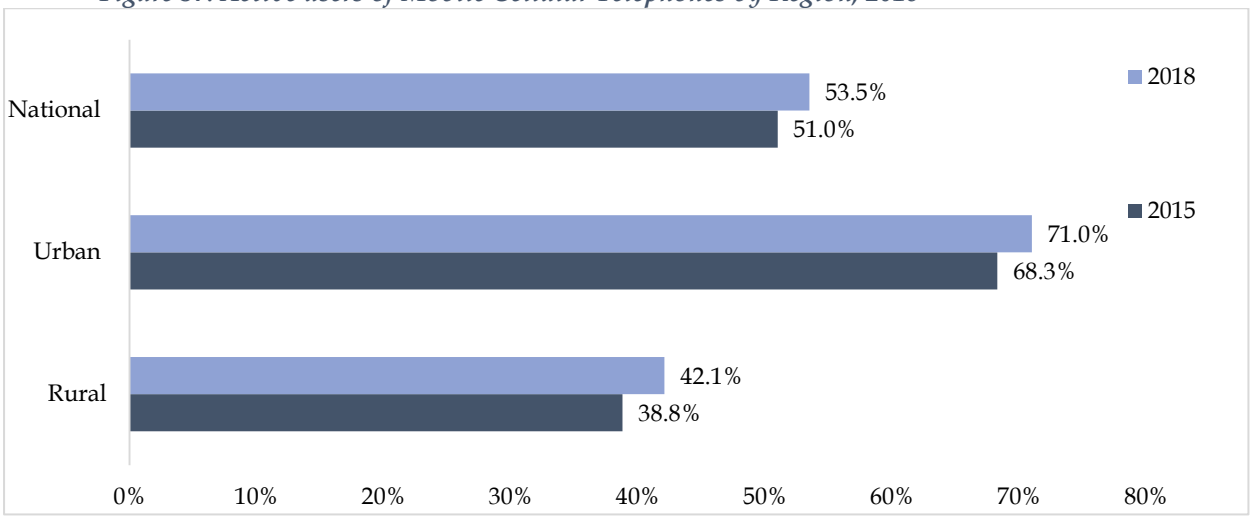
3.2.2. Usage of Mobile Phones

3.2.2.1. Active Users of Mobile Cellular Telephones

It was estimated that 53.5 percent of all the individuals aged 10 years and above across the country were active users of mobile cellular telephones established by estimating the proportion of individuals aged 10 years and above that had used a mobile cellular telephone in the last three months prior to the survey[15]. The proportion of active users of mobile cellular telephones was relatively higher in urban areas compared to rural areas. Specifically, 71.0 percent of all the individuals aged 10 years and above based in urban areas were noted to be active users of mobile cellular telephones while only 42.1 percent of all the individuals based in rural areas were considered active users of mobile cellular telephones. There was a noted improvement in the proportion of individuals aged 10 years and above that were active users of mobile cellular telephones across all regions.

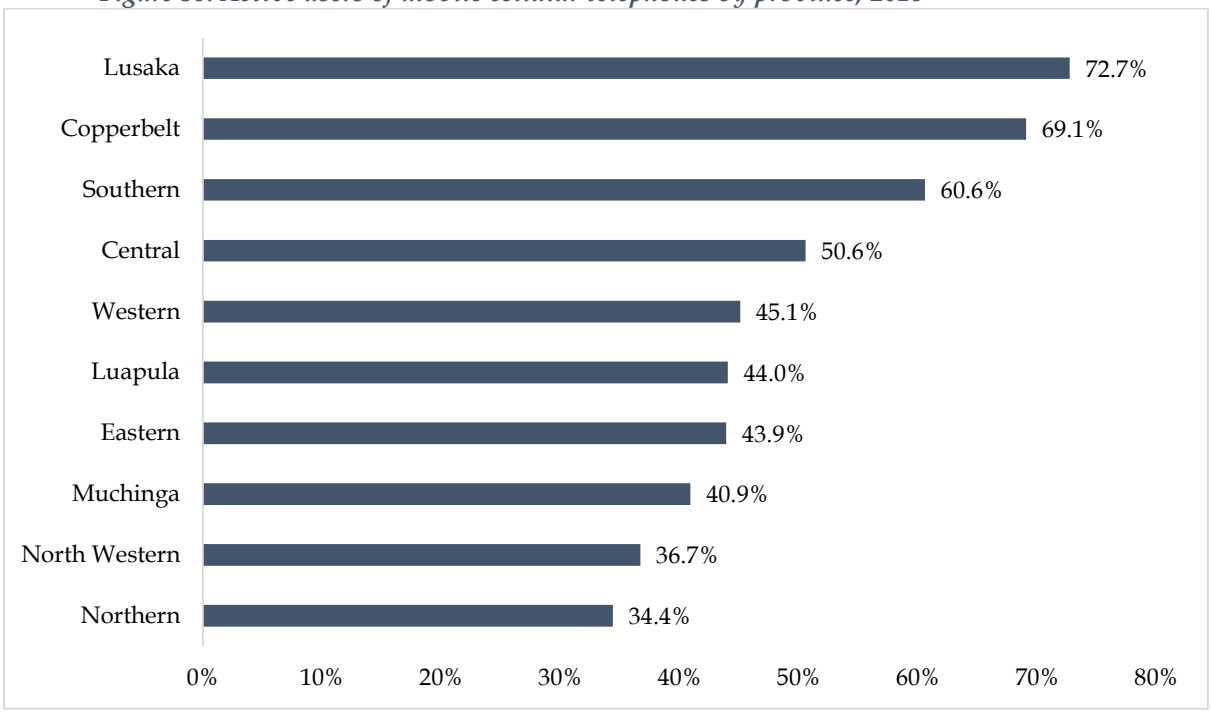
[15] They used the device at least once to make call or to SMS or to access data services in a three month period.

Figure 57: Active users of Mobile Cellular Telephones by Region; 2018



Lusaka Province, Copperbelt Province and Southern Province had the highest concentration of active users of mobile cellular telephone services accounting for 72.7 percent, 69.1 percent and 60.6 percent of all the individuals in the provinces respectively. Northern Province, North-Western Province and Southern Province had the lowest concentration of active users of mobile cellular telephone services accounting for 34.4 percent, 36.7 percent and 40.9 percent of all the individuals in the respective provinces.

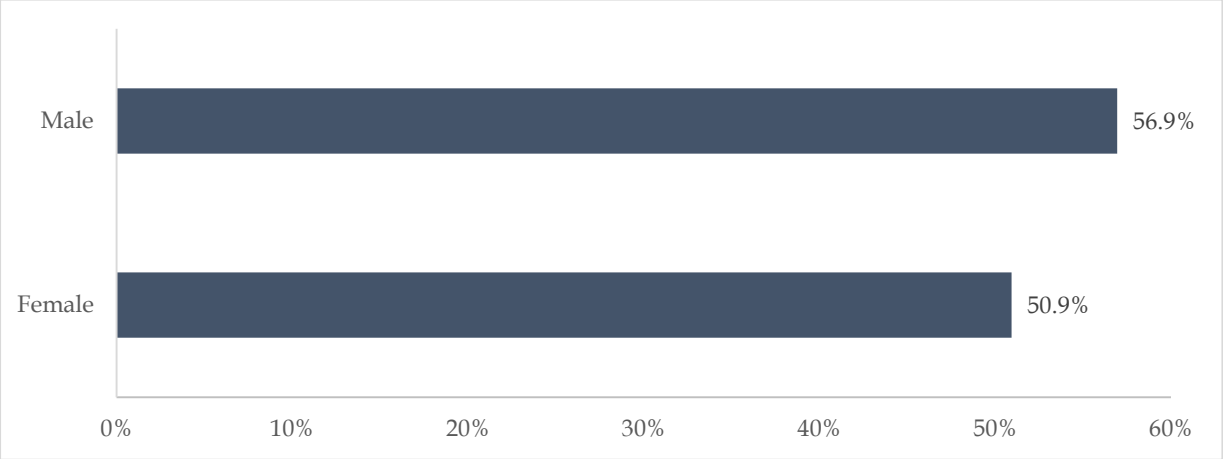
Figure 58: Active users of mobile cellular telephones by province; 2018



There was a relatively higher proportion of males that were active users of mobile cellular telephones compared to females across the country. Specifically, 56.9 percent of all the males across the country indicated that they had used a mobile cellular telephone in the

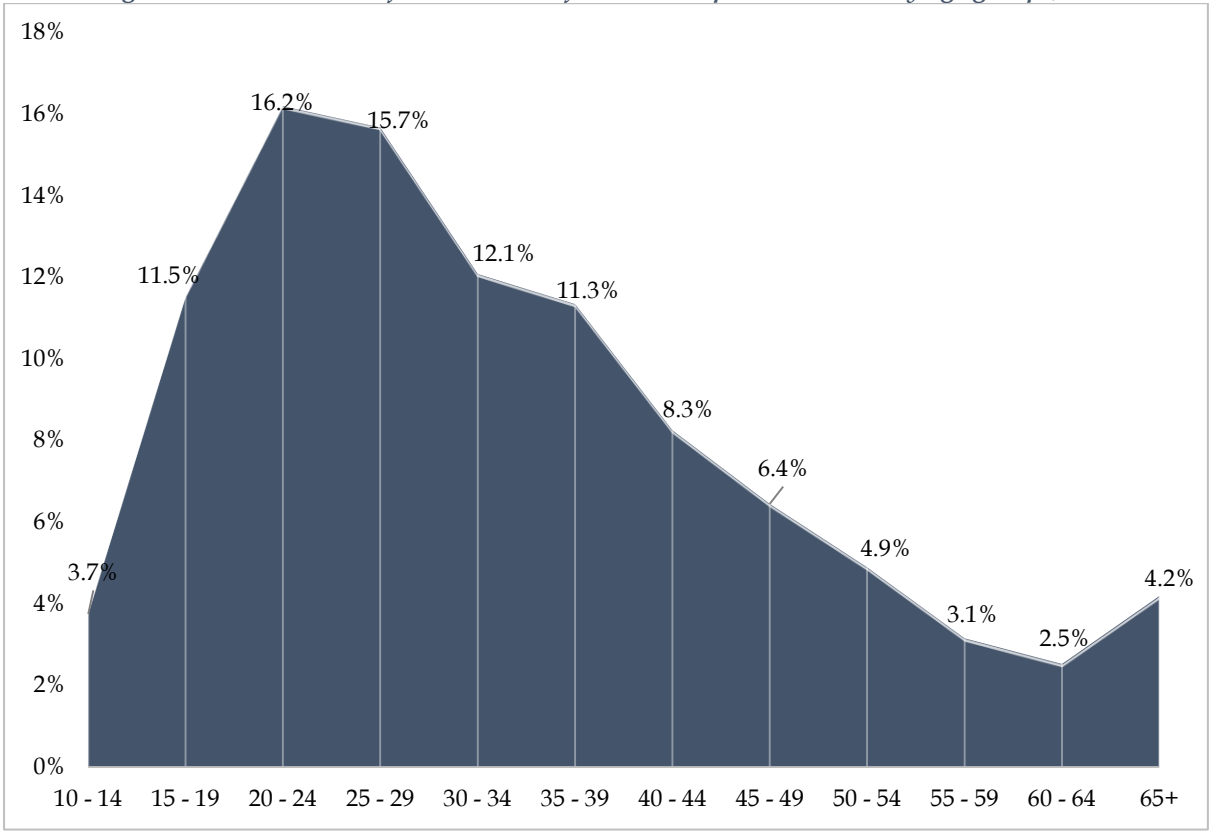
last three months prior to the survey while only 50.9 percent of all the in females indicated that they were active users of mobile cellular telephones.

Figure 58: Active users of mobile cellular telephones by sex; 2018



The survey established that 59.2 percent of all the active users of mobile cellular telephone services were aged below the age of 35 years. Less than 10 percent of all the active users of the services were aged above 55 years.

Figure 59: Distribution of active users of mobile telephone services by age groups; 2018



3.2.3. Ownership of Mobile Cellular Telephones

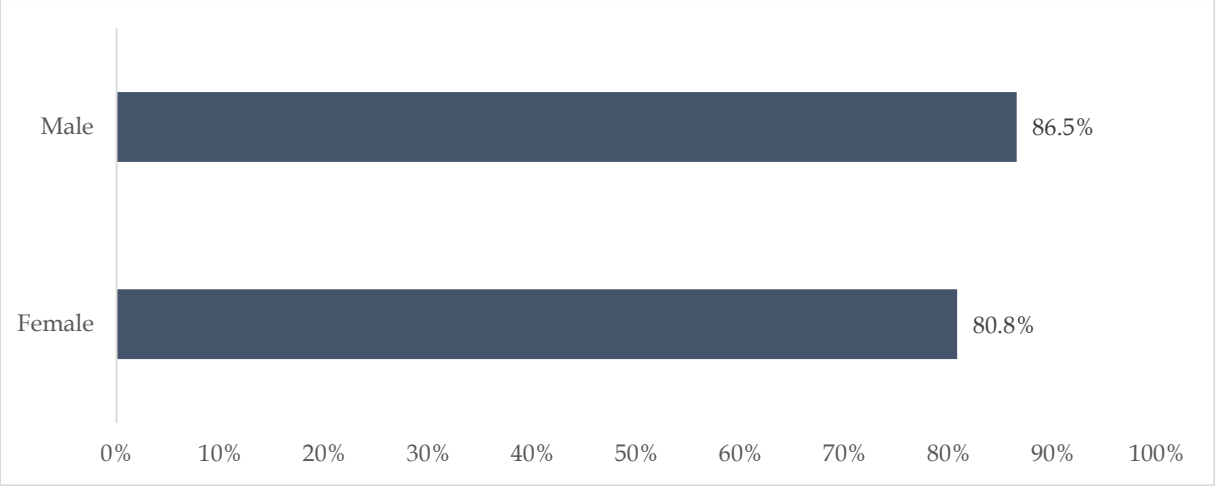
A sizeable proportion of individuals aged 10 years and above that were active users of mobile telephone services, constituting 83.4 percent, owned mobile devices that were subscribed to at least one local network. While the proportions were relatively high across regions, there were more active users in urban areas constituting 88.0 percent compared to rural areas where the proportion was 78.3 percent.

Figure 60: Ownership of mobile cellular telephones among active users; 2018

Indicator	2015	2018
Ownership Of Mobile Phones Among Active Users	83.8%	83.4
Ownership Of Mobile Phones Among Active Users In Urban Areas	89.2%	88.0
Ownership Of Mobile Phones Among Active Users In Rural Areas	77.0%	78.3

There were very minimal differences in the proportion of active users of mobile telephones that owned a mobile phone and were male and those that were female. Both sex groups had a concentration of active users of mobile cellular telephones that owned mobile phones that were subscribed to a local network that was above 80 percent.

Figure 61: Active users of mobile phones that owned a mobile phone by sex group; 2018



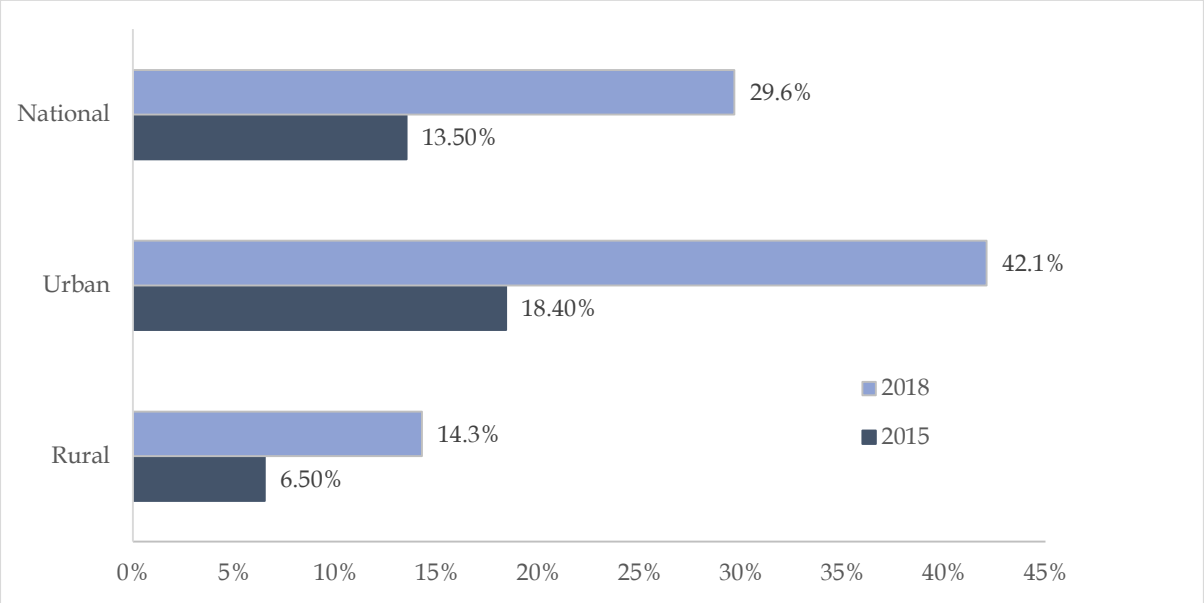
3.2.4. Ownership of Smartphones

3.2.4.1. Ownership of Smartphones across Regions

The proportion of individuals aged 10 years and above that owned a smartphone as a share of all the individuals aged 10 years and above that had owned a mobile cellular telephone subscribed to a local network increaded from 13.5 percent in 2015 to 29.6 percent in 2018. The largest growth rate was obsreved in the urban areas as the proportion

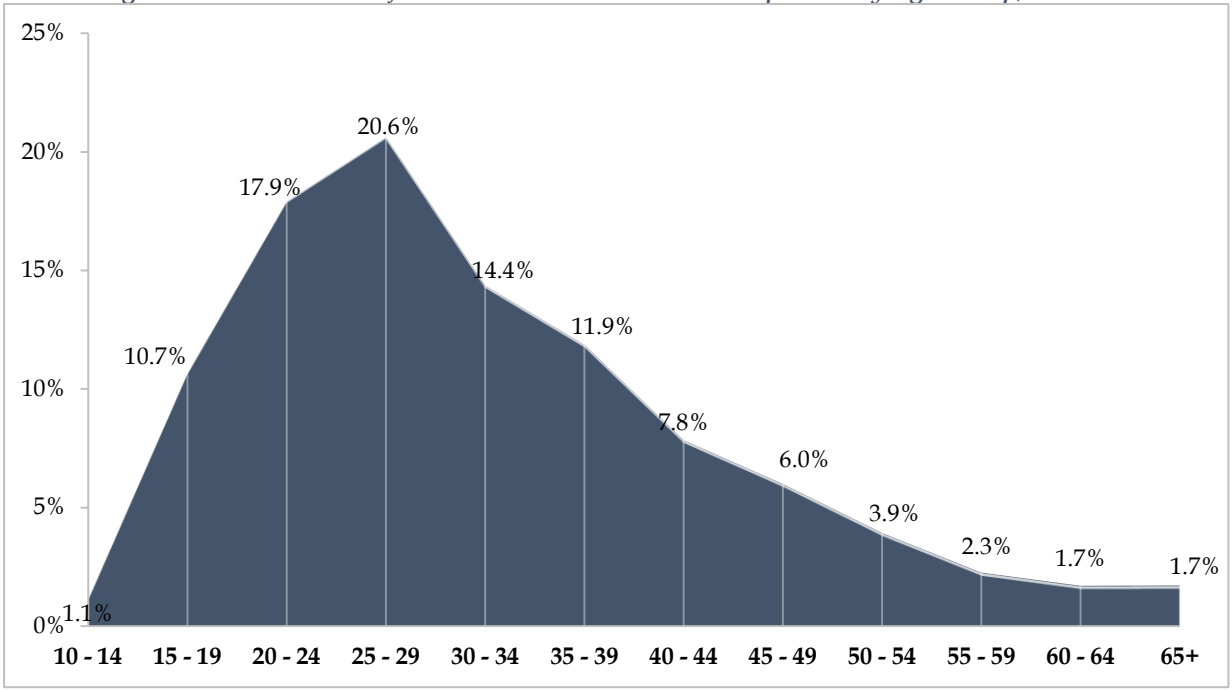
increased from 18.4 percent to 42.1 percent while an improvement from 6.5 percent to 14.3 percent was observed in the rural areas.

Figure 62: Proportion of mobile cellular telephone owners that owned a smartphone across regions; 2018



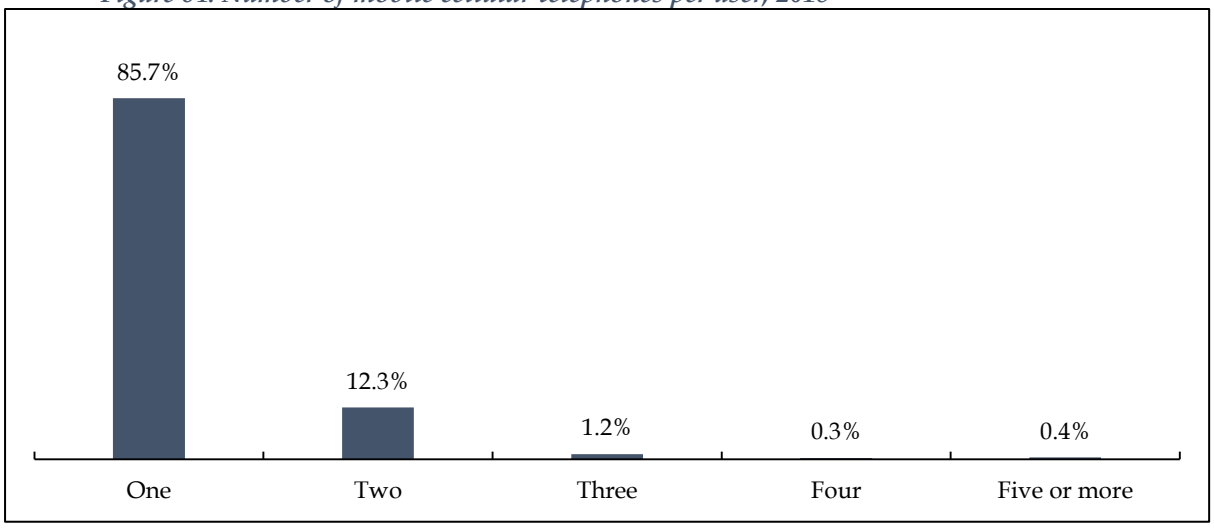
The survey established that 76.6 percent of all the individuals aged 10 years and above that owned smartphones were below the age of 35 years. Less than 10 percent of the individuals aged 10 years and above that owned smartphones were above 50 years old. On the other hand 29.6 percent of the individuals aged 10 years and above that owned smartphones were below the age of 24 years.

Figure 63: Distribution of Individuals that owned Smartphones by Age Group; 2018



An investigation into the number of mobile cellular telephones owned by individuals aged 10 years and above revealed that 85.7 percent have one mobile cellular telephone while 14.3 percent have at least two mobile cellular telephones with an active SIM card.

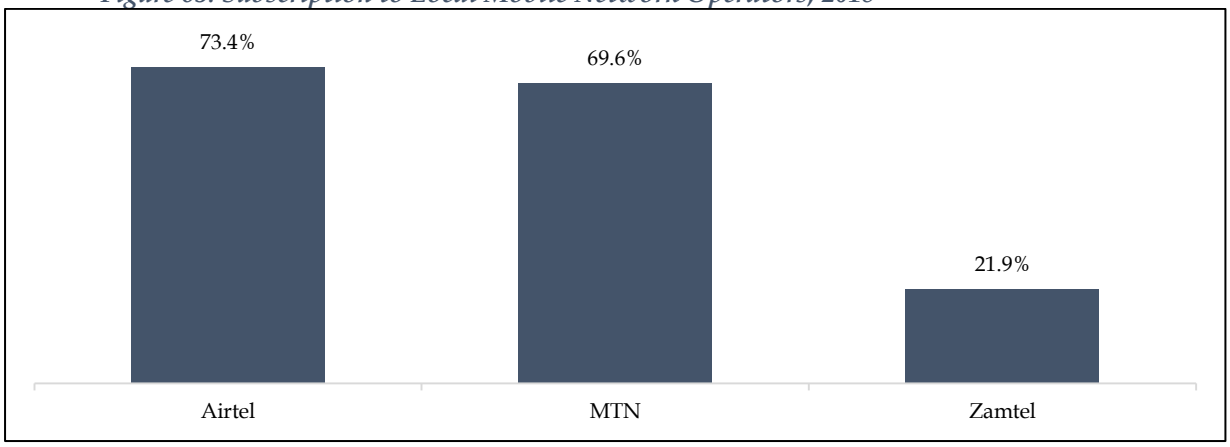
Figure 64: Number of mobile cellular telephones per user; 2018



3.2.5. Network Subscription and Subscriber Preferences

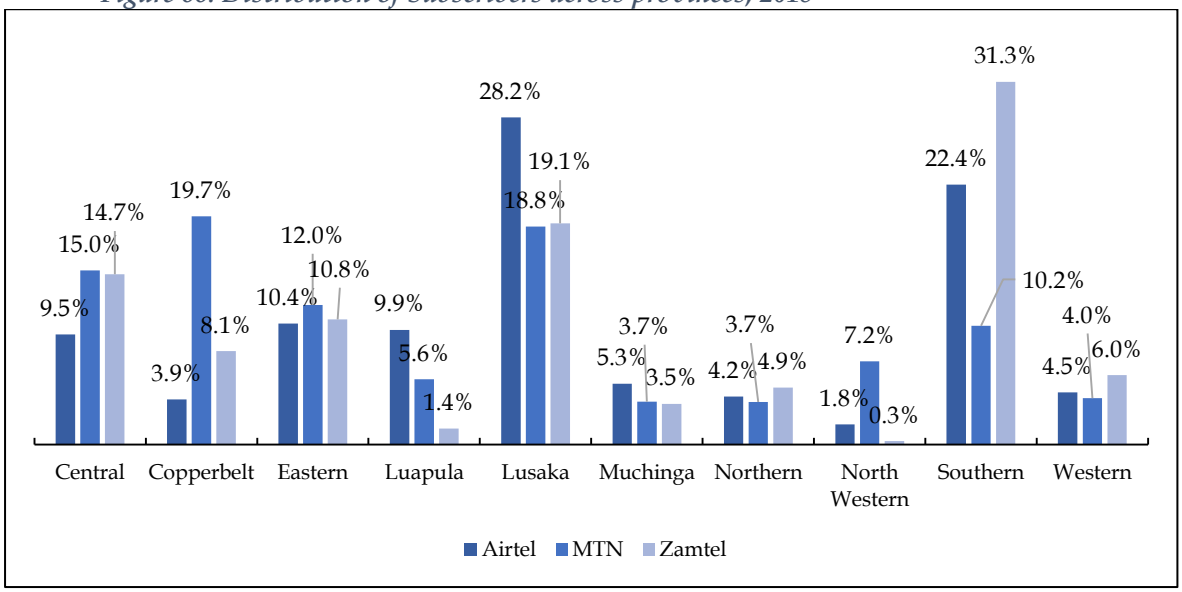
The survey established that Airtel network and MTN Network had the largest proportion of individuals subscribed to the network. Specifically, the proportion of individuals aged 10 years and above that indicated that they were subscribed to the Airtel network and MTN networks accounted for 73.4 percent and 69.6 percent respectively. Only 21.9 percent of the individuals aged 10 years and above that indicated that they were subscribed to a local mobile network indicated that they were subscribed to the Zamtel network.

Figure 65: Subscription to Local Mobile Network Operators; 2018



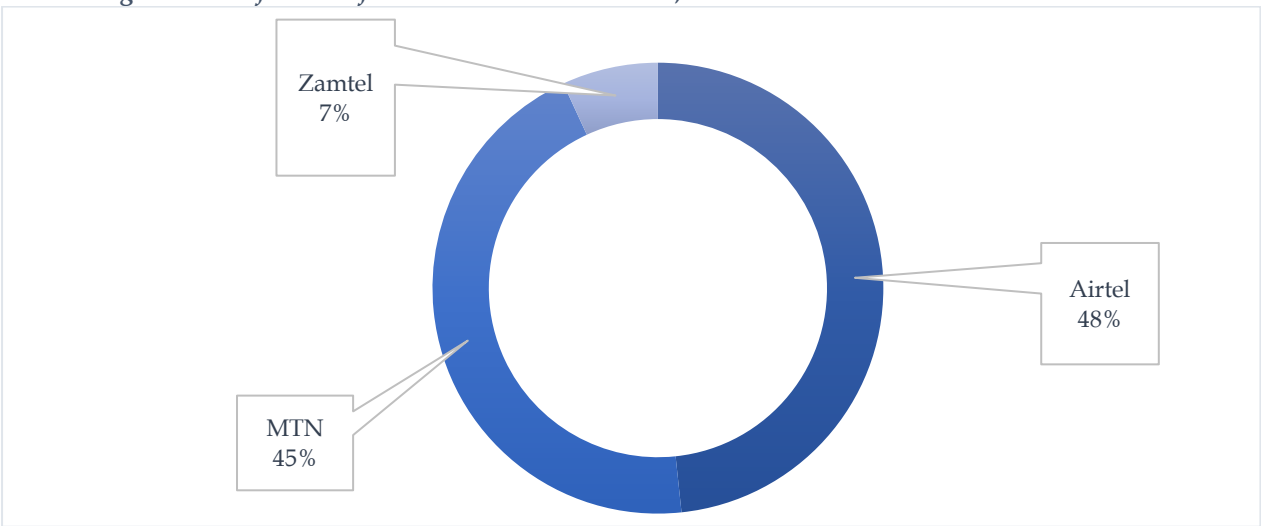
The distribution of subscribers across provinces revealed that subscription for Zamtel was largest in Southern Province while Airtel had its largest subscribers in Lusaka Province and MTN on the Copperbelt Province.

Figure 66: Distribution of Subscribers across provinces; 2018



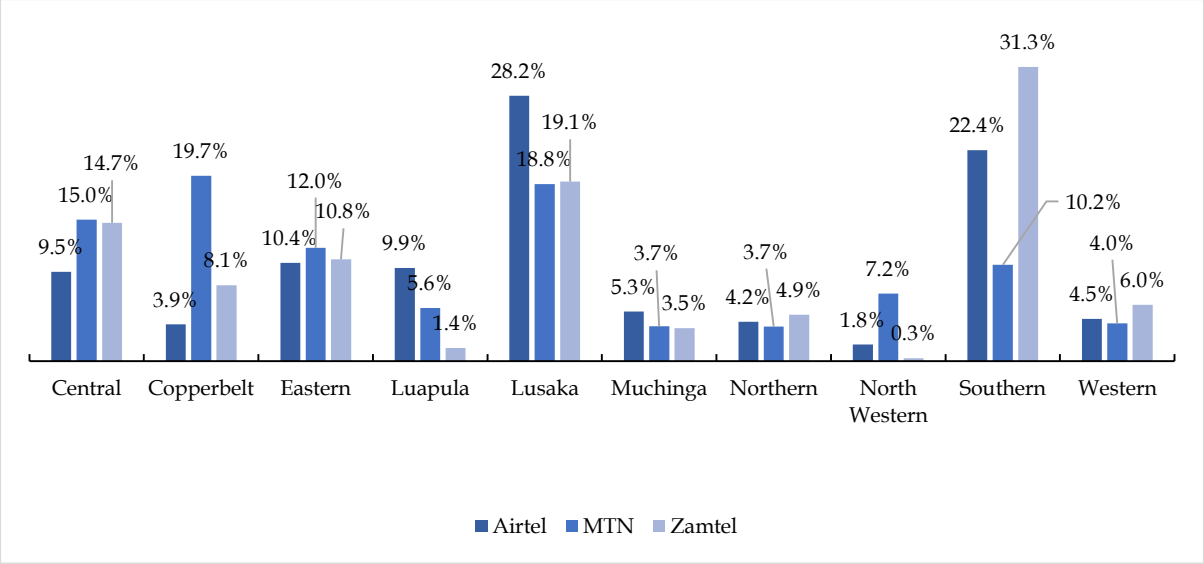
The Airtel network was reported as the most preferred mobile cellular network followed by MTN. Specifically, 48.3 percent of the individuals aged 10 years and above that indicated that they had used a mobile phone subscribed to a local network in the last three months prior to the survey indicated that Airtel was their most preferred network while 44.8 percent cited MTN network. Only 6.9 percent of the individuals that indicated that they had used a mobile cellular phone subscribed to a local network in the last three months prior to the survey indicated that Zamtel was their preferred network.

Figure 67: Preference of Mobile Cellular Network; 2018



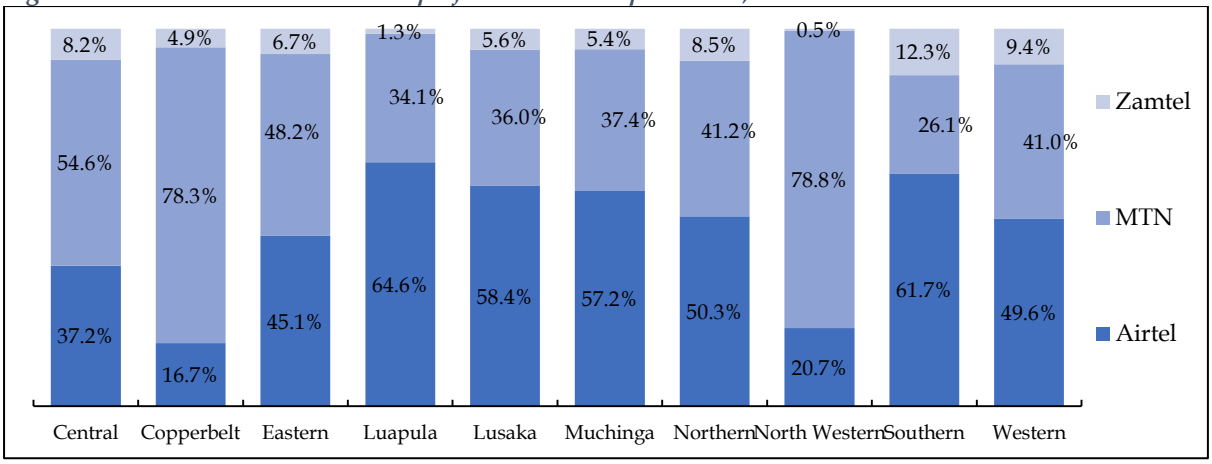
Notwithstanding, it was also noted that the majority of individuals aged 10 years and above that preferred the MTN network were based on the Copperbelt Province and Lusaka Province while the majority of individuals aged 10 years and above that preferred the Airtel network were based in Southern Province and Lusaka Province. Similarly, the majority of individuals aged 10 years and above that preferred the Zamtel network were largely in Southern Province and Lusaka Province.

Figure 68: Distribution of individuals by preference of mobile cellular network across provinces; 2018



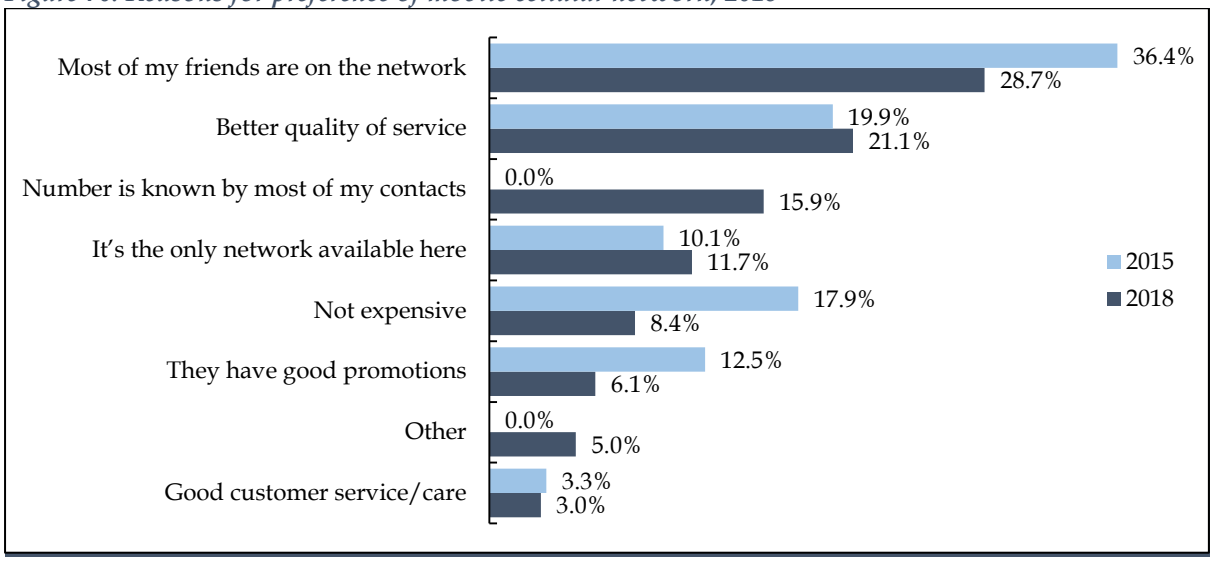
The Airtel network was noted to be the most preferred network in six (6) out of ten (10) Provinces. These constituted Luapula Province, Lusaka Province, Muchinga Province, Northern Province, Southern Province and Western Province. On the other hand, the MTN network was also noted to be the most preferred network in four (4) out of the ten (10) provinces constituting North-Western Province, Copperbelt Province, Central Province and Eastern Province.

Figure 69: Mobile cellular network preference within provinces; 2018



The main reasons cited for preference of mobile cellular networks by individuals aged 10 years and above continued to be associated with the need to avoid cross network calls by being on same network with friends and family. Further, the good quality of service was an influencing factor. These reasons were highlighted by 36.4 percent and 19.9 percent of all the individuals aged 10 years and above that indicated that they were subscribed to a local network. Other prominent attributes included the need for better quality of service and availability of the network in an area.

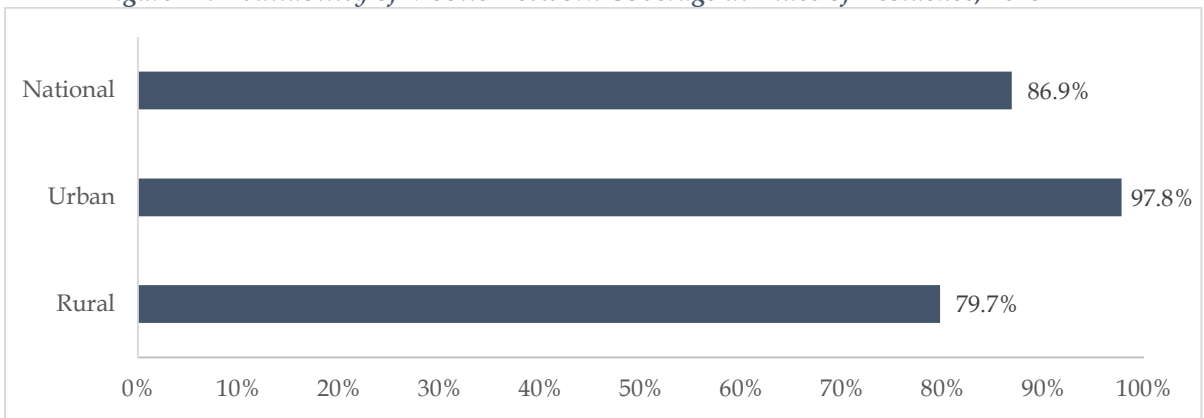
Figure 70: Reasons for preference of mobile cellular network; 2018



3.2.6. Coverage of the population by Mobile Cellular Network

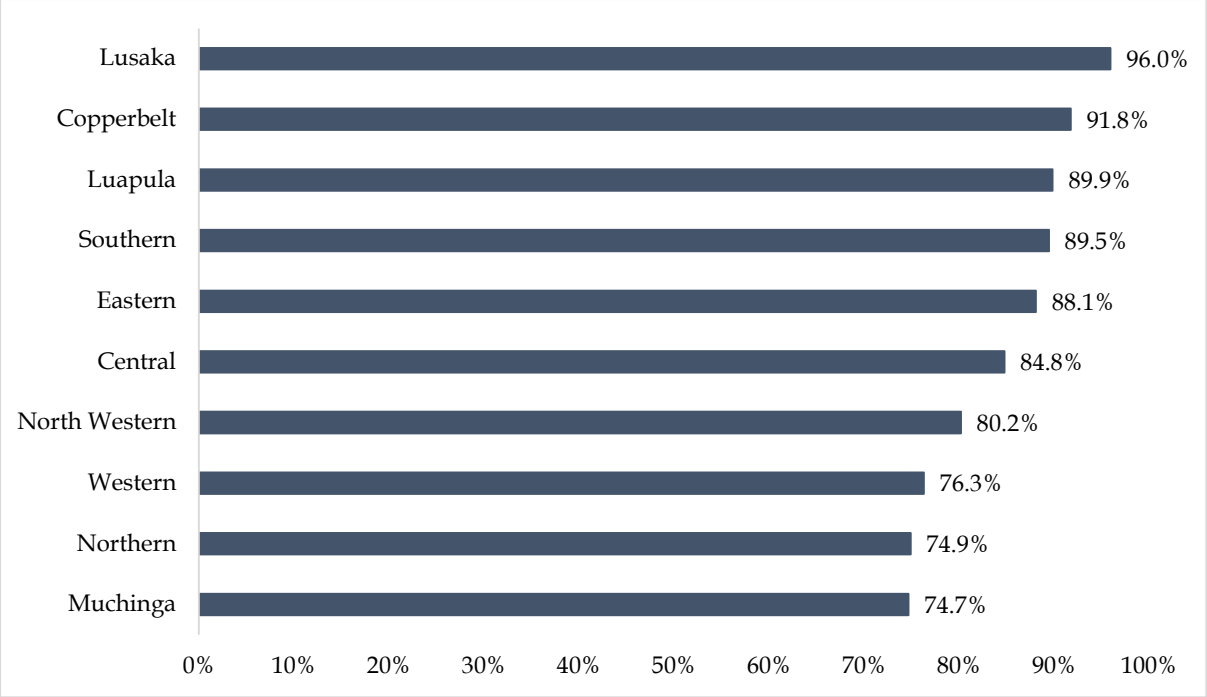
The mobile cellular network coverage of the entire population in the country was estimated to be 86.9 percent. The coverage of the population by a mobile cellular network at the place of residence was higher in urban areas than in rural areas. In urban areas, 97.8 percent of the population indicated that they were covered by a mobile cellular network at their place of residence while in the rural areas only 79.7 percent of the population indicated they had coverage of a mobile cellular network at their place of residence.

Figure 71: Availability of Mobile Network Coverage at Place of Residence; 2018



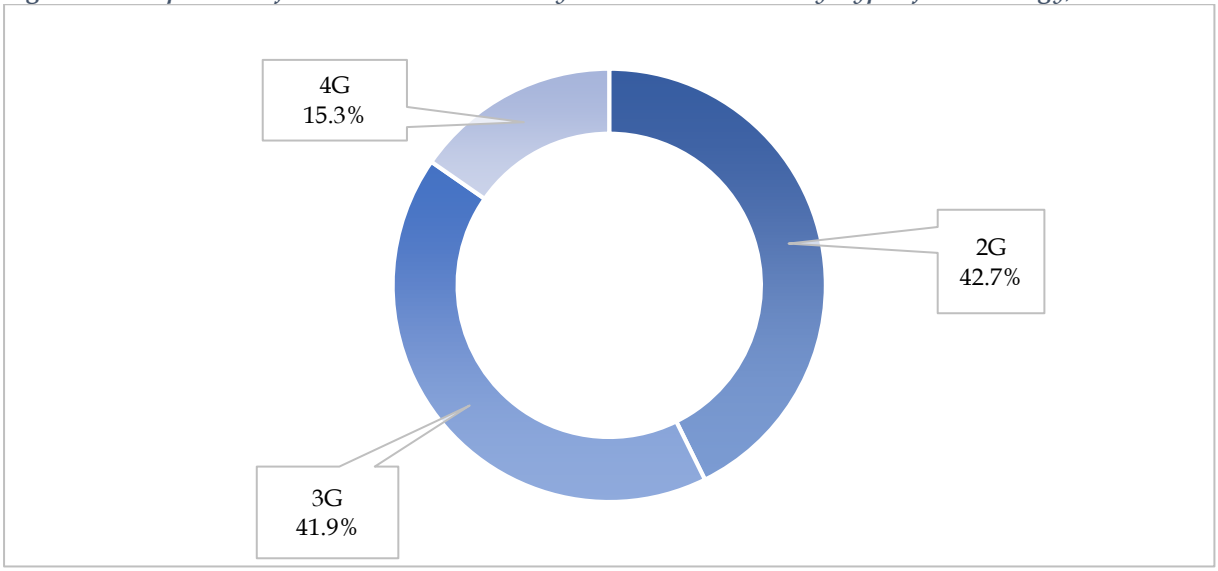
Lusaka Province had the highest proportion of individuals aged 10 years and above that indicated that they had coverage by a mobile network accounting for 96 percent of all the individuals aged 10 years and above in the province. On the other hand, Muchinga Province had the smallest proportion of individuals who indicated that there was coverage by a mobile network at their place of residence accounting for 74.7 percent of the people in the province.

Figure 72: Availability of mobile network coverage at place of residence by province; 2018



The distribution of the population by type of mobile cellular network technology that is available at their place of residence revealed that the 2G technology was most widespread accounting for 42.7 percent of population that indicated that they are covered by a mobile cellular network. An equally sizeable proportion of the population indicated that they were covered by 3G technology constituting 41.9 percent of the population. The 4G technology is was established to be the least wide spread accounting for 15.3 percent of the population that indicated that they were covered by a mobile cellular network.

Figure 73: Proportion of Individuals Covered by a Mobile Network by Type of Technology; 2018



3.2.7. Distance Covered to Access mobile cellular network

The survey established the amount of time needed to travel to a place where there is mobile cellular network coverage by individuals aged 10 years and above who indicated that they lived in areas without mobile cellular network coverage. On average, individuals aged 10 years and above that indicated that they did not have mobile cellular network coverage at their place of residence had to walk for 21 minutes[16] (approximately 1.75 kilometers) to reach an area with mobile cellular network coverage.

Individuals aged 10 years and above that were based in rural areas and did not have mobile cellular network coverage had to walk relatively longer distances than those that were based in urban areas. Specifically, individuals aged 10 years and above based in rural areas needed on average 22 minutes to reach areas with access to mobile cellular networks compared to 2 minutes taken by individuals aged 10 years and above in urban areas.

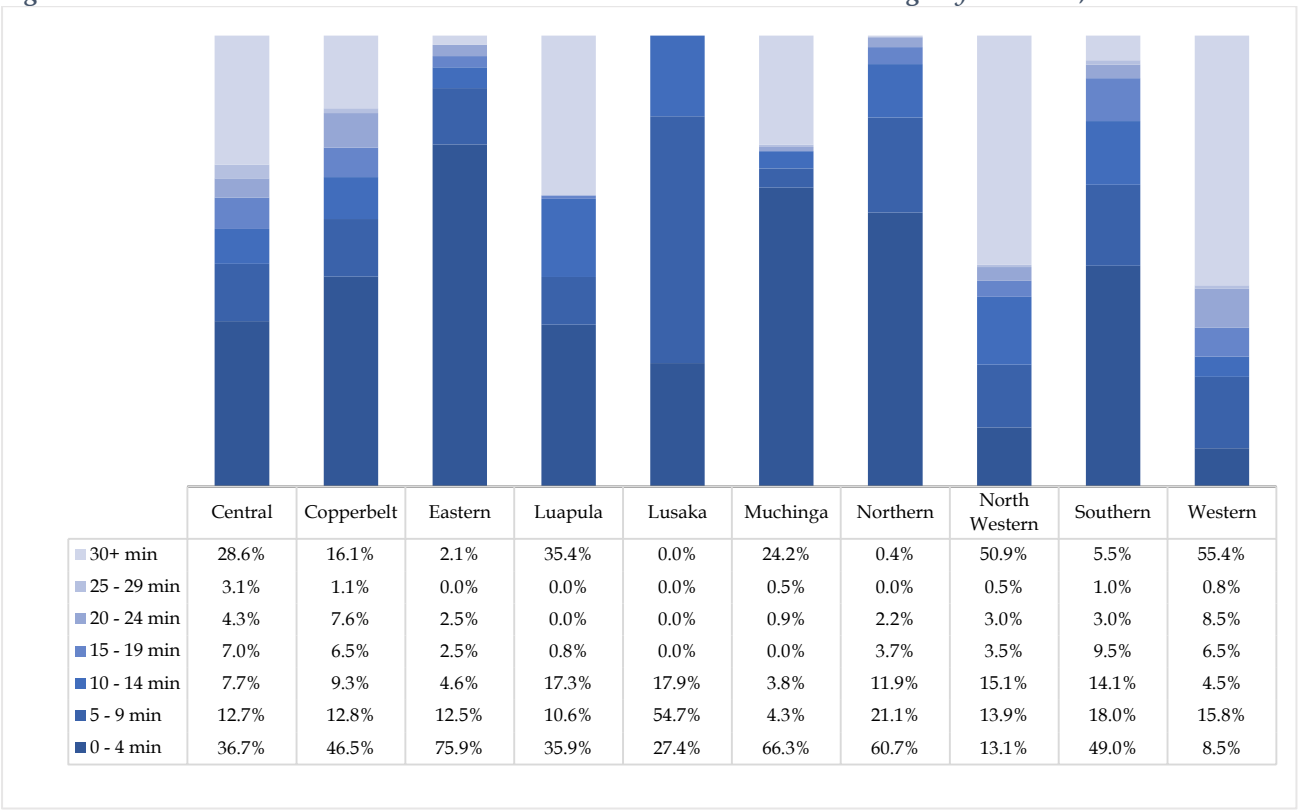
There was very minimal variation in the time needed for males that did not have coverage of any mobile cellular network at their place of residence to walk to an area with mobile cellular network coverage compared to females. On average, the males indicated that they needed to walk for 20 minutes to reach areas with access to mobile cellular network coverage while females required at least 21 minutes. However, individuals aged 10 years and above with disabilities indicated that they needed at least 27 minutes on average to walk to an area with mobile cellular network coverage.

An assessment of the time taken to reach an area with mobile cellular network coverage by individuals aged 10 years and above in various provinces revealed that Western, North-Western, Luapula and Central Provinces had relatively high proportions of

[16] It was estimated that it takes 120 minutes to cover 10 Km

individuals aged 10 years and above that needed to cover longer distances, typically more than 2.5 kilometers, to reach areas with mobile cellular network coverage. However, most individuals aged 10 years and above in Copperbelt, Eastern, Lusaka, Muchinga, Northern and Southern Provinces needed to walk for less than 10 minutes (approximately 800 meters) to reach areas with access to mobile cellular networks.

Figure 74: Time Taken to Reach Areas with Mobile Cellular Network Coverage by Province; 2018

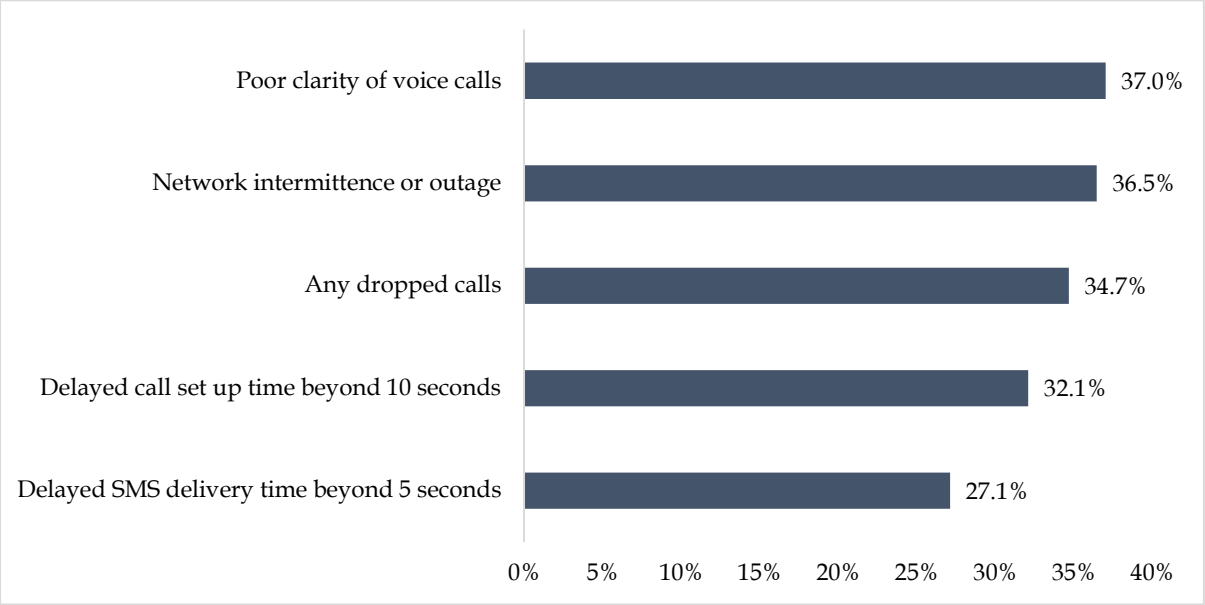


	Central	Copperbelt	Eastern	Luapula	Lusaka	Muchinga	Northern	North Western	Southern	Western
30+ min	28.6%	16.1%	2.1%	35.4%	0.0%	24.2%	0.4%	50.9%	5.5%	55.4%
25 - 29 min	3.1%	1.1%	0.0%	0.0%	0.0%	0.5%	0.0%	0.5%	1.0%	0.8%
20 - 24 min	4.3%	7.6%	2.5%	0.0%	0.0%	0.9%	2.2%	3.0%	3.0%	8.5%
15 - 19 min	7.0%	6.5%	2.5%	0.8%	0.0%	0.0%	3.7%	3.5%	9.5%	6.5%
10 - 14 min	7.7%	9.3%	4.6%	17.3%	17.9%	3.8%	11.9%	15.1%	14.1%	4.5%
5 - 9 min	12.7%	12.8%	12.5%	10.6%	54.7%	4.3%	21.1%	13.9%	18.0%	15.8%
0 - 4 min	36.7%	46.5%	75.9%	35.9%	27.4%	66.3%	60.7%	13.1%	49.0%	8.5%

3.2.8. Quality of Experience for Mobile Cellular Services

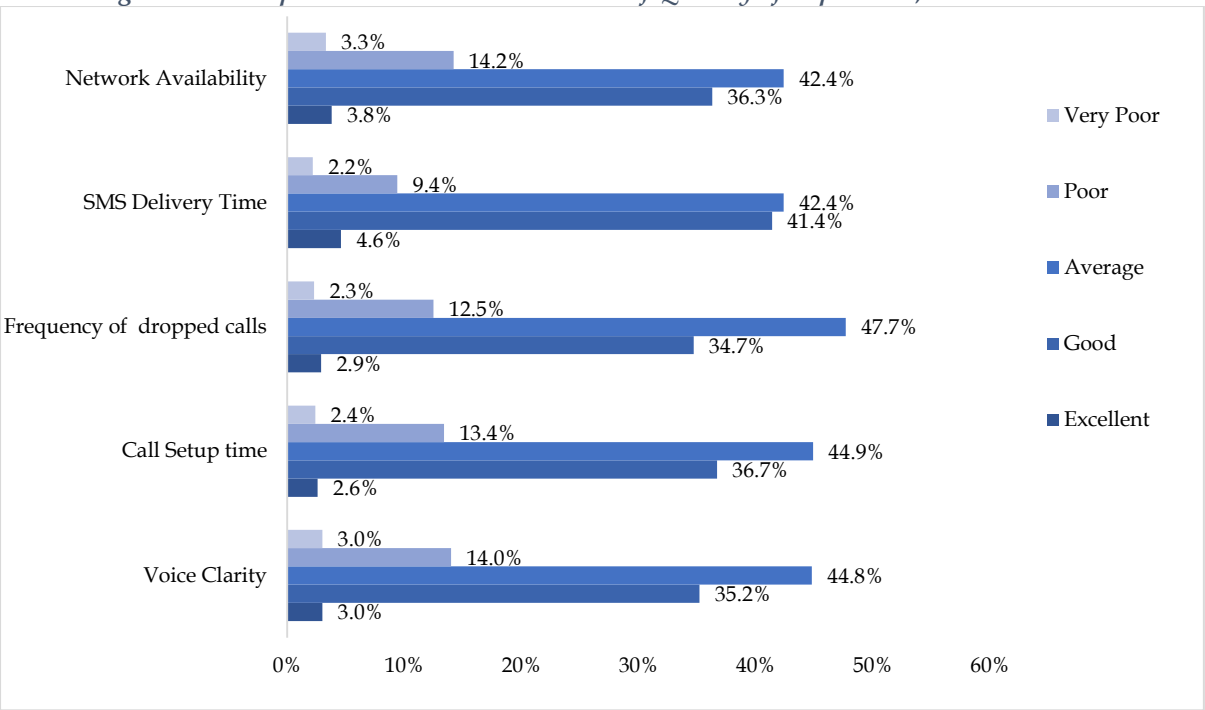
The most prominent complaints cited by individuals aged 10 years and above that indicated that they used mobile cellular telephone services was poor clarity of voice calls as well as intermittent network availability or network outages. Specifically, 37 percent of all the individuals aged 10 years and above that indicated that they had used a mobile cellular telephone in the last three months cited poor clarity of voice calls as one of the challenges they had experienced while 36.5 percent cited intermittent networks or network outages.

Figure 75: Challenges Experienced by Individuals that Use Mobile Cellular Phone Services



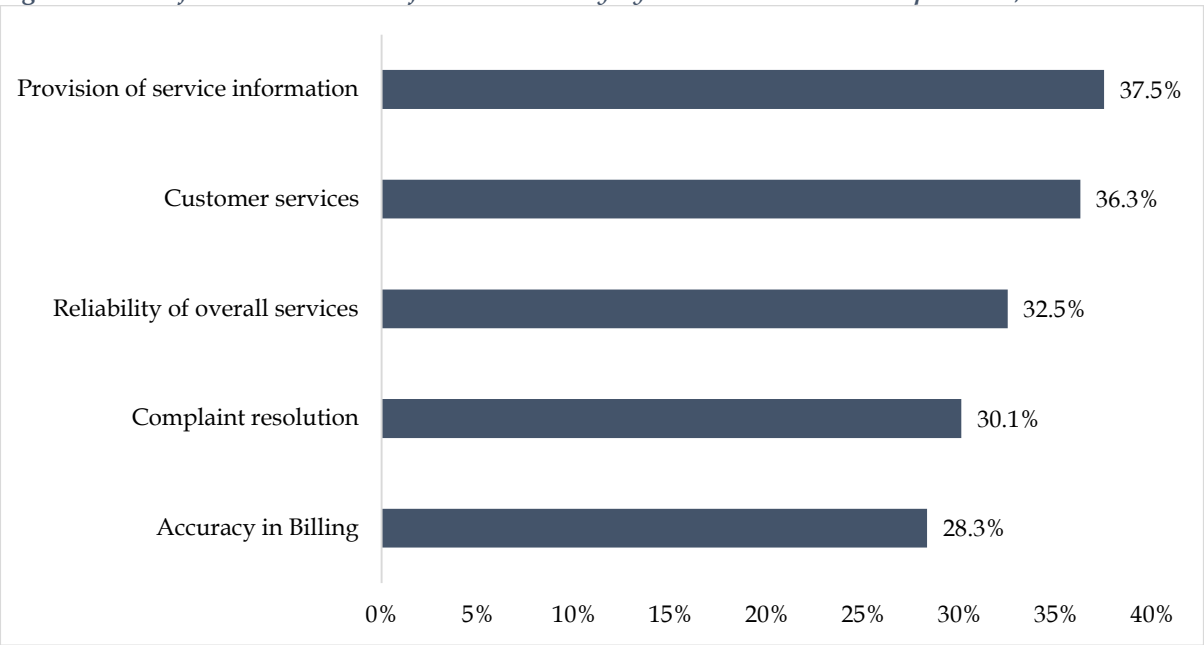
An assessment of various attributes of quality of experience revealed that most individuals aged 10 years and above that used mobile cellular telephone services were of the view that the quality of experience had an average rating. Specifically, at least 40 percent of all the individuals aged 10 years and above that had used mobile cellular telephone services were of the view that the various attributes of quality of service namely network availability, SMS delivery time, frequency of dropped calls, call setup time and clarity of voice calls were average.

Figure 76: Perceptions on Various Attributes of Quality of Experience; 2018



The most prominent attribute of service delivery by the main mobile network operator that individuals aged 10 years and above were satisfied with related to the provision of service information and customer services accounting for 37.5 percent and 36.3 percent of all the individuals aged 10 years and above that had used a mobile cellular telephone in the last three months prior to the survey. While there was little variation in the proportion of individuals aged 10 years and above that were satisfied with various attributes of service delivery, accuracy in billing accounted for the smallest proportion amounting 28.3 percent.

Figure 77: Satisfaction attributes of service delivery by main mobile network provider; 2018



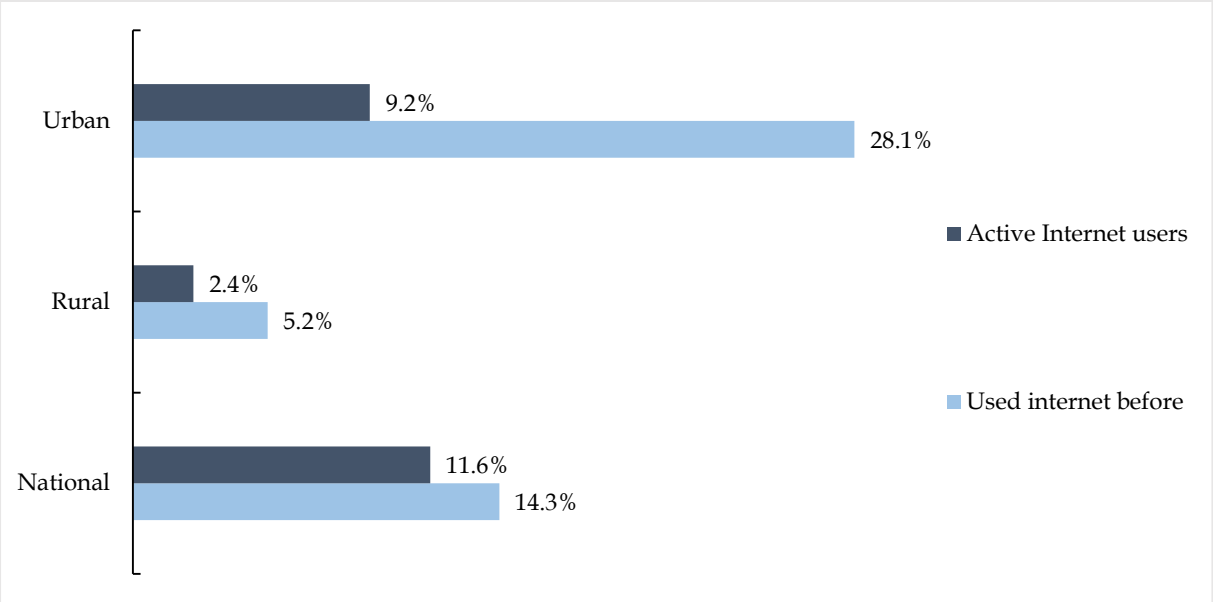
3.3. Access and Usage of Internet Services by Individuals

3.3.1. Internet Usage

The survey established that the proportion of individuals who indicated that they had used the internet before was 14.3 percent in 2018. This finding represents an increase in the proportion of individuals that had used the internet from 8.8 percent reported in 2015. However, the proportion of users of the internet in Zambia who reported using the internet at least once in the 3 months preceding the survey was 11.6 percent.

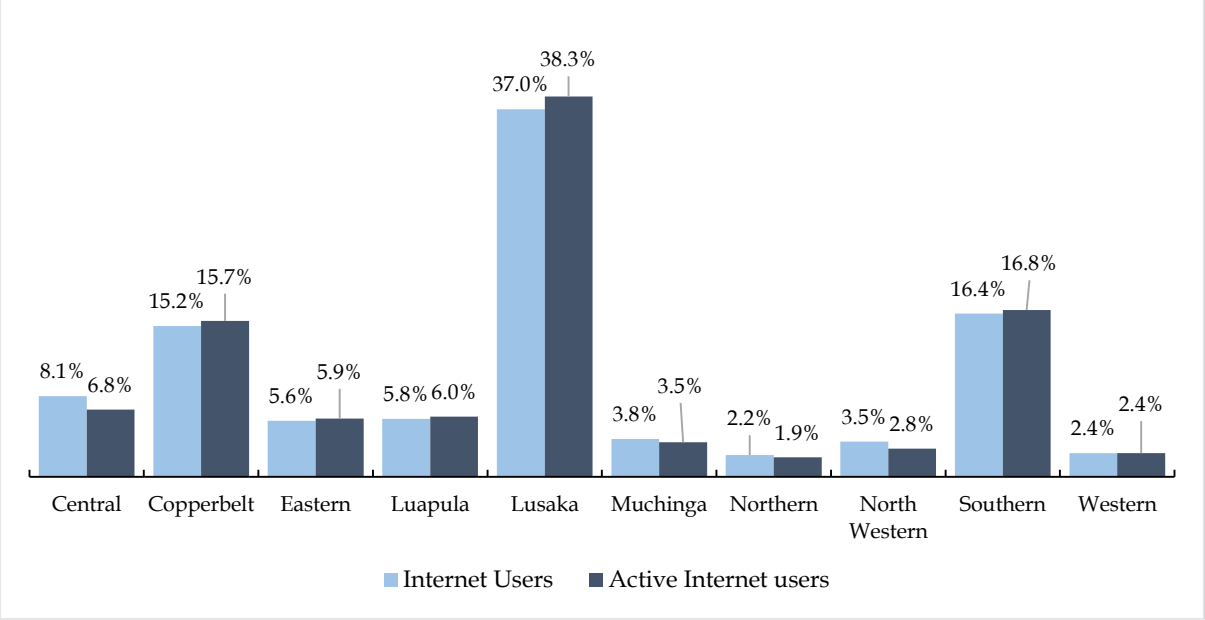
The population of active users of the internet was concentrated in urban areas constituting 77.8 percent compared to 22.2 percent based in rural areas. However, the proportion of individuals within the urban areas that had used the internet was 28.1 percent while only 5.2 percent of individuals within the rural areas had used the internet before. The usage of internet services thus increased from the findings established in 2015 when the proportion of individuals that had used the internet that were based in urban areas was 16.8 percent and 3.2 percent among individuals that were based in rural areas.

Figure 78: Individuals that Use Internet Services by Region; 2018



The majority of individuals that had used the internet before or were active users of the internet were mainly based in Lusaka province, Southern province and Copperbelt provinces. On the other hand the smallest proportion of individuals that had used the internet or were active users of the internet were based in Northern province, North Western province and Western province.

Figure 79: Distribution of Internet Users across Provinces

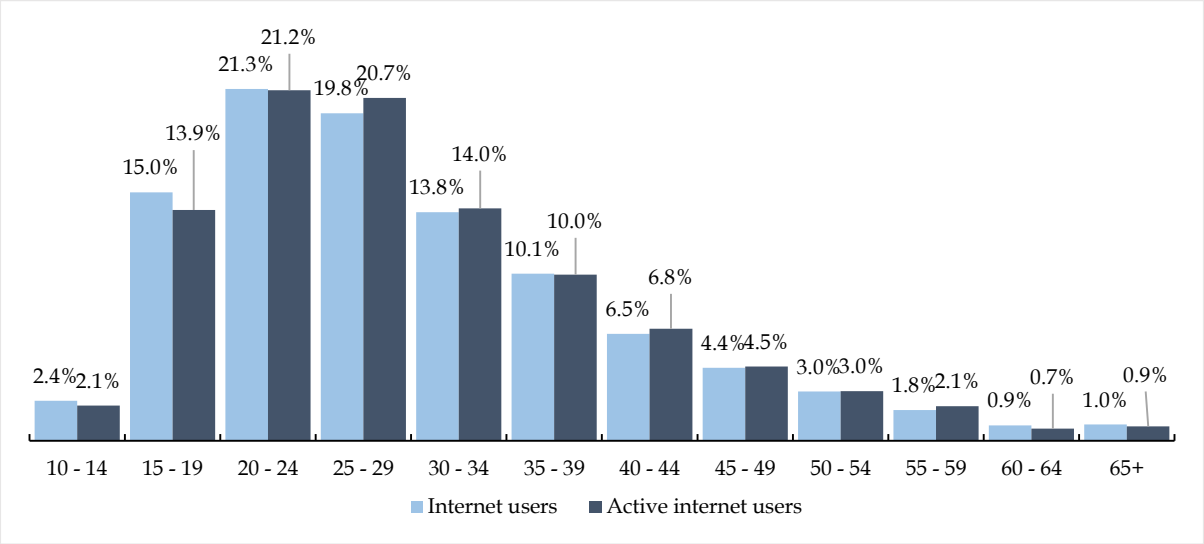


The majority of internet users were males constituting 52.1 percent of all the users of the internet compared to females who constituted 47.9 percent. However, 17.3 percent of all

the males had used the internet before while only 12.0 percent of all the females had used the internet before.
The assessment also revealed that 1.2 percent of all the internet users had some disabilities. The proportion of individuals with disabilities that had used internet services before was only 5.7 percent.

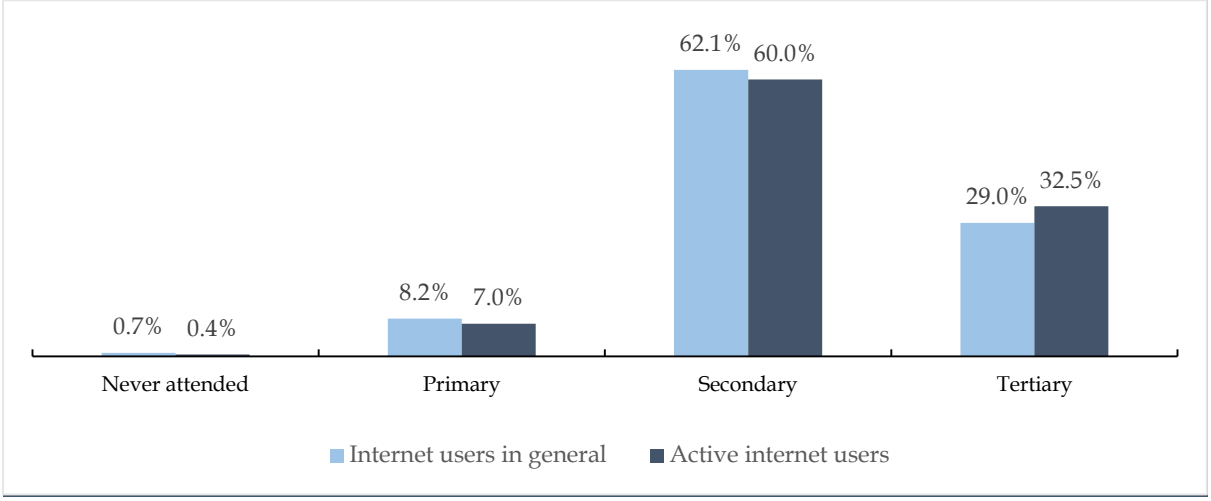
The majority of individuals that had used the internet before or were active users of the internet were young. Specifically, 72.3 percent of all the individuals that had used the internet before were aged below 35 years while 72 percent of the active internet users were aged below 35 years. Less than 5 percent of the individuals that had used the internet before were aged above 55 years.

Figure 80: Internet Users by Age Group; 2018



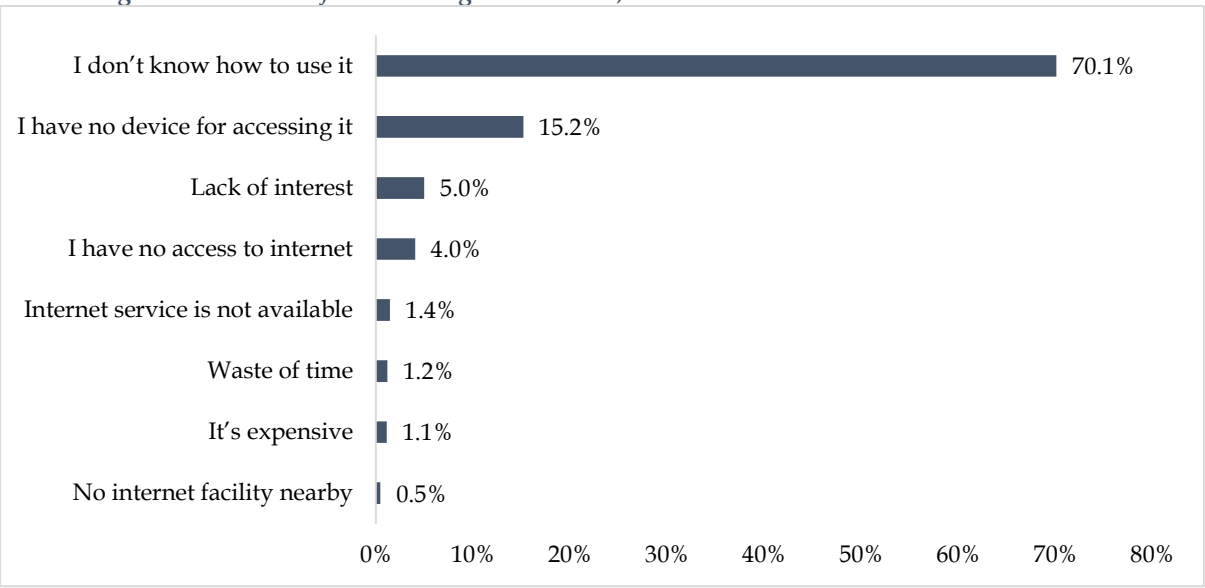
The majority of internet users had attained secondary education accounting for over 60 percent of all the internet users. A similar proportion of active users of the internet had attained secondary education. The usage of internet services was lowest among individuals that had not attained any formal education.

Figure 81: Internet Usage by Level of Education; 2018



The main reason cited for not using the internet by individuals was lack of knowledge on how to use the internet accounting for 70.1 percent of the individuals that indicated that they had never used the internet. Other barriers to the uptake of internet services by individuals included lack of appropriate devices, lack of interest in the services as well as lack of access to the service.

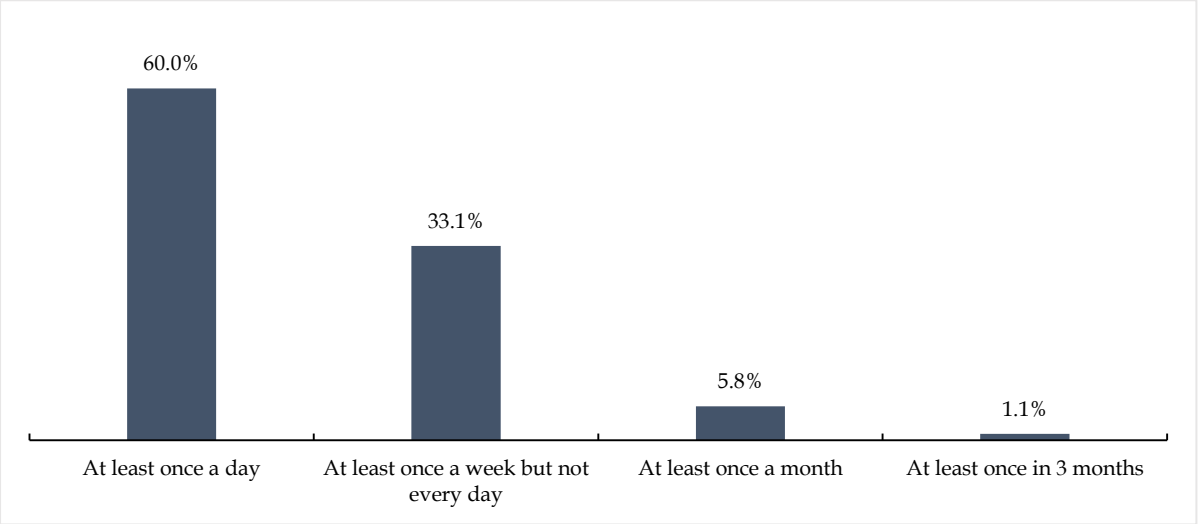
Figure 82: Reasons for not using the Internet; 2018



3.3.2. Frequency of Usage of Internet Services

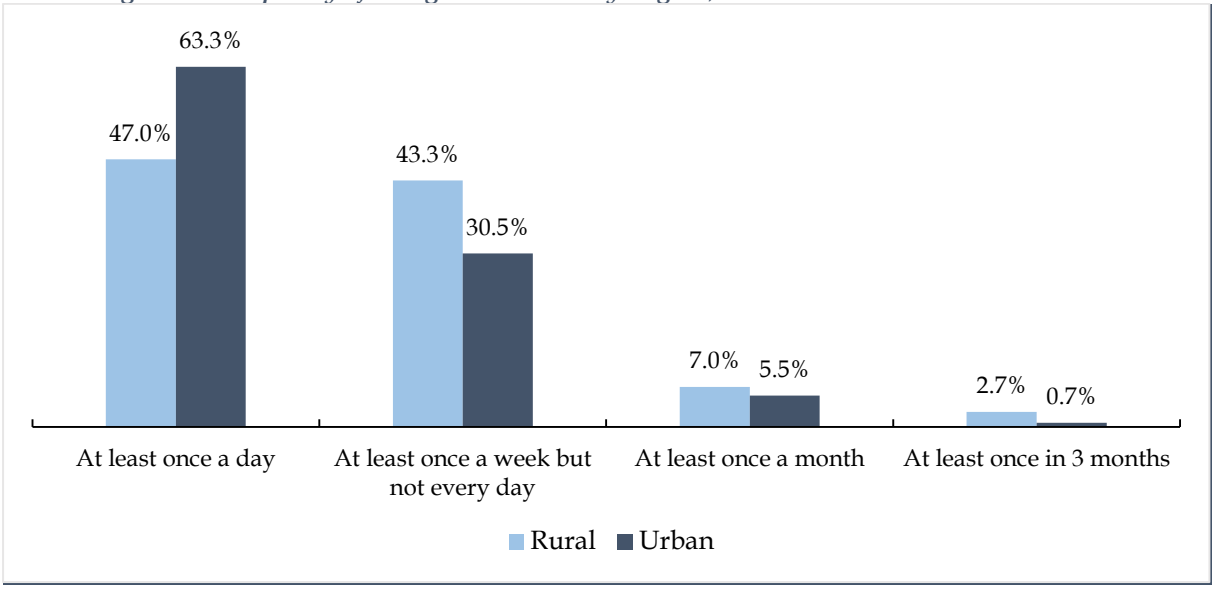
The majority of individuals that used the internet in the three months prior to the survey indicated that they used the internet atleast once a day. Further, over 93 percent of the internet users used the internet atleast once a week. This indicated that most users of internet services used the internet regularly.

Figure 83: Frequency of Using the Internet by Active Internet Users; 2018



The survey established that the majority of the active internet users who indicated that they used internet services everyday were based in urban areas. Specifically, 63.3 percent of the active internet users that were based in urban areas indicated that they used the internet atleast once a day while only 47 percent of the active internet users that were based in rural areas indicated that they used the internet once a day.

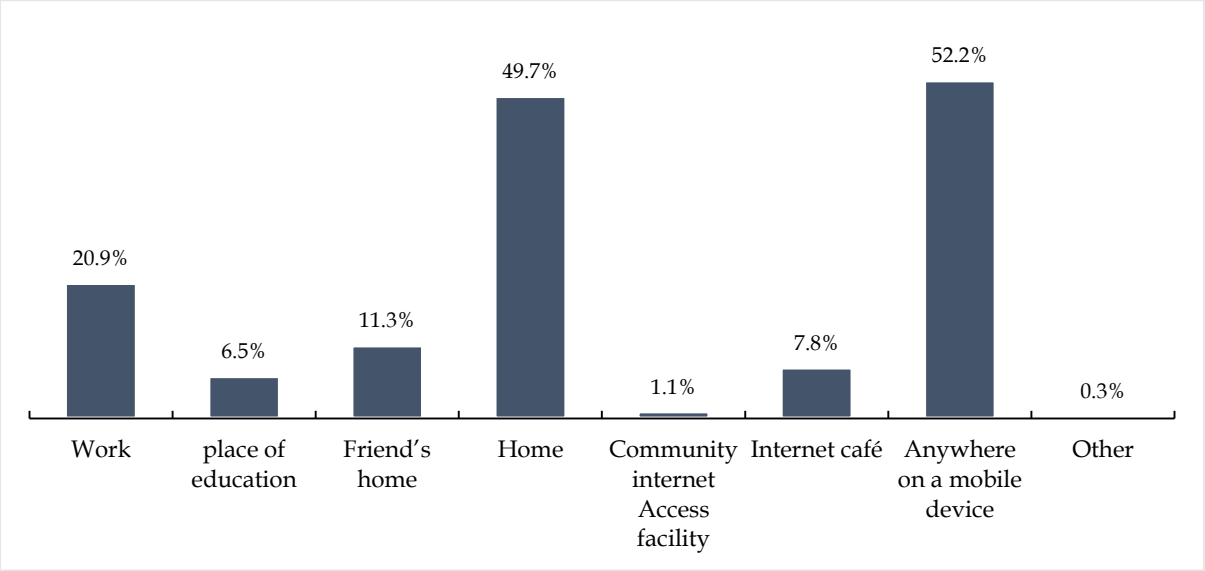
Figure 84: Frequency of using the Internet by Region; 2018



3.3.3. Places Where Internet Services are Accessed

The majority of active internet users, constituting 52.2 percent of all the users of internet services, reported accessing the internet anywhere on mobile devices. Further, a sizeable number of users of the internet indicated that they accessed the internet at home and at the place of work in the last three months prior to the survey.

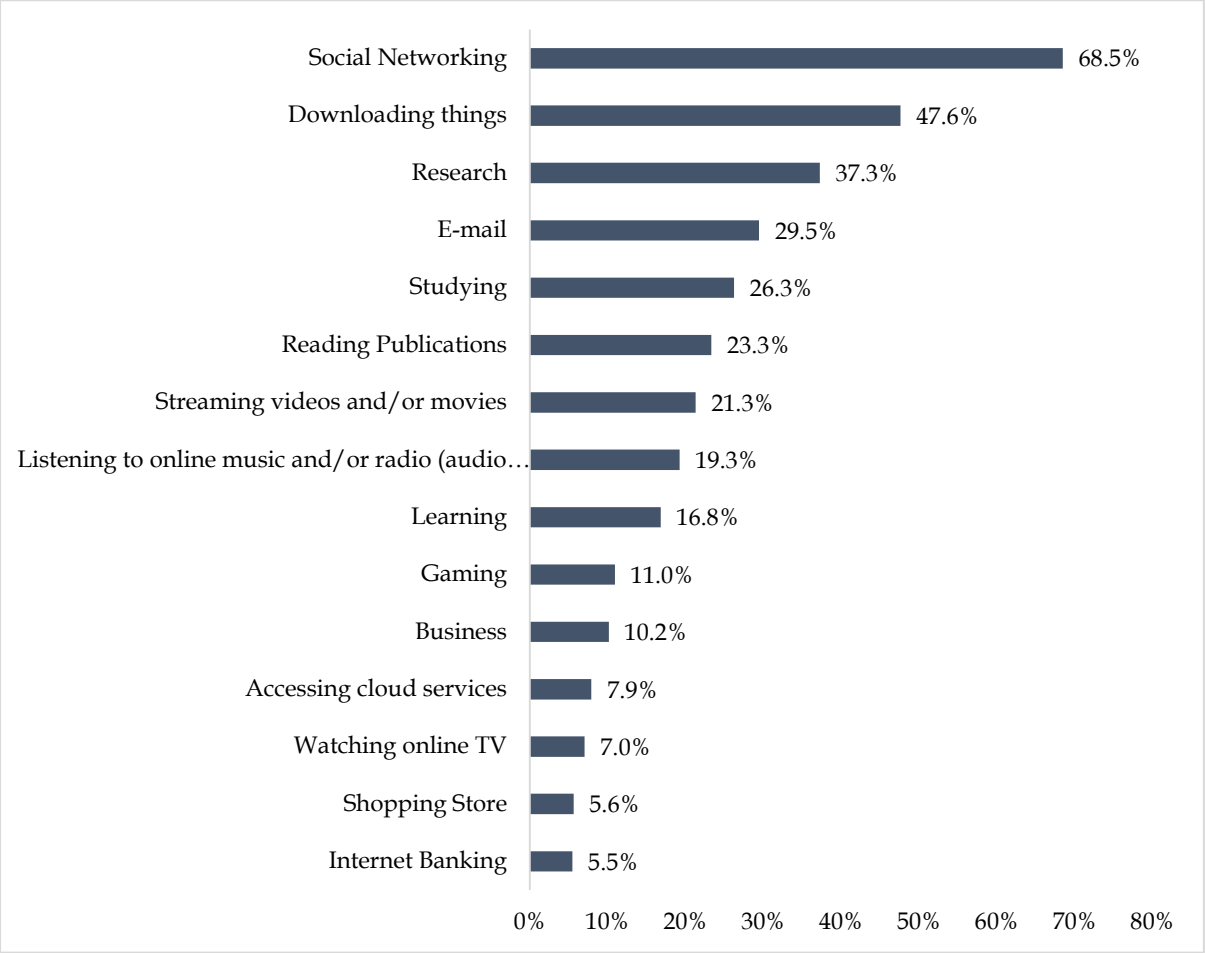
Figure 85: Places Where Internet Users accessed the Internet in the Last Three Months; 2018



3.3.4. Activities Undertaken Online

The most common activities undertaken by active users of the internet were social networking, downloading, research and emailing respectively. However, online shopping (shopping store) and internet banking were the least common activities undertaken by active internet users online.

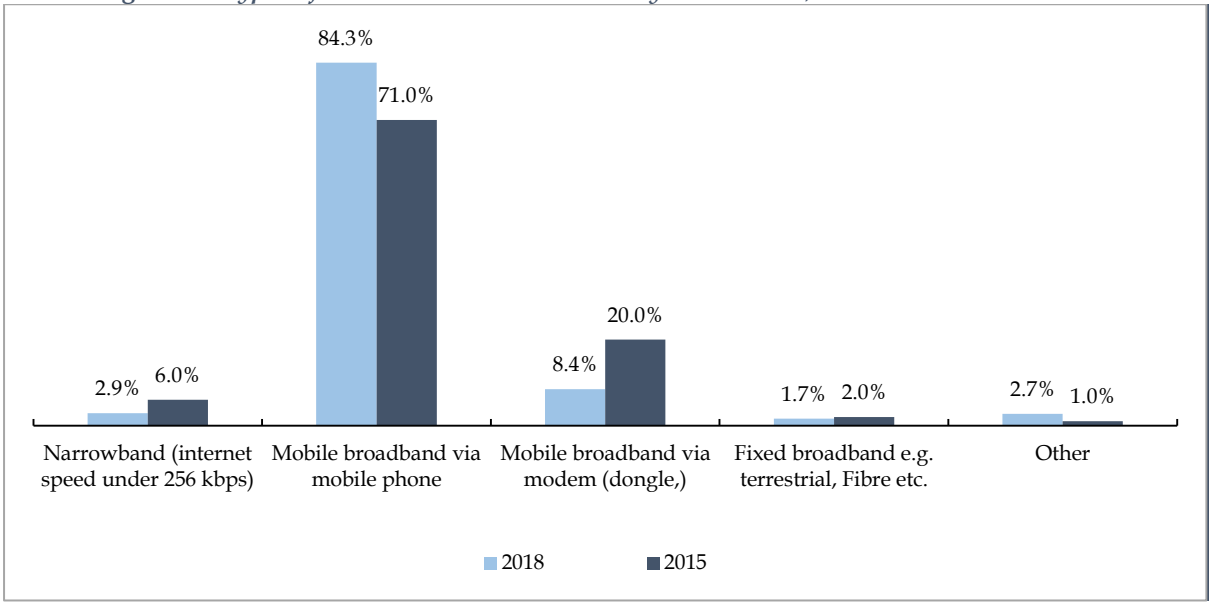
Figure 86: Activities undertaken by Active Internet Users; 2018



3.3.5. Types of Internet Services Accessed

Most of the individuals aged 10 years and above that indicated that they had used internet services before accessed the service through mobile broadband internet services via mobile cellular telephones and modems. In 2018, there were relaltively more individuals aged 10 years and above that indicated that they accessed internet services using mobile broadband internet service via mobile cellular telephone than in 2015. Further, there was a noted decline in the proprotion of individuals that accesed internet services using modem. Other sources of internet services, particularly fixed internet services, remained relatively low in 2018.

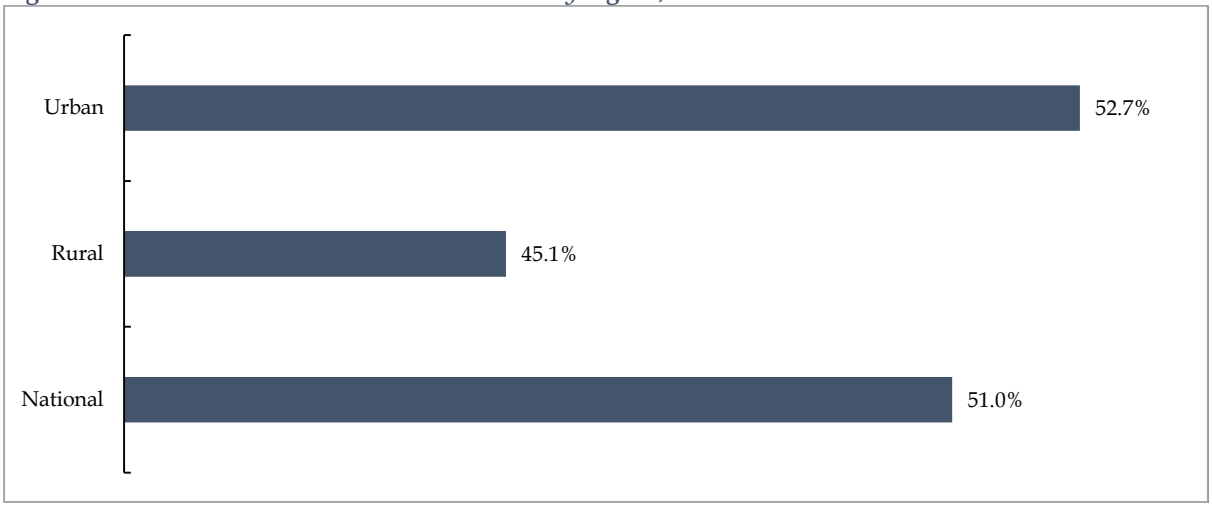
Figure 87: Types of internet services accessed by individuals; 2015-2018



3.3.6. Ownership and Usage of Emails

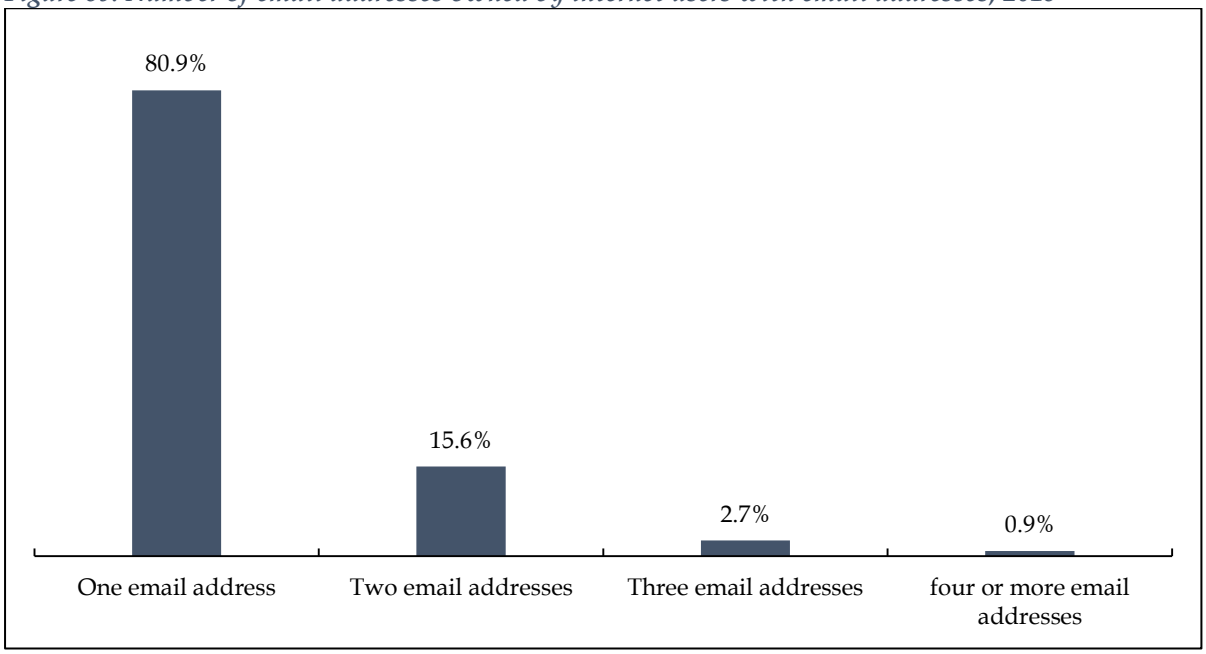
It was observed that 51.0 percent of all the individuals aged 10 years and above that had used the internet before indicated that they owned an email address. This represents an increase of 4 percent points in the proportion of users of the internet that owned an email address from the 47.0 percent reported in 2015. However, 52.7 percent of all the users of the internet based in urban areas had an email address while 45.1 percent of individuals aged 10 years and above that had used the internet before and were based in rural areas owned an email address.

Figure 88: Internet users with email addresses by region; 2018



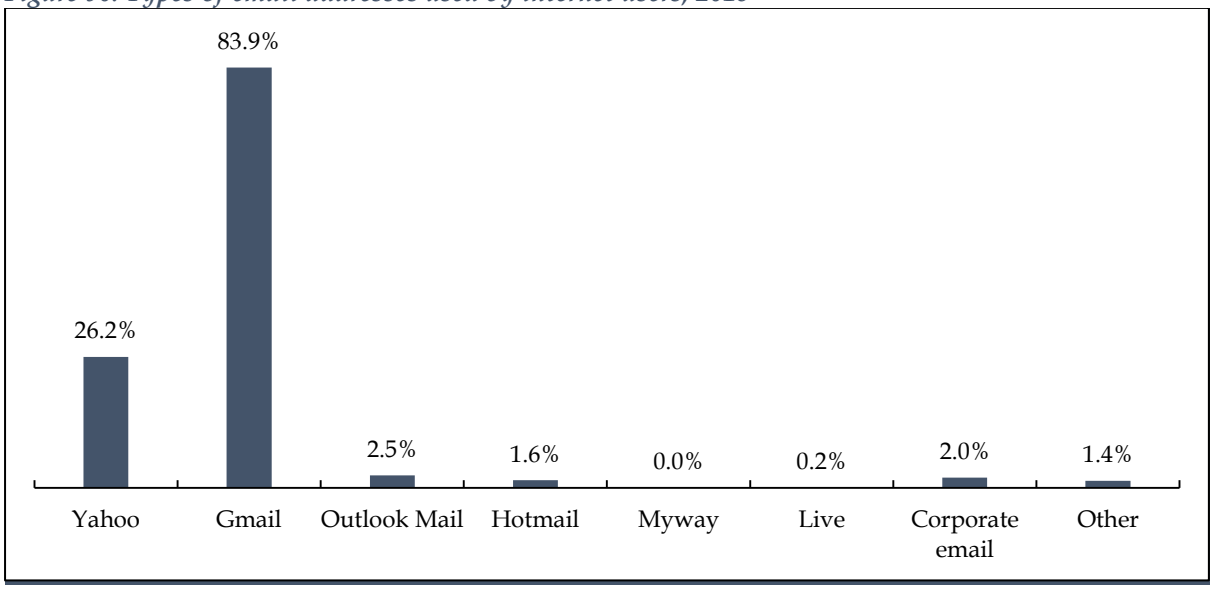
It was further established that 80.9 percent of all the users of the internet that owned email addresses reported having one email address. Further, less than 1 percent of the individuals aged 10 years and above that owned email addresses had more than three email addresses.

Figure 89: Number of email addresses owned by internet users with email addresses; 2018



The majority of internet users with email addresses held an addresses with Gmail and Yahoo. Specifically, 83.9 percent of individuals aged 10 years and above with email addresses held Gmail accounts while 26.2 percent had accounts with Yahoo.

Figure 90: Types of email addresses used by internet users; 2018

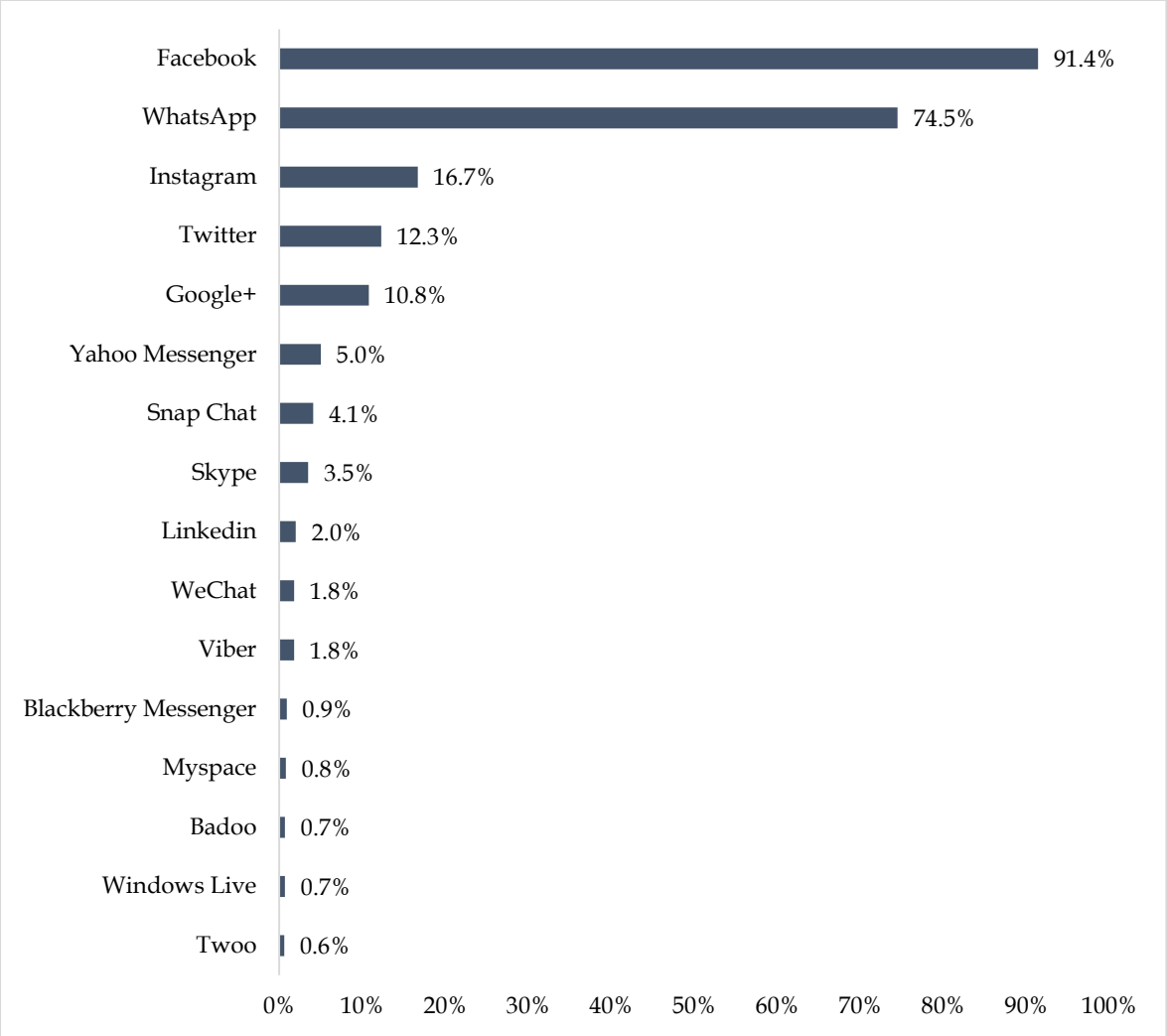


3.3.7. Usage of Social Media Platforms

The survey estimated that 78.4 percent of all the users of the internet had at least one social media account representing an improvement of 15.8 percent when compared to the proportion of 63.0 percent reported in 2015. The proportion of internet users with at least one social media account was concentrated in urban areas constituting 80.0 percent while only 20.0 percent were based in rural areas. Facebook was the most

prominent social media platform used by internet users accounting for 91.4 percent of all the internet users that were subscribed to a social media platform. WhatsApp was the second most popular social media platform constituting 74.5 percent of all the internet users that were subscribed to a social media platform.

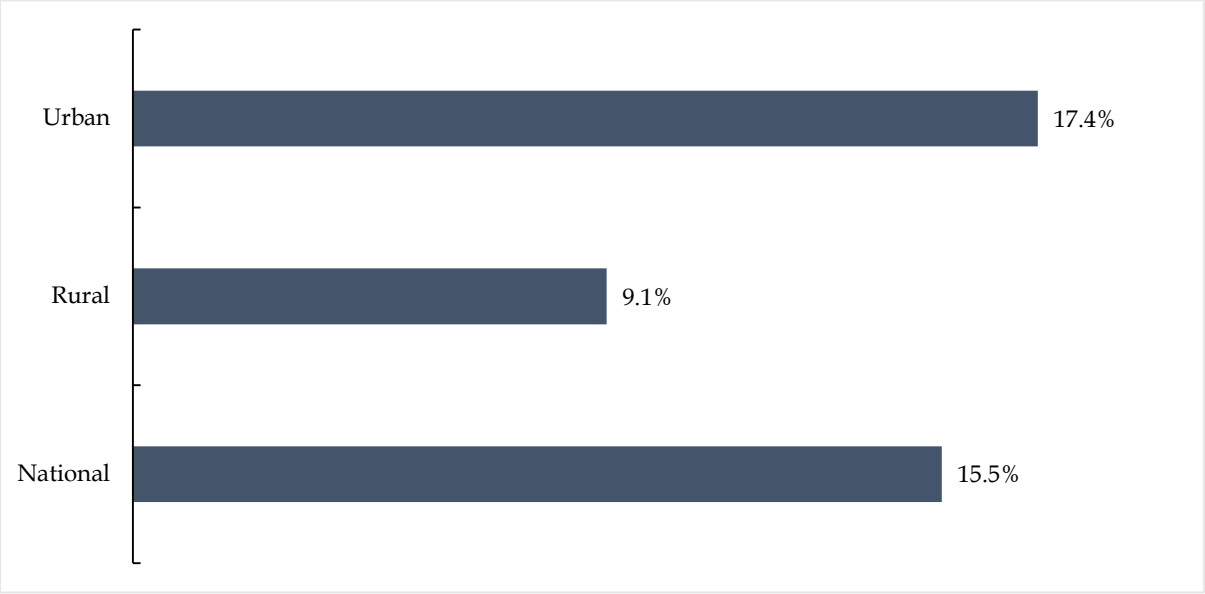
Figure 91: Types of social media platforms used by individuals with social media accounts; 2018



3.3.8. Usage of Cloud Services

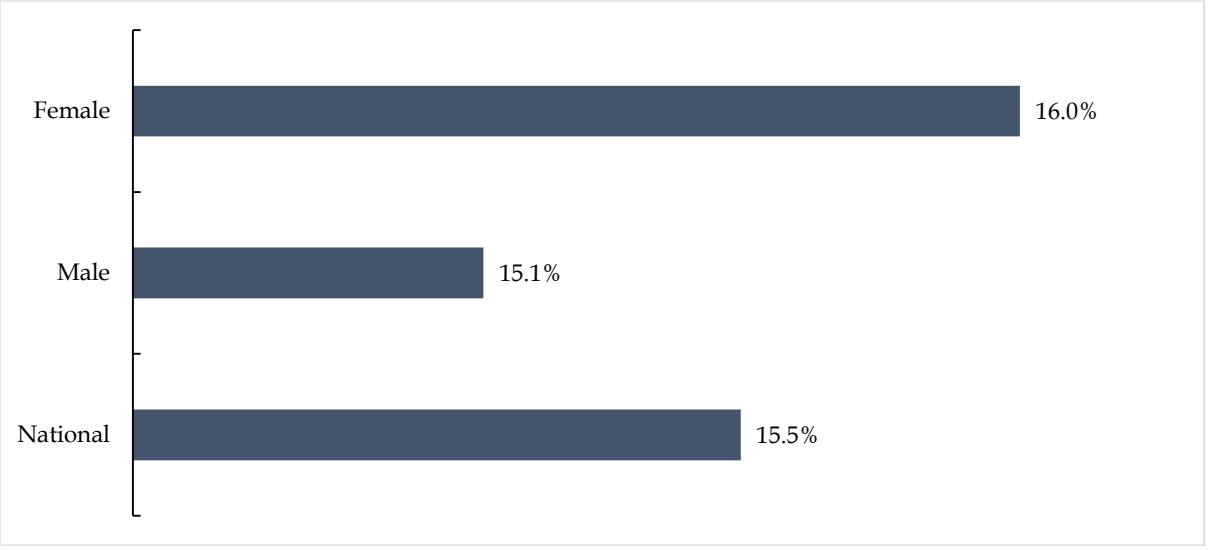
The survey revealed that 15.5 percent of all the users of internet services had used cloud services before. The majority of the users of cloud services were mainly based in urban areas constituting 87.0 percent of all the individuals aged 10 years and above that had used cloud services before compared to 13 percent that were based in rural areas. Further, the findings of the survey established that the usage of cloud services among urban internet users was relatively high amounting 17.4 percent while only 9.1 percent of the internet users based in rural areas had used cloud services before.

Figure 92: Proportion of internet users that use cloud services; 2018



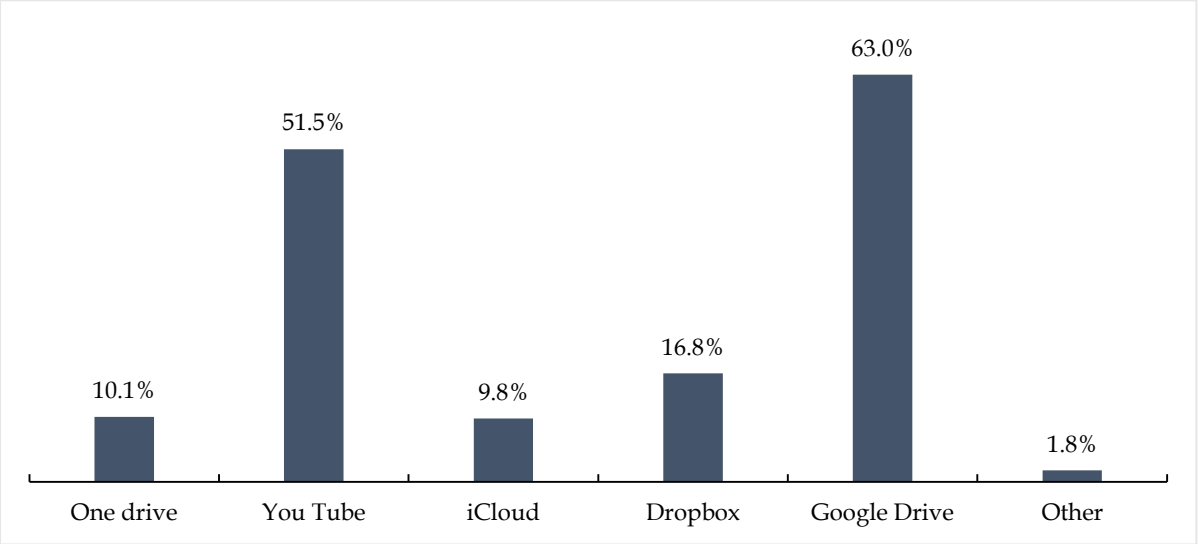
The proportion of females that had used cloud services before was relatively higher than that of males. Specifically, 6.0 percent of the female internet users had used cloud services before compared to 15.1 percent among male internet users.

Figure 93: Users of cloud services by sex; 2018



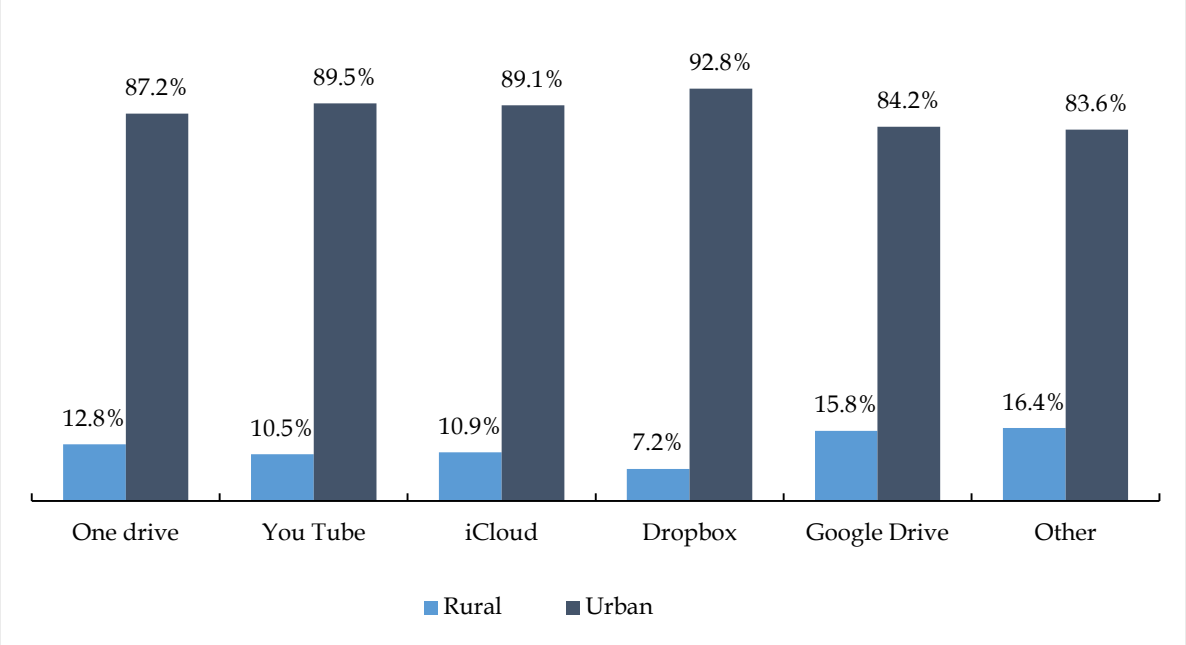
It was established that Google Drive was the most popular cloud service platform used by internet users accounting for 63.0 percent of internet users that had used cloud services before. YouTube equally had a sizeable proportion of individuals that used the services accounting for 51.5 percent of all the internet users that had used cloud services before. The iCloud platform was the least popular cloud service platform among internet users accounting for less than 10 percent of the individuals aged 10 years and above that indicated that they had used cloud services before.

Figure 94 Types of Cloud services used by individuals that access cloud services; 2018



The proportion of individuals aged 10 years and above that used cloud services was significantly higher among internet users based in urban areas compared to internet users based in rural areas. Specifcally, over 80 percent of all the users of cloud computing services across different platforms were based in urban areas.

Figure 95: Distribution of users of cloud services across regions; 2018

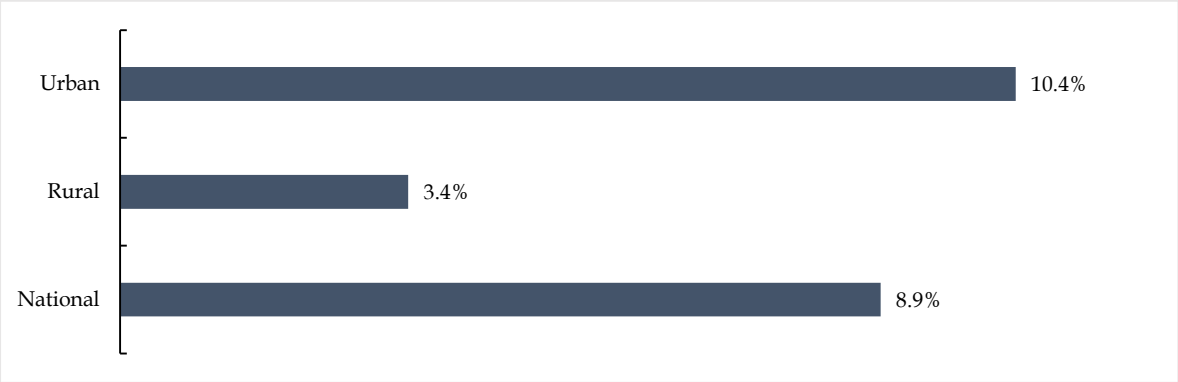


3.3.9. Usage of E-commerce

The survey estimated that 8.9 percent of all the individuals that had used the internet before had purchased goods and/or services online. The majority of the individuals that had engaged in e-commerce activities, constituting 93.2 percent, received the goods and/or services in the condition described online. The proportion of internet users that had engaged in e-commerce activities were concentrated in urban areas

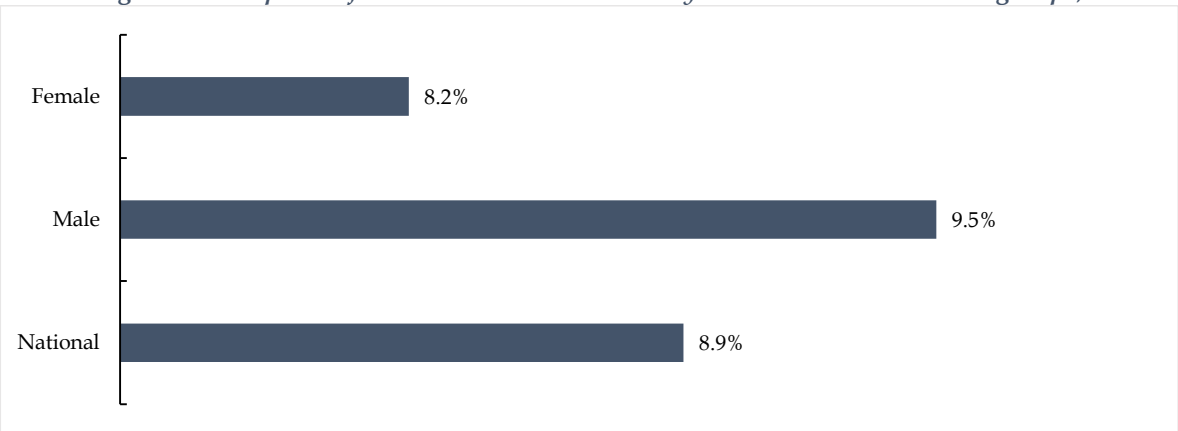
accounting for 91.6 percent of the internet users that indicated that they had engaged in e-commerce activities while only 8.4 percent were based in rural areas. Further, the adoption of e-commerce was relatively low among internet users based in rural areas constituting 3.4 percent relative to 10.4 percent among internet users that were based in urban areas.

Figure 96: Adoption of e-commerce by users of internet services across regions; 2018



There were relatively more males that were engaged in e-commerce transactions than females. Specifically, 55.7 percent of the people that indicated that they had engaged in some e-commerce transaction before were male while 44.3 percent were female. Further, the proportion of males that had used the internet before and engaged in e–commerce transactions was 9.5 percent while the proportion of females that had used the internet before and engaged in e-commerce transactions was 8.2 percent.

Figure 97: Adoption of e-commerce transactions by internet users across sex groups; 2018

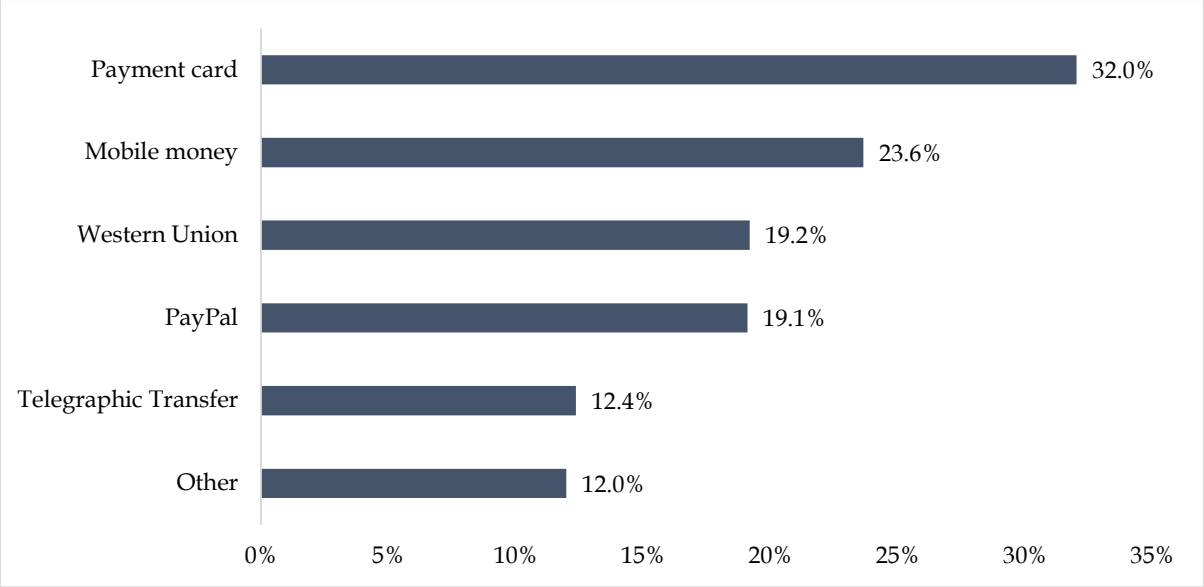


Payment cards[17] and Mobile money were the most prominnet methods of paying for goods and/or services purchased online accounting for 32.0 percent and 23.6 percent of the people that were engaed in e commerce tranactions respectively. The use of telegrahic transfers and PayPal was relatively less widespread accounting for 12.4

[17] Automatic Teller Machine (ATM) cards such VISA, Master Card, American Express etc.

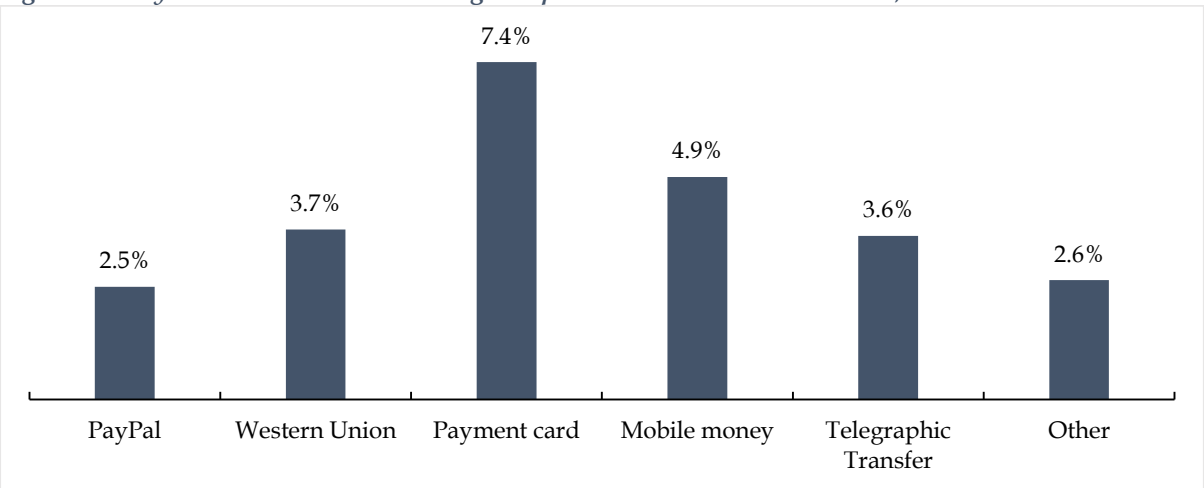
percent and 19.1 percent of the people that were engaed in e-commerce tranactions respectively.

Figure 98: Payment methods adopted for e- commerce transactions; 2018



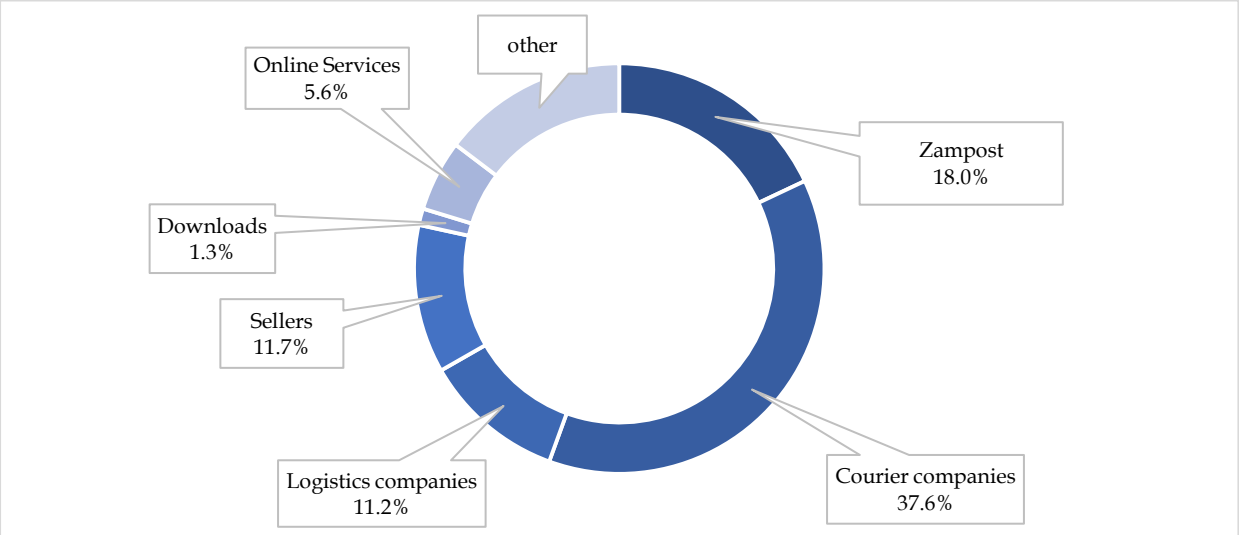
Electronic payments systems are usually not problem-free. The ICT survey investigated e-commerce users' expereience with different payment methods. Despite payment cards and mobile money being popular methods of paying for goods and/or services purchased online they were also cited as having given the most problems. However, none of the payment methods had given problems to more than 8 percent of the individuals aged 10 years and above that were engaged in e-commerce transactions.

Figure 99: Payment methods which had given problems to e-commerce users; 2018



Courier companies and Zampost were the most prominent means of delivering physical goods purchased via e-commerce accounting for 37.6 percent and 18.0 percent of all the e-commerce users respectively.

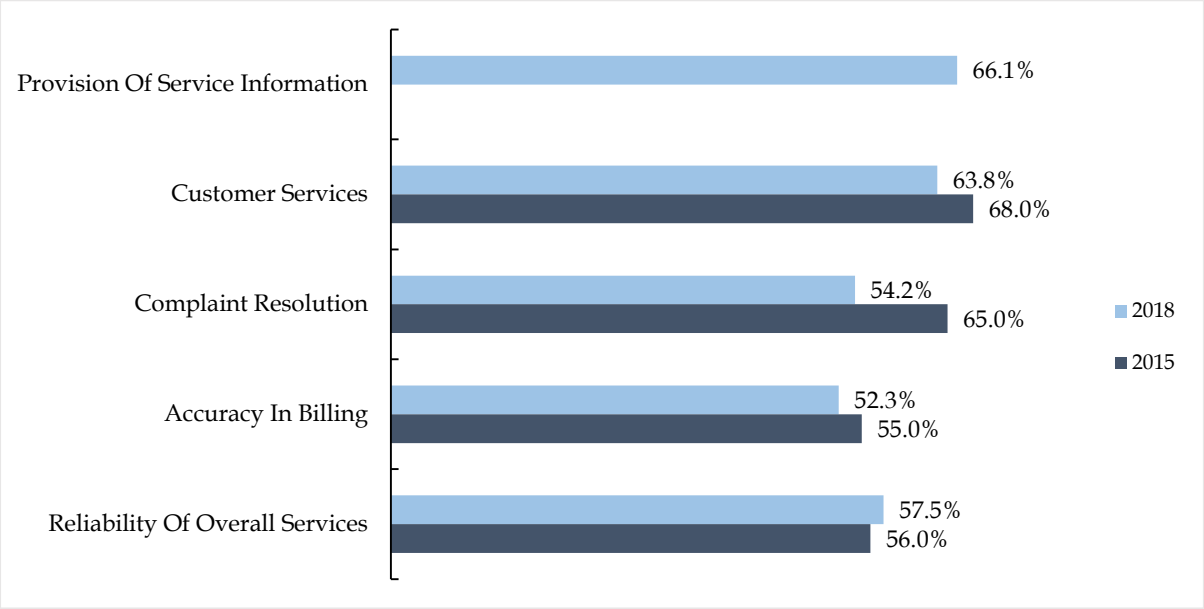
Figure 100: Delivery Methods for Goods and/or Services Purchased Online



3.3.10. Quality of Experience for Internet Services

The level of satisfaction with various attributes of service delivery for internet services deteriorated marginally between 2015 and 2018. The most significant deterioration was noted in complaint resolution as the proportion of internet users that were satisifeid with complaint resoultion by the provider reduced from 65 percent to 54.2 percent between 2015 and 2018. However, the satisfation with provison of information accounted for the largest proportion of internet users. The smallest proportion of internet users that were satisfied with the identified attributes related to accuracy in billing consisting 52.3 percent of all the users of the internet.

Figure 101: Satisfaction with attributes of service delivery for internet services; 2015- 2018

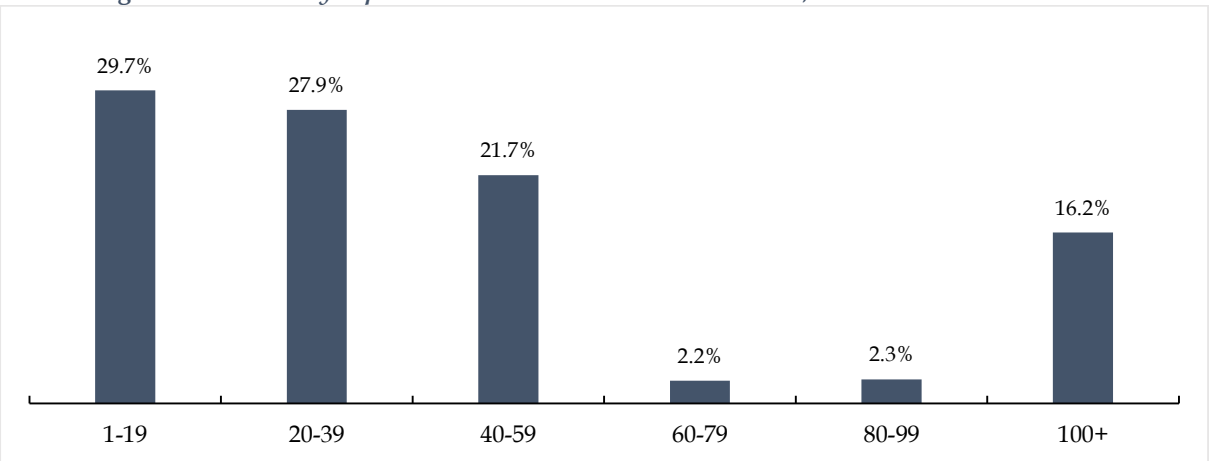


3.3.11. Affordability of Internet Services

3.3.11.1. Monthly Expenditure on Internet Services

The survey revealed that over 79 percent of the individuals aged 10 years and above that used the internet and were subscribed to a monthly package spent less than ZMW 60.00 per month on internet services. Further, only 16.2 percent of the individuals that used internet services and were subscribed to a monthly package spent more than ZMW 100.00 per month on internet services.

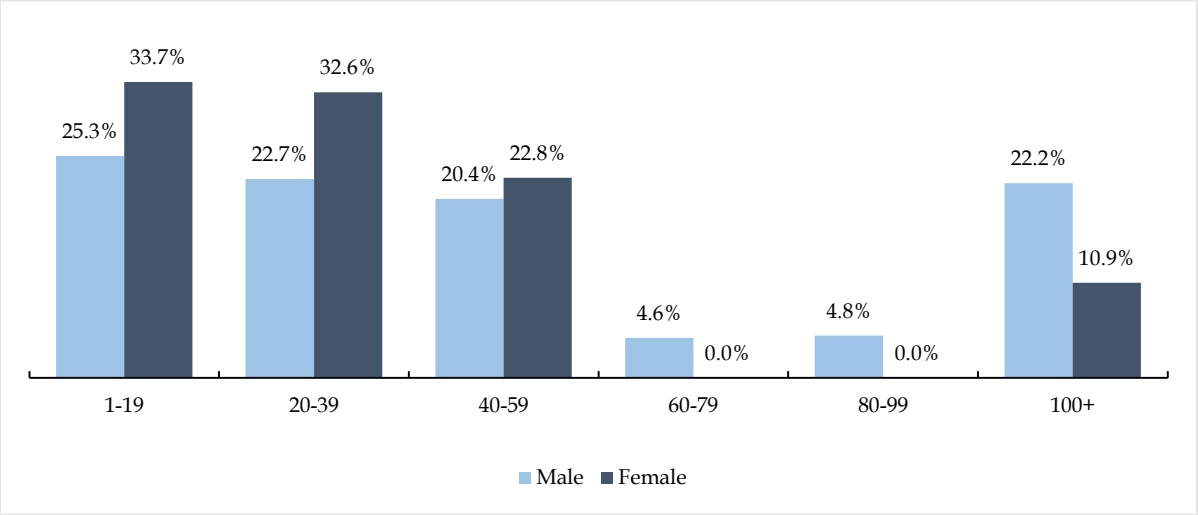
Figure 102: Monthly expenditure on internet services 'ZMW'; 2018



The survey also established that most female internet users spent relatively less on internet services with nearly 91 percent reporting monthly expenditure of less than ZMW 60.00 on internet services. On the other hand, only 68 percent of the male internet users spent less than ZMW 60.00 on internet services. Further, there were more male internet users with monthly expenditure on internet services in excess of ZMW100.00 constituting 22.2 percent of all the male internet users while only 10.9

percent of the female internet users spent more than ZMW 100.00 on the services per month.

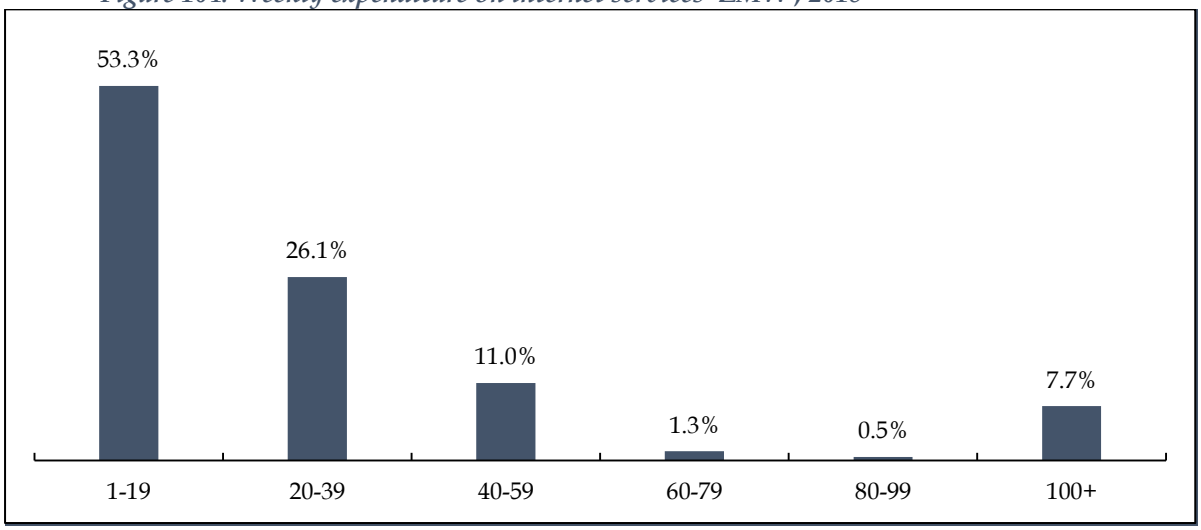
Figure 103: Monthly expenditure on internet services across sex groups; 2018



3.3.11.2. Weekly Expenditure on Internet Services

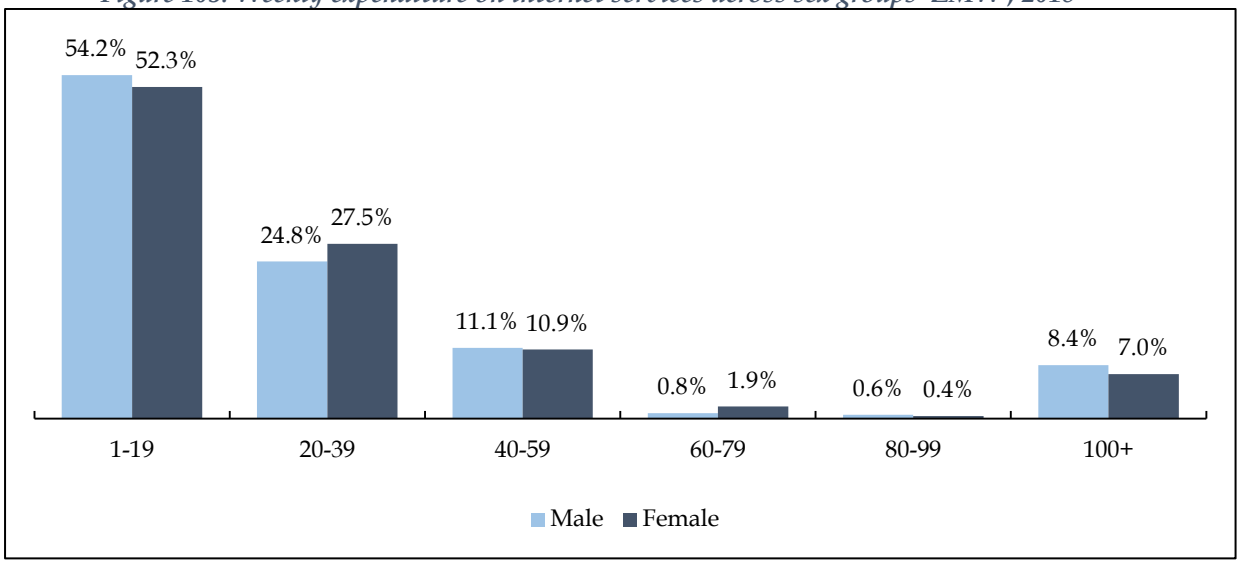
The survey also revealed that the weekly average expenditure on internet services by individuals aged 10 years and above that were subscribed to a weekly or daily package was K30.20. Further the majority of individuals that were subscribed to a weekly or daily package, constituting nearly 90.0 percent of internet users, spent less than K60.00 per week on internet services.

Figure 104: Weekly expenditure on internet services 'ZMW'; 2018



There were more male internet users with weekly expenditure on internet services in excess of ZMW100.00 constituting 8.4 percent relative to females accounting for 7.0 percent. Further, the average weekly expenditure on internet services among males was ZMW30.90 while the average weekly expenditure on internet services among female internet users was ZMW29.43.

Figure 105: Weekly expenditure on internet services across sex groups 'ZMW'; 2018



4.0. Online Risks, Incidents and Mitigation

This chapter presents an overview of the risks exposed to households and individuals aged above the age of 10 years in Zambia when they are online. An assessment of the incidents associated with the identified risks that households and individuals aged above the age of 10 years may have been exposed to is also provided. The chapter further discusses the levels of awareness as well as some of the strategies adopted by households to mitigate the risks associated with being online. Ultimately, the chapter aims to highlight key risks associated with individuals accessing online services in the country and provides an assessment of the capability of individuals and heads of households to mitigate any of the identified risks or incidents.

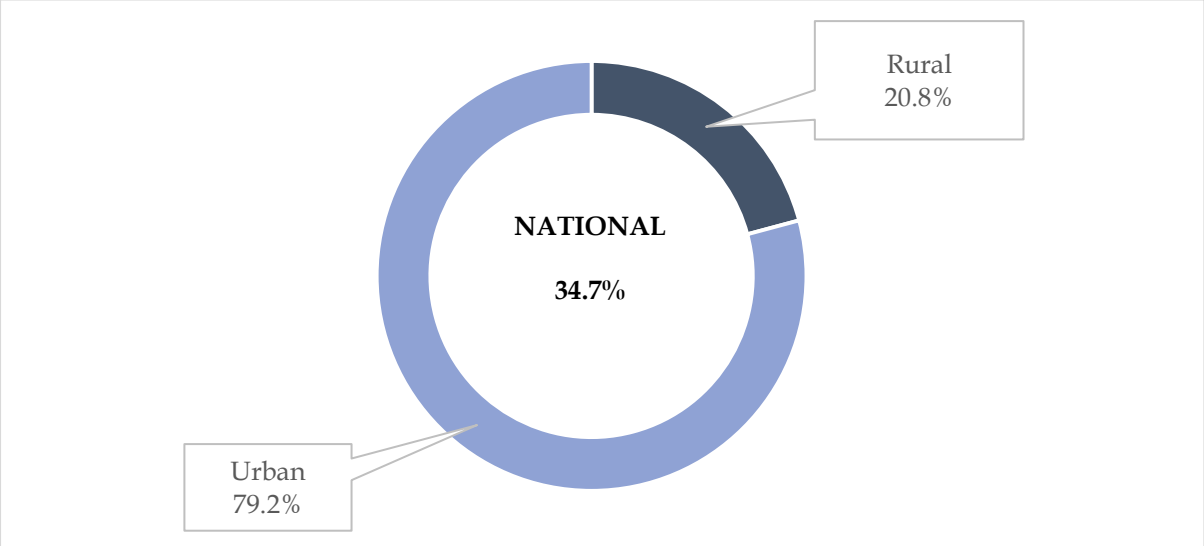
The discussion in the chapter considers various demographic and socio-economic characteristics of the households and population aged above the age of 10 years to identify any salient patterns within the strata. Particularly, differences in the risks and incidents associated with being online across sex groups are presented. An evaluation of the incidence, levels of awareness as well as practices for mitigating risks associated with being online within different demographic groups is also provided.

4.1. Online Risks, Incidents and Mitigation by Households

4.1.1. Monitoring of Online activities by Households

The survey revealed that 34.7 percent of the households that indicated that they had access to internet services at home, had a member of the household who was responsible for monitoring the content accessed online by other members of the household. The majority of the households that had a member responsible for monitoring the content accessed by members of the household were based in urban areas accounting for 79.2 percent of the total number of households with access to the internet.

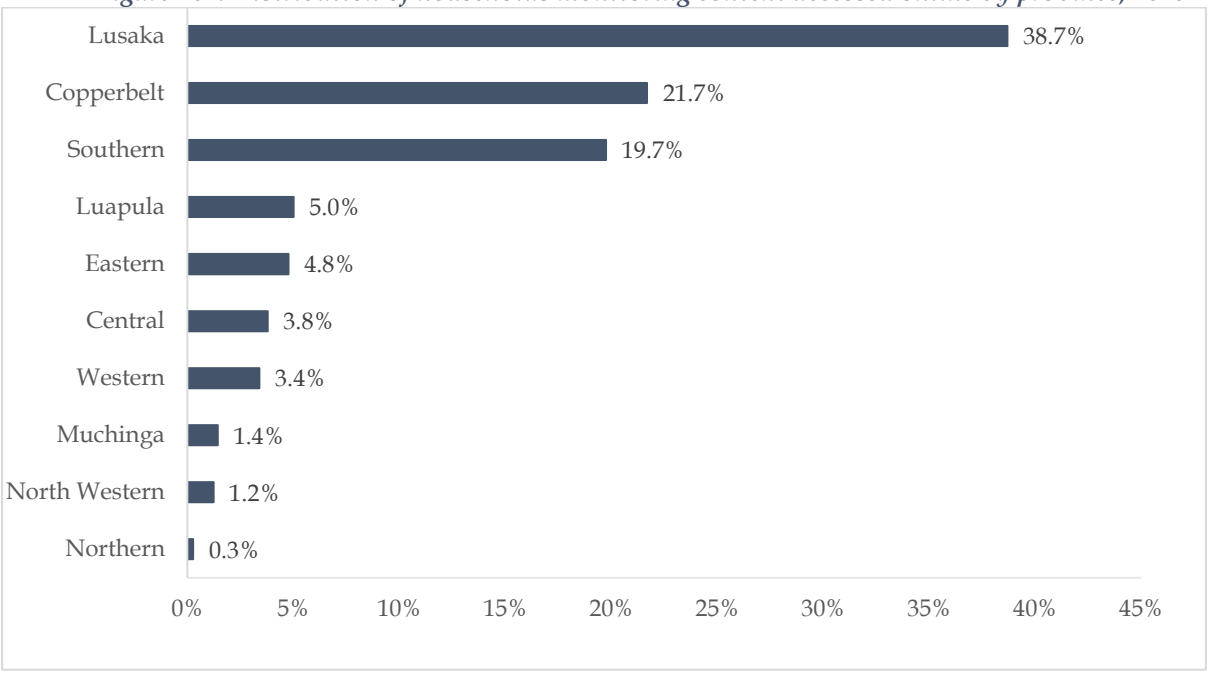
Figure 106: Households that monitor activities of household members online by region; 2018



The majority of the households that had access to internet services and had a member of the households responsible for monitoring the content accessed by other members of the household were based in Lusaka and Copperbelt Provinces accounting for 38.1 percent

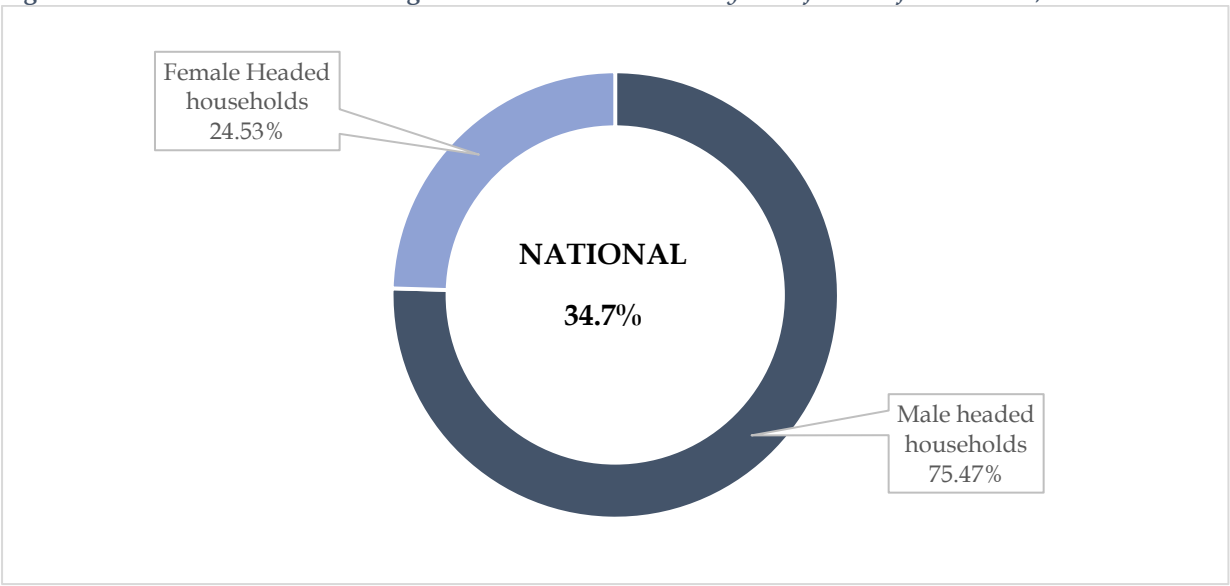
and 21.7 percent respectively. Northern and North Western Provinces had the smallest proportion of the total number of households in the province with access to the internet that had a member responsible for monitoring the content accessed by members of the household accounting for 0.3 percent and 1.2 percent respectively.

Figure 107: Distribution of households monitoring content accessed online by province; 2018



Of the total number households that had access to the internet and had a member responsible for monitoring content accessed online by other members, 75.5% were headed by males.

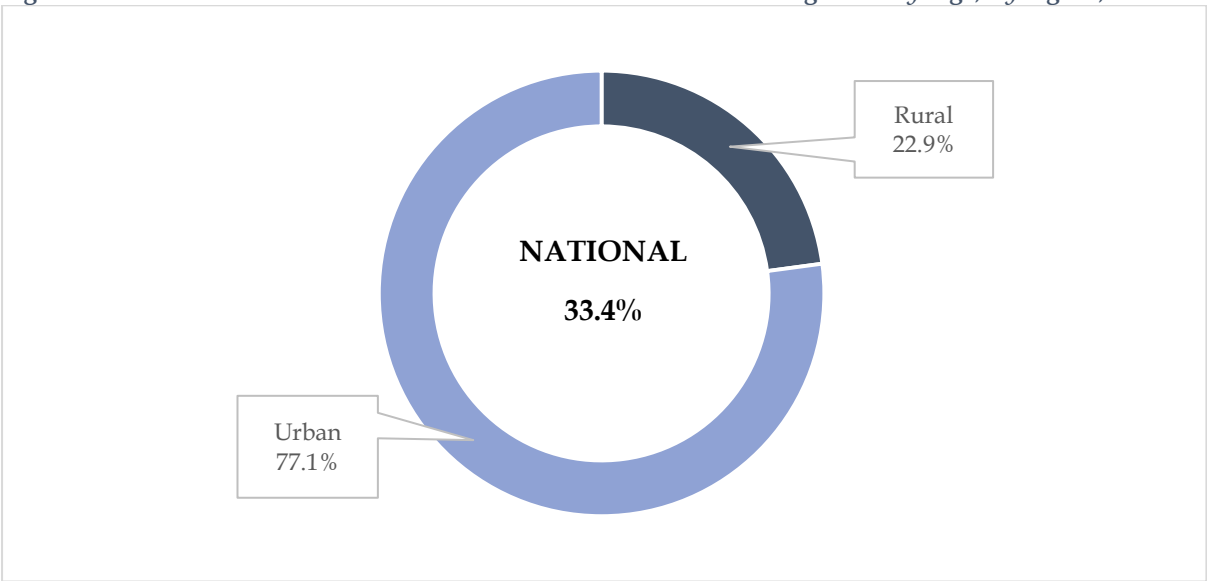
Figure 108: Households monitoring content accessed online by sex of head of household; 2018



4.1.2. Monitoring of Activity Logs and History Pages Online

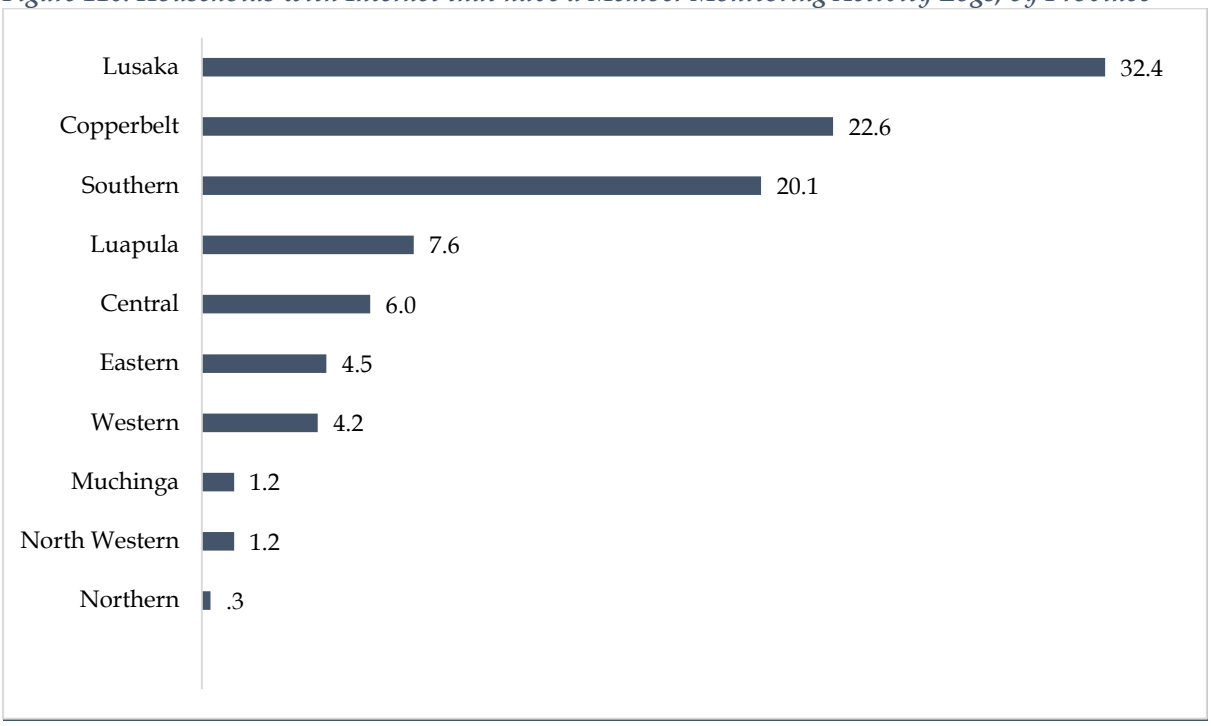
The survey established that 33.4 percent of the total number of households that had access to the internet had at least one member of the household responsible for visiting activity logs of the sites visited by other household members.

Figure 109: Households with internet that have a member monitoring activity logs; by region, 2018



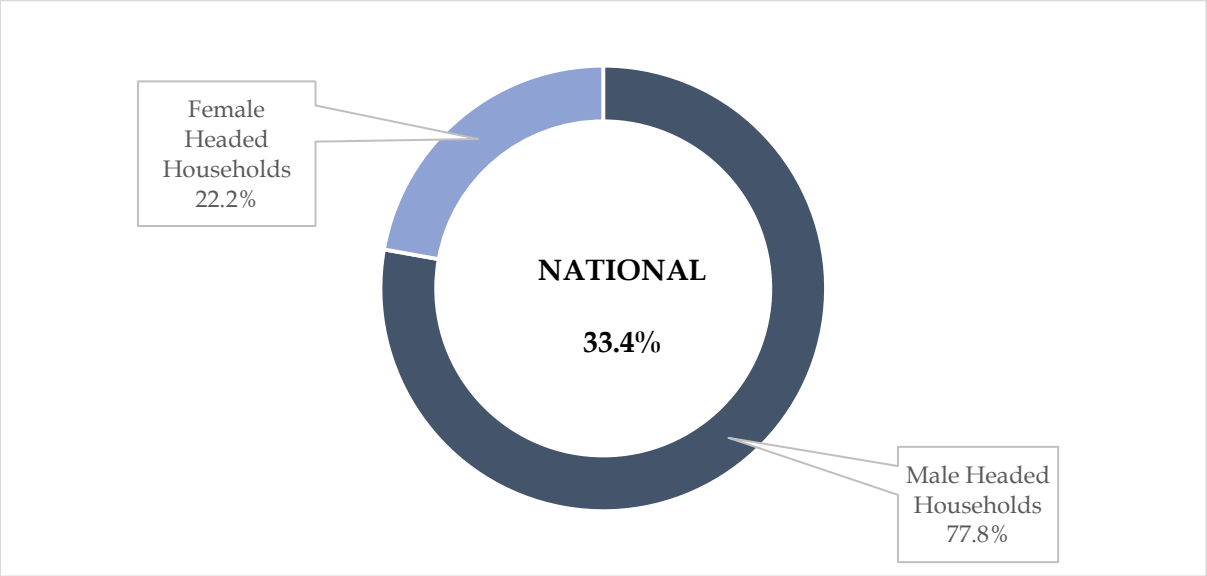
Lusaka Province recorded the highest proportion of the households with access to the internet that indicated that they monitor the activity logs at 32.4% while the lowest proportion of households was observed from Northern, Muchinga and North Western Provinces at 0.3 percent, 1.2 percent and 1.25 percent respectively.

Figure 110: Households with Internet that have a Member Monitoring Activity Logs; by Province



77.8% of the total number of households that had access to the internet and indicated that they had a member responsible for monitoring activity logs for all household members were headed by males.

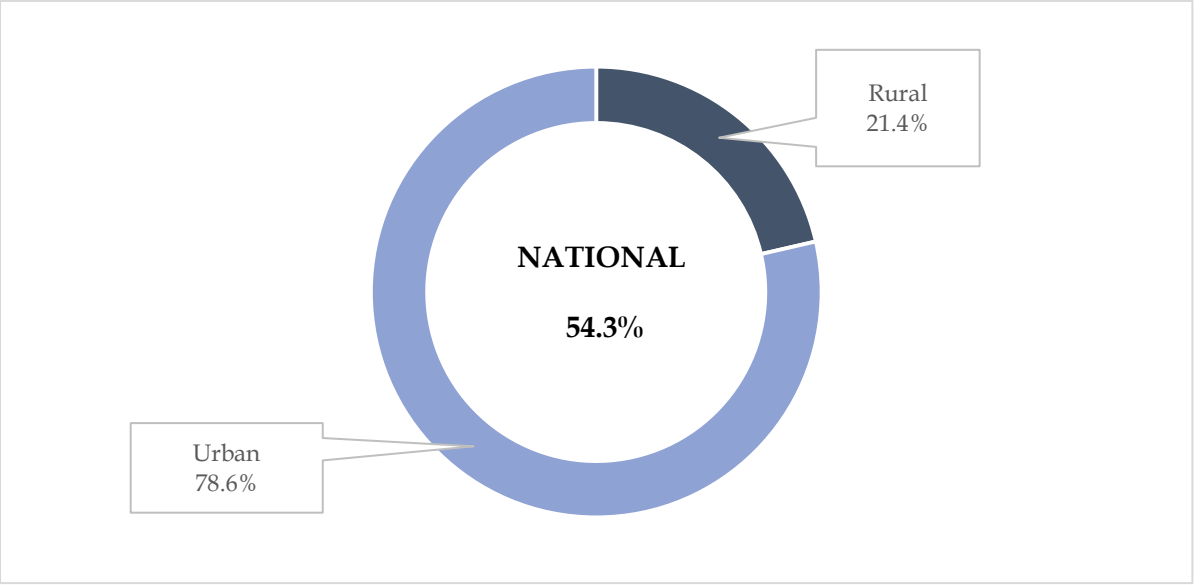
Figure 111: Monitoring of activity logs by sex of head of household; 2018



4.1.3. Awareness of Activities Household Members do while Online

The survey revealed that 54.3 percent of the households that indicated that they had access to the internet had some understanding of the activities that their household members do when they are online.

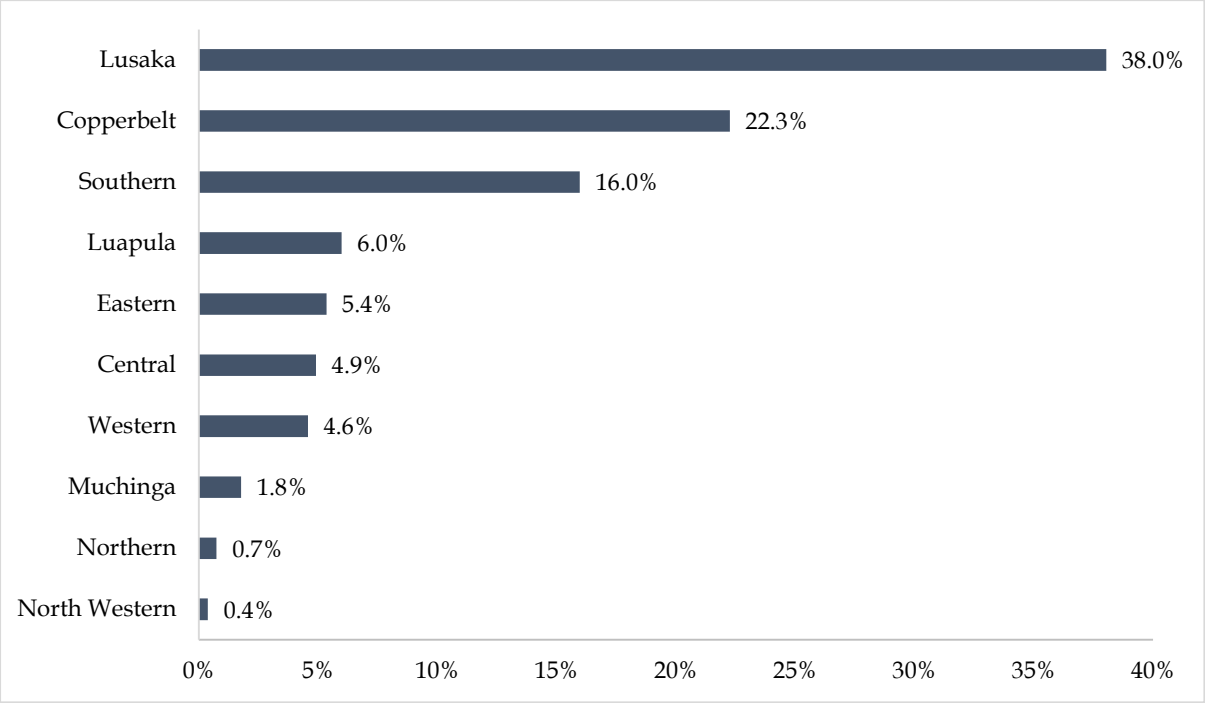
Figure 112: Understanding the Household members' activities online by Region; 2018



The highest prevalence of households who had access to the internet and indicated that they had an understanding of the activities that household members undertake when they are online were in Lusaka, Copperbelt and Southern Provinces accounting for 38 percent,

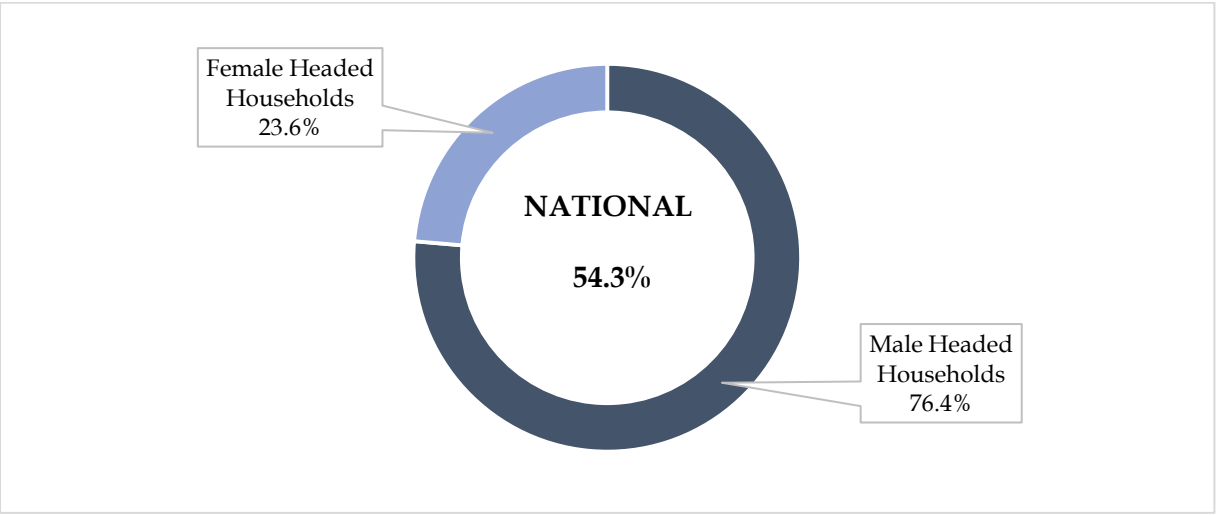
22.3 percent and 16 percent respectively. The least proportions were observed in North-Western, Northern and Muchinga Provinces accounting for 0.4 percent, 0.7 percent and 1.8 percent respectively.

Figure 113: Understanding the household members' activities online across provinces; 2018



The majority of households that indicated that they had access to the internet and had an understanding of the activities that household members undertake when they are online were headed by males constituting 76.4 percent of the total.

Figure 114: Understanding of the household members' activities online across sex of head of household; 2018

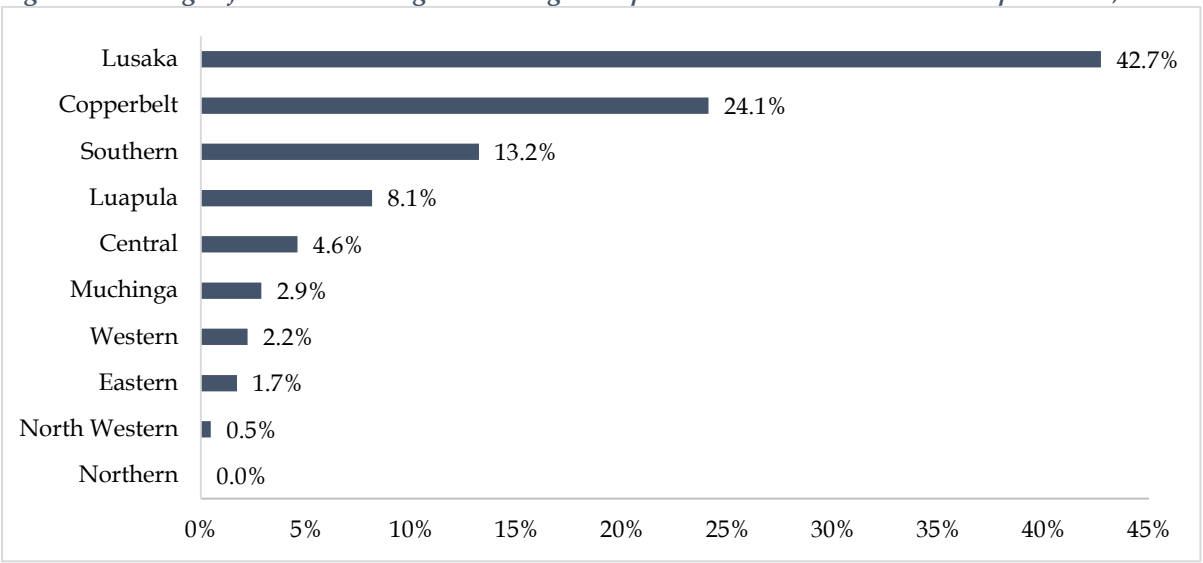


4.1.4. Usage of Tools or Strategies to Mitigate Exposure to illicit Content

The survey established that the proportion of households that indicated that they used tools or strategies to mitigate exposure to illicit content was very low accounting for 14.5

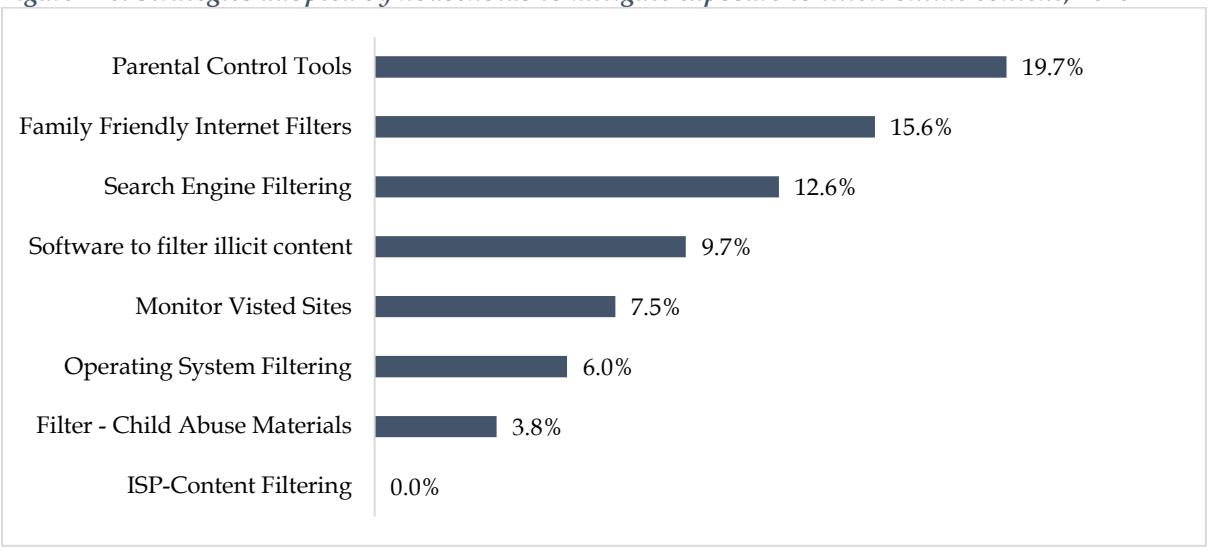
percent of the total number of households that reported that they have access to the internet at home. Lusaka, Copperbelt and Southern Provinces accounted for the largest proportion of households within the province that indicated that they used tools or strategies to mitigate exposure to illicit content accounting for 42.7 percent, 24.1 percent and 13.2 percent respectively. The lowest proportion of the households that have used any tools/strategies to mitigate exposure to illicit content were based in Northern, North Western and Eastern Provinces accounting for less than 0.1 percent, 0.5 percent and 1.7 percent respectively.

Figure 115: Usage of tools or strategies to mitigate exposure to illicit content across provinces; 2018



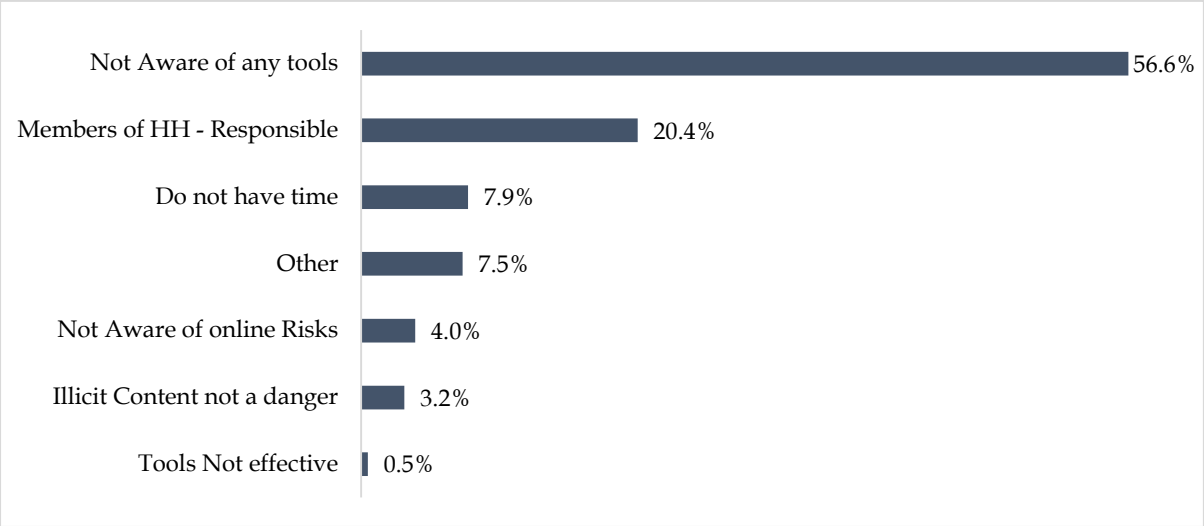
The most widely adopted tools or strategies by households to mitigate against risks associated with exposure to illicit content included web browser filtering parental control tools, family friendly internet filters and Search engine filtering accounting for 19.7 percent, 15.6 percent, and 12.6 percent respectively. Content filtering by internet service providers as well as filtering child abuse materials accounted for the least adopted strategies by households that had adopted some strategies to mitigate against risks.

Figure 116: Strategies adopted by households to mitigate exposure to illicit online content; 2018



The survey established that the main reason cited for not using any tools or strategies by 56.6 percent of the households that reported that they did not employ any tools or strategies to mitigate exposure of the households to illicit content, was that these households did not know of the existence of any such tools. The effectiveness of tools or strategies was not a significant barrier to the adoption of tools or strategies for mitigating the risk as less than 1 percent of the households that indicated that they had not adopted any tools or strategies cited this as a problem.

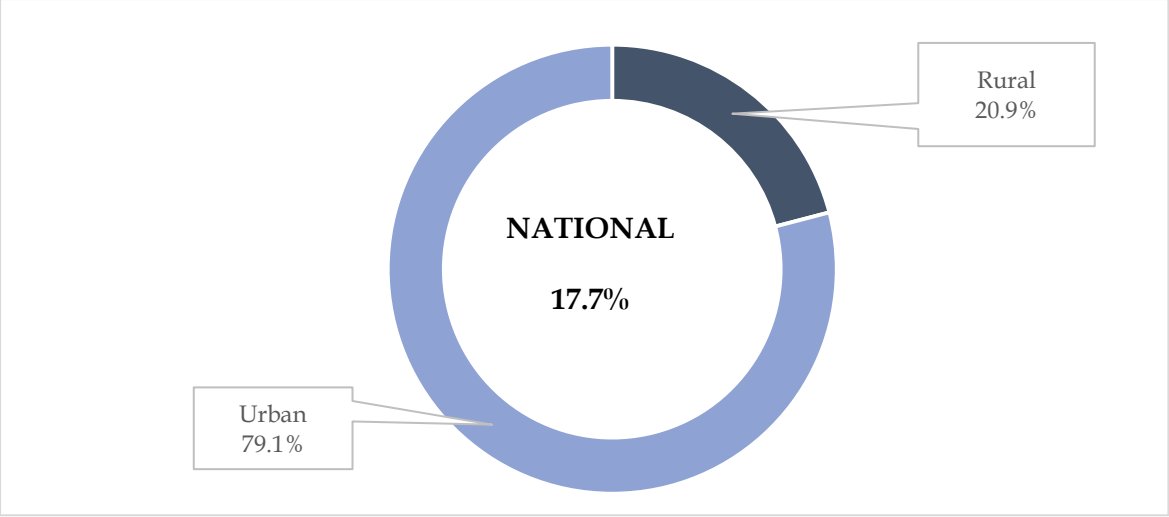
Figure 117: Main reasons for not using any tools/ strategies to mitigate exposure to illicit content; 2018



4.1.5. Established Rules about using the Internet by Households

The survey estimates revealed that only 17.7 percent of the households with access to the internet had established rules among household members on how to use the internet. The majority of these households constituting 79.1 percent, were based in urban areas.

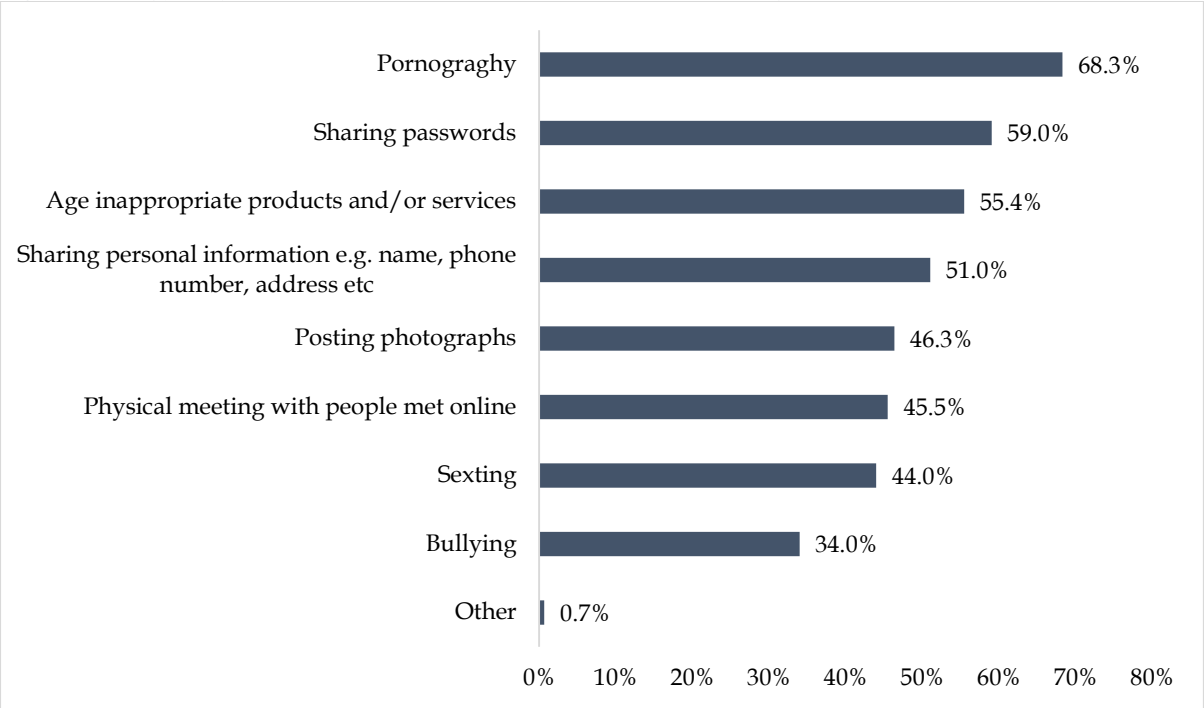
Figure 118: Households that have established rules on how to use the internet; 2018



The majority of households that have established rules regarding online activities, have rules relating to pornography, sharing of passwords as well as accessing age-

inappropriate sites, accounting for 68.3 percent, 59.0 percent and 55.4 percent respectively. Fewer households that had established rules on online activities, had established rules about sexting and cyber bullying, accounting for 44 percent and 34 percent respectively.

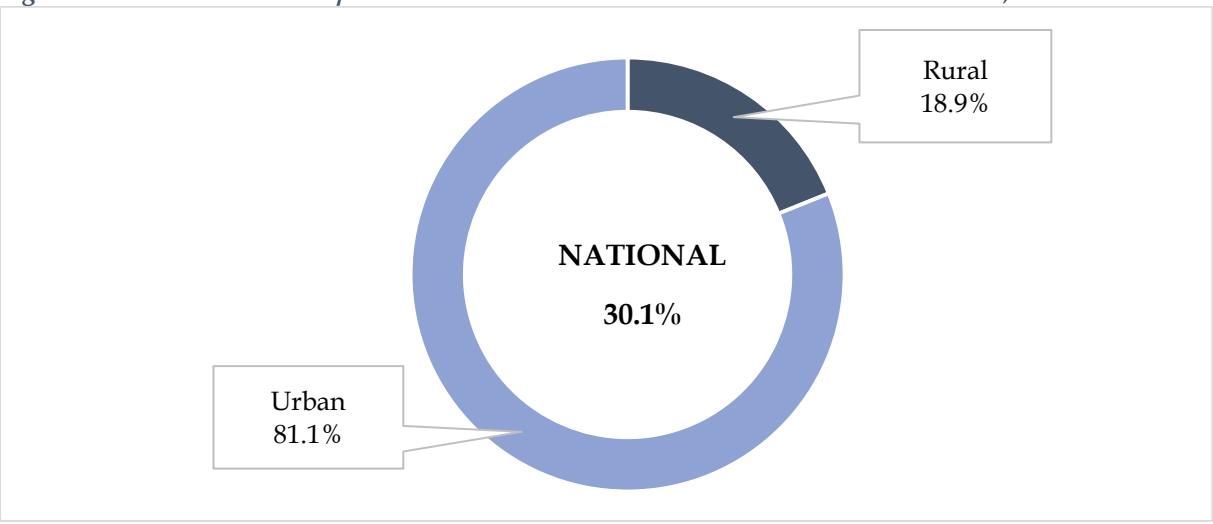
Figure 119: Types of established rules on how to use the internet by households; 2018



4.1.6. Education on the Risks Associated with Internet

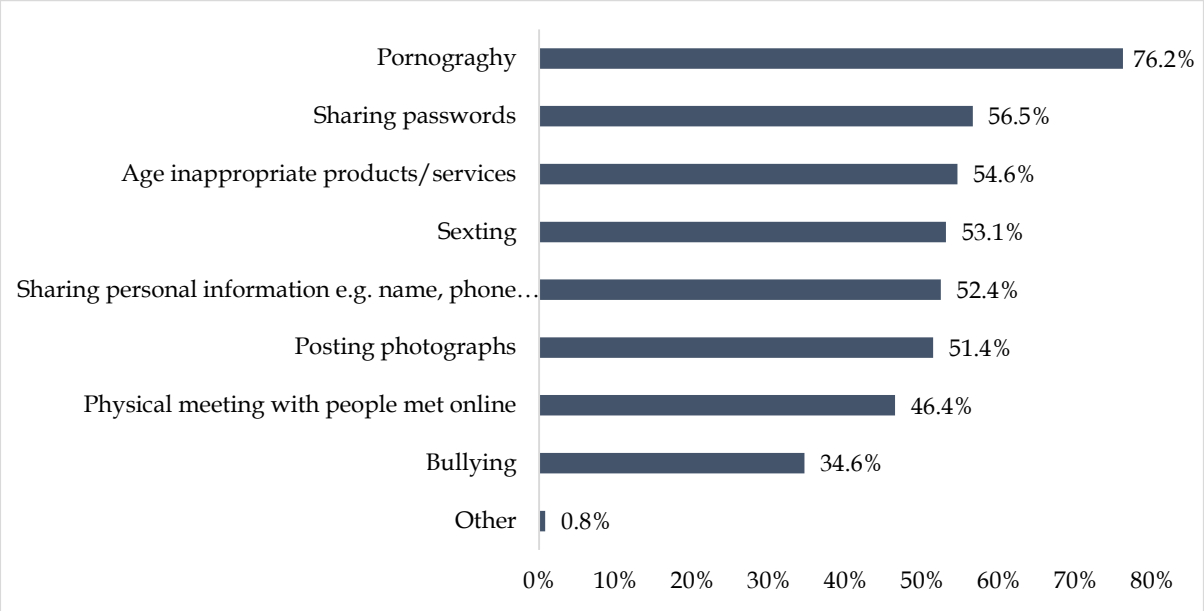
It was established that 30.1 percent of the households that had access to the internet have some form of education provided by some member of the household to other members on the risks associated with the online environment. The majority of these households were based in urban areas accounting for 81.1 percent of the total number of households that had access to the internet have some form of education provided by some member of the household to other members on the risks associated with the online environment.

Figure 120: Households that provide education on online risks to household members; 2018



Most of the households that had access to the internet and have some form of education provided by some member of the household on the risks associated with the online environment, discuss topics relating to pornography and sharing of passwords accounting for 76.2 percent of the total and 56.5 percent of the total respectively. There were fewer households that discussed bullying as a risk associated with being online accounting for 34.6 percent of the total.

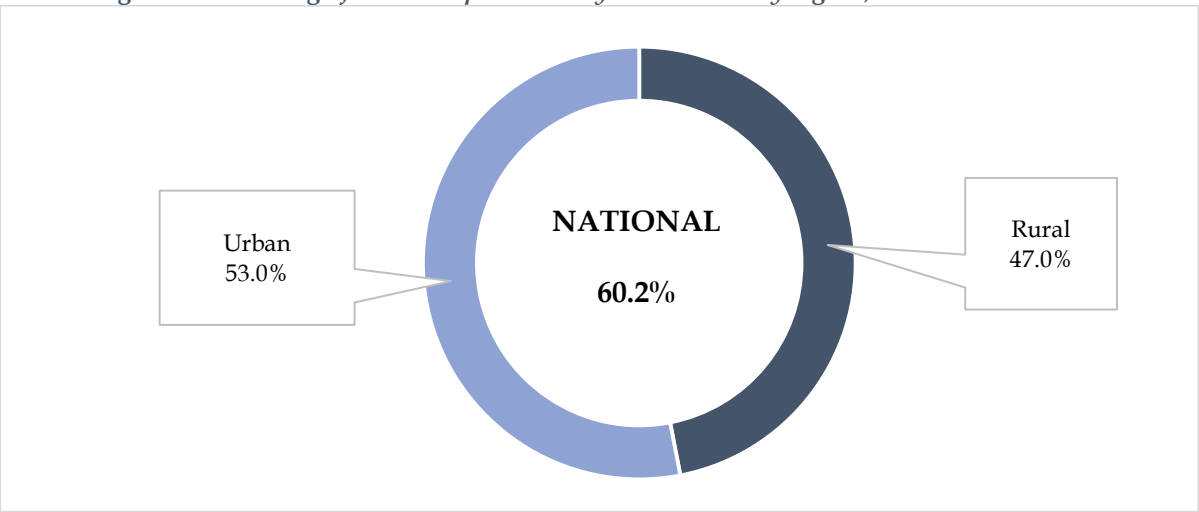
Figure 121: Topics covered by households on the risks of the online environment; 2018



4.1.7. Sharing of Online Experiences by Households

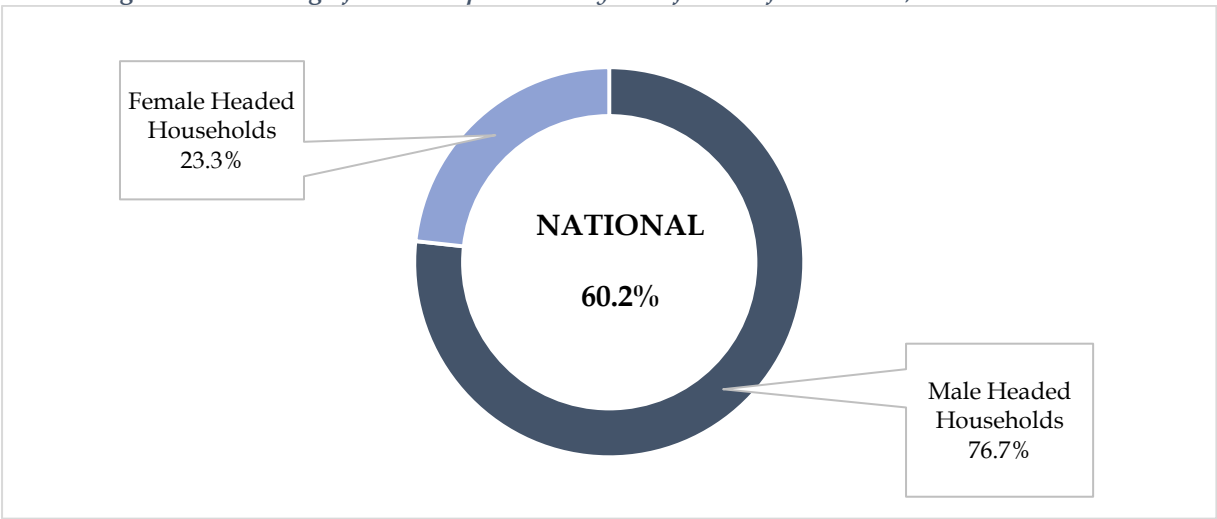
The survey revealed that a sizeable proportion of households with access to the internet shared their experiences online with other members of their household. Specifically, 60.2 percent of the households across the country were estimated to share experiences about their online experiences within the households. This proportion constituted 53 percent of households based in urban areas and 47 percent of households based in rural areas.

Figure 122: Sharing of online experiences by households by region; 2018



The households headed by males accounted for the largest proportion of the households with access to the internet and whose members share their experiences online within the household. Specifically, 76.7 percent of the households with access to the internet and whose members share their experiences online within the household were headed by males.

Figure 123: Sharing of online experiences by sex of head of household; 2018

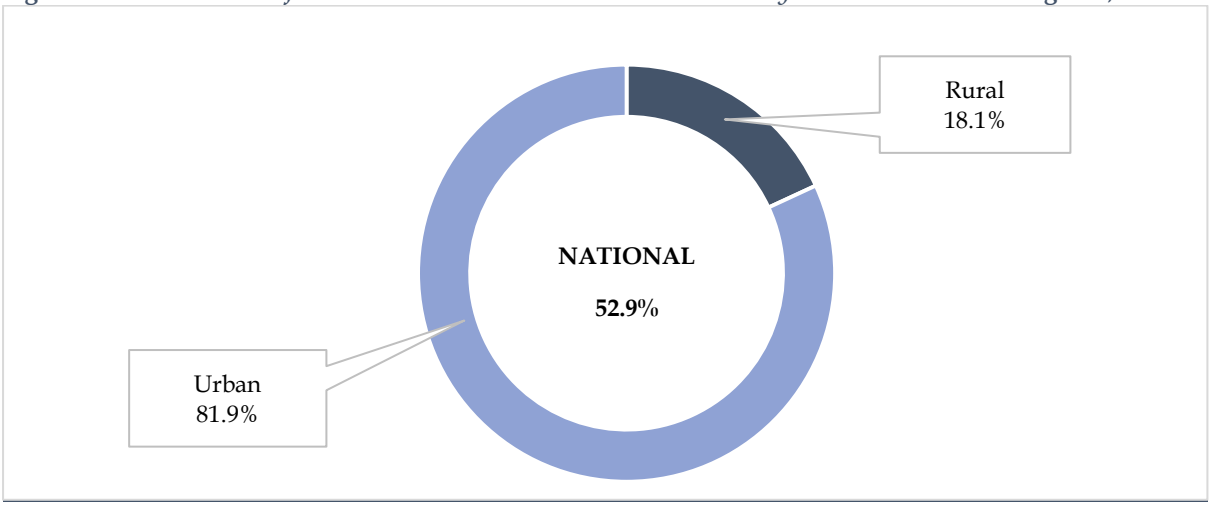


4.2. Online Risks, Incidents and Mitigation by Individuals

4.2.1. Awareness of Risks Associated with Online Activities

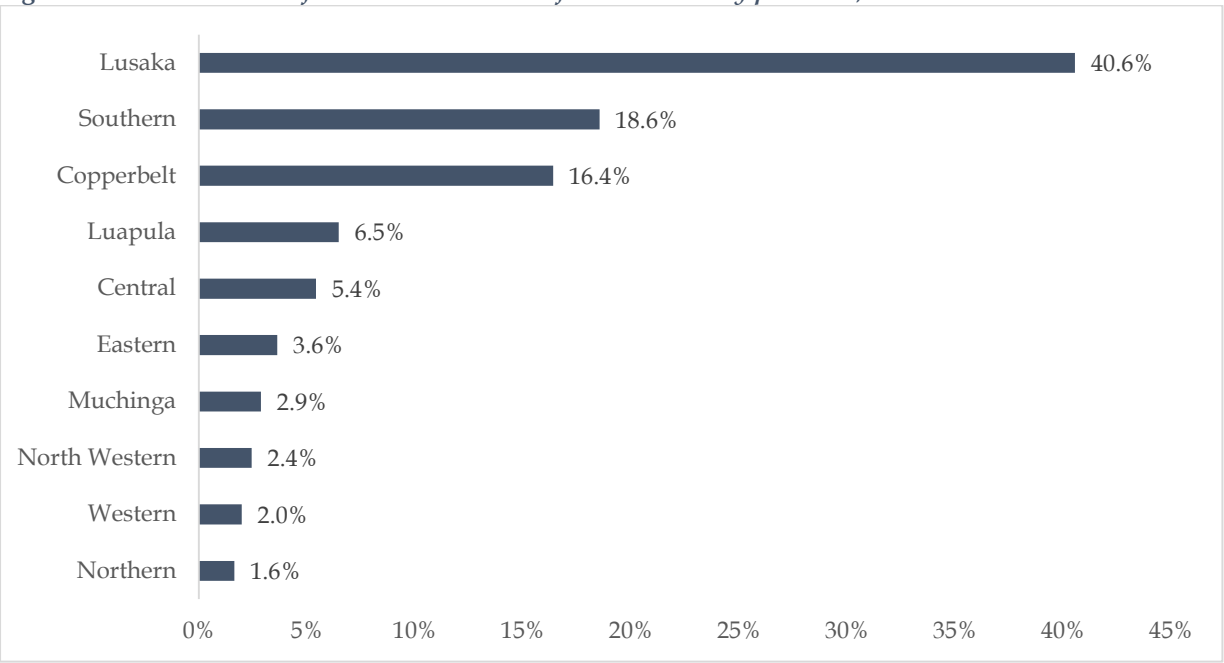
The survey estimated the proportion of individuals aged 10 years and older across the country with access to the internet that were aware of the risks associated with online activities at 52.9 percent. The majority of the individuals aged 10 years and older that were aware of the risks associated with being online were based in urban areas accounting for 81.9 percent of the total number of individuals aged 10 years and older across the country with access to the internet that were aware of the risks associated with online activities.

Figure 124: Awareness of risks associated with online activities by individuals across regions; 2018



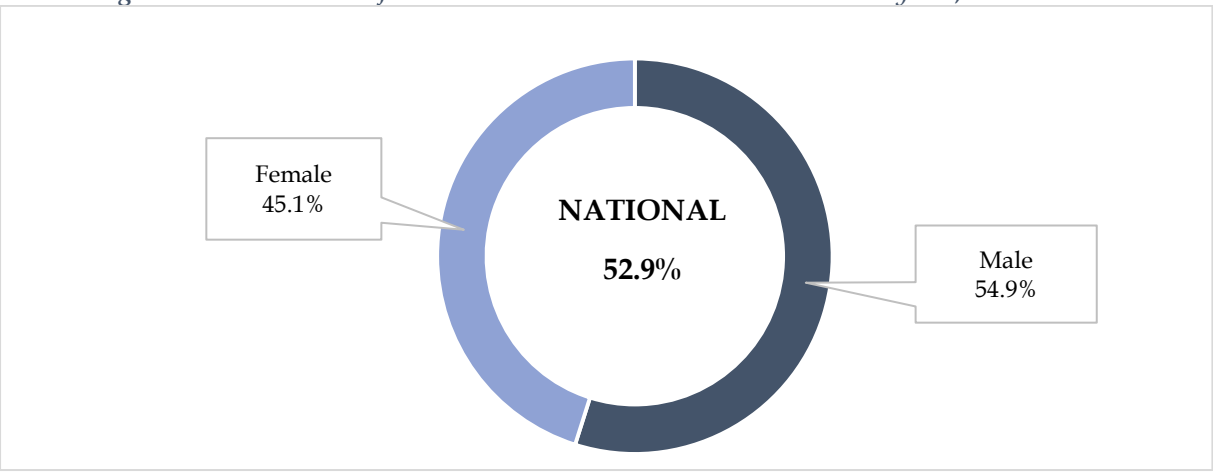
The highest proportion of individuals aged 10 years and older across the country that were aware of the risks associated with online activities were based in Lusaka, Copperbelt and Southern Provinces accounting for 40.6 percent, 18.6 percent and 16.4 percent respectively. Northern Province accounted for the lowest proportion of individuals aged 10 years and older that were aware about the risks associated with online activities constituting 1.6 percent.

Figure 125: Distribution of individuals aware of online risks by province; 2018



The majority of individuals aged 10 years and older that had access to internet services and were aware of the risks associated with online activities were male. These accounted for 54.9 percent of the individuals that had access to internet services and were aware of risks associated with online activities while the females accounted for 45.1 per cent.

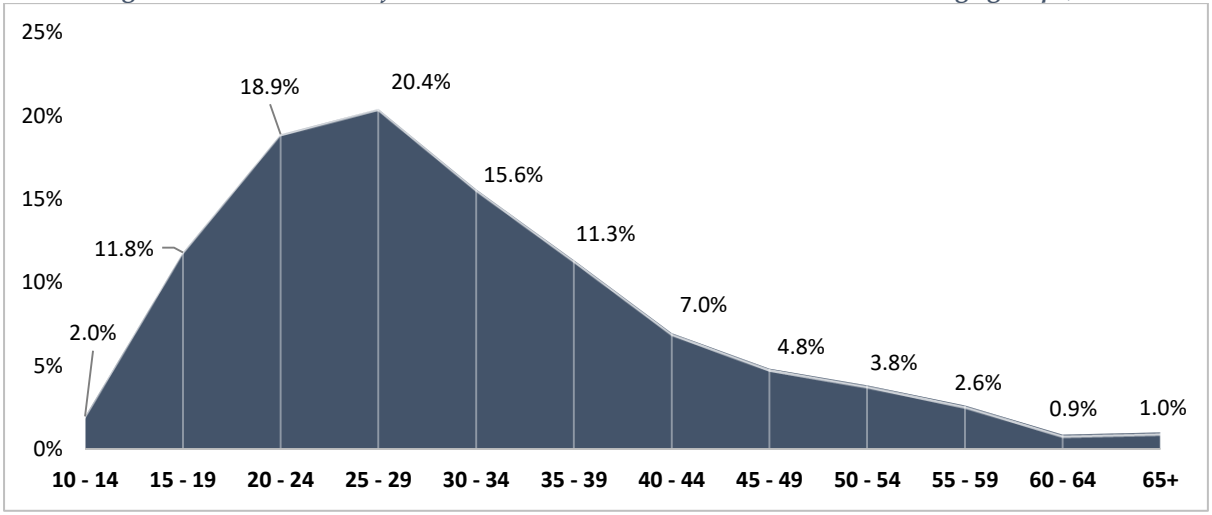
Figure 126: Awareness of Risks Associated with Online Activities by Sex; 2018



The survey established that the majority of individuals aged 10 years and older that had access to internet services and were aware about risks associated with online activities

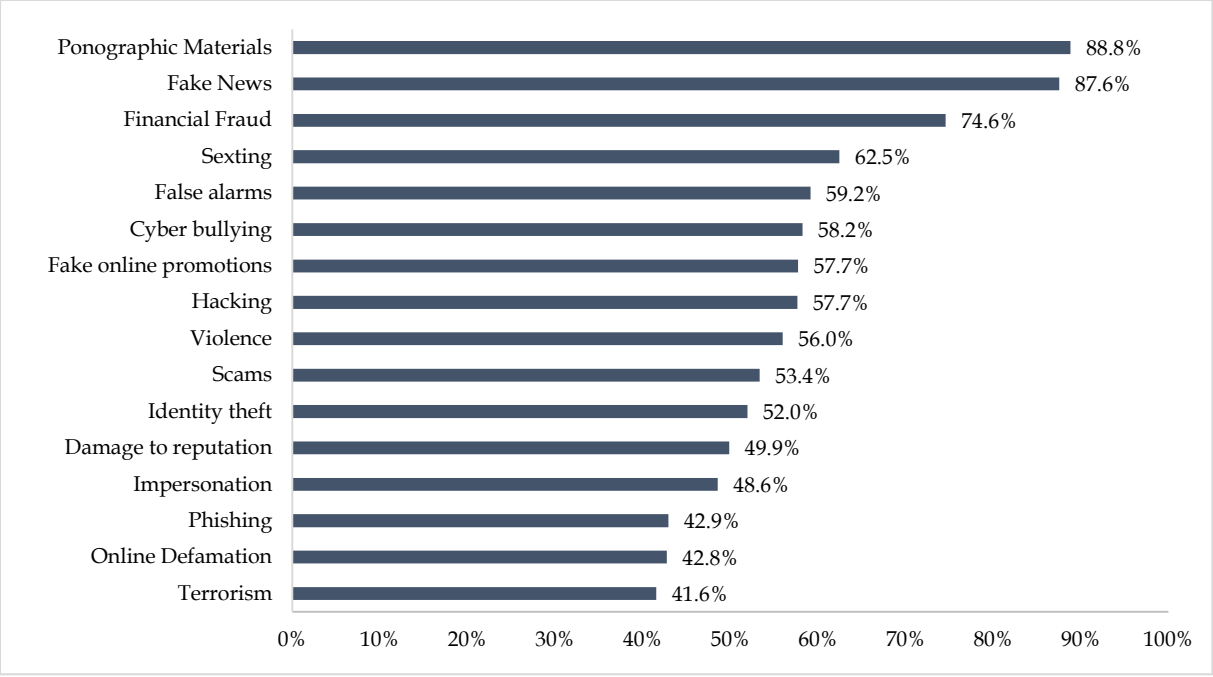
were young. Specifically 68.7 percent of the internet users that indicated that they were aware of risks associated with online activities were below the age of 35 years. Less than 10 percent of the internet users that had access to internet services and were aware about risks associated with online activities were above the age of 50 years.

Figure 127: Awareness of risks associated with online activities across age groups; 2018



The most prevalent known risks among the individuals aged 10 years and older that reported awareness about the risks associated with online activities were pornographic material, fake news and financial fraud accounting for 88.8 percent, 87.6 percent and 74.6 percent of the total number of internet users that indicated that they were aware of the risks associated with online activities respectively. Risks associated with terrorism, online defamation and phishing were relatively less prevalently known among individuals aged 10 years and older that reported to be aware of risks associated with online activities.

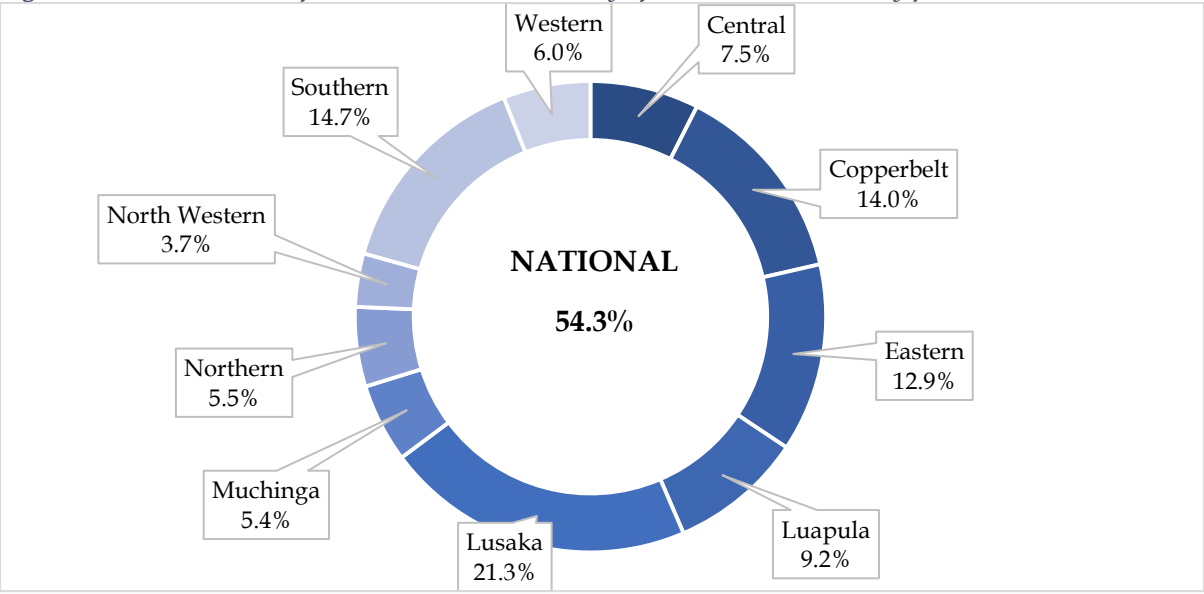
Figure 128: Levels of awareness of different types of dangers of the internet risks; 2018



4.2.2. Production, Possession or Circulation of Obscene Materials

The levels of awareness among individuals aged 10 years and older on the criminality of production, possession or circulation of obscene materials in Zambia was relatively low. Only 54.3 percent of the people aged 10 years and older were aware that it was a crime to produce, poses or circulate obscene material in Zambia. The majority of individuals aged 10 years and older aware of the criminality were based in Lusaka, Southern and Copperbelt Provinces accounting for 21.3 percent, 14.7 percent and 14 percent respectively.

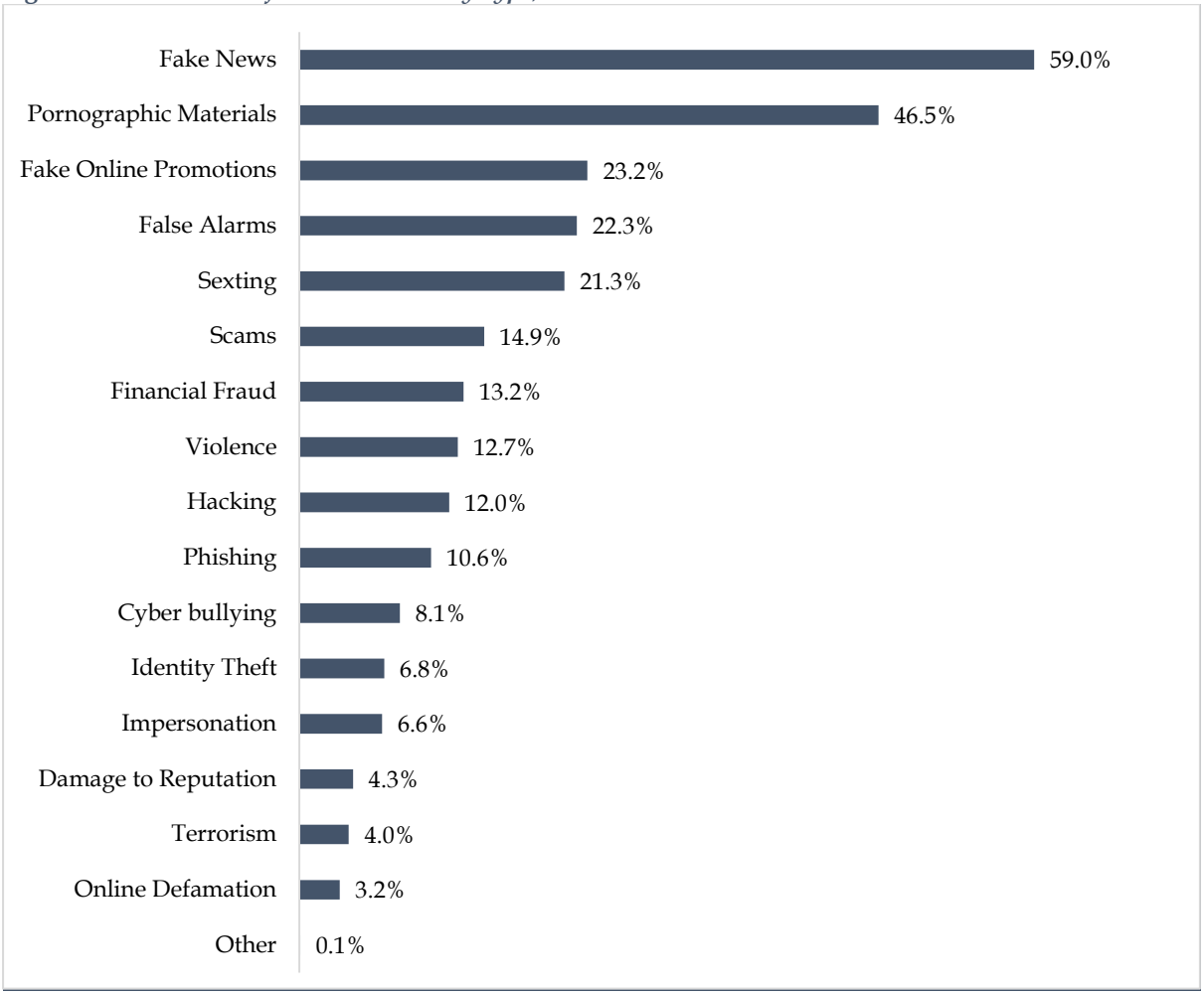
Figure 129: Distribution of awareness on criminality of obscene materials by province; 2018



4.2.3. Incidence of Risks Associated with Online Activities

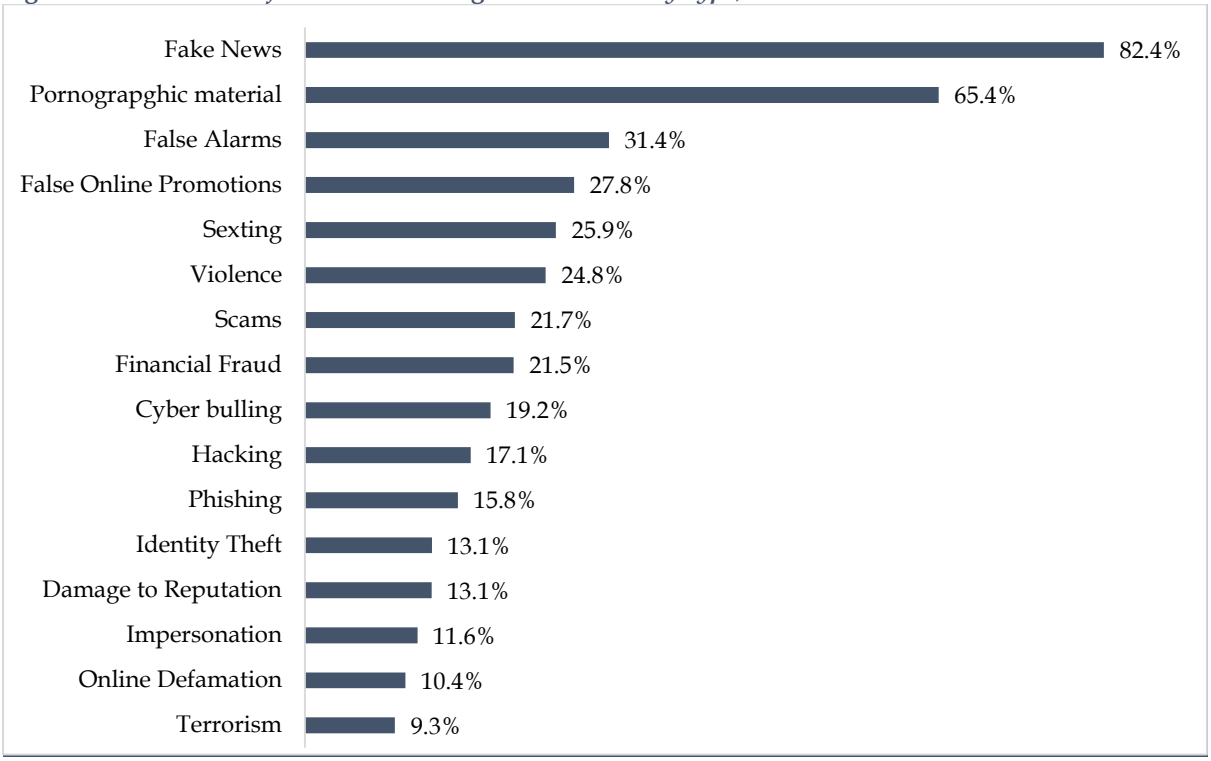
The incidence of fake news and pornographic material were reported to be the most prevalent risks that users of internet services encountered while online, accounting for 59.0 percent and 46.5 percent respectively, of the total number of users of internet services that reported that they encountered identified risks while online. Online defamation and terrorism were reportedly, relatively less prevalent incidents among users of internet services in Zambia.

Figure 130: Incidence of internet risks by type; 2018



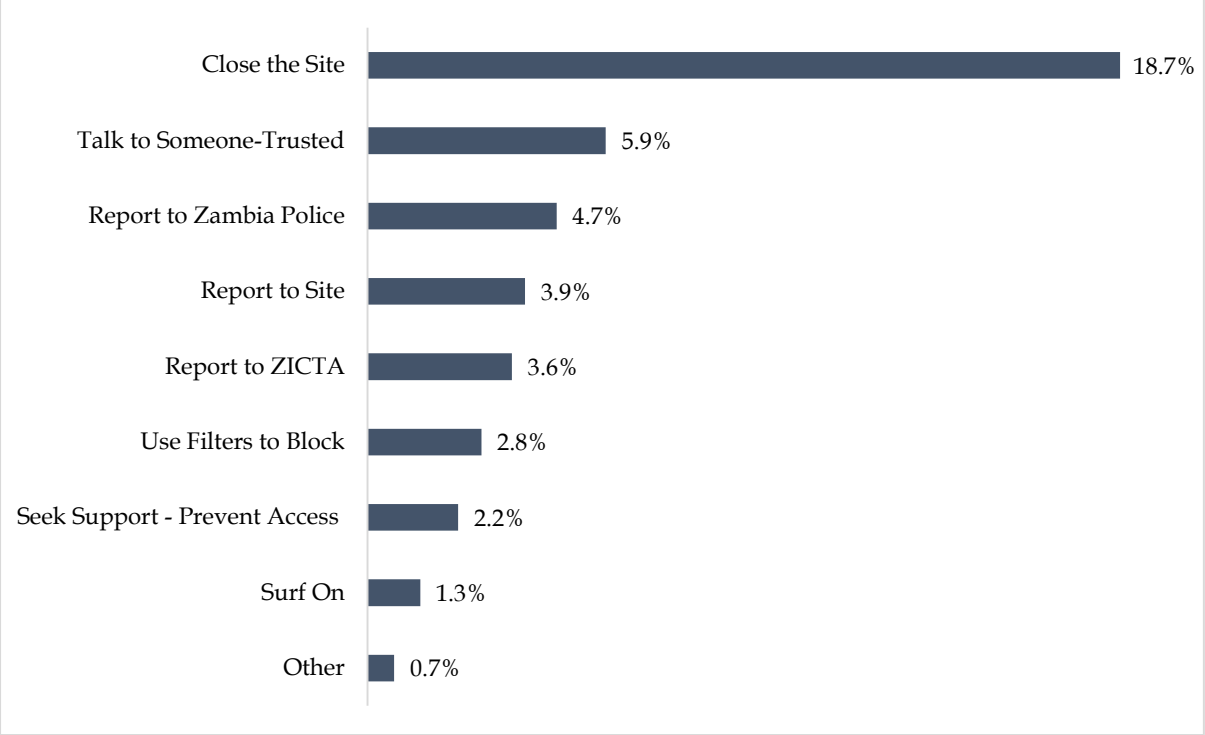
Exposure to fake news and pornography were the most prevalent incidents that individuals aged 10 years and older reported to encounter while using social media. Specifically, 82.2 percent of the individuals aged 10 years and older that indicated that they were aware of the risks associated with using the internet and had encountered incidents while using social media had experiences related to exposure to fake news, while 65.4 percent had incidents related to pornography. On the other hand, terrorism and online defamation were relatively less extensively experienced by individuals aged 10 years and older who were exposed to risks associated with online activities while using their social media account constituting 9.3 percent and 10.4 percent respectively.

Figure 131: Incidence of risks while using social media by type; 2018



The escalation of cases through channels of reporting by users of the internet that were exposed to obscene materials on the internet was relatively low. The majority of people that were exposed to obscene material such as pornography closed the site. On the other hand, only 3.9 percent of the people aged 10 years and older that were exposed to obscene materials reported to the site while only 2.8 percent applied filters to block the sites.

Figure 132: Action taken after exposure to obscene materials online; 2018

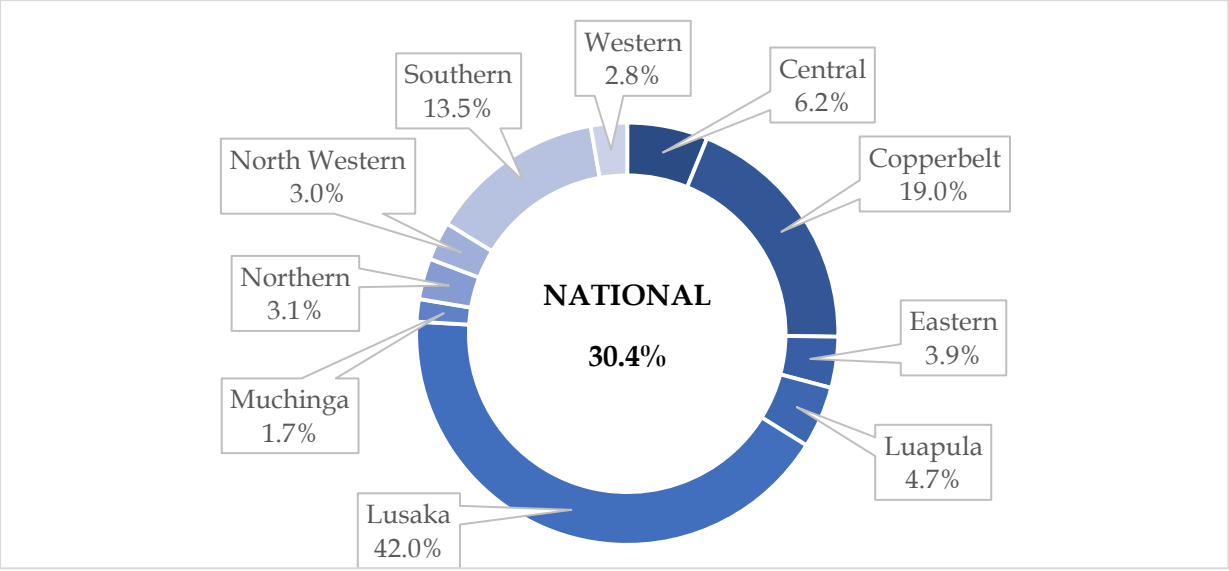


4.3. Mitigation Strategies against Online Risks

4.3.1. Activation of Security and Privacy Settings

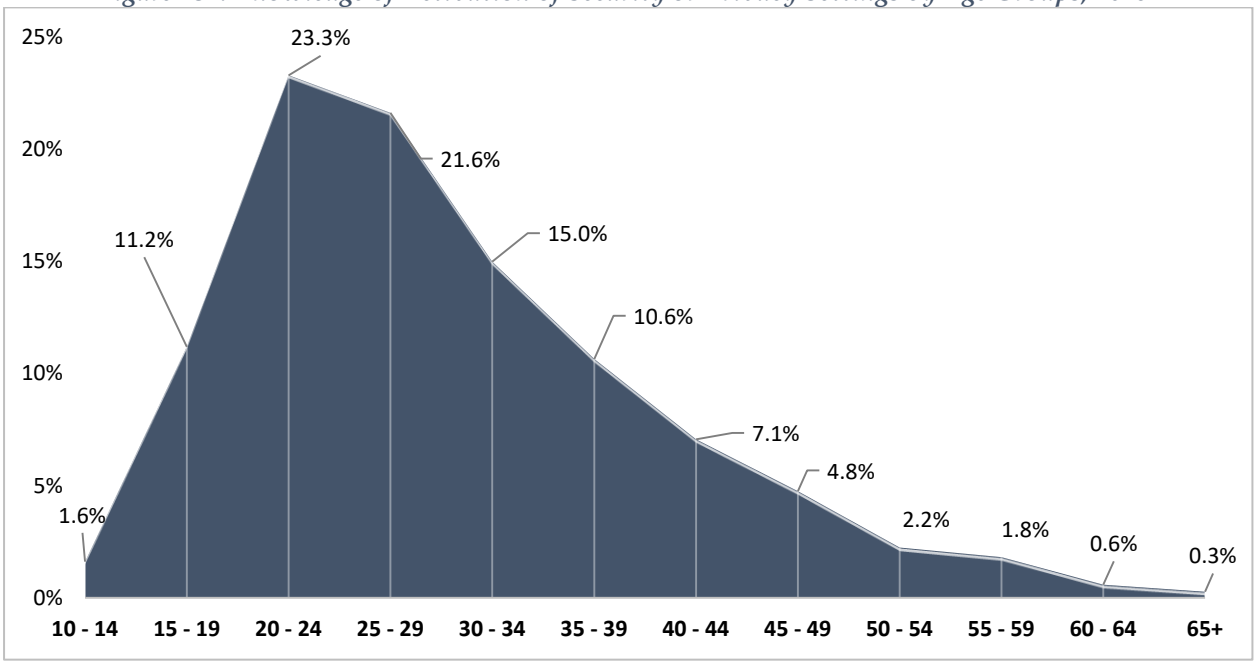
The survey revealed that only 30.4 percent of the individuals aged 10 years and older that use internet services know how to activate security or privacy settings on social media or a web browser. More than 60 percent of this proportion were based in Lusaka and Copperbelt Provinces. Muchinga and Western Provinces accounted for the lowest proportions amounting 1.7 percent and 2.8 percent respectively.

Figure 133: Knowledge of activation of security or privacy settings by province; 2018



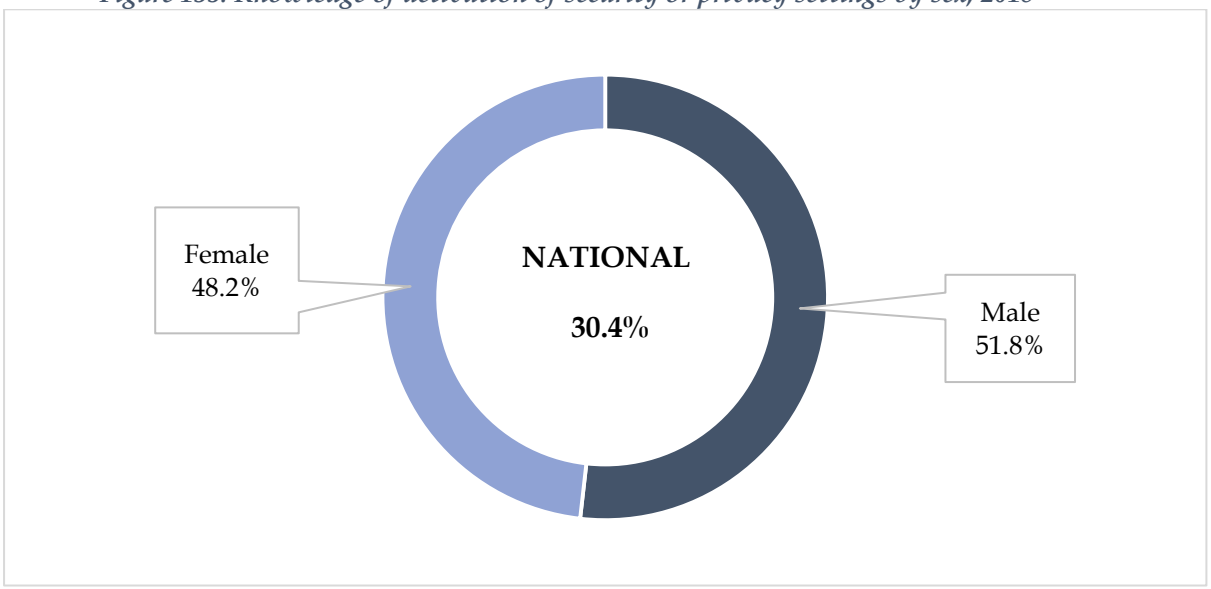
More than 70 percent of the individuals aged 10 years and older with access to the internet that had knowledge of how to activate security and privacy settings in a web browser or social media account were below the age of 35 years.

Figure 134: Knowledge of Activation of Security or Privacy Settings by Age Groups; 2018



There was a minimal observed difference between male and female individuals aged 10 years and older that had access to the internet and had knowledge about how to activate security and privacy settings in a web browser or social media account. Specifically, the proportion of internet users with knowledge on how to activate security and privacy settings who were male was 51.8 percent and the females were 48.2 percent.

Figure 135: Knowledge of activation of security or privacy settings by sex; 2018



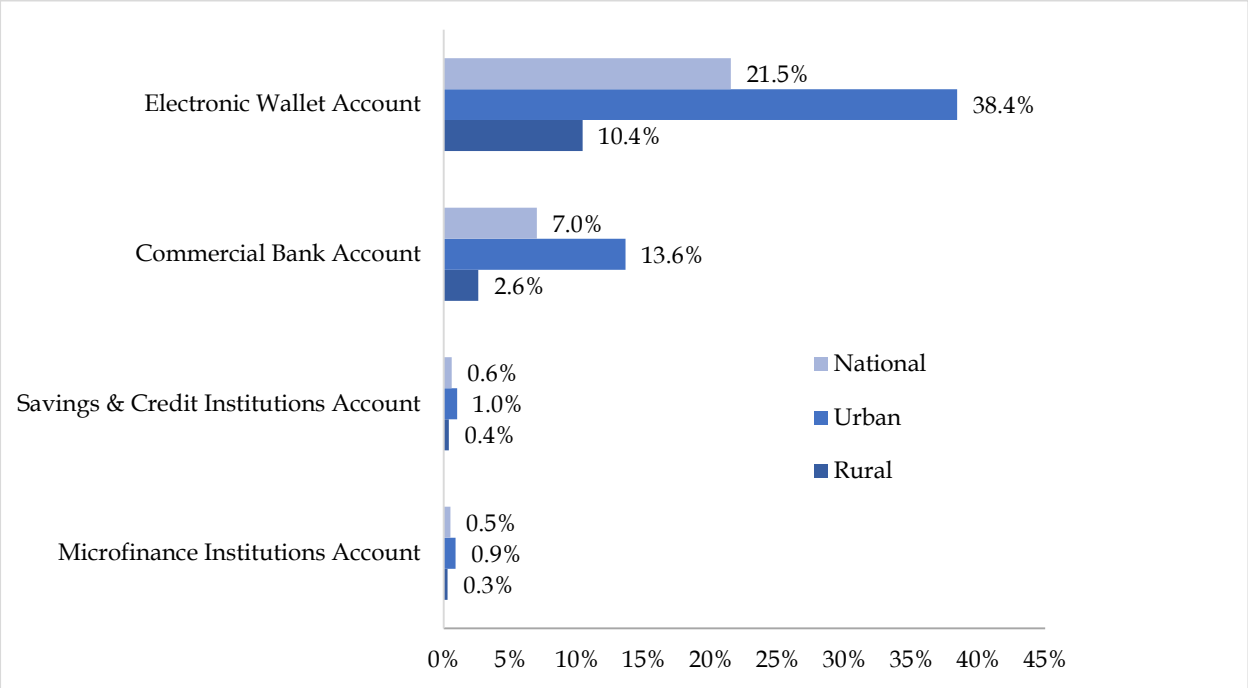
5.0. Access and Usage of Digital Financial Services

This chapter explores the extent of adoption of digital financial services by households and individuals aged 10 years and older. An evaluation is made within various demographic and socio-economic groupings and across the strata regarding various attributes related to digital financial services. To the extent possible, an attempt is made to explain some of the factors that inhibit extensive adoption and usage of digital financial services in the country. The chapter also highlights some of the most widely adopted services and preferred providers with a view to establish the responsiveness of providers to households' and individuals' needs.

5.1. Ownership of Different Types of Accounts

The survey revealed that the most widely held formal financial services accounts were electronic wallets (e-wallets) accounting for 21.5 percent of individuals aged 10 years and older. Only 7 percent of the individuals aged 10 years and older held at least one commercial bank account. Ownership of accounts with Micro Finance institutions as well as Savings and Credit Institutions was negligible accounting for about 1 percent all the individuals aged 10 years and older. There were sizeable differences observed in the ownership of the different accounts across regions. Particularly, while 38.4 percent of all the individuals aged 10 years and older based in urban areas owned an e-wallet, only 10.4 percent of e-wallet holders were in rural areas.

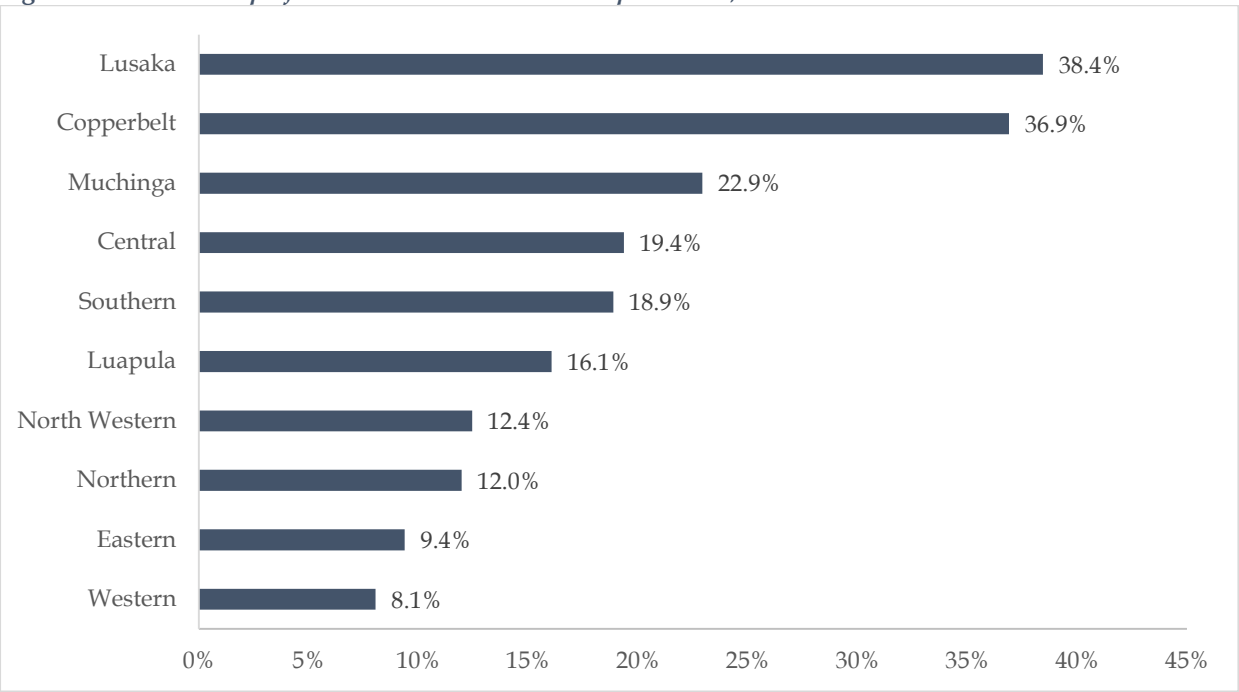
Figure 136: Ownership of different types of accounts by individuals; 2018



Lusaka and Copperbelt Provinces had the highest concentration of e-wallets for individuals aged 10 years and older accounting for 38.4 percent and 36.9 percent respectively. On the other hand, Western and Eastern Provinces accounted for the lowest

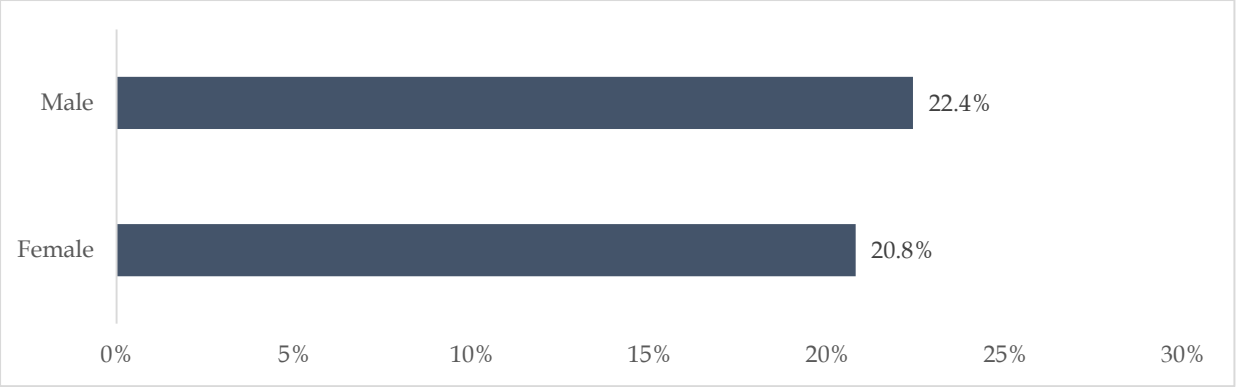
concentration of e-wallet accounts for individuals aged 10 years and older accounting for 8.1 percent and 9.4 percent respectively.

Figure 137: Ownership of electronic -wallets within provinces; 2018



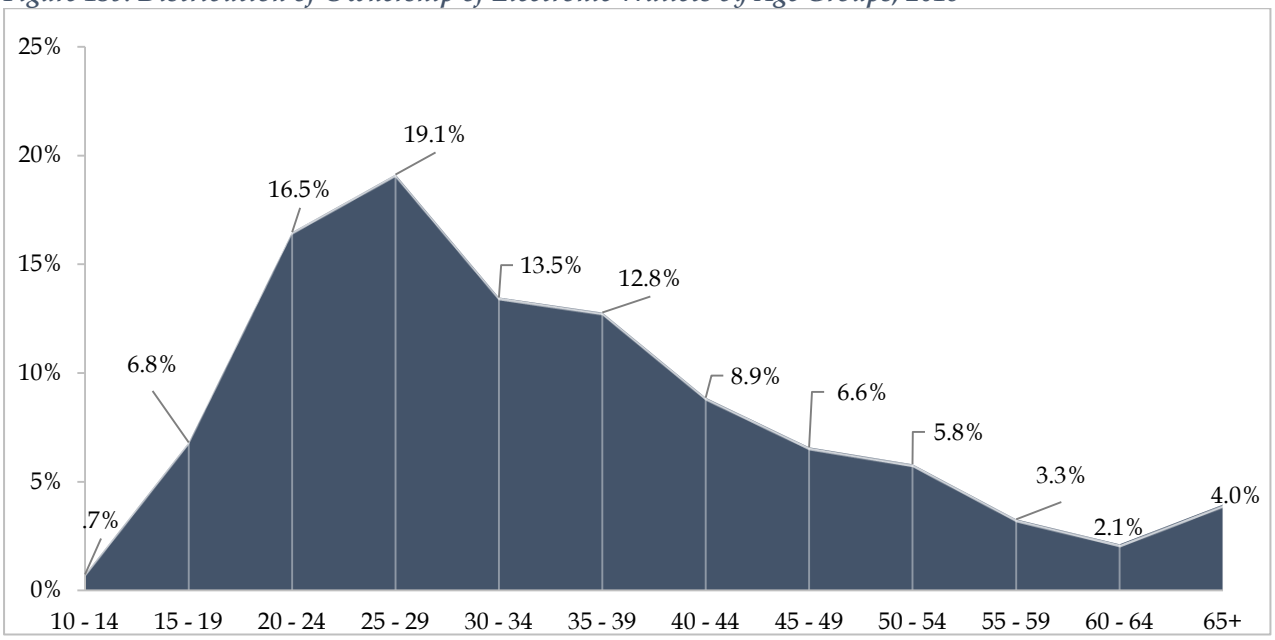
There were negligible differences in ownership of e-wallets between males and females in the country. However both sex groups accounted for very low levels of ownership of e-wallets constituting 22.4 percent and 20.8 percent for males and females respectively.

Figure 138: Ownership of Electronic Wallets within Sex Groups; 2018



The survey estimated that about 70 percent of the individuals aged 10 years and older that owned an e-wallet account were below the age of 35 years. Less than 10 percent of the individuals aged 10 years and older that indicated that they owned an e-wallet were above the age of 55 years.

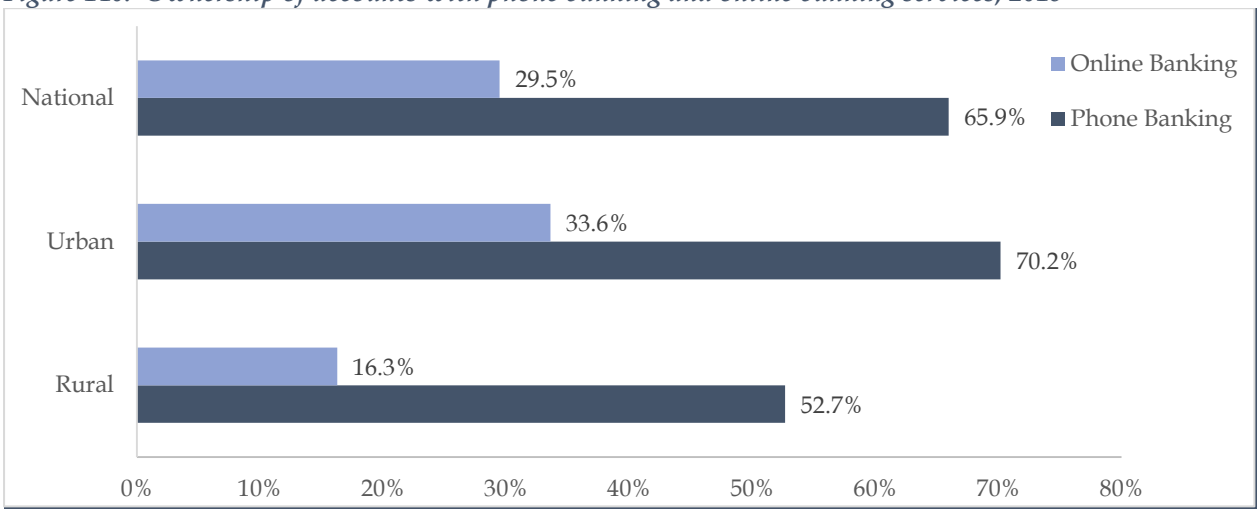
Figure 139: Distribution of Ownership of Electronic Wallets by Age Groups; 2018



5.1.1. Phone Banking Services and Online Banking Services

The majority of commercial bank accounts held by individuals aged 10 years and older were enabled for phone banking services accounting for 65.9 percent of all the individuals aged 10 years and older that reported to own a commercial bank account. On the other hand, only 29.5 percent of the individuals aged 10 years and older that indicated that they owned a commercial bank account had their accounts enabled for online (internet) banking services. There was a relatively larger proportion of individuals aged 10 years and older with accounts that were enabled for either online banking or phone banking services that were based in urban areas compared to rural areas.

Figure 140: Ownership of accounts with phone banking and online banking services; 2018

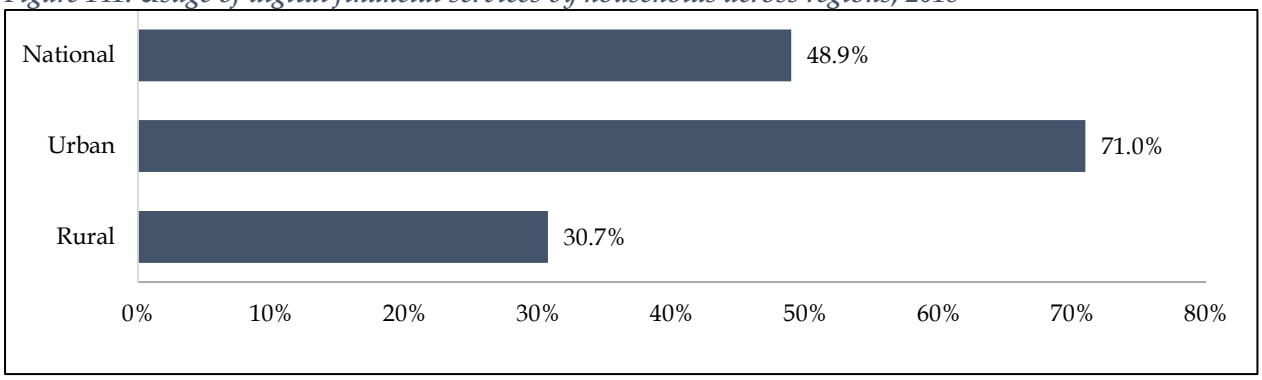


5.2. Usage of Digital Financial Services by Households

The survey established that at least 48.9 percent of all the households across the country had used digital financial services before. However, the proportion of households in

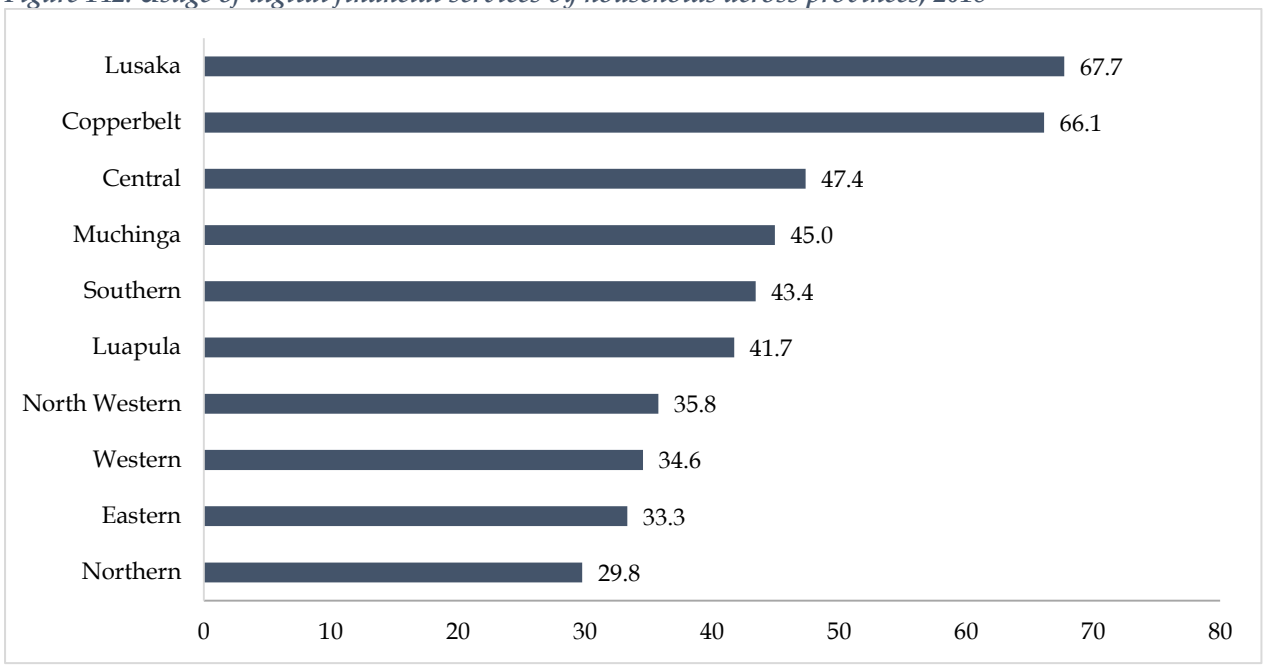
urban areas that had used digital financial services was relatively higher than in rural areas. Specifically, 71.0 percent of the households in urban areas indicated that they had used digital financial services before while only 30.7 percent of households in rural areas reported that they had used digital financial services.

Figure 141: Usage of digital financial services by households across regions; 2018



Lusaka, Copperbelt and Central Provinces had a relatively higher proportion of households that had indicated that they used digital financial services constituting 67.7 percent, 66.1 percent and 47.4 percent respectively.

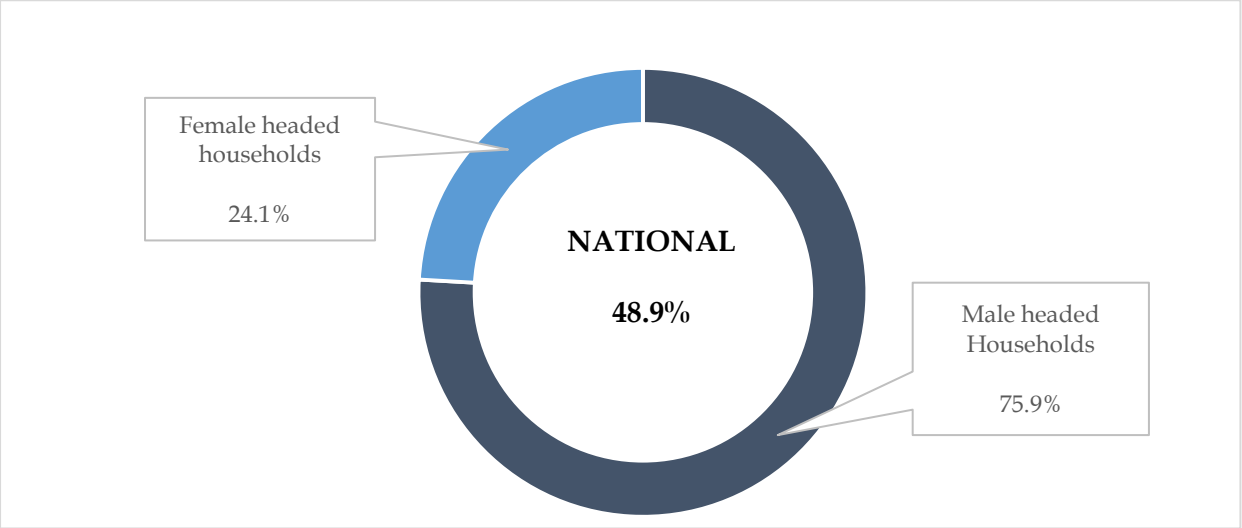
Figure 142: Usage of digital financial services by households across provinces; 2018



However, relatively lower levels of usage of digital financial services by households were observed in Northern, Eastern and Western Provinces accounting for 29.8 percent, 33.3 percent and 34.6 percent respectively.

The majority of the households that indicated that they had used digital financial services before, constiting 75.9 percent of the households that had used digital fincial services before, were headed by males.

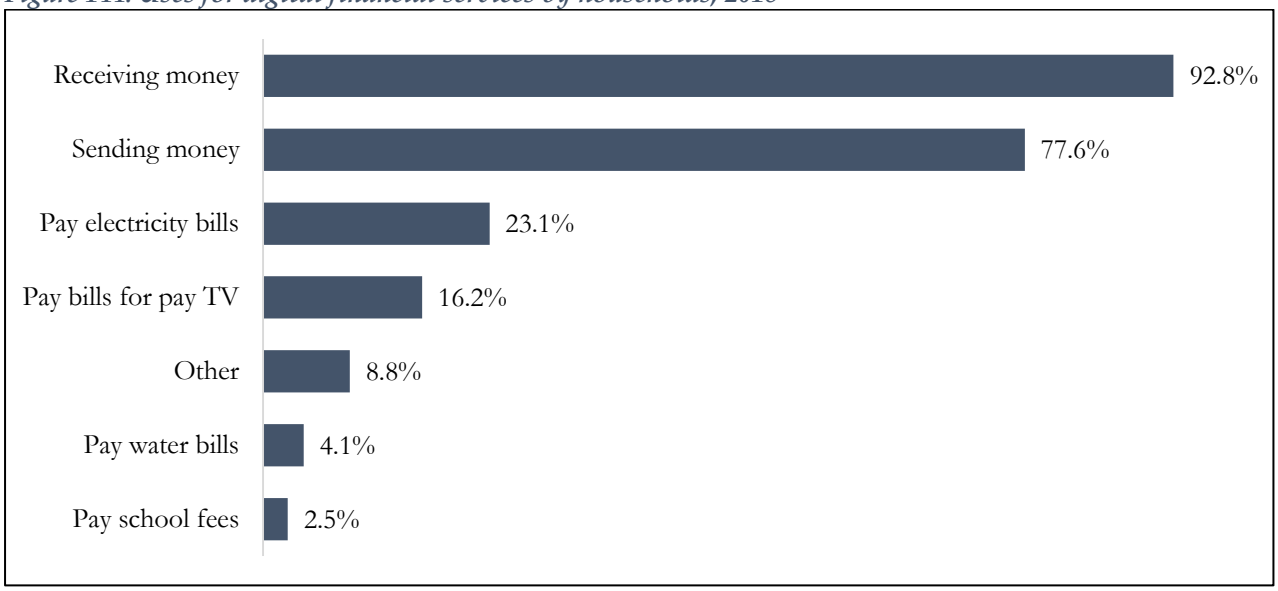
Figure 143: Usage of digital financial services by sex of head of household; 2018



5.3. Extent of Usage of Digital Financial Services by Households

The majority of the households reported using digital financial services for receiving and sending money representing 92.8 percent and 77.6 percent respectively. However, only 2.5 percent of the households that indicated that they used digital financial services for paying school fees while 4.1 percent of households reported they used them for paying water bills.

Figure 144: Uses for digital financial services by households; 2018



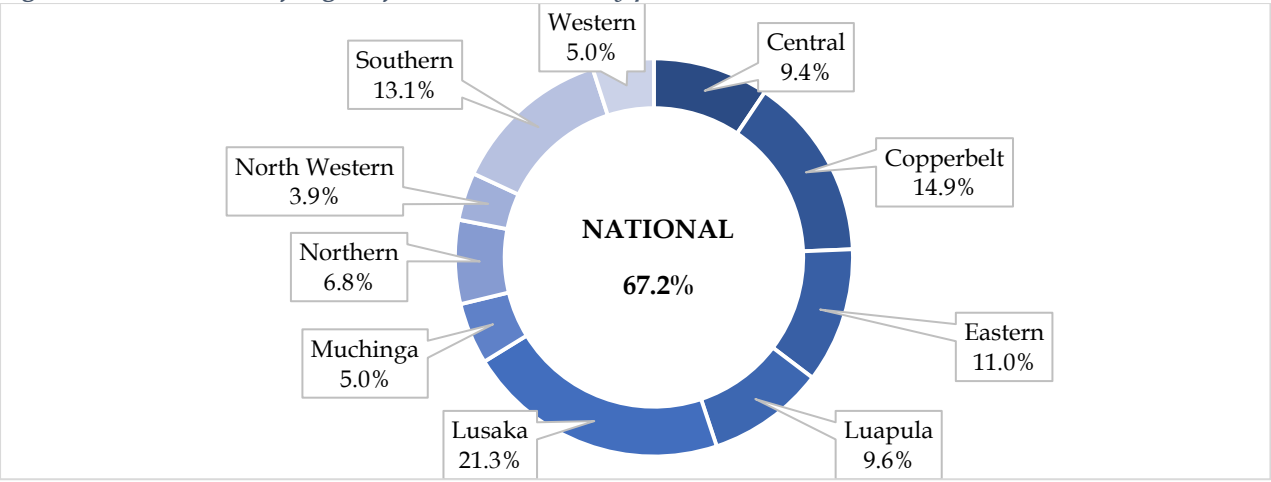
5.4. Access and Usage of Digital Financial Services by Individuals

5.4.1. Awareness of Digital Financial Services

The level of awareness on the existence digital financial services currently on offer in Zambia among all individuals aged 10 years and older was estimated at 67.2 percent. Lusaka, Copperbelt and Southern Provinces accounted for the largest proportion of

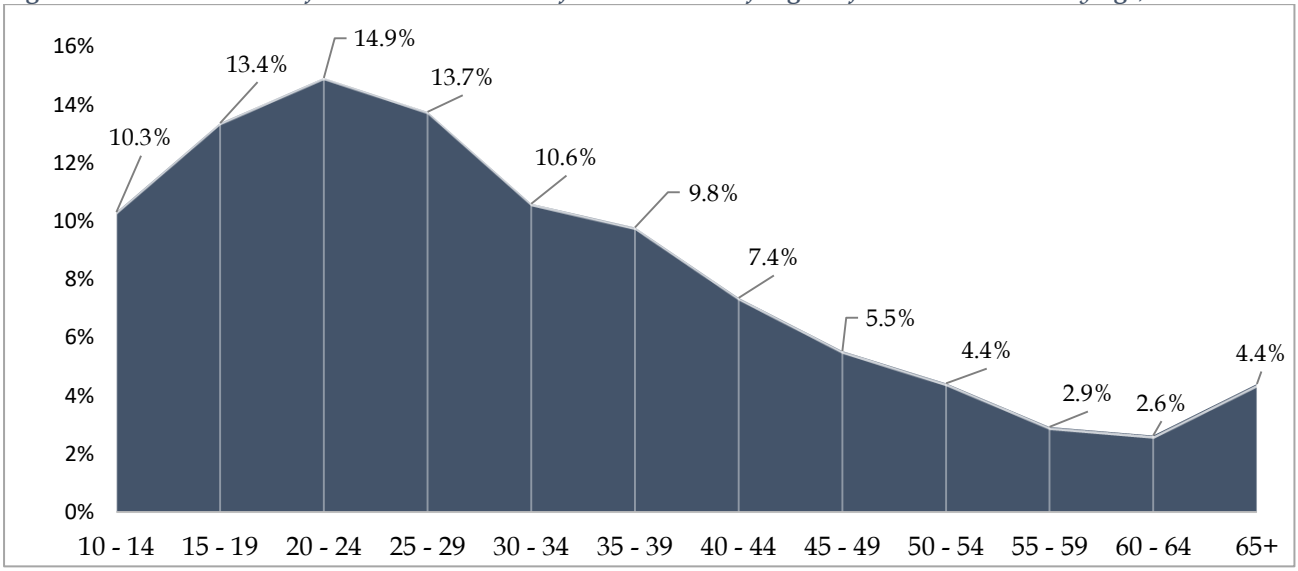
individuals aged 10 years and older that were aware of the existence of digital financial services amounting 21.3 percent, 14.9 percent and 13.1 percent respectively.

Figure 145: Awareness of digital financial services by province; 2018



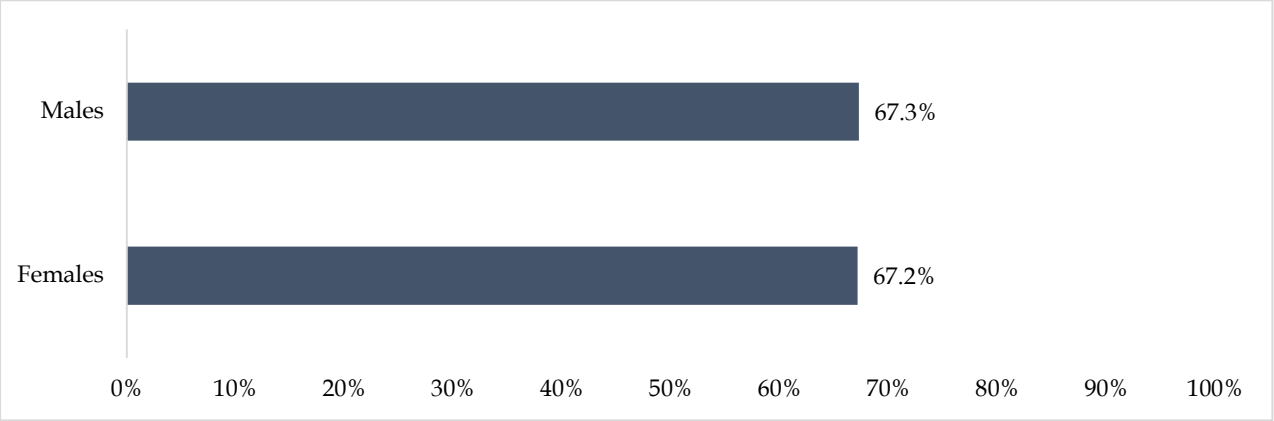
About 62.9 percent of the individuals aged 10 years and older that indicated that they were aware of the existence of digital financial services in Zambia were below the age of 35 years. Less than 10 percent of the people that indicated that they were aware about the existence of digital financial services in Zambia were above 55 years.

Figure 146: Distribution of individuals aware of the existence of digital financial services by age; 2018



There were negligible differences observed in the proportion of males and females that were aware of the existence of digital financial services in Zambia. Specifically, an equal proportion of approximately 67.0 percent of individuals aged 10 years and older within each sex group was aware of the existence of digital financial services offered in Zambia.

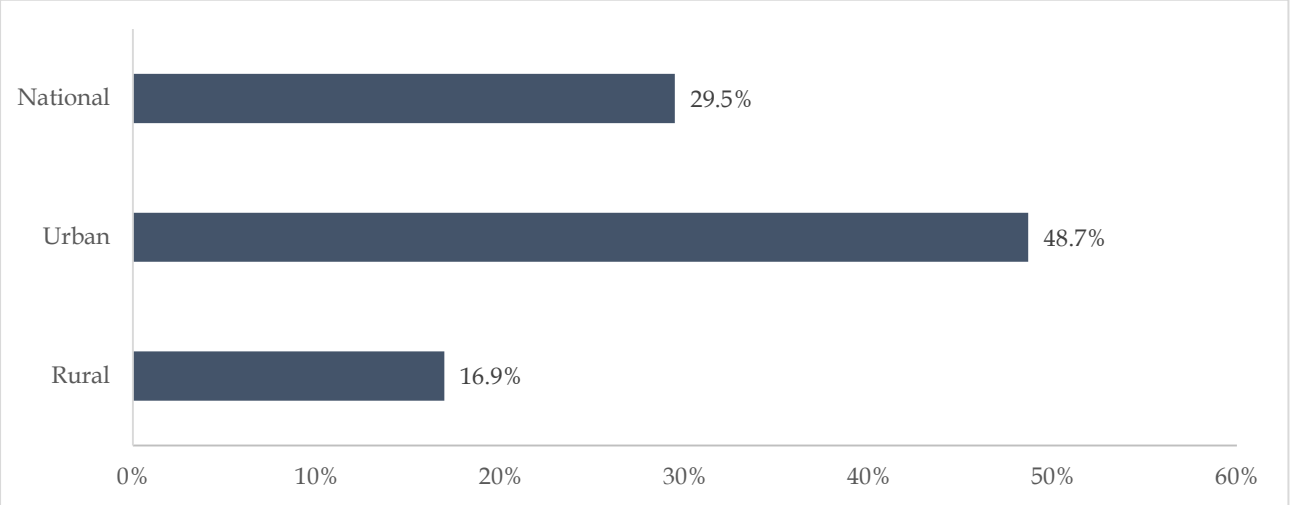
Figure 147: Awareness of existence of digital financial services within sex groups; 2018



5.4.2. Usage of Digital Financial Services

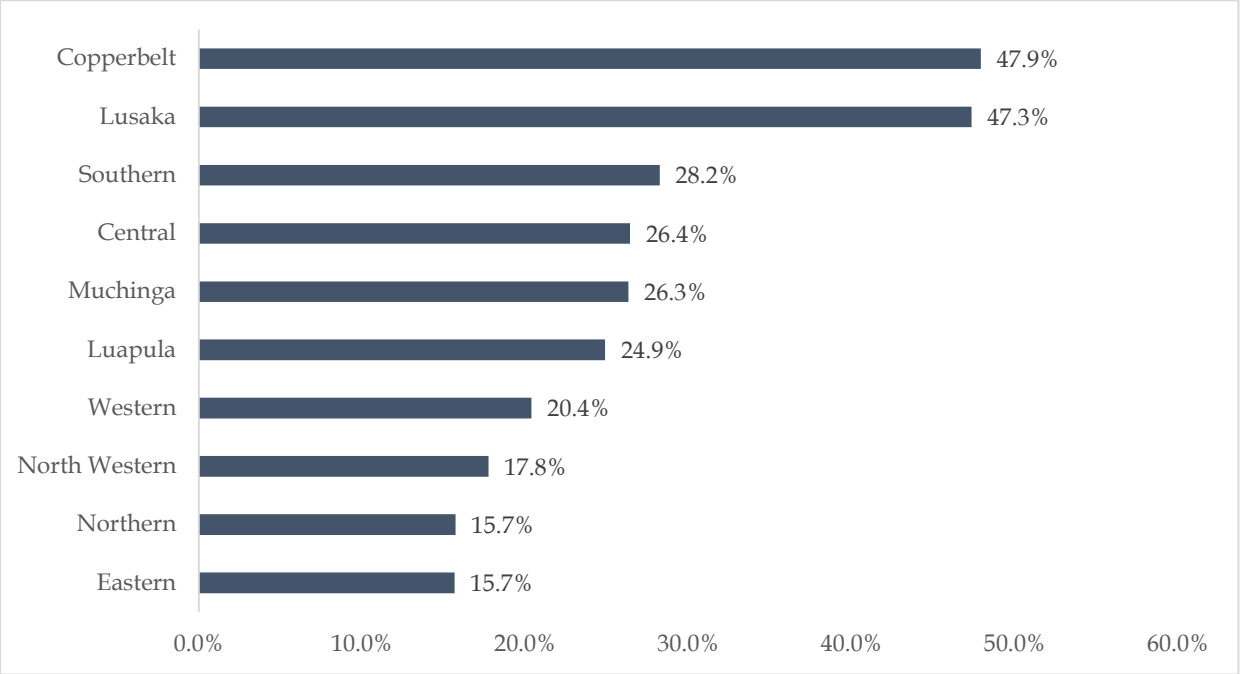
The survey estimated that about 29.5 percent of individuals aged 10 years and older in the country have transacted before using digital financial services. It was further observed that over 48.7 percent of the individuals aged 10 years and older based in urban areas had used digital financial services before while only 16.9 percent of individuals aged 10 years and older based in rural areas had used the services before.

Figure 148: Usage of digital financial services by individuals within regions; 2018



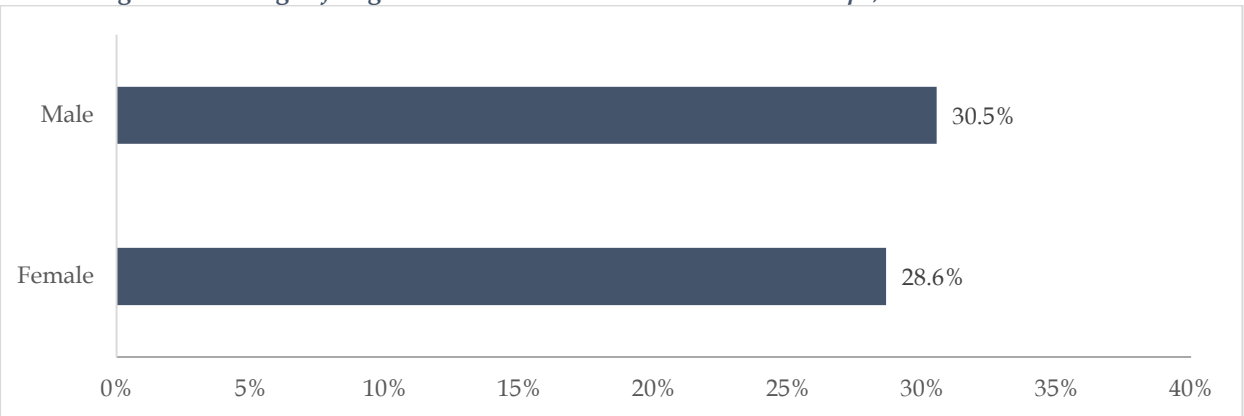
The Copperbelt, Lusaka and Southern Provinces had the highest concentration of individuals aged 10 years and older that had used digital financial services before. Specifically, 47.9 percent of individuals aged 10 years and older based in the Copperbelt Province indicated that they had used digital financial services before while Lusaka and Southern Provinces accounted for 47.3 percent and 28.2 percent respectively.

Figure 149: Usage of digital financial services by individuals across provinces; 2018



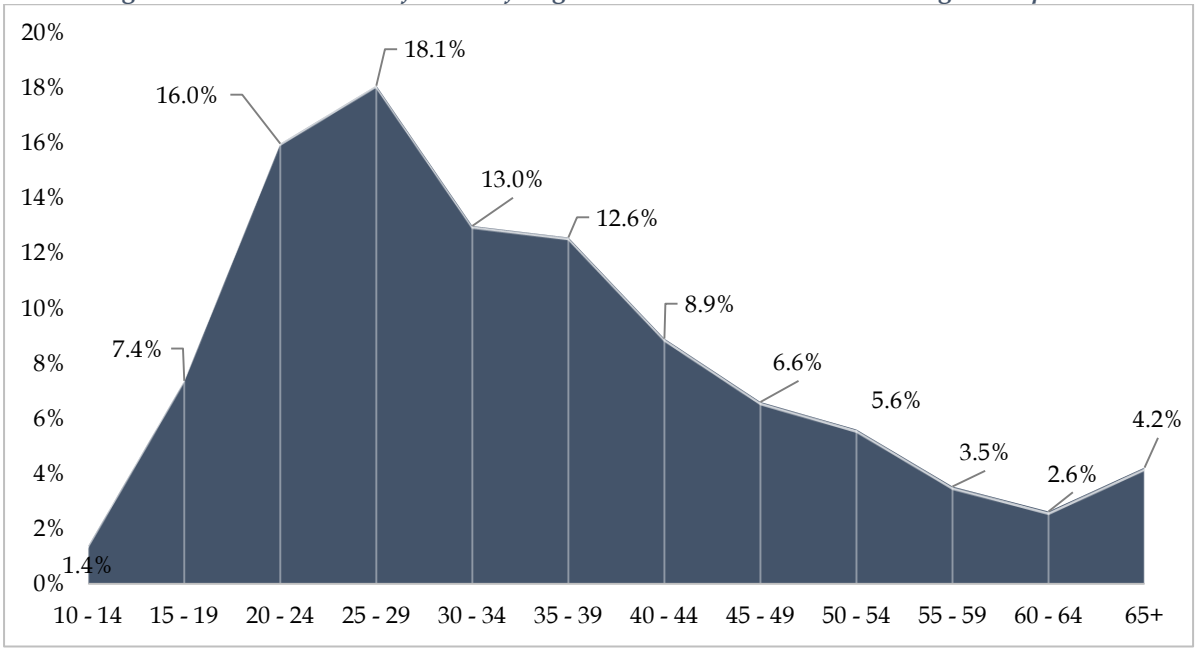
There was a relatively higher proportion of males that indicated that they had used digital financial services before compared to females. Specifically, 30.5 percent of all the males indicated that they had used digital financial services while 28.5 percent of all the females were estimated to have used digital finanicial services.

Figure 150: Usage of Digital Financial Services within Sex Groups; 2018



About 55.9 percent of all the indivuals aged 10 years and older that indicated that they had used digital fiancial services in the past were below the age of 35 years. This was indicative that more young people were open to using digital financial services than the older population.

Figure 151: Distribution of Users of Digital Financial Services across Age Groups



Overtime, there has been a marked improvement in the proportion of individuals aged 10 years and older who are aware of the existence of digital financial services as well as those that use the services. In 2013, only 26.4 percent of individuals aged 10 years and older reported to be aware of the existence of digital financial services and subsequently this proportion increased to 45.9 percent in 2015. However, in 2018 the proportion of individuals aged 10 years and older that reported to be aware of the existence of digital financial services increased to 67.2 percent. Similarly, there has been a marked improvement in the usage of digital financial services from 8.9 percent in 2013 to 30.0 percent in 2015 and subsequently 43.8 percent of among those aware of the availability of digital financial services.

Table 4: Access and usage of digital financial services, 2013 - 2018

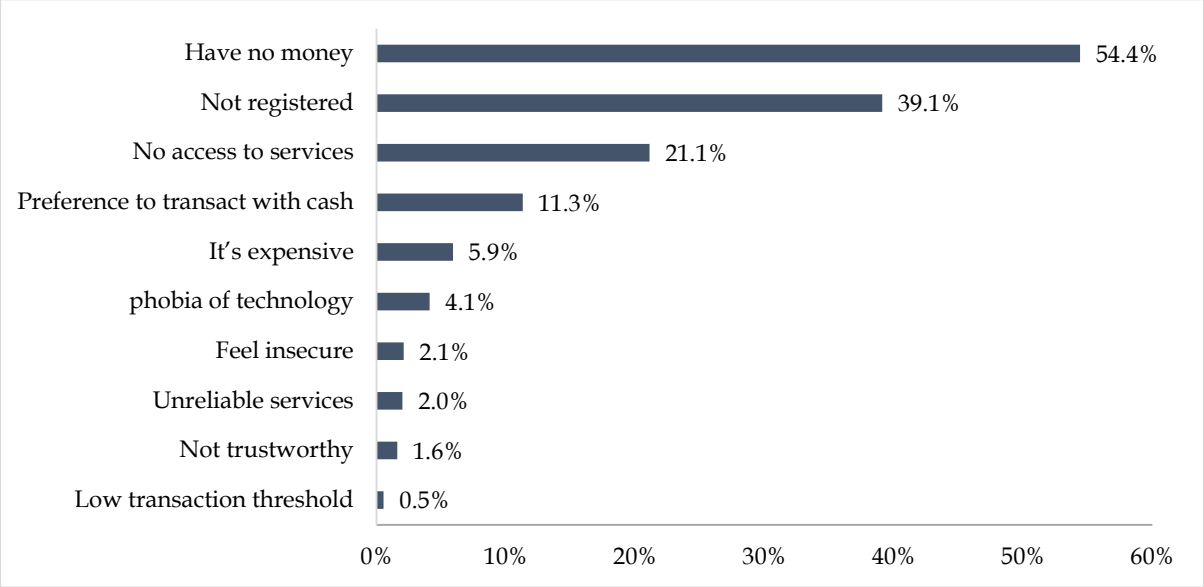
Indicator	2013	2015	2018
Proportion of individuals aware of the existence of Digital Financial Services	26.4%	45.9%	67.2%
Proportion of individuals aware of the existence of Digital Financial Services based in urban Areas	69.3%	58.1%	49.2%
Individuals that use Digital Financial services as a proportion of those who are aware of the existence of the service	8.9%	30.0%	43.8%

5.4.3. Challenges with Access to Digital Financial Services

The main reason cited by individuals aged 10 years and older that had not used digital financial services was that they had no resources to use the services or they were not registered accounting for 54.4 percent and 39.1 percent of all the individuals aged 10 years and older that had not used digital financial services before. A very small proportion of individuals aged 10 years and older that had not used digital financial services before

attributed their challenges to low transaction thresholds and not having trust in the services accounting for 0.5 percent and 1.6 percent of the individuals aged 10 years and older had not used digital financial services.

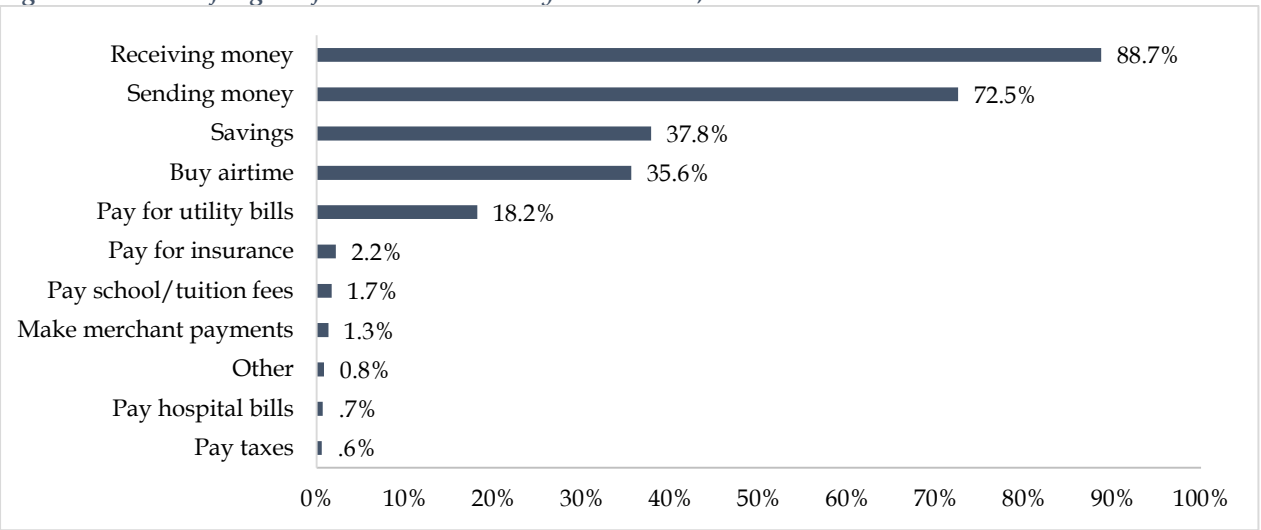
Figure 152: Barriers to access to digital financial services; 2018



5.4.4. Extent of Usage of Digital Financial Services among Individuals

The most popular uses for digital financial services among individuals aged 10 years and older included sending and receiving money accounting for 88.7 percent and 72.5 percent of the people aged 10 years and older that indicated that they had used the services respectively. The proportion of individuals aged 10 years and older using digital financial services for savings, buying airtime and paying utility bills as a share of those that had used the services before was estimated at 37.8 percent, 35.6 percent and 18.2 percent respectively. The least prominent uses of these services included among other things merchant payments and payment of taxes.

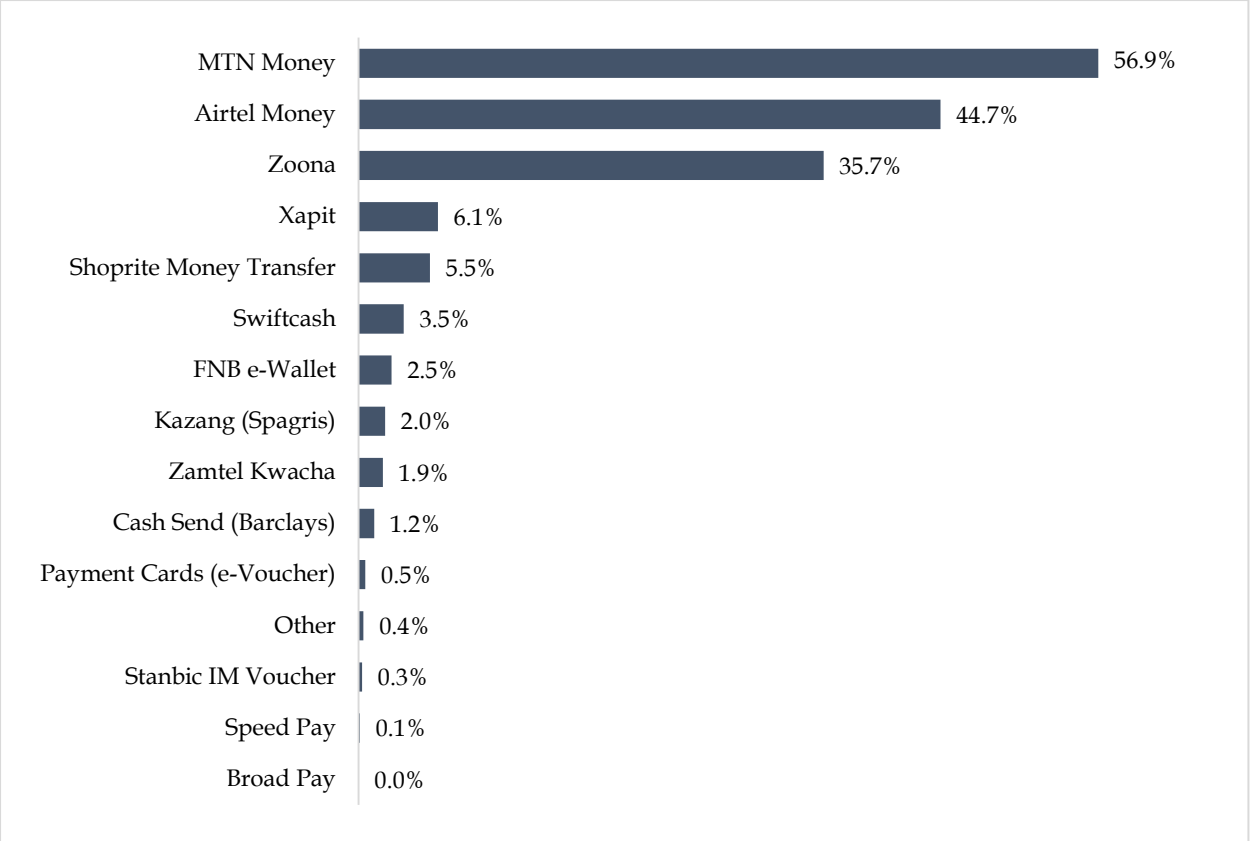
Figure 153: Uses of digital financial services by individuals; 2018



5.4.5. Usage of Digital Financial Services across Providers

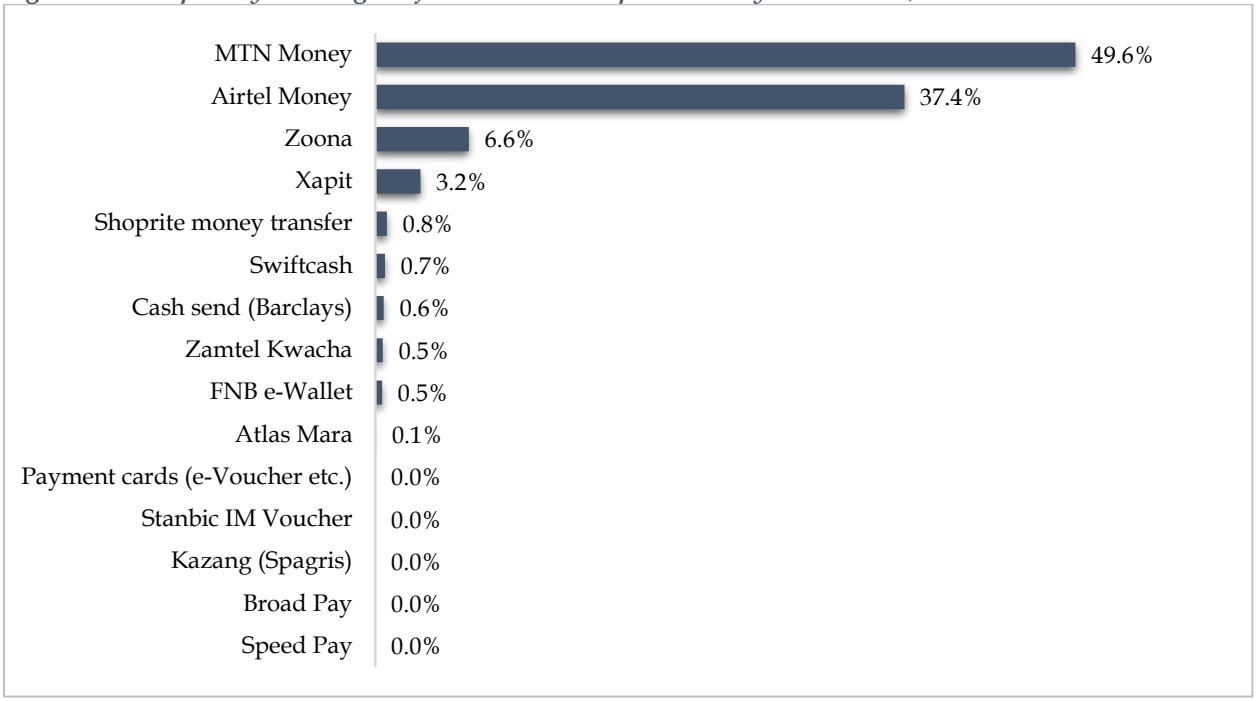
The most widely used digital financial service providers were reported to be MTN money, Airtel money and Zoona accounting for 56.9 percent, 44.7 percent and 35.7 percent of all the people aged 10 years and older that reported that they had transacted using digital financial services before respectively.

Figure 154: Usage of Digital Financial Services by Individuals across Providers; 2018



The survey further established that MTN Money and Airtel Money were the most frequently used digital financial services among individuals aged 10 years and older constituting proportions of 49.6 percent and 37.4 percent respectively. Zoona and Xapit equally had a sizeable proportion of individuals aged 10 years and older that indicated that they used the services most frequently amounting 6.6 percent and 3.2 percent respectively. The majority of providers accounted for less than 1 percent of the users of digital financial services that reported to use the service provider most frequently.

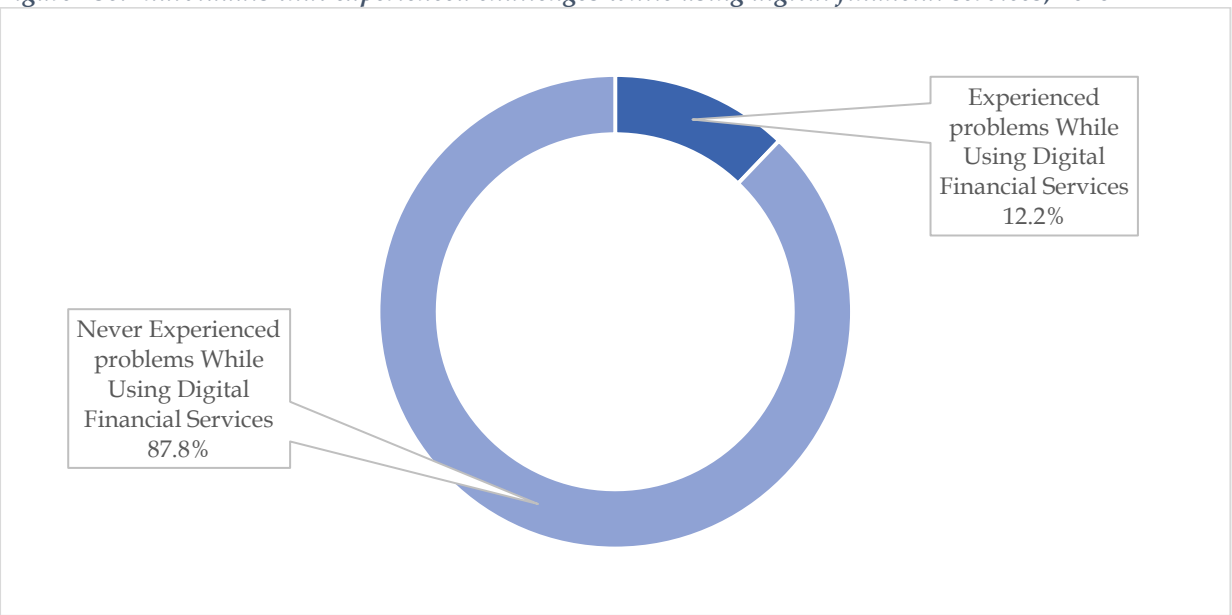
Figure 155: Frequently used digital financial service providers by individuals; 2018



5.4.6. *Challenges with using Digital Financial Services*

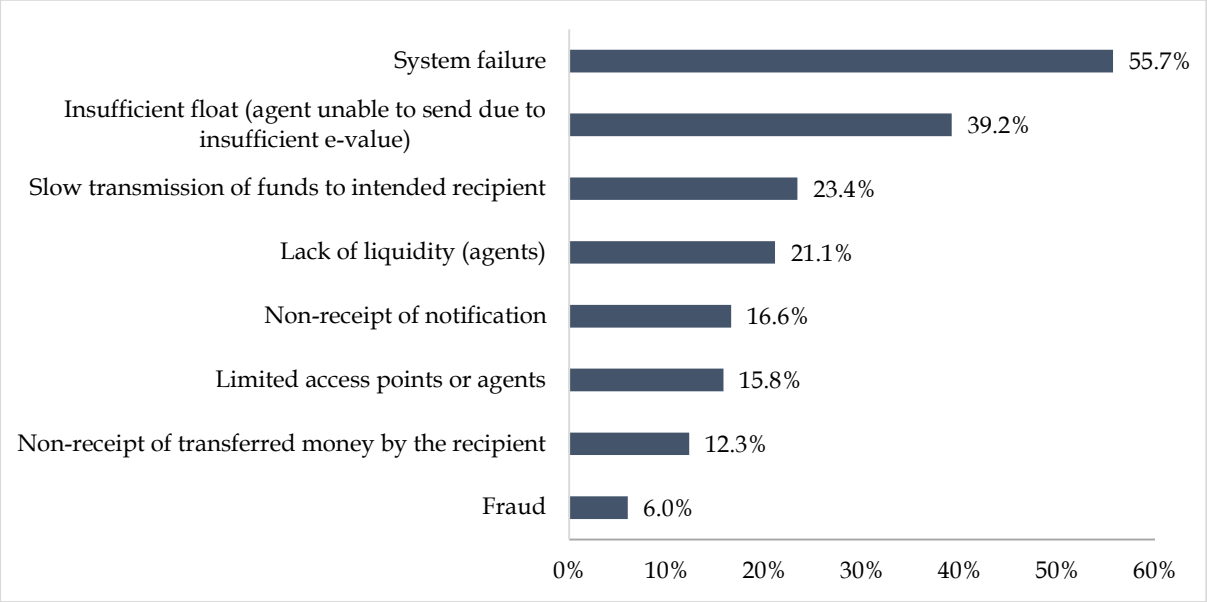
The majority of the individuals aged 10 years and older that indicated that they had used digital financial services before, constituting 87.8 percent, pointed out that they had never experienced any problems while using digital financial services.

Figure 156: Individuals that experienced challenges while using digital financial services; 2018



The most prominent challenges experienced while using digital financial services were system failure and insufficient float by agents accounting for 55.7 percent and 39.2 percent of individuals aged 10 years and older that had used digital financial services and experienced some challenges. The least prominent challenges related to fraud and non-receipt of funds accounting for 6 percent and 12.3 percent of all the individuals aged 10 years and older that had experienced challenges while using digital financial services.

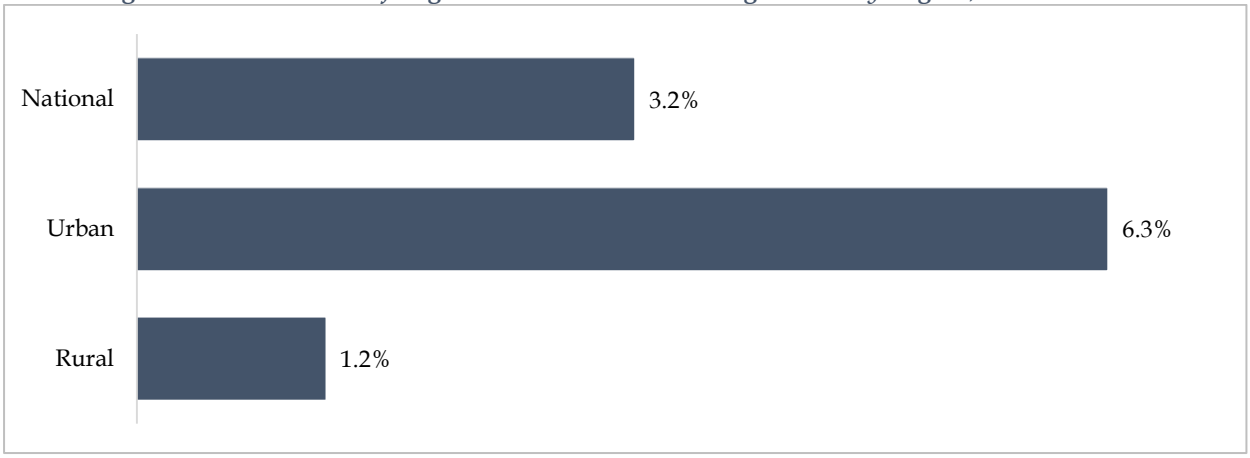
Figure 157: Challenges experienced while using digital financial services; 2018



5.4.7. Regulation of Digital Financial Services

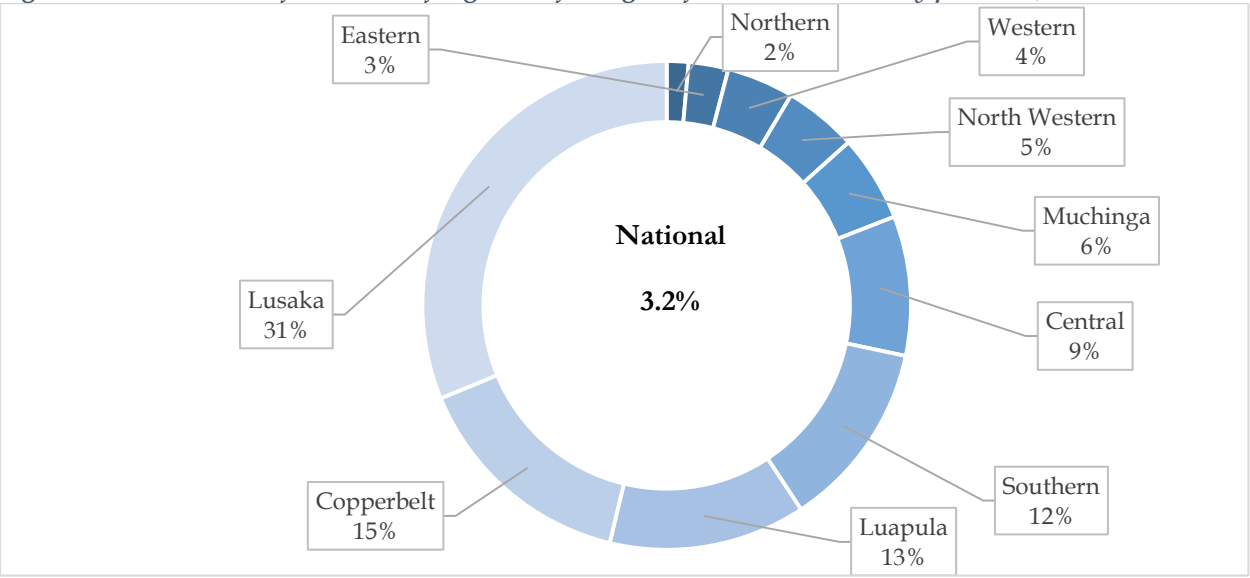
Only 3.2 percent of all the individuals aged 10 years and older across the country indicated that they were aware of an institution that is responsible for the regulation of digital financial services in Zambia. This proportion was relatively larger in urban areas compared to rural areas constituting 6.3 percent and 1.2 percent respectively.

Figure 158: Awareness of Digital Financial Services Regulation by Region; 2018



Lusaka and Copperbelt Provinces accounted for the largest proportion of individuals aged 10 years and older that indicated that they were aware of an institution responsible for the regulation of digital financial services accounting for 31.2 percent and 15 percent respectively. Eastern and Northern Provinces accounted for the lowest proportion of individuals aged 10 years and older that indicated that they were aware of an institution responsible for the regulation of digital financial services accounting for 2.6 percent and 1.4 percent of the total number of people aged 10 years and older that indicated that they were aware of an institution responsible for the regulation of digital financial services.

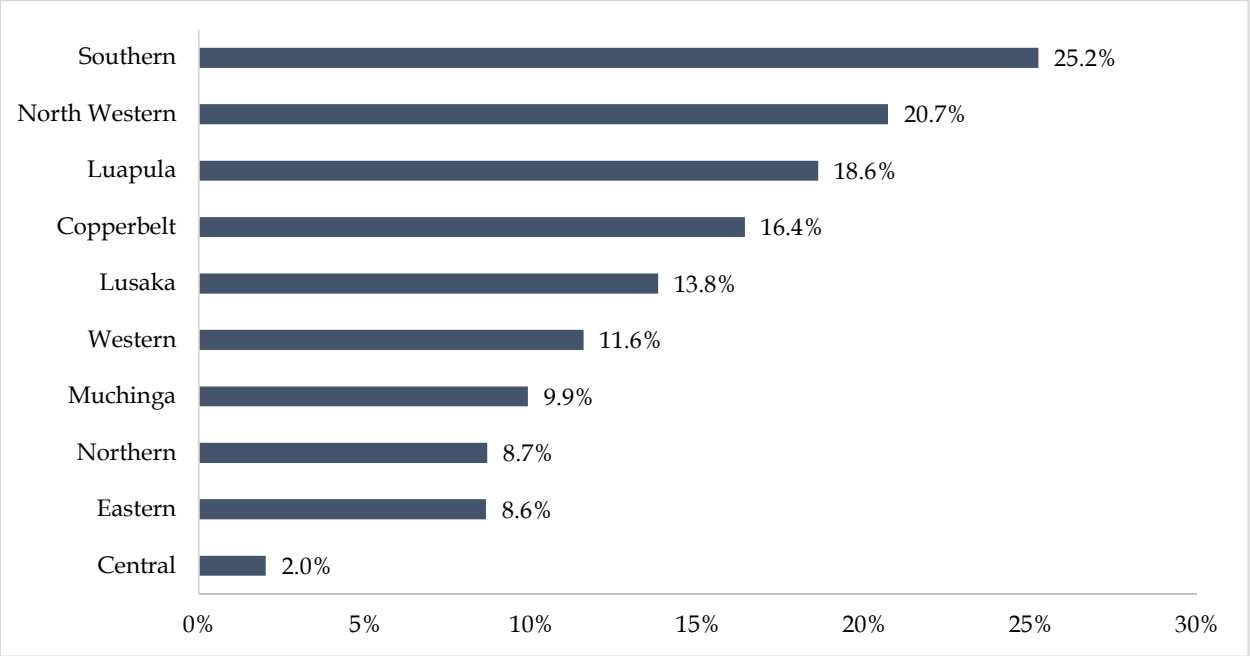
Figure 159: Awareness of existence of regulator for digital financial services by province; 2018



5.4.8. Channels of Redress for Challenges related to Digital Financial Services

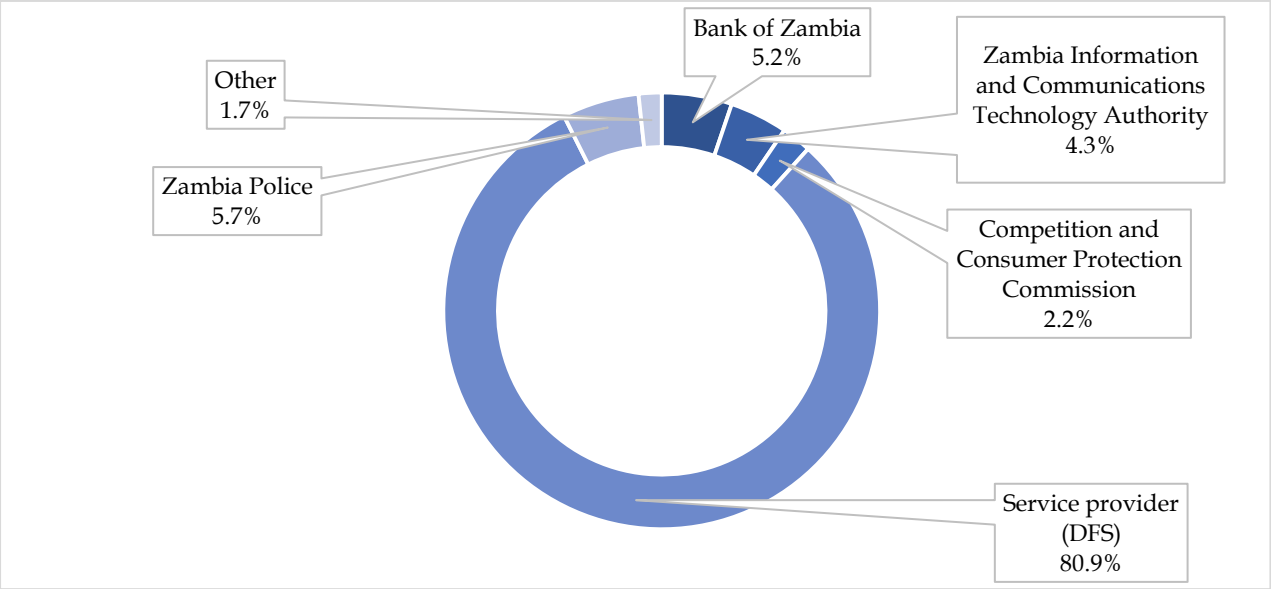
Only 14.2 percent of individuals aged 10 years and older that indicated that they had transacted using digital financial services indicated that they were aware of channels of redress in the event of a problem during usage of the services. Southern and North-Western Provinces had the highest concentration of individuals that indicated that they were aware of some channels for redress of any challenges regarding digital financial services constituting 25.2 percent and 20.7 percent respectively. Central Province had the lowest concentration of individuals aged 10 years and older that indicated that they were aware of some channels for redress of any challenges regarding digital financial services constituting 2.0 percent.

Figure 160: Awareness of avenues for redress for digital financial services; 2018



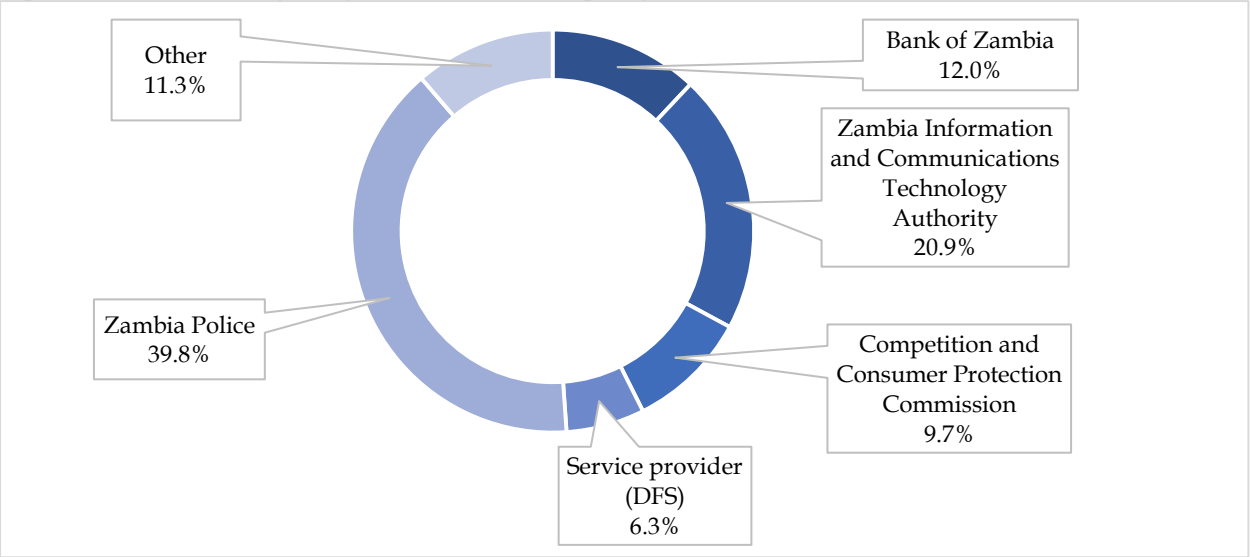
The majority of individuals aged 10 years and older that indicated that they were aware of the channels of redress for problems associated with digital financial services, constituting 80.9 percent, indicated that they would report their challenges first to the provider of the digital financial services.

Figure 161: First point of contact for complaints with digital financial services; 2018



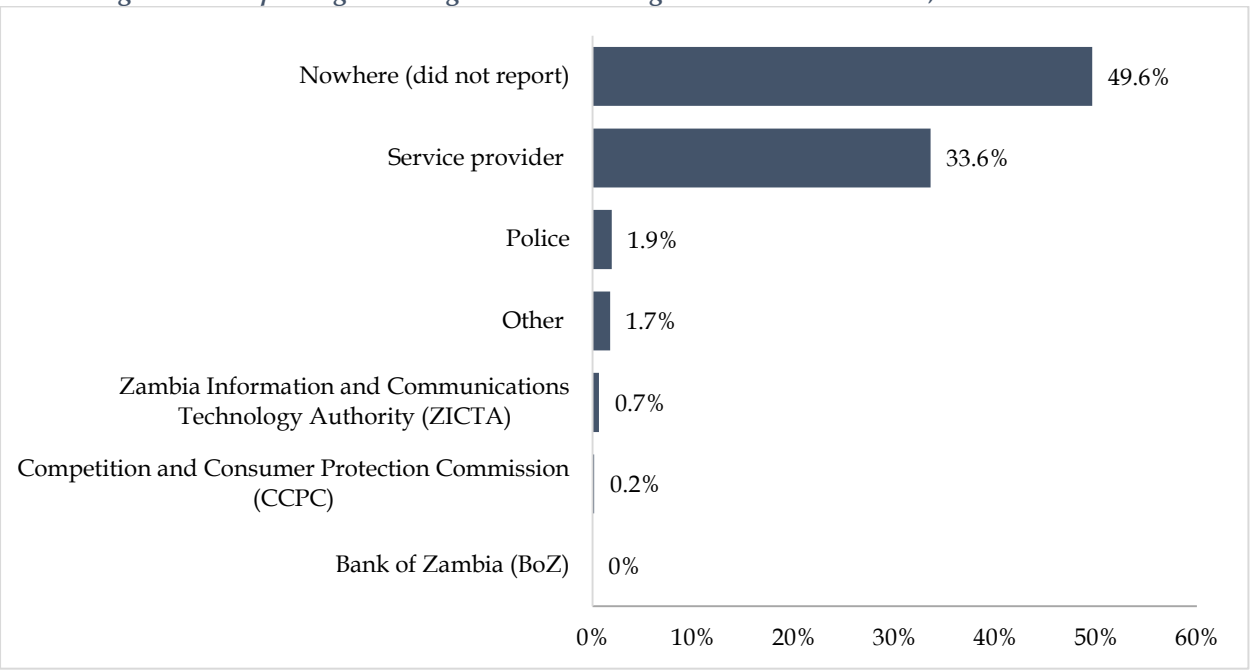
However, the majority of individuals aged 10 years and older that indicated that they were aware of the channels of redress for digital financial services indicated that they would escalate their complaints if they were not resolved to the Zambia police and Zambia Information and Communications Technology Authority accounting for 39.8 percent and 20.9 percent respectively.

Figure 162: Escalation of complaints related to digital financial services; 2018



The survey showed that most of the individuals aged 10 years and older that had experienced problems while using digital financial services, accounting for 49.6 percent of individuals that indicated that they had experienced some problems, did not report the problems encountered anywhere. Only 33.6 percent of the individuals aged 10 years and older that indicated that they had experienced some problems reported the problems to the service provider while 1.9 percent reported to the police. The industry regulators of various aspects of digital financial services such as Zambia Information and Communications Technology Authority, Competition and Consumer Protection Commission and the Bank of Zambia received the lowest proportion of complaints amounting less than 1 percent collectively.

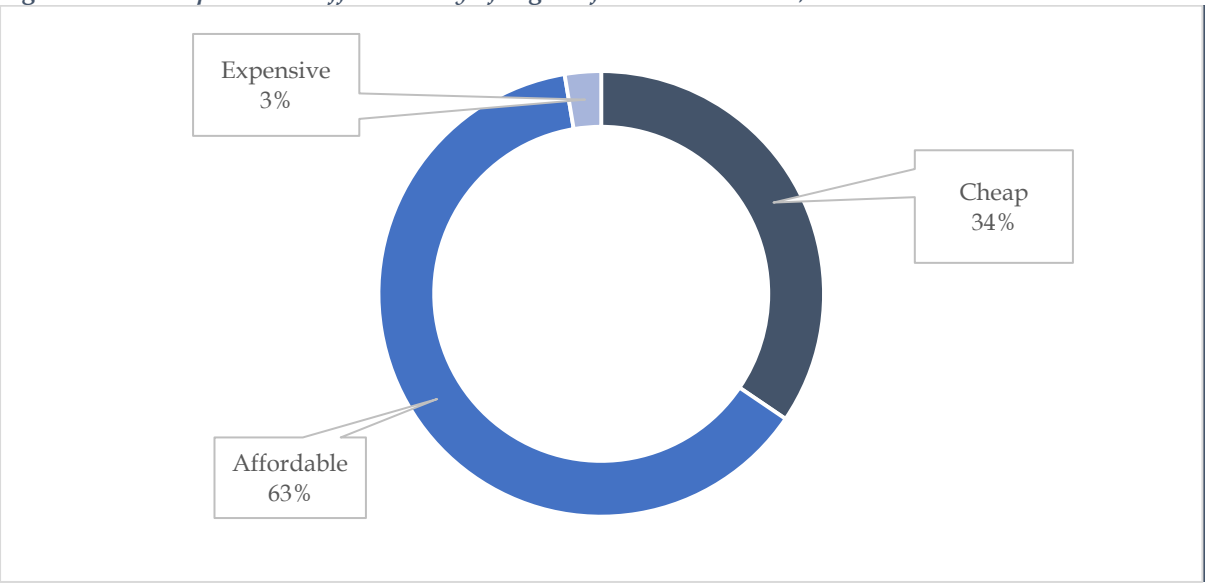
Figure 163: Reporting Challenges Related to Digital Financial Services; 2018



5.4.9. Affordability of Digital Financial Services

Approximately 62.7 percent of the individuals aged 10 years and older that reported that they had used digital financial services indicated that they were affordable. Only 2.6 percent of the individuals aged 10 years and older that had used digital financial services indicated that they were expensive.

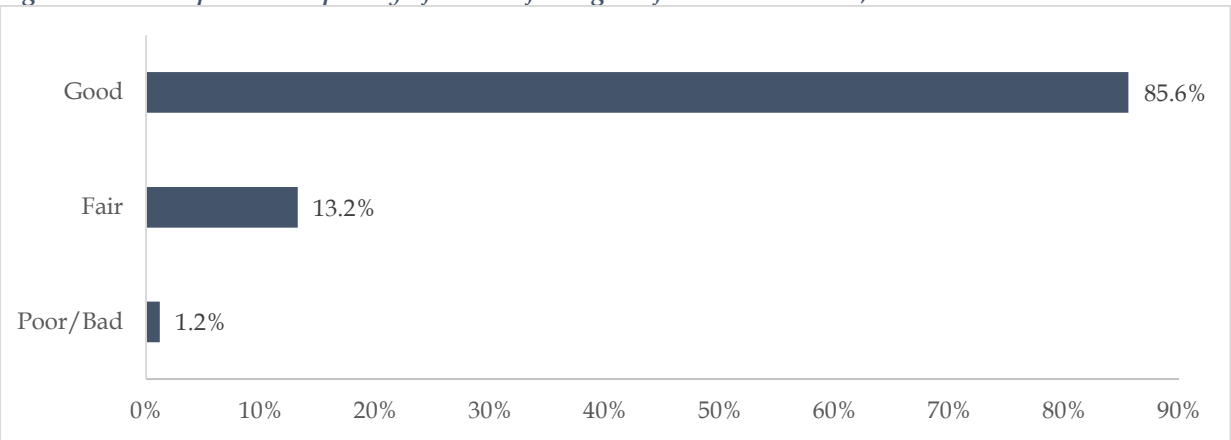
Figure 164: Perceptions on affordability of digital financial services; 2018



5.4.10. Quality of Experience with Digital Financial Services

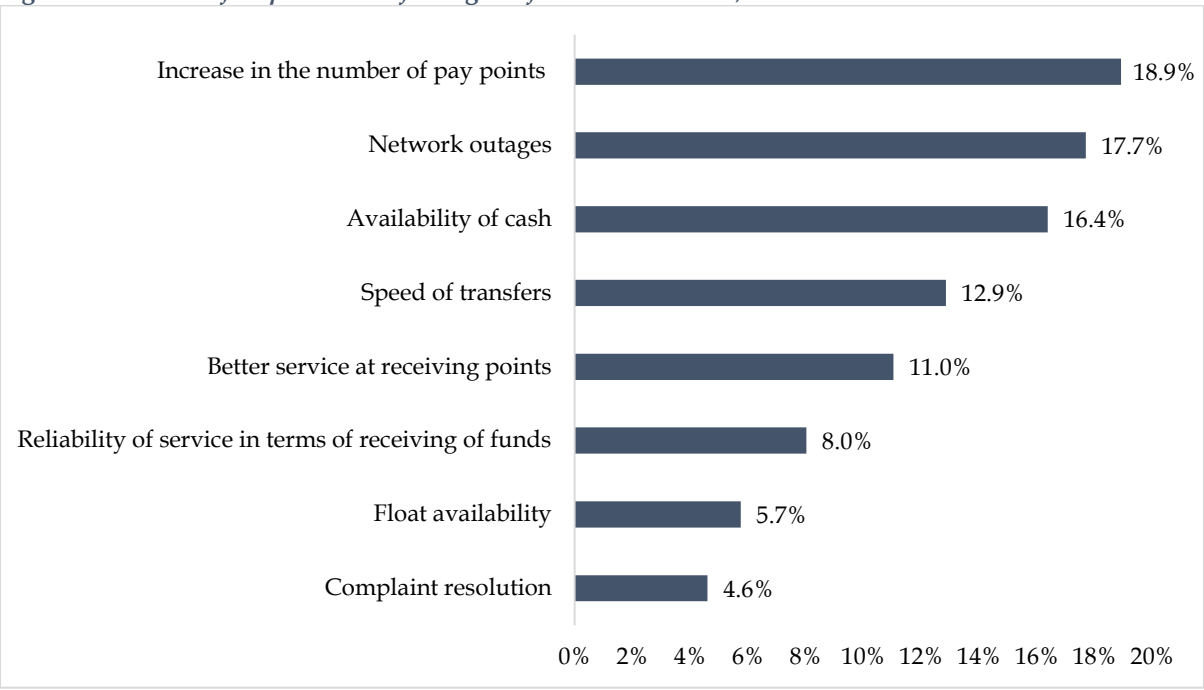
The majority of individuals aged 10 years and older that use digital financial services, accounting for 85.6 percent, were of the view that the quality of service for digital financial services was good. Only 1.2 percent of individuals aged 10 years and older indicated that they were of the view that the quality of service was poor.

Figure 165: Perceptions on quality of service for digital financial services; 2018



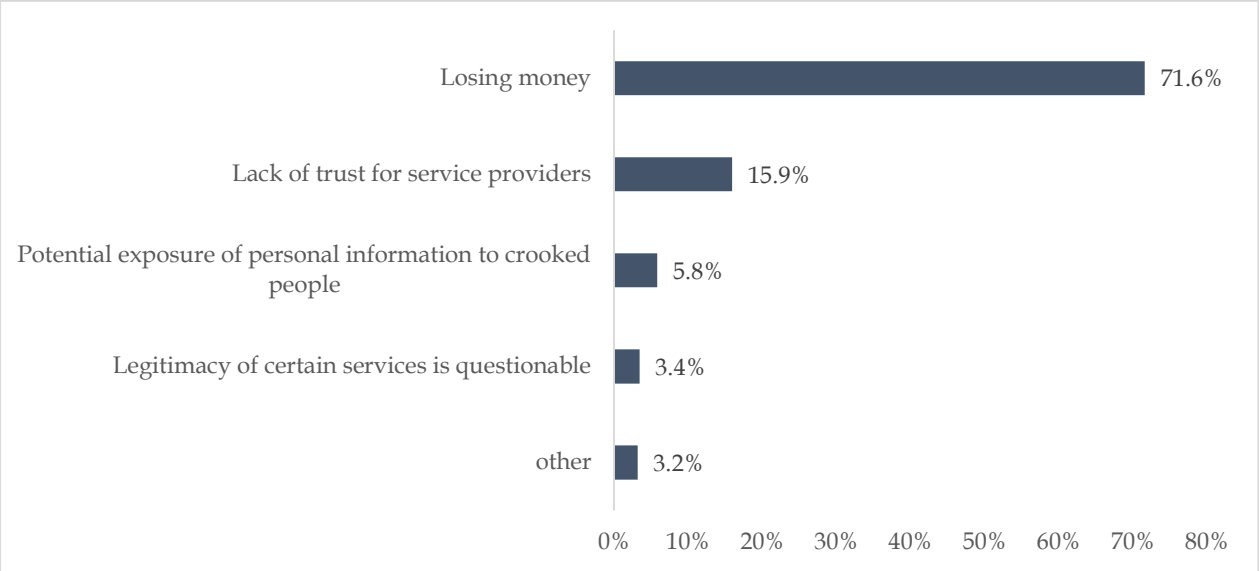
The most prominent areas cited for the improvement of delivery of digital financial services were related to increasing the number of pay points and minimising on network outages accounting for 18.9 percent and 17.7 percent of all the people aged 10 years and older that indicated that they transacted using digital financial services. Fewer individuals aged 10 years and older cited complaints resolution as the main area needing improvement in the delivery of digital financial services.

Figure 166: Areas of improvement for digital financial services; 2018



The main security concern noted by individuals aged 10 years and older that had used digital financial services was the risk of losing money accounting for 71.6 percent of all the individuals aged 10 years and older that had used the services. Other concerns noted included trust associated with the providers of the service as well as potential exposure of personal information and the legitimacy of some services provided.

Figure 167: Main security concerns with digital financial services; 2018



6.0. Electrical and Electronic Waste Management

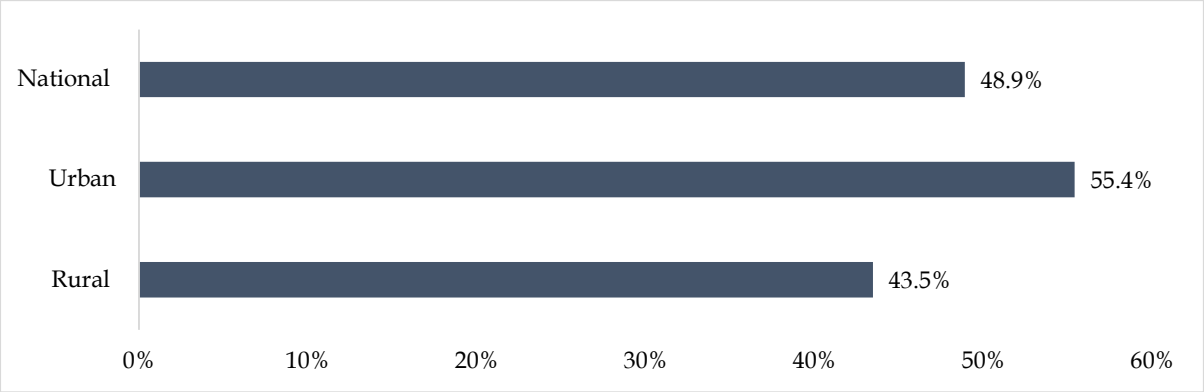
This chapter attempts to estimate the extent of disposal of electrical and electronic waste (e-waste) by households and individuals aged 10 years and older in Zambia. It highlights key trends in disposal of e-waste by region, type and the volume of this waste. An attempt is also made to determine the extent of e-waste by sex as well as that which is emanating from male and female headed households. The chapter also provides some insights relating to levels of awareness on dangers associated with unsafe disposal of e-waste and attempts to identify the common methods of disposal of this waste.

6.1. E-waste Management by Households

6.1.1. Disposal of Electrical and Electronic Waste

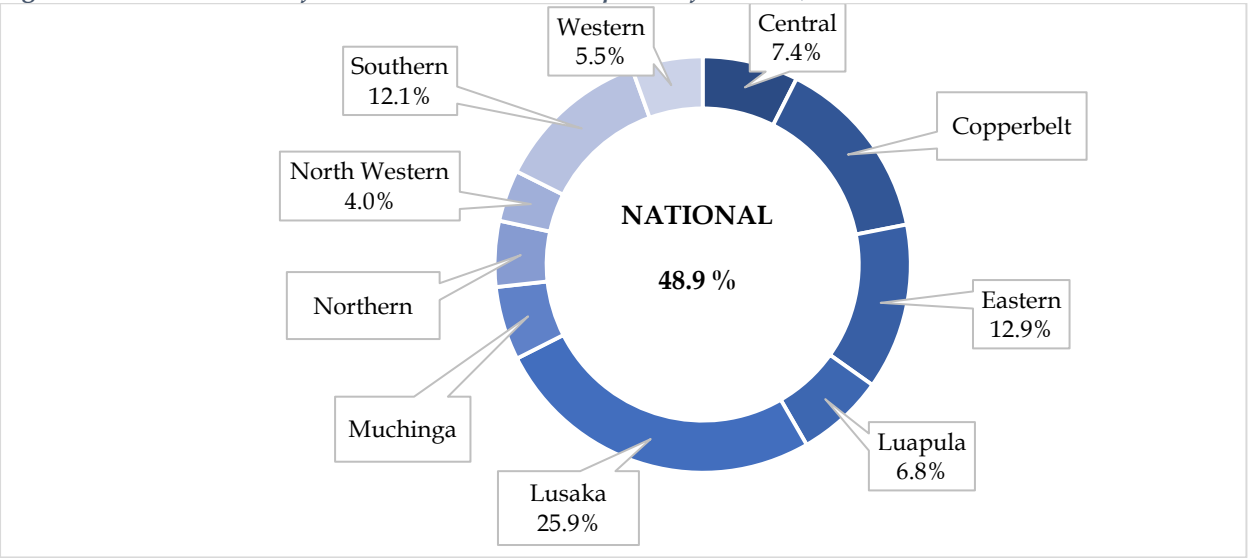
The survey estimated that 48.9 percent of all the households across the country had disposed of some electronic or electrical items which were damaged or were no longer useful to the households. The proportion of households that had disposed of some e-waste were higher in urban areas than in rural areas. Specifically, 55.4 percent of all the households in urban areas had disposed of some e-waste while only 43.5 percent of households in rural areas had disposed of similar waste.

Figure 168: Disposal of e-waste by region; 2018



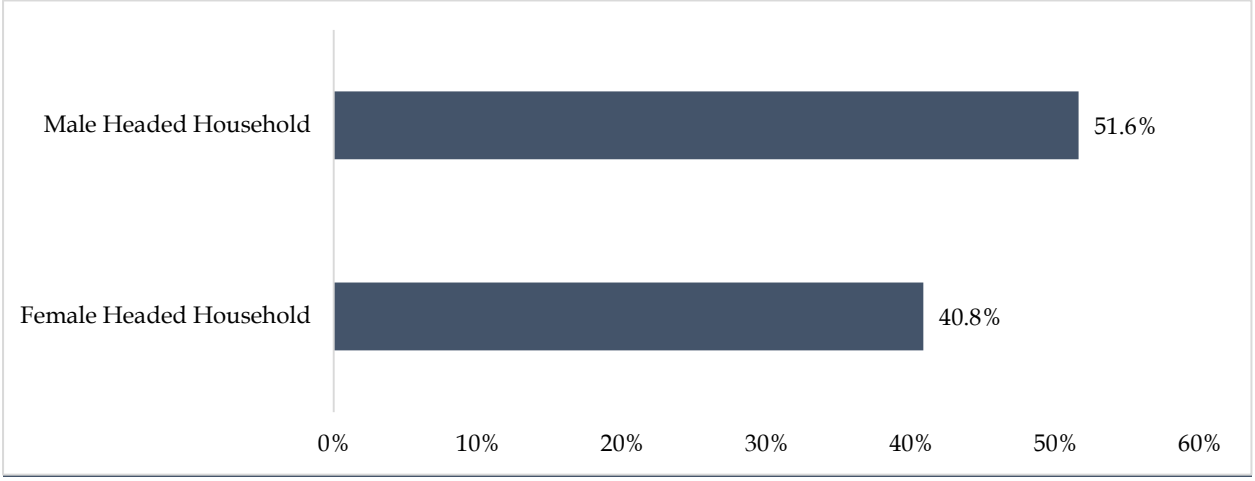
The majority of the households that had disposed of electronic or electrical waste were based in Lusaka, Copperbelt and Eastern Provinces constituting 25.9 percent, 14.5 percent and 12.9 percent of all the households that had disposed of electrical or electronic waste.

Figure 169: Distribution of households that had disposed of e-waste; 2018



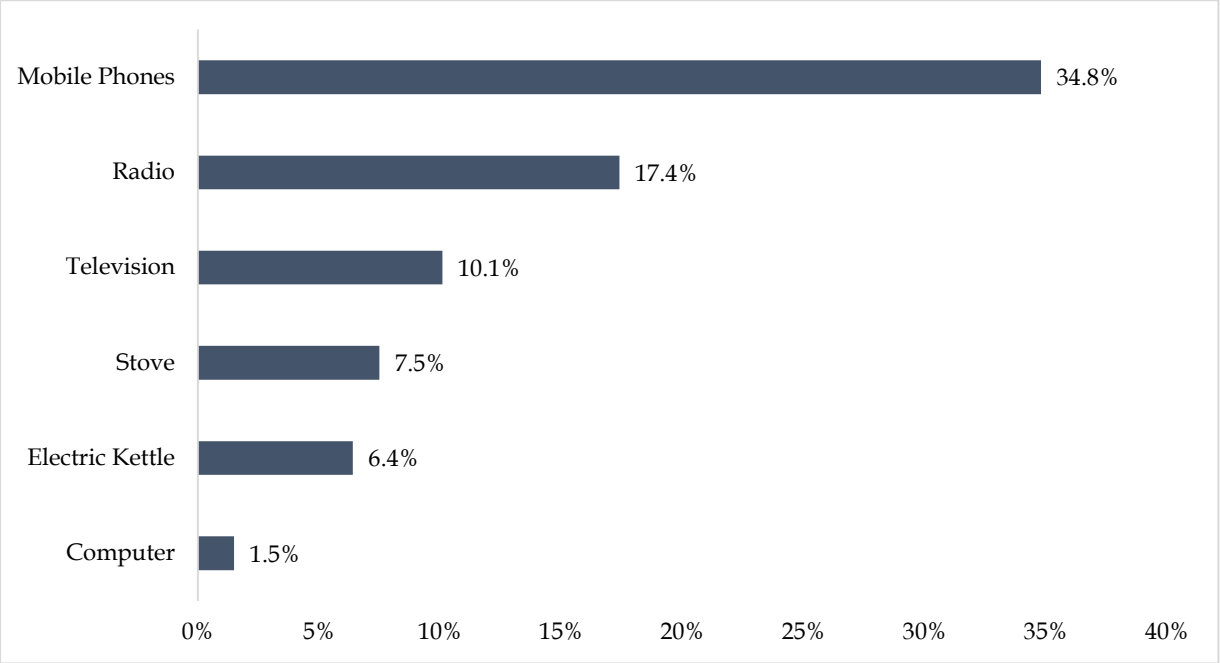
The proportion of male headed households that had disposed of e-waste was relatively higher than the proportion of female headed households that had disposed of e-waste. Particularly, 51.6 percent of the male headed households had disposed of e-waste while only 40.8 percent of the female headed households had disposed of e-waste.

Figure 170: Disposal of E-waste by sex of head of household; 2018



The survey established that mobile phones are among the most widely disposed of electronic items by households. Specifically, 34.8 percent of all the households across the country that had disposed of e-waste indicated that they had disposed of a mobile phone. On the other hand, only 1.5 percent of all the households across the country that had disposed of an e-waste reported ever disposing of a computer in the last three years.

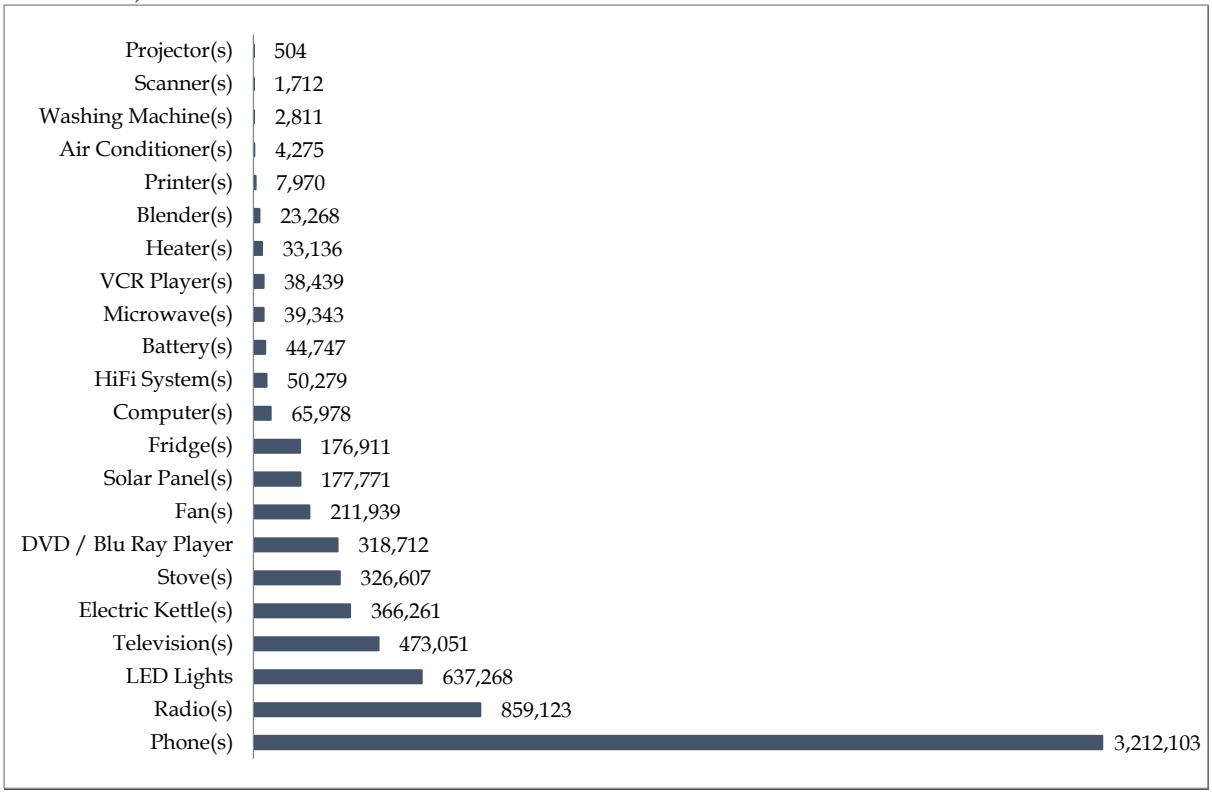
Figure 171: Disposal of selected e-waste by households; 2018



6.1.2. Volumes of Electrical and Electronic Waste

An assessment of the number of electrical or electronic items that were disposed by households revealed that mobile phones and radios were the most widely disposed items by households. On the other hand, scanner(s) and projector(s) were relatively less prominently disposed of.

Figure 172: Distribution of Estimated quantities of electrical and electronic items disposed of by households; 2018



6.2. Electronic Waste Management by Individuals

6.2.1. Disposal of Electronic and Electrical items

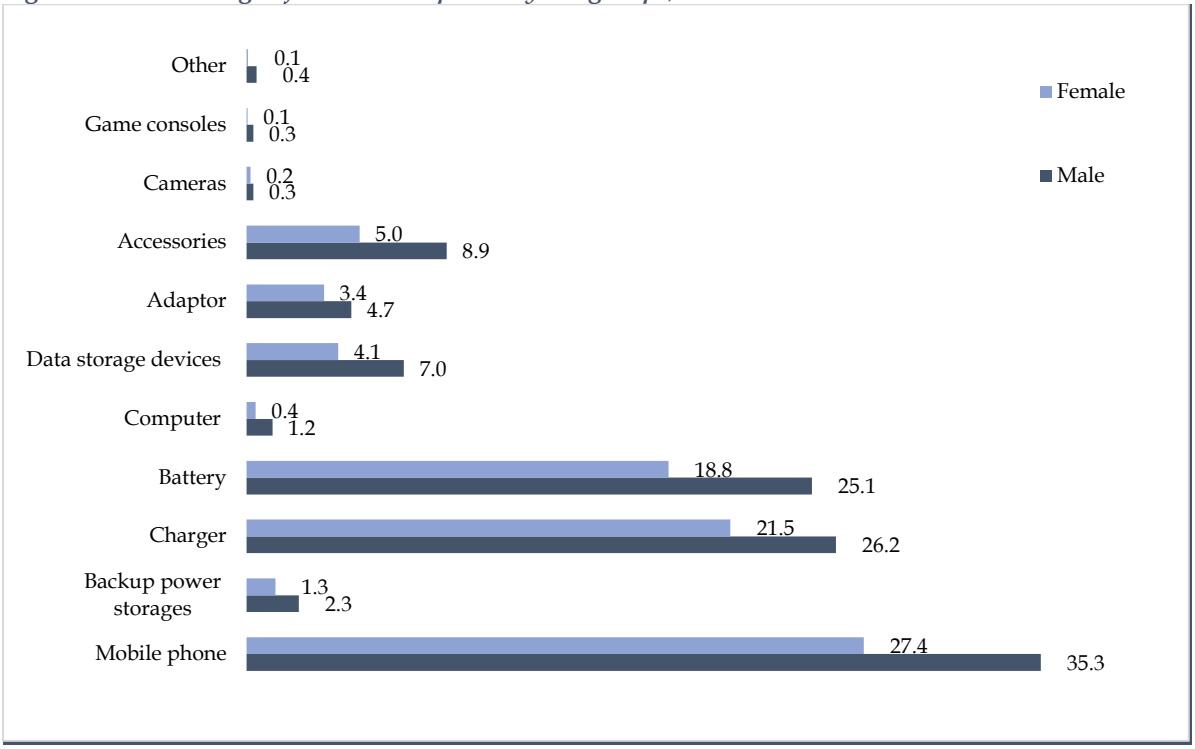
The survey established that 30.8 percent of all the individuals aged 10 years and older in the country aged above 10 years had disposed of mobile phones while 23.5 percent indicated that they had disposed of chargers. Further, 21.5 percent of all the individuals aged 10 years and older had disposed of batteries while only 6.7 percent had disposed of accessories such as headsets, data cables, and power packs.

Figure 173: Percentage distribution of individuals who disposed of e-waste; 2018

	Mobile phone	Backup power storages	Charger	Battery	Computer	Data storage devices	Adaptor	Accessories	Cameras	Game consoles
National	32.5	1.8	24.8	22.7	0.8	5.6	4.2	7.1	0.2	0.2
Province										
Central	34.0	2.5	21.3	26.7	0.4	5.4	1.9	6.6	0.5	0.4
Copperbelt	26.7	1.7	24.6	25.9	0.7	4.9	7.1	7.8	0.2	0.3
Eastern	30.2	0.8	24.8	30.0	0.2	5.1	2.4	6.0	0.2	0.0
Luapula	31.0	1.3	25.2	21.9	1.2	7.2	3.0	7.9	0.7	0.2
Lusaka	30.2	2.5	26.6	20.6	1.3	5.2	5.5	7.7	0.1	0.1
Muchinga	31.5	1.5	23.3	15.4	0.6	11.0	5.1	10.4	0.5	0.3
Northern	46.3	1.7	18.3	19.9	0.4	4.9	2.8	5.4	0.2	0.0
North-Western	32.9	0.8	26.9	22.3	0.1	5.9	3.2	6.4	0.3	0.0
Southern	41.5	2.0	25.2	19.3	0.6	4.0	2.3	4.6	0.1	0.1
Western	36.3	0.6	24.0	25.2	0.5	5.9	1.4	5.6	0.1	0.0

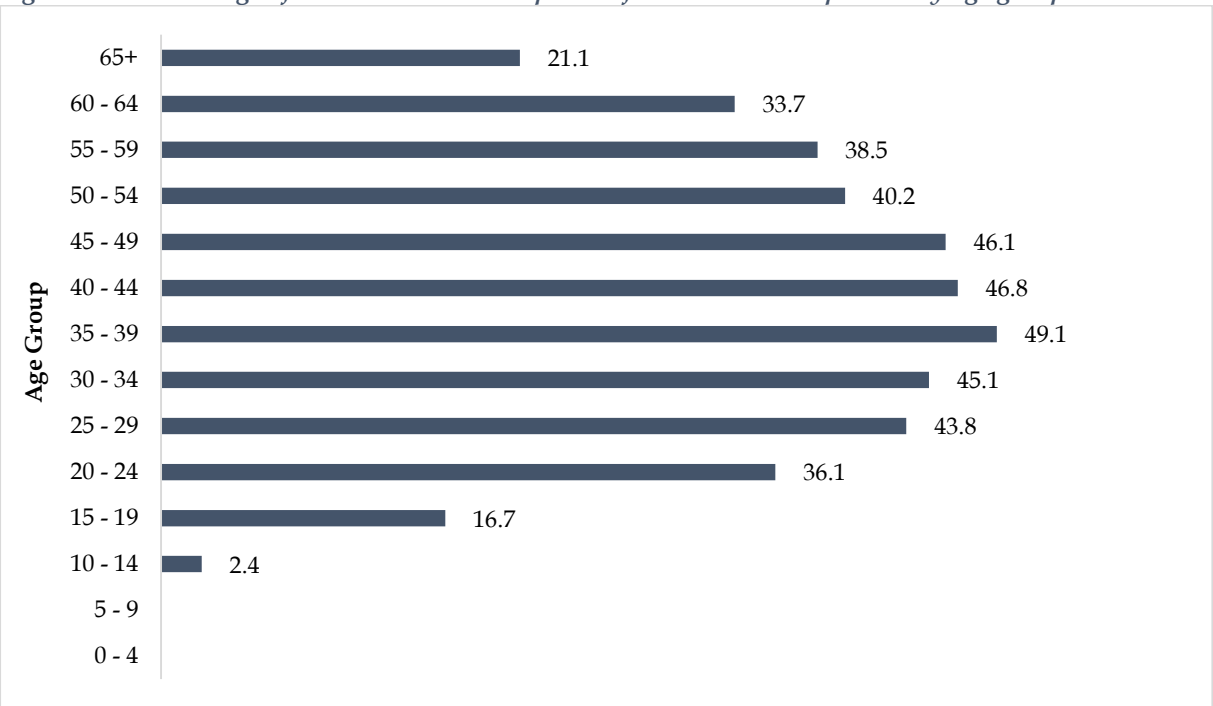
An assessment of the disposal patterns of e-waste within the different sex groups revealed that 35.3 percent of the males reported disposing of a mobile cellular phone, 26.2 percent a phone charger, 25.1 percent a battery and only 1.2 percent disposed of a computer. On the other hand, 27.4 percent of the females disposed of a mobile cellular phone, 21.5 percent a phone charger, 18.8 percent disposed of a battery and 0.4 percent disposed of a computer.

Figure 174: Percentage of e-waste disposal by sex groups; 2018



The survey established that the age group 35-39 years had the highest percentage of persons who disposed of mobile phones at 49.1 percent, followed by the age group between 40-44 years at 46.8 percent. It was observed that the younger age groups below 24 years had lower proportions of persons disposing of mobile cellular phones. A similar pattern was also observed for individuals aged above 60 years.

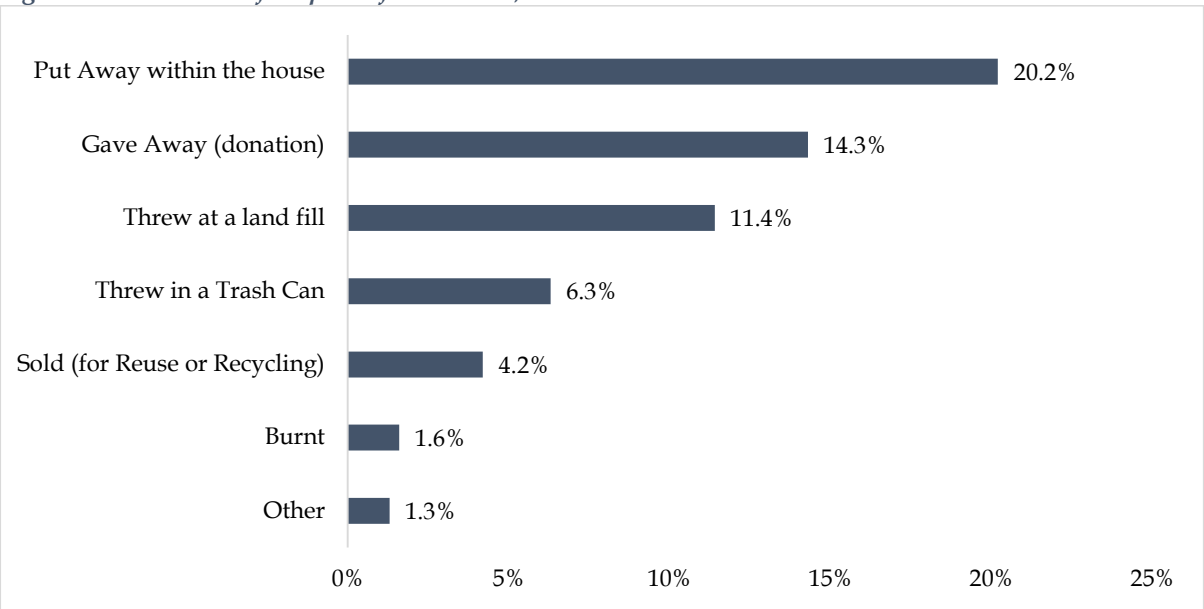
Figure 175: Percentage of individuals that disposed of mobile cellular phones by age group



6.2.2. Methods of Disposal for Electronic and Electrical Devices

The most prominent method of disposal for electronic and electrical waste by individuals was putting away of the electrical or electronic waste that was deemed unfit for use as well as donating of the devices constituting 20.2 percent and 14.3 percent of all the individuals aged 10 years and older that had disposed of some items. Only 11.4 percent of individuals aged 10 years and older reported that they threw their e–e-waste at a landfill. Only1.6 percent of all the individuals that had disposed of some items reported burning devices as a way of disposal.

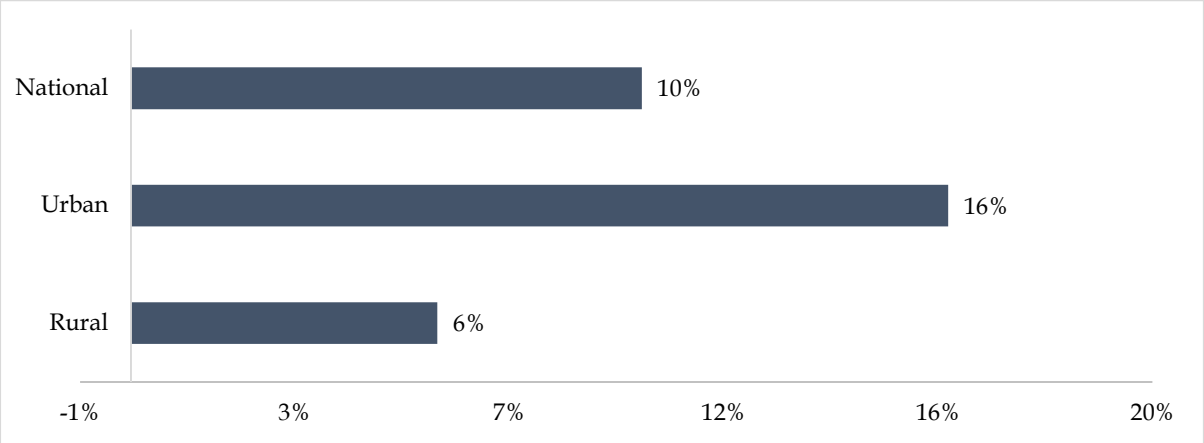
Figure 176: Methods of disposal for e-waste; 2018



6.2.3. Awareness of Dangers Associated with Unsafe Disposal of E-Waste

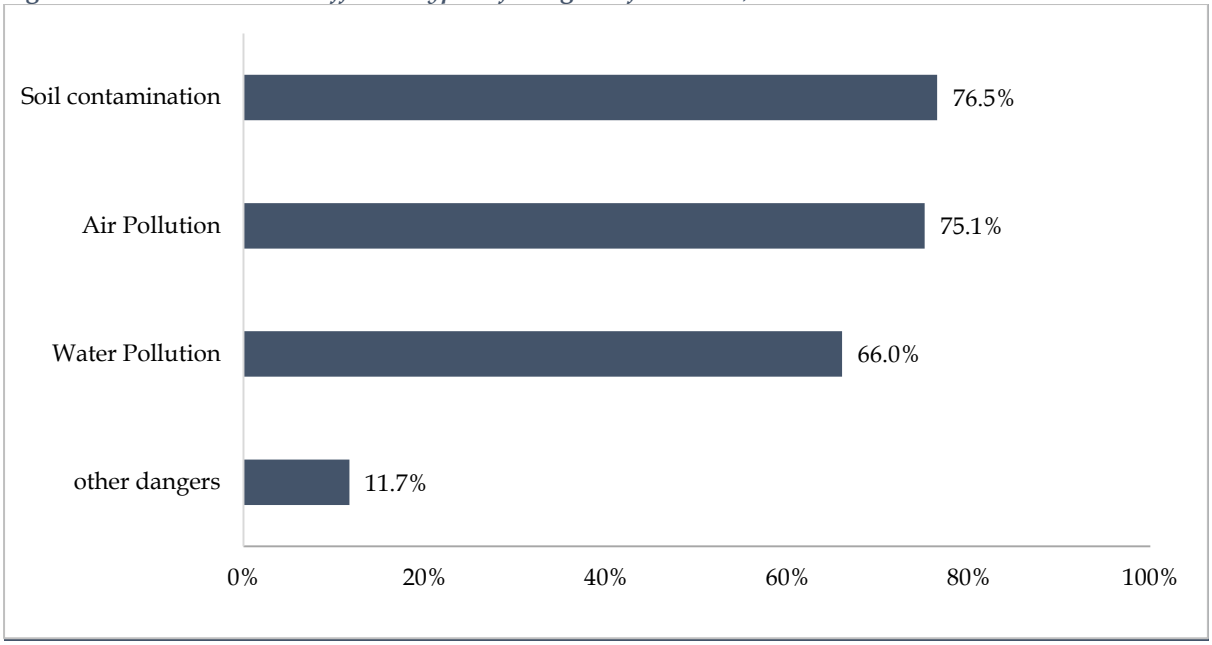
The survey established that only 10 percent of the population aged 10 years and older indicated that they had knowledge about the dangers associated with unsafe disposal of e-waste. The proportion of individuals aged 10 years and older aware of the risks associated with e-waste was relatively higher in urban areas compared to the rural areas. Specifically, 16 percent of the individuals aged 10 years and older in urban areas were aware of the risks associated with e-waste while only 6 percent of the individuals aged 10 years and older based in rural areas were aware of the dangers associated with e-waste.

Figure 177: Awareness of dangers of unsafe disposal of E-waste across Regions; 2018



The most prominent risk associated with unsafe disposal of e-waste that individuals aged 10 years and older were aware of was soil contamination and air pollution constituting 76.5 percent and 75.1 percent respectively of all the individuals aged 10 years and older that were aware of some dangers associated with unsafe disposal of e-waste.

Figure 178: Awareness on different types of dangers of E-waste; 2018



7.0. Key Conclusions, Policy and Regulatory Considerations

The 2018 survey on access and usage of ICTs was primarily aimed at measuring the progress attained by the country in enhancing the uptake of various ICT products and services by households and individuals. Other aspects investigated broadly related to the quality of experience for various ICTs, the risks associated with online activities as well as the mitigation strategies adopted by households and individuals. Further the survey provides insights regarding the adoption of digital financial services as well as the associated challenges in using the services and the barriers to the uptake of the services in the country. An assessment of the electrical or electronic waste management practices adopted by households and individuals were also evaluated.

Overall, there was significant progress observed in the uptake of various ICT products and services considered. Particularly, an outstanding improvement in the proportion of smartphone owners was observed between 2015 and 2018. The proportion of individuals that owned mobile phones that were smartphones increased from 13.5 percent to 29.6 percent over the last three years. This development was particularly high in the urban areas where an increase from 18.4 percent in 2015 to 42.1 percent in 2018 was observed. This is reflective of an exponential uptake of data services in the country. However, slower progress was observed in selected segments such as computer ownership by households. Specifically, only 8.1 percent of the households across the country reported to own a computer following a similar proportion in 2015 of 7.1 percent of the total number of households. Regional imbalances as well as provincial imbalances were prominent across all ICT products and services. It was evident that concentration in access and usage was mainly in Lusaka province, Copperbelt province, Southern Province and in some instances Central Province.

A number of challenges relating to the quality of experience in the course of using ICTs were observed. Notably, there was significant dissatisfaction relating to complaint resolution and accuracy in billing for mobile services as well as internet services. Further, there were reported challenges with internet speeds, voice clarity on mobile voice services, intermittent network outages and dropped calls. For the excluded, the barriers to the uptake of ICTs included knowledge and awareness on how to use the services, cost of the devices and services as well as the lack of network coverage. Online risks continues to be an important issue worth consideration as the levels of awareness and adoption of mitigation strategies remained low. Particularly, only 34.1 percent of the household heads indicated that there was a member of their household responsible for monitoring activities online. The main incidents for online risks were related to fake news and exposure to pornography which were even more extensive on social media platforms.

Digital financial services continued to play an important role in extending financial inclusion in the country. E-wallets were noted to be the most extensive form of financial accounts held by individuals aged 10 years and older. However, the extent of adoption was relatively minimal in view of the potential that exists in the country. The main barriers to uptake were reported to be related to perceptions that the services are for the economically endowed, non-registration as well as limited access to the services.

However, some challenges exist in the usage of digital financial services. Notably, there were problems related to system failure or persistent down times, inadequate pay points, insufficient float by agents as well as delayed transmission of funds.

E-Waste management is a relatively new phenomenon in the country that has received little attention. Only 10 percent of the individuals aged 10 years and older that had disposed of some e-waste across the country indicated that they were aware of any safe methods of disposal. It was also noted that mobile phones were among the most prominent sources of electrical and electronic waste in the country. On average, one (1) million mobile cellular phones per year were disposed by households over the last three years prior to the survey. The most prominent methods of disposal included but were not limited to putting the devices away in the house and giving it away. Less than 5 percent of the individuals aged 10 years and older that had disposed of e-waste had taken the devices for recycling.

A number of policy and regulatory considerations can be drawn from the findings of the 2018 survey on access and usage of ICTs in the country. In the first place the increased adoption of ICTs as evident from the findings guides policy makers and the regulator to place more oversight on issues related to ICTs. This is because ICTs are likely to affect a larger cross section if not the entire population. Some issues for consideration are proposed below:

a) There is need to continue exploring avenues for extending access to electricity supplied by utility companies if increased adoption of ICTs is to persist. The survey estimates that only 32.9 percent of the households across the country access electricity through a utility company. Greater focus should be on rural areas as only 6 percent of the households in the rural areas had supply through a utility company compared to 65.5 percent of households based in urban areas.

b) Interventions aimed at increasing awareness need to be structured with the demographic composition of the population in mind. Particularly, over 78 percent of the population was aged below 35 years. At the same time, 52 percent of the population are female. Similarly, Lusaka and Copperbelt Provinces account for the largest proportion of the population. There were noted imbalances in access and usage of ICTs with respect to the geographical distribution of individuals and to a limited extent across sex groups.

c) There is need to explore avenues for enhancing the quality of television reception for the national broadcaster, which is the most widely adopted television station. Further, the adoption of ZNBC set-top boxes remains low despite the progress on the initiatives related to digital migration. Further, while community radio stations are the most widely accessed radio services, the quality of the reception was not the most favourable. More oversight may be useful to enhance the quality of radio services received by households.

d) The improvement in the adoption of fixed line services, partly explained by the use of SIM card based fixed telephones, provides an innovative prospect for the market segment. The market segment could be opened up to more innovative options such as fibre based services to complement the emergence of the SIM card based fixed telephones.

e) Deliberate policy actions aimed at increasing the uptake of computers in the country will be necessary. For instance, fiscal incentives aimed at either the importation of computers or local assembly of computers could provide a more affordable avenues for accessing the devices.

f) ICT skills remain nascent especially outside secondary school going individuals aged 10 years and older. Further, advanced ICT skills were notably low with the majority of individuals exhibiting basic skills. It will be useful to extend interventions aimed at enhancing ICT skills to primary schools as well as enhancing the depth of the curriculum on ICT training at all levels of education.

g) As smartphone ownership is expanding, exposure to online risks is expected to increase. It will be useful to enhance efforts aimed at increasing awareness on online risks as well as the mitigation measures for the risks. Particularly, fewer households were aware of the filters that can be provided by the internet service provider.

h) ZICTA must enhance its oversight on network availability, quality of voice call clarity, internet speeds, dropped call rates, complaint resolution and accuracy in billing. For instance, more periodic audits on the billing platforms could be undertaken. At the same time, more extensive tests on the quality of service could be considered.

i) The regulator could consider enhancing its efforts in mitigating the risks associated with fake news and exposure to pornography. This is especially prominent on social media platforms. Consideration could be given to increasing awareness on mitigation measures, channels of redress as well as more responsible use of the internet and social media in particular.

j) Efforts to extend financial inclusion through increased uptake of digital financial services will be useful. There is still a lot of scope to leverage on the increased adoption of ICTs to enhance financial inclusion. Much of the effort should be directed at increasing awareness about the services as well as spelling out misconceptions on the appeal of the services to the wealthy.

k) Regulatory oversight of digital financial services should include but not limited to improving the network availability, mitigating challenges with lack of float especially with most agents as well as monitoring key performance indicators on transmission of funds. There is also need to stimulate the agent networks coverage.

l) Awareness on safe disposal of e-waste remains a huge gap in Zambia. The Zambia Environmental Management Agency working with other stakeholders must enhance its awareness efforts to sensitise the public on the dangers of e-waste as well as the alternative methods for safer disposal of e-waste. This may also entail developing more platforms for safe disposal of e-waste. The increased accumulation of e-waste from mobile phones, chargers and batteries raises concern on the quality of devices available on the market. More oversight on the adherence to quality standards that could enhance the useful life of the devices may be useful to mitigate this growing challenge.

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Annexure 1: Household Level and Individual Level Questionnaire

Annexure 2: Survey Methodology

Target Population and Coverage

The target population for the survey was, all individuals who are aged above 10 years and were present at home at the time of the survey. The survey was conducted in all the ten (10) provinces of Zambia.

Sampling Design

The method of sampling that was adopted for this survey was a stratified two-stage sampling method. The survey objectives and the available sampling frame were the main determinants for the method.

The sample design for the survey called for a probability sample of 6,150 households in which all eligible persons aged 10 years and older were to be interviewed. The cluster-based household sample was selected country-wide, in every province and by urban/rural residence. The sample is nationally representative and designed to produce national, provincial, urban and rural estimates. Sample design for the first survey in 2013 began with the sample of 243 clusters and was based on the 2010 Census of Population and Housing as the sampling frame. In the second survey the number of clusters increased to 246, an improvement in sample size from the 243 clusters in the 2013 sampling. For the 2018 survey the same number of clusters was maintained. The 2010 sampling frame was used for all the three surveys.

Sampling Frame

The description of the structure of the 2010 census frame used for selecting the primary sampling units (PSUs), is given within Zambia's administrative boundaries. The provinces are subdivided into districts. For statistical purposes each district is

subdivided into Census Supervisory Areas (CSAs) and these are in turn subdivided into Enumeration Areas (EAs). EAs are grouped within wards while wards are grouped within constituencies. Constituencies are further grouped within districts and districts in provinces. The listing of EAs has information on the number of households and the population. The EAs are grouped into urban and rural categories within districts. There are about 25,000 EAs countrywide. The sample frame for this study was the list of EAs for the whole country.

Sample Size

The formulas to calculate sample size are based on simple random sampling. More complex sampling designs such as multi-stage sampling, lead to higher variances in survey estimates. Therefore it is necessary to inflate the sample size determined using simple random sampling formulas to take the type of design into account. The multiplication factor is called the design effect. The design effect (*deff*) is the ratio of the actual variance of a sample to the variance of a simple random sample of the same number of elements. This factor inflates the simple random sample size to take care of complexities of clustering and stratification in the sample design. This inflation factor is usually determined from other surveys of the same or similar design.

Therefore the sample size for this survey was computed step by step as:

Step.1

The first step involved calculation of initial simple random sample size was calculated as

$$n_{srs} = \frac{s^2}{[cv(p)\,p]^2} = \frac{p(1-p)}{[cv(p)\,p]^2}$$

$$n_{srs} = \frac{0.5(1-0.5)}{(0.05\times 0.5)^2} = 400$$

, where n_{srs} = initial simple random sample size, es^2 = variance under the assumption of simple random sampling, cv(p) is the coefficient of variation for the proportion and p = is an estimate of the proportion of the population that has the characteristic of interest or the probability of success.

Step. 2

The second step involves adjustment of the initial simple random sample with the design effect and the expected response rate. The design effect, however, is usually estimated subjectively by making use of whatever knowledge is available about the variability of Characteristics of interest in the population. For this survey, a design effect of 1.5 was used (being the recommended default value. A response rate of 97.5 percent was chosen.

$$n = \frac{n_{srs} \times deff}{r} = \frac{400 \times 1.5}{0.975} = 615$$

where n = the overall sample size under our design which is approximately 615 households.

n_{srs}= the initial simple random sample size

r = the expected response rate

$deff$=the design effect

A sample of about **615** households was derived to give reliable estimates at national level. However, since there are 10 analysis domains (provinces) for which separate estimates were required, initial sample size of households (615) was thus multiplied by 10 to get the overall sample size. Therefore, the overall sample size was **6,150** households, covering about 30,000 respondents.

Since the survey was based on stratified two-stage sampling, the initial selection of the sample involved selection of clusters or enumeration areas. The total number of clusters to be selected was based on a cluster take of 25 households per cluster i.e. the number of households to be selected in each selected enumeration area. An adjustment to the initial allocation was made to ensure an even number of clusters in each stratum as recommended. Therefore the number of clusters increased from 243 to 246, resulting into 6,150 households.

Sample allocation

Sample allocation to the provinces was done using proportional allocation, with population being the measure of size. This method ensures that each province gets a sample size which is representative of its population.

Sample allocation by province

Province	Population	Households Allocated	SEAS
Central	1,307,111	600	24
Copperbelt	1,972,317	950	38
Eastern	1,592,661	750	30
Luapula	991,927	450	18
Lusaka	2,191,225	1,000	40
Muchinga	711,657	350	14
Northern	1,105,824	500	20
North Western	727,044	350	14
Southern	1,589,926	750	30
Western	902,974	450	18
All Zambia	**13,092,666**	6,150	246

Sample selection

The sample was selected using a stratified two-stage sampling method. The first stage involved selection of clusters corresponding to SEAs from the frame developed for this survey. The second stage involved selection of households in the selected clusters. Equal probability selection method was used to get the required sample of end-users of ICT services in the chosen target areas.

Sampling Procedure

In order to make the sample selection more efficient, SEAs were selected with probability proportional to size (PPS) within each stratum. The SEAs were geographically ordered in a serpentine manner within each stratum. This ensured a systematic selection which resulted in implicit stratification. The systematic sampling procedure is efficient in terms of simplicity of selection and lowering sampling error.

In the second stage households will be selected from the selected clusters upon completion of the households listing exercise.

Selection of Clusters - PSUs

A cluster was the ultimate area unit retained in the survey. The procedure for selecting SEAs in each province involved:

For each stratum (province, rural/urban), a list of SEAs, ordered by SEA identification numbers was developed. The list included, for each SEA, the number of households and population and the cumulated measure of size (by adding the populations down the list).

For each stratum, a sampling interval, ($\boldsymbol{I_h}$) was determined by dividing the total population (final cumulated measure of size), by the number of sample SEAs allocated to the stratum, a_h.

$$I_h = \frac{\sum_{i=1}^{N_h} M_{hi}}{a_h}$$

where M_{hi} is the population in i^{th}SEA in stratum h,

$\sum_{i=1}^{N_h} M_{hi}$ is the size of the stratum (total population in the stratum according to the 2010 census) and a_h is the number of SEAs to be selected in the stratum.

A random number between 1 and I was then selected. This was the random start (R) for the systematic PPS selection of EAs.

When determining the selected SEAs from the selection numbers, the calculations will be as follows: $S_{hi} = R_h + [I_h * (i-1)]$, where $i = 1,2,---,n_h$, rounded up to the next integer. The sample SEA in the stratum was the one with the cumulated measure of size closest to the selection number, without exceeding it.

Selection of households

A frame of households was developed by listing all the households in all the selected SEAs. During the household listing, all the households were assigned sampling serial numbers. The sampling numbers were assigned sequentially within each cluster

starting from 1. The total number of households in the cluster was equal to the last serial number assigned.

The following steps were followed to select the households:

Let M = the total number of households listed in the SEA
n = the number of households to be selected from each cluster

A sampling interval for the cluster will be calculated as: M/n=I
A random number (R) between 1 and the last sampling serial number was generated; the first selection was hence R
The interval was added to the random number to get the next selection: R+I
Then, the interval was added repeatedly until the desired sample size.

Estimation

In order for the survey estimates ***to*** be representative at national or any domain level, it will be necessary to weight the sample data with appropriate expansion factors. Weighted analysis of sample survey results is needed to achieve unbiased or nearly unbiased estimates of population parameters. Weights compensate for unequal selection probabilities.

Weights

The weight for each sample unit is equal to the reciprocal/ inverse of its probability of selection.

The probability of selecting cluster *i* was calculated as;

$$P_{hi} = \frac{a_h M_{hi}}{\sum_{i=1}^{N_h} M_{hi}}.$$

The weight or boosting factor is, thus, given as

$$w_{hi} = \frac{1}{P_{hi}}$$

where: P_{hi} is the first stage sampling probability of (SEA), a_h is the number of SEAs selected in stratum h, M_{hi} is the size (population) of the i^{th} SEA in stratum h, and ΣM_{hi} is the total size of stratum h.

The selection probability of the household was be calculated as:

$$p_h = \frac{1}{I_h}$$

where I_h =the sampling interval for the i^{th}SEA in stratum h.

Let y_{hij} be an observation on variable Y for the j^{th} household in the i^{th} SEA of the h^{th} stratum. Then the estimated total for the h^{th} stratum is:

$$y_h = \sum_{i=1}^{a_h} \sum_{j=1}^{n_h} w_{hi} y_{hij}$$

where, y_h is the estimated total for the h^{th} stratum., w_{hi} is the weight for the j^{th} household in the i^{th} SEA of the h^{th} stratum, $j = 1 - ah$ is the number of selected clusters in the stratum, $j = 1 - nh$ is the number of sample households in the stratum. The rural and urban estimate is given by:

$$y = \sum_{h=1}^{H} y_h$$

where, y is the overall estimate, $h = 1, \dots, H$ is the total number of strata. For the purposes of this survey $H = 10$ (Provinces).

Data Collection Instruments

Three instruments were used in the data collection exercise, a listing form, one questionnaire for Households and Another for Individual members of the household. All were structured questionnaires consisting of a combination of closed and open-ended questions. Questionnaires were administered through face to face interviews with respondents using a CAPI. The ICT questionnaire was designed based on standard ICT indicators using the standard ITU manual for reference.

The 2018 ICT survey questionnaire was expanded to incorporate some new questions on E-waste management and specific gender related questions .The items that failed to produce useful data in previous surveys were dropped.

Recruitment and Training of field staff

Enumerators were recruited from among CSO enumerators in Provincial and District Offices, and among students in institutions of higher learning in the country. Enumerators and some supervisors underwent training to induct them into the background and purpose of the study and also to familiarize them with the questionnaires. Interviewers and supervisors attended a ten day training session in respective provinces in October 2018.

Data collection and Monitoring

Fieldwork was carried out by 10 interviewing teams each assigned to a province. Household and individual interviews were preceded by household listing in each selected cluster. Interviews were conducted only in the selected households. Fieldwork ran for a period of at least three weeks.

As a quality control measure, trainers of the field staff remained in the provinces after training to observe implementation of the fieldwork. The objective was to ensure that all field procedures and administration of the instruments was done correctly. The trainers listened to some interviews, checked a sample of completed questionnaires for errors, and discussed any problems or questions with the interview team.

Data Processing

Data Cleaning Process

Data cleaning is the process of identifying incomplete, incorrect, inaccurate, irrelevant data and then replacing, modifying or deleting the dirty data. The inconsistencies detected or removed may have been originally caused at the time of data capture, corruption in transmission or storage or by different data dictionary definitions of similar entities. The actual process of data cleaning may involve removing typographical errors or validating and correcting values against a known list of

entities. Data cleaning edit programmes were prepared based on the variables that were highly prone to errors during data collection.

Tabulation and Analysis

Following the tabulation plan, output tables were generated using SPSS software.

Annexure 3: Selected ITU Core Indicators