NATIONAL INFORMATION TECHNOLOGY AUTHORITY

2021

NITA-U STATISTICAL ABSTRACT

FOREWORD

The National Information Technology Authority-Uganda (NITA-U) is committed to the production and dissemination of quality Information Technology statistics. Specifically, indicators are required for monitoring the progress towards achieving the goals for the National Development Plan, Government Performance within the ICT sector and the United Nations Sustainable Development Goals. This Statistical Abstract is NITA-U's major annual publication through which key statistical information derived from the Authority's operations and administrative records of other agencies that are involved in the production of Information Technology statistics and International ICT publications are disseminated for use in tracking outcomes of policies and programmes as well as decision-making.

The information presented in this 2021 NITA-U Statistical Abstract covers statistics on NITA-U Human Resources, NITA-U Operations, Internet and Telephony, E-waste, ICT performance in the economy and Uganda's ICT rankings on the global scale. Information is presented either based on a calendar year (January-December) or Financial year (June-July) structure, depending on availability of data.

The Authority would like to appreciate the Uganda Bureau of Statistics' continued technical support and cooperation of the various agencies in providing the requisite data to produce this publication.

Copies of this publication are available on the NITA-U's website: https://www.nita.go.ug/statistics-0

It is my sincere hope that the statistical information in this publication will be used by the readers to make informed decisions.

Dr. Hatwib Mugasa
Executive Director

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CERT/CC	Cyber Security Emergency Response Team/Co-ordination Centre
DLGs	District Local Governments
EEE	Electric and Electronic Equipment
EGDI	E-Government Development Index
EPI	The e-participation index
EU	European Union
FY	Financial Year
GCI	Global Cybersecurity Index
HS	Harmonised System
ICT	Information and Communications Technology
IFMS	Integrated Financial Management System
ISIC	International Standard Industrial Classification of All Economic Activities
IT	Information Technology
ITU	International Telecommunications Union
MDAs	Ministries, Departments and Agencies
NBI	National Backbone Infrastructure
NCSI	National Cyber Security Index
NISF	National Information Security Framework
NITA-U	National Information Technology Authority-Uganda
NRI	Networked Readiness Index
POM	Placed on the Market
UGX	Ugandan Shillings
UMCS	Unified Messaging and Collaboration System
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar
USSD	Unstructured Supplementary Service Data

EXECUTIVE SUMMARY

This NITA-U Statistical Abstract is an annual publication of some key statistics produced within the Authority under its mandate to coordinate, promote and monitor Information Technology developments. Other statistics are collected from agencies that are involved in the production of Information Technology statistics. This publication is divided into six major thematic areas which include; NITA-U Human Resources statistics, NITA-U Operational statistics, Internet and Telephony statistics, E-waste statistics, ICT performance in the economy and Uganda's ICT rankings on the global scale.

NITA-U Human Resources Statistics

This section presents organisational statistics related to NITA-U staff. In the FY2020/21, the total number of NITA-U staff was Ninety (90) with 66% being male and 34% female.

NITA-U Operational Statistics

This section presents statistics on NITA-U's core business covering: National Backbone Infrastructure, e-Government services, priority IT standards, Compliance to IT standards, Certification of IT service providers, awareness of the existing cyber laws, and Information Security.

- In FY2020/21, 778kms of Optical Fibre cable were laid, bringing the total number of kilometers laid to 4,172 kms covering a total of fifty-eight (58) districts across the country.
- Of the 1,359 sites connected to the NBI, 850 (63%) were utilizing various services (Internet Bandwidth, IFMS, leased lines, and dark fiber) delivered over the NBI in FY2020/21compared to 423 sites out of 597 connected (71%) in FY2019/20.
- By the end of FY2020/21, there was a 35% increase in the Government applications being centrally hosted at the National Data Centre from 125 in FY2019/20 to 169.

- A total of thirty-four (34) Government websites were developed and revamped in the FY2020/21.
- In FY2020/21, UMCS was rolled out to additional forty (40) MDAs cumulatively bringing the total number of MDAs using the service to eighty-eight (88) with a total of 18,152 users with 87% usage.
- In FY2020/21, an addition of four (4) government entities were on boarded for the SMS gateway making a cumulative total of eighteen (18) entities utilizing twenty-two (22) services.
- By end of FY2020/21, the level of availability for hosted public services declined to 92.2% up from 95.6% in FY2019/20.
- In FY2020/21, a total of fourteen (14) National priority standards were developed, reviewed, and approved for mandatory implementation by the National Standards Council under the Uganda National Bureau of Standards (UNBS).
- In the FY2020/21, the overall MDA compliance with the standards for structured cabling and standards for the acquisition of IT Hardware improved from 69% in the previous financial year to 75.5%.
- NITA-U certified one hundred fifty-eight (158) firms in FY2020/21 as compared to eighty-seven (87) firms in FY2019/20.
- In FY2020/21, twenty-three (23) MDAs were compliant with the National Information Security Framework as compared to sixteen (16) in the previous financial year.
- For the FY2020/21, the National CERT/CC issued thirty-one (31) cyber security advisories as compared to fifty-seven (57) issued in FY2019/20.

Internet and Telephony statistics

This section covers statistics on internet and telephone subscriptions, Smartphones, and feature phones and Mobile network coverage in Uganda with the following highlights:

- Total internet subscriptions improved by 16% from 18.94million in FY2019/20 to 21.95million in FY2020/2021 translating into a penetration of 51.1 internet connections for every 100 Ugandans.
- A decline of 0.3% was recorded in mobile phone subscriptions from 25.44million in FY2019/20 to 25.37million in FY2020/21.
- Total telephone subscriptions of 28.99million was recorded in FY2020/21 compared to 25.65million registered in FY2019/20.
- There was an increase of 11% in telephone penetration per 100 subscribers from 61.0 in FY2019/20 to 67.6.
- In FY2020/21, smart phone subscriptions increased by 40% from 6.96million in FY2019/20 to 9.73million.
- Mobile broadband coverage (3G or above) was available to 89% of the population by the end of FY2020/21.

E-waste statistics

- The amount of Electric and Electronic Equipment placed on the market significantly increased by 53% from 424,427 tonnes in the year 2016 to 649,094 in 2020.
- In the year 2020, the amount of e-waste generated increased by 60% from 112,126 tonnes generated in 2016 to 179,537 tonnes. The biggest component of E-waste generated in 2020 was temperature exchange equipment which was followed by large equipment.

ICT sector performance in the economy

This includes statistics on the ICT sector GDP, trade in ICT goods, ICT sector revenue collections and ICT planned investment with the following high lights;

- The ICT sector value added in nominal terms increased to UGX 2.93trillion in FY2020/21 from UGX 2.79trillion in FY2019/20.

- The ICT sector contributed 2.0% of aggregate nominal GDP in FY2020/21 and this was the same in FY2019/20.
- The ICT sector GDP grew at 9.7% in FY2020/21 compared to the growth of 14.7% recorded in FY2019/20.
- During the FY2020/21, the total formal ICT export earnings declined by 6% from USD6.87Million in FY2019/20 to USD6.48Million.
- ICT goods exports as a percentage of total exports has been declining consistently over the past five years. In FY2020/21, it declined to 0.1% from 0.2% in FY2019/20.
- The total estimated formal ICT imports bill in FY2020/21 reduced to USD256.27Million from UGX USD255.54 million in FY2019/20 translating into a 0.3% increase.
- The number of licensed companies to carry out ICT projects/services increased from ten (10) in FY2019/20 to eleven (11) in FY2020/21.
- The total number of planned jobs to serve in ICT investments declined from one thousand and twenty-five (1,025) in FY2019/20 to eight hundred ninety-eight (898) in FY2020/21.

Uganda's ICT ranking on the global scale

This section comprises of the E-government Development Index; E-Participation Index; Networked Readiness Index; and Global Cybersecurity Index with the following highlights:

- Uganda's E-government Development Index improved by 10.9% from 40.55% in 2018 to 44.99% in 2020 which is above Africa's average of 39.14%. Greatest performance was recorded on Online Service Index (OSI) from 56.94% in 2018 to 58.24% in 2020; and Human Capital improved from 49.06% in 2018 to 53.95% in 2020. Although the Telecommunication Infrastructure Index improved by 45.5% from 15.66% in 2018 to 22.78% in 2020, it is still a concern.

- Uganda's e-Participation Index declined from 62.36% in 2018 to 57.14% in 2020.
- In 2021, Uganda ranked the 116th out of the 130 economies included in the Networked Readiness Index with a score of 31.51%. Its main strength relates to Governance pillar ranked the 94th with a score of 45.70%. The greatest scope for improvement concerns People pillar.
- Uganda's score in Global Cybersecurity Index was 69.98% in 2020 from 62.10% in 2018. Uganda performed fairly well on the legal measures pillar with a score of 78.20%, followed by cooperative measures at 78.15% and technical measures at 70.95%. The greatest scope for improvement, concerns organisational measures (68.25%) and least on capacity development (54.35%).

GLOSSARY

Bandwidth:

This describes the maximum data transfer rate of a network or internet connection. It measures how much data can be sent over a specific connection in a given amount of time.

Cyber Laws:

These are laws put in place in to facilitate transacting and communicating using electronic platforms, specifically, consumer protection matters. They include; Electronic Transactions Act, 2011; Electronic Signatures Act, 2011 and Computer Misuse Act, 2011, The Data Protection and Privacy Act, 2019 and all the Regulations promulgated under the National Information Technology Authority, Uganda Act, 2009.

Dark fiber service:

This refers to un-used fiber optic capacity on the NBI leased out to clients.

Data Centre:

This is a large group of networked computer servers typically used by organizations for the remote storage, processing, or distribution of large amounts of data. The National Data Centre is fully equipped with state of the art technology which is utilised for Centralized Hosting Services, Disaster Recovery Services and other Data Centre Services for Government Applications & Data.

E-Citizens Portal:

This a one-stop centre for Government online services (http://www.ecitizen.go.ug). Its main objective is to enhance Government service delivery to citizens, non-citizens, businesses and to Government Ministries, Departments and Agencies (MDAs).

E-Government:

This is the use of information and communication technologies to deliver public services in a convenient, efficient customer-oriented and cost-effective way.

E-Government Development Index:

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

E-Government Regulations:

These are regulations that aim at promoting e-government services and electronic communications and transactions with public and private bodies, institutions and citizens enacted under the National Information Technology Authority, Uganda Act, 2009.

E-Participation Index:

The e-participation index (EPI) is derived as a supplementary index to the UN E-Government Survey. It extends the dimension of the survey by focusing on the use of online services to facilitate provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation"), and engagement in decision-making processes ("e-decision making").

E-Services:

These are services delivered through the use information and communication technologies (ICTs). The three main components of e-services are; service provider, service receiver and the channels of service delivery (i.e. technology).

Electronic Waste (E-Waste):

The Basel Convention on the control of trans-boundary movement and disposal of hazardous waste, to which Uganda is a member, defines E-Waste, as: "all

discarded electrical and electronic assemblies, scrap, components and batteries". E-Waste includes a broad range and growing number of electronic devices ranging from large household appliances such as refrigerators and air conditioners, to personal products such as handheld cellular phones, personal stereos, consumer electronics and computers.

Exports:

Outward flows comprising goods leaving the economic territory of a country to the rest of the world.

Feature phone:

A mobile phone that incorporates features such as the ability to access the internet and store and play music but lacks the advanced functionality of a smartphone.

Global Cybersecurity Index:

Global Cybersecurity Index (GCI) is a composite index produced, analysed and published by the International Telecommunication Union (ITU) to measure the commitment of countries to cybersecurity in order to raise cybersecurity awareness. Each country's level of development or engagement is assessed along five pillars – (i) Legal Measures, (ii) Technical Measures, (iii) Organizational Measures, (iv) Capacity Building, and (v) Cooperation – and then aggregated into an overall score.

Hardware & Software Standards:

These spell out the rationale for establishing minimum specifications and guidelines for use in the procurement of Information Technology hardware and software products by MDAs for sustainable and manageable IT in Government.

ICT Development Index:

The ICT Development Index (IDI) developed by the International Telecommunication Union is a measure that serves to monitor and compare developments in information and communication technology across countries.

The IDI is composed of ICT access, ICT use and ICT skills components. The IDI value ranges from one to ten.

ICT goods:

ICT goods is based on the World Customs Organisation's Harmonised System (HS) which defines ICT products (including ICT goods). ICT goods must either be intended to fulfill the function of information processing and communication by electronic means, including transmission and display, or use electronic processing to detect, measure and/or record physical phenomena, or to control a physical process.

ICT Sector:

The ICT sector combines manufacturing and services industries whose products primarily fulfil or enable the function of information processing and communication by electronic means, including transmission and display. This comprises ICT manufacturing industries, ICT trade industries and ICT services industries.

ICT services:

ICT services are those intended to enable the function of information processing and communication by electronic means.

IT Certification:

IT Certification is a formal procedure, by which NITA-U assesses, verifies and attests that a company/person providing information technology products or services meets the minimum requirements and standards.

Imports:

Inward flows of goods from the rest of the world into the economic territory of a country.

Information Technology:

This means the science of collecting and using information by means of computer systems and refers to computers, ancillary or peripheral equipment such as printers and scanners, software and firmware services including support services, and related resources and includes any equipment or interconnected systems that are used in the acquisition, storage, manipulation or processing, management, movement, control, display, transmission or reception of data or information.

Information Security:

This means the protection of information and information systems from unauthorised access, use, disclosure, disruption, modification or destruction.

Internet:

This is worldwide public computer network. It provides access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (not assumed to be only via a computer – it may also be by mobile phone, PDA, game machine, digital TV or other device). Internet access can be via a fixed or wireless network.

Leased line:

This refers to a dedicated connection that allows for communication between two sites (a point-to-point leased line) or between a site and the internet (an internet leased line). Leased lines typically deliver bandwidth over a leased fibre connection, although copper local tails can sometimes be used as well.

National Cyber Security Index:

National Cyber Security Index, developed by e-Governance Academy measures the preparedness of countries to prevent cyber threats and manage cyber incidents. Analysing these fields helps governments to identify the gaps in policies and strategies that should to be tackled to improve a country's cyber security. The NCSI focuses on measurable aspects of cyber security implemented by the central government:1. Legislation in force – legal acts, regulations, orders,

etc.; 2. Established units – existing organisations, departments, etc.; 3. Cooperation formats – committees, working groups, etc.; 4. Outcomes – policies, exercises, technologies, websites, programmes, etc. The maximum NCSI Score is always 100 (100%) regardless of whether indicators are added or removed.

Networked Readiness Index:

The Networked Readiness Index model recognizes the pervasiveness of digital technologies in today's networked world and focuses on four fundamental dimensions: Technology, People, Governance, and Impact. It covers issues ranging from future technologies such as AI and the Internet of Things (IoT) to the role of digital transformation in reaching the Sustainable Development Goals (SDGs). The Network Readiness Index provides nations with invaluable knowledge they must have to succeed and be future-ready.

Smartphone:

A class of mobile phones and of multipurpose mobile computing devices. They are distinguished from feature phones by their stronger hardware capabilities and extensive mobile operating systems, which facilitate wider software, internet (including web browsing over mobile broadband), and multimedia functionality (including music, video, cameras, and gaming), alongside core phone functions such as voice calls and text messaging.

Structured Cabling Standards:

These aim at providing guidance in the process of implementing structured cabling to enhance the delivery of voice, data and video conferencing services across the different Government MDAs.

Website:

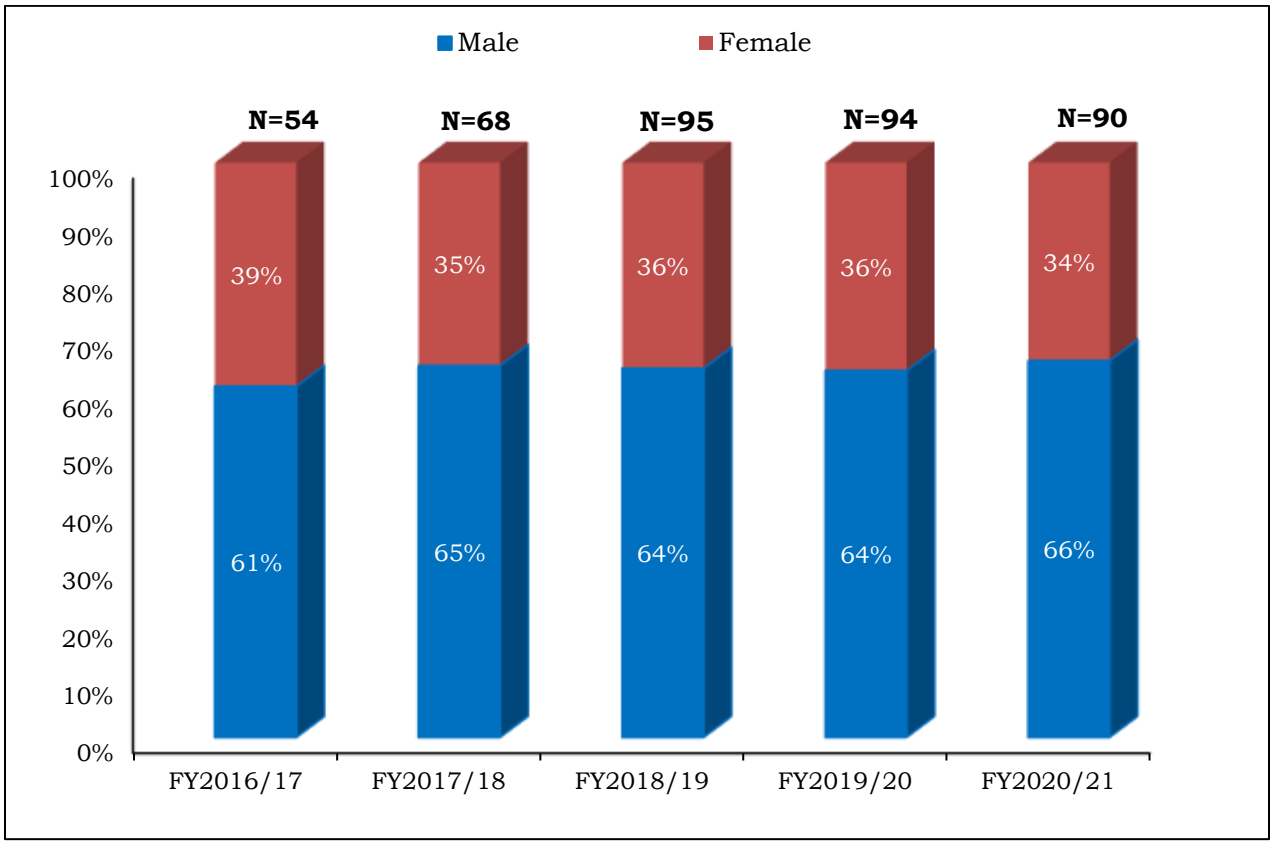
This means a location on the internet and a collection of web pages, images, videos, data which are addressed relative to a common Uniform Resource Location (National Information Technology Authority, Uganda (E-Government) Regulations, 2015).

1. NITA-U HUMAN RESOURCES STATISTICS

1.1 NITA-U Staff by Gender

This section covers statistics on NITA-U staffing levels by gender. In the FY2020/21, the total number of NITA-U staff was Ninety (90) compared to Ninety-four (94) recorded in FY2019/20. This translates into 66% being male and 34% female (Figure 1.1.1).

Figure 1.1.1: Number of Staff by Gender; FY2016/17-FY2020/21



Source: National Information Technology Authority-Uganda

2. NITA-U OPERATIONAL STATISTICS

This section contains statistics collected from NITA-U administrative reports/records on the business of the organisation. It covers the National Data Backbone Infrastructure, e-government services, IT standards, laws and regulation; and Information Security.

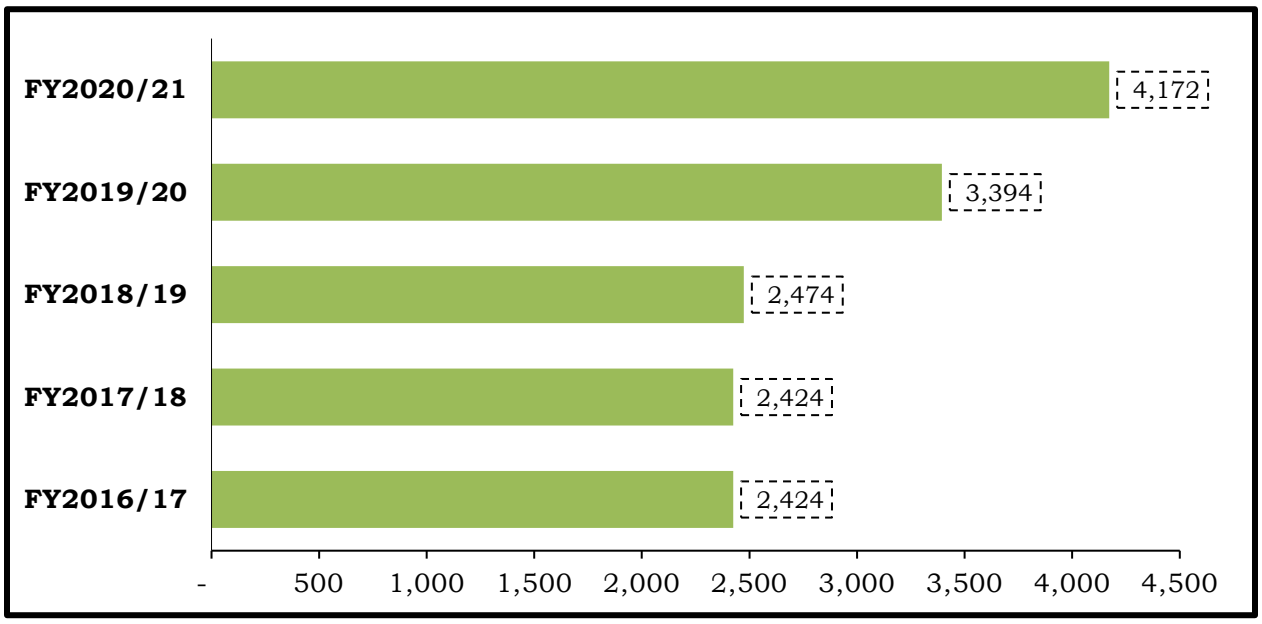
2.1 National Backbone Infrastructure (NBI)

This section provides information on the National Backbone Infrastructure whose major aim is to connect all major towns within the country onto an Optical Fibre Cable based Network and to connect Government entities onto the e-Government Network. Statistics on the kilometers of Optical Fibre Cable on the NBI; districts covered by the NBI; government sites connected to the NBI; government sites utilizing services over the government sites receiving Internet band width service over the NBI and government sites using other services over the NBI are presented in this section.

2.1.1 Kilometers of Optical Fibre Cable on the NBI

In FY2020/21, 778kms of Optical Fibre cable were laid bringing the total number of kilometers laid to 4,172 kms (Figure 2.1.1).

Figure 2.1.1: Kilometers of Fibre Optical Cable on the NBI; FY2016/17-FY2020/21

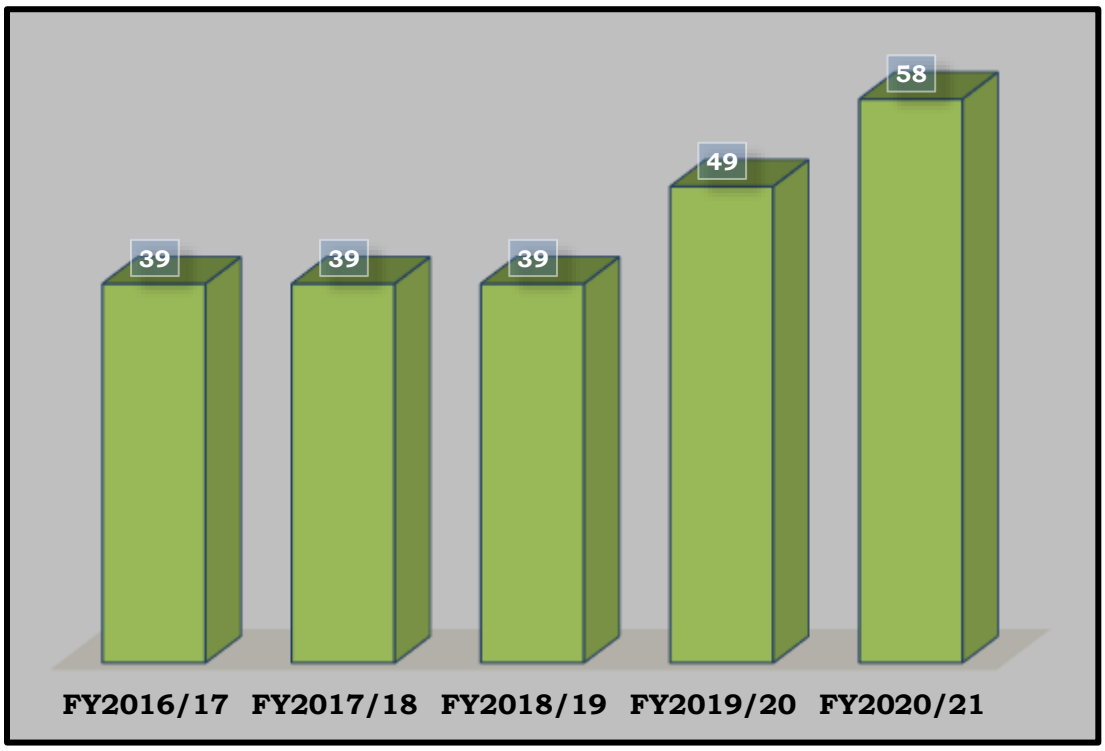


Source: National Information Technology Authority-Uganda

2.1.2 Districts connected to the NBI

By the end of FY2020/21, 58 districts headquarters of the 134 districts (43%) were connected to the NBI across the country compared to 49 districts in FY2019/20 (Figure 2.1.2).

Figure 2.1.2: Number of districts connected to the NBI; FY2016/17-FY2020/21



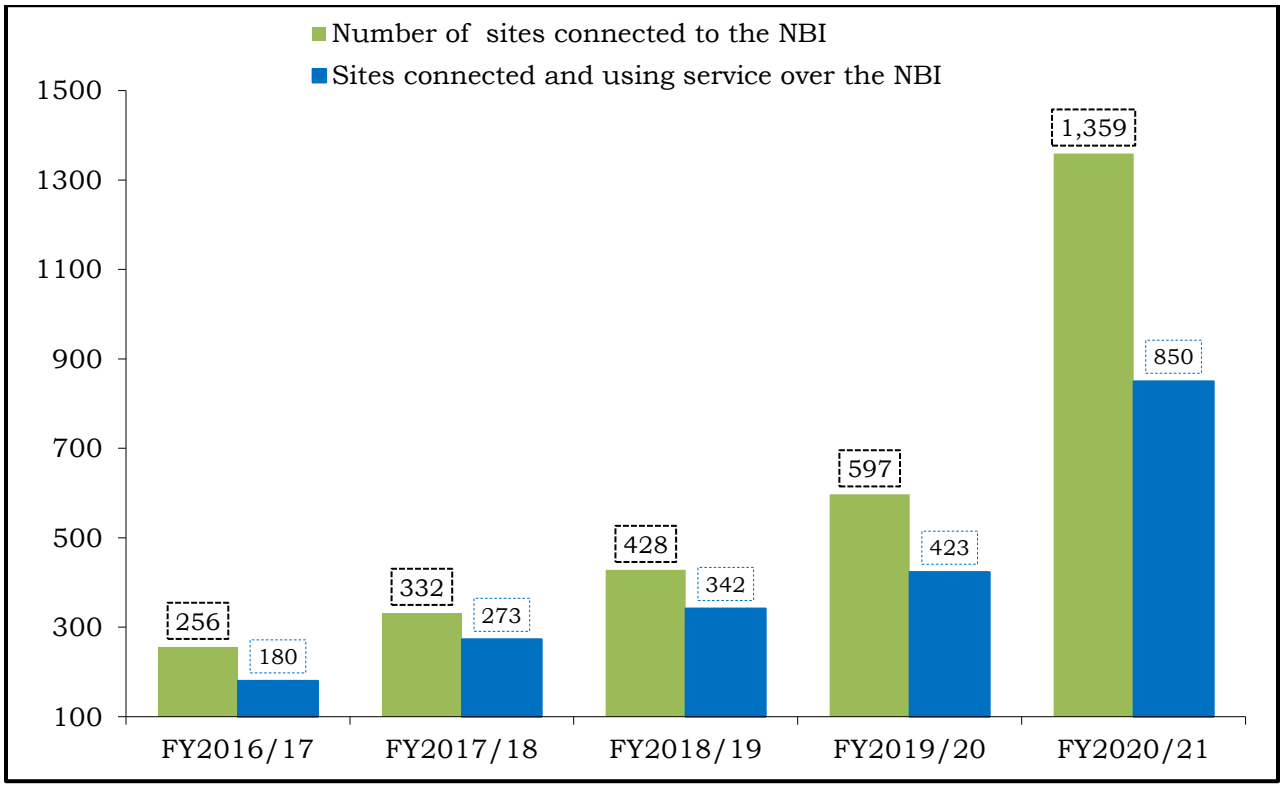
Source: National Information Technology Authority-Uganda

2.1.3 Sites connected to the NBI

Similarly, in FY2020/21, the NBI was further extended to seven hundred sixty-two (762) sites bringing the overall total number of sites connected to the NBI to one thousand three hundred fifty-nine (1,359). In FY2019/20 only (One Hundred Sixty-Nine (169) additional sites were recording leading a total of 597 sites (Figure 2.1.3).

Furthermore, of the 1,359 sites connected to the NBI, 850 (63%) were utilizing various services delivered over the NBI in FY 2020/21 compared to 423 sites out of 597 connected (71%) in FY 2019/20. The services over the NBI include; Internet Bandwidth, Data Centre hosting, Integrated Financial Management (IFMS) services, dark fibre among others.

Figure 2.1.3: Sites connected to the NBI and provision of services; FY2015/16-FY2020/21



Source: National Information Technology Authority-Uganda

2.2 Snapshot of e-government services

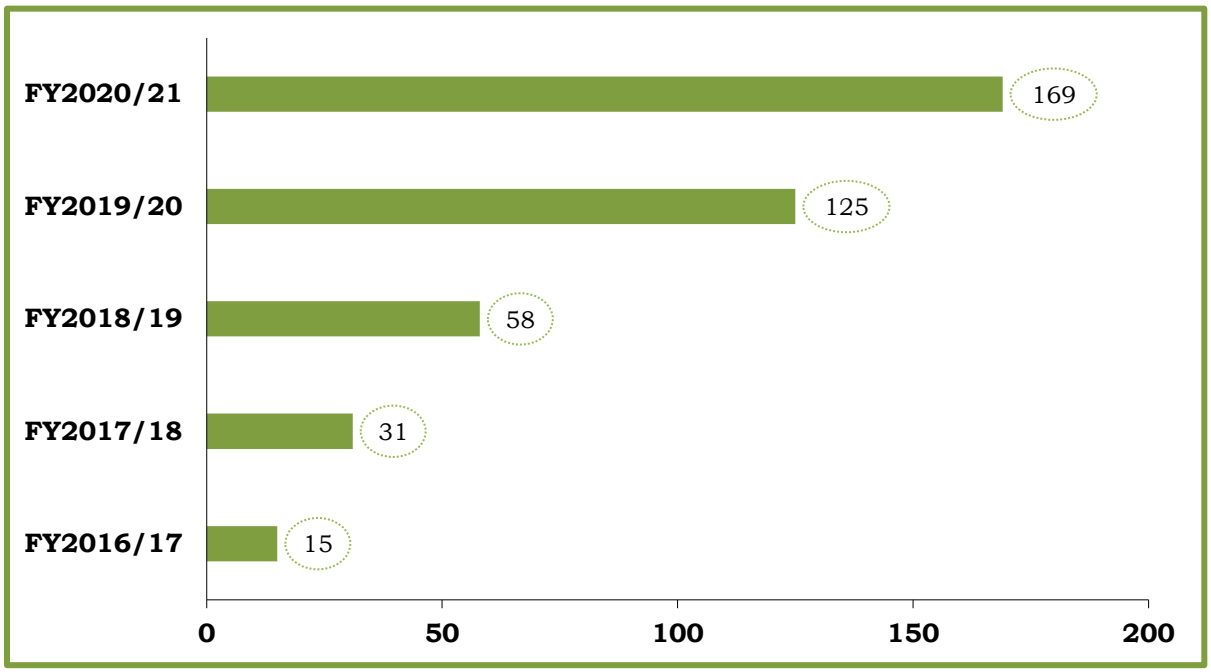
E-Government enables citizens, enterprises and organizations to carry out their business with government in a more efficient, transparent, and effective manner. Therefore, NITA-U is championing comprehensive implementation of information and communication technology in government Ministries, Departments, Agencies (MDAs) and Local Governments. The government has setup infrastructure and is promoting the roll out of e-services.

This section presents statistics among others on applications hosted at the National Data Centre, e-services accessed through the e-citizens Portal, MDAs/LGs provided technical assistance to in the implementation of e-Government projects and websites developed by NITA-U.

2.2.1 Applications hosted at the National Data Centre

Following the rationalization of IT services across government, by the end of the FY2020/21 one hundred and sixty-nine (169) applications for fifty-one (51) MDAs were hosted in the data center (Figure 2.2.1).

Figure 2.2.1: Number of applications hosted at the Data Centre; FY2016/17-FY2020/21

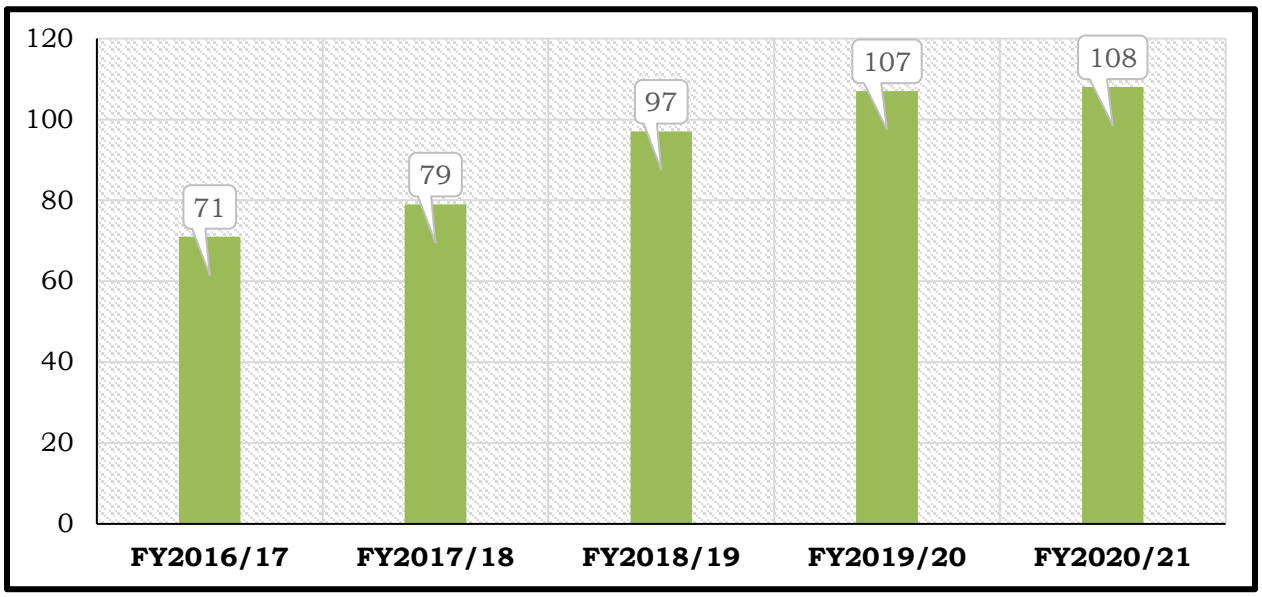


Source: National Information Technology Authority-Uganda

2.2.2 E-services accessed through the e-citizen portal

In the FY2020/21, One (1) new e-service (COVID-19 dashboard for ministry of Health) was added to the e-citizen portal (www.ecitizen.go.ug) bringing the total number of services accessible on the portal to one hundred eight (108) e-services that can be accessed by the citizens (Figure 2.2.3). The portal provides a centralized platform through which citizens can access the various e-services.

Figure 2.2.2: Number of e-services accessed through the e-citizens Portal; FY2016/17-FY2020/21

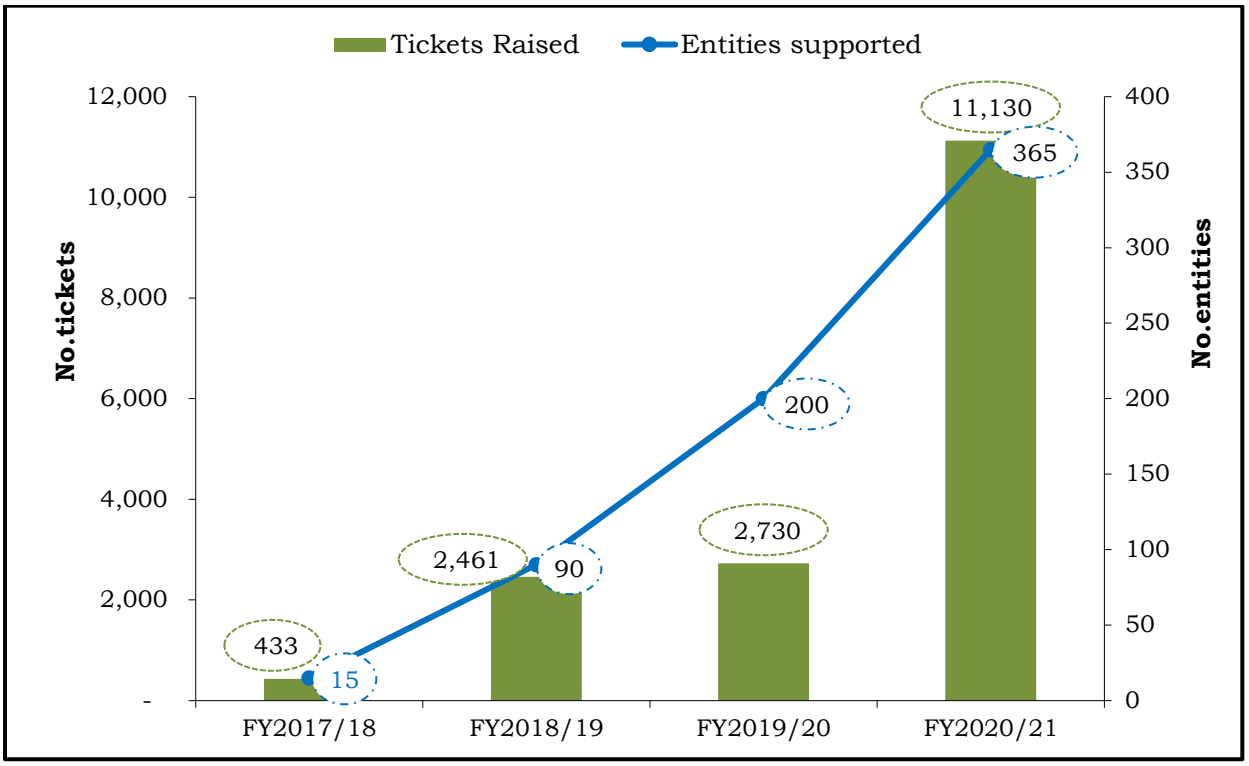


Source: National Information Technology Authority-Uganda

2.2.3 Usage of NITA-U IT Service Desk

NITA-U established the Government of Uganda IT Service Desk as a single Point of Contact for IT service delivery and support to all Ministries, Departments, Agencies and Local Governments. The usage of the Service Desk has improved considerably since its operationalization as seen Figure 2.2.3 below. Throughout the FY 2020/21, the Service Desk, together with the technical teams supported three hundred and sixty-five (365) entities. A total of 11,130 tickets were received and issues resolved through the ticketing tool (https://helpdesk.nita.go.ug)

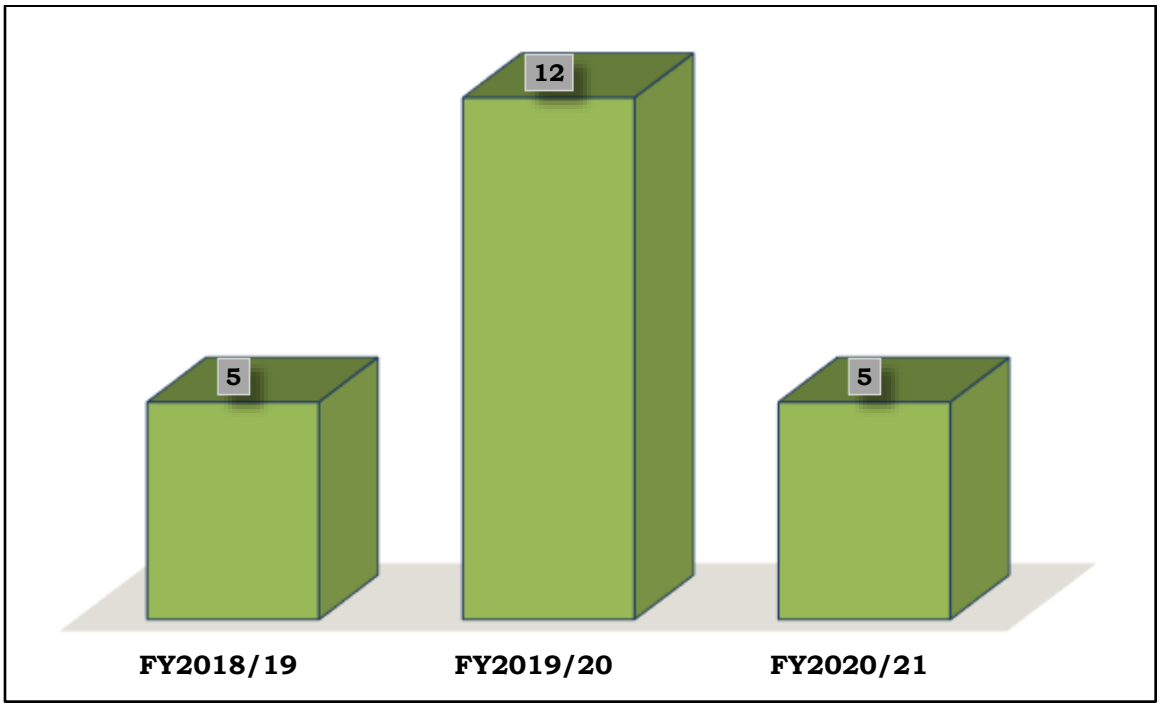
Figure 2.2.3: Growth in usage of service desk; FY2017/18-FY2020/21



2.2.4 Number of E-services developed

In FY2020/21, a total of five (5) e-services were developed of which, two (2) e-services were developed in an effort to support the fight against COVID-19. In FY2019/20, a total of twelve (12) e-services were developed of which seven (7) of them were developed to support the fight against COVID-19 and five (5) were developed to aid the smooth operation of entities (Figure 2.2.4).

Figure 2.2.4: Number of e-services developed; FY2018/19-FY2020/21

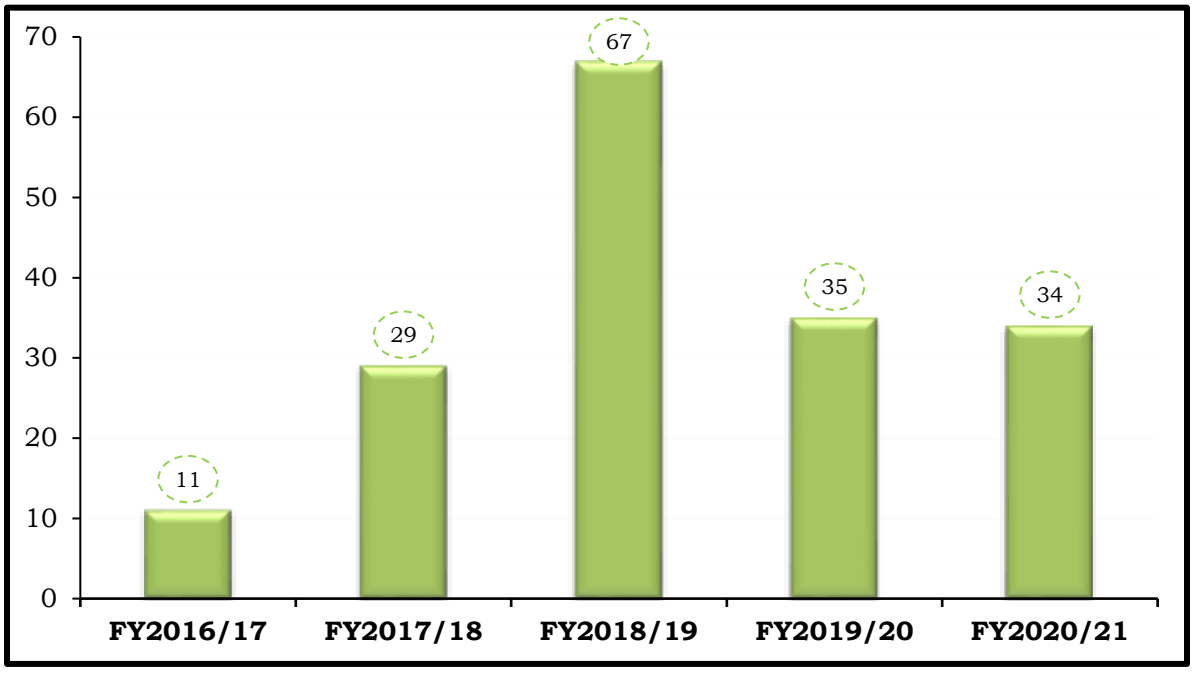


Source: National Information Technology Authority-Uganda

2.2.5 Websites developed

Furthermore, in FY2020/21, a total of **thirty-four (34)** Government websites were developed and revamped and in addition to that, **three hundred fifty-eight (358)** domains were renewed and managed (Figure 2.2.5).

Figure 2.2.5: Number of websites developed; FY2016/17-FY2020/21

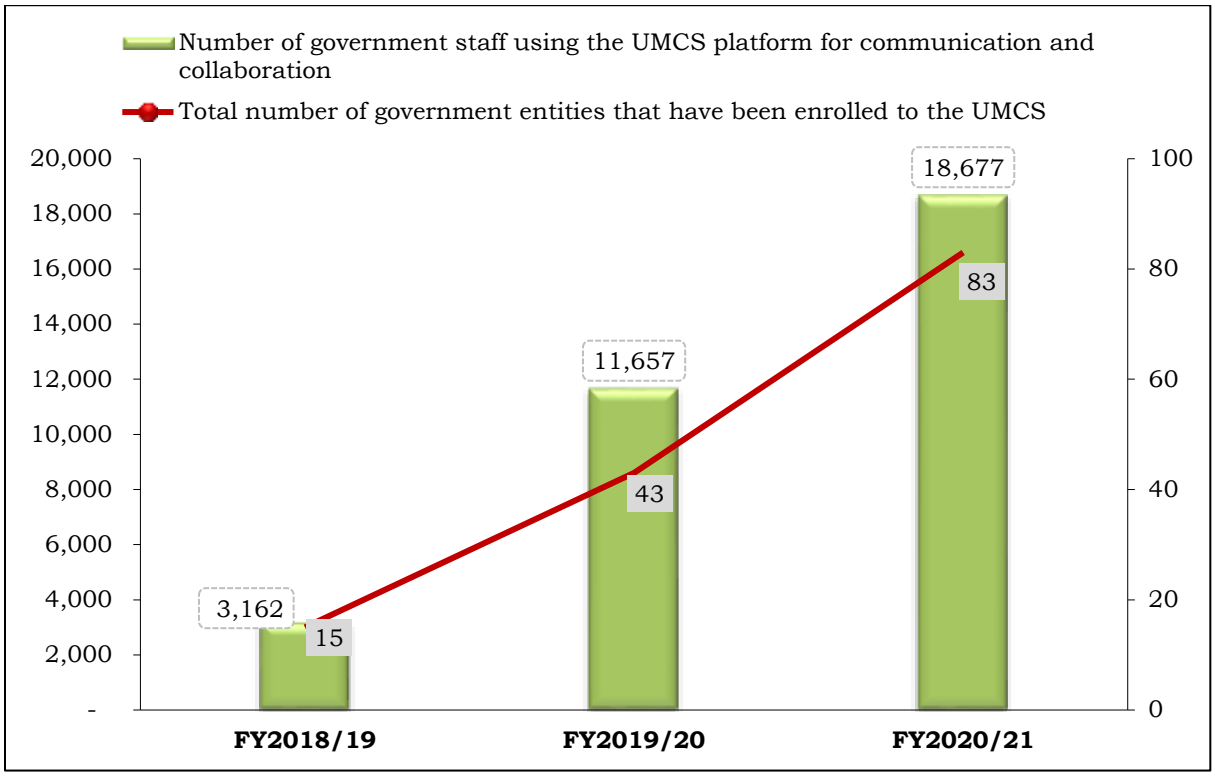


Source: National Information Technology Authority-Uganda

2.2.6 Unified Messaging and Collaboration System

NITA-U established the Unified Messaging and Collaboration System (UMCS) which provide a standardized platform for seamless communication across Government. In the FY2020/21, forty (40) Government Ministries, Departments and Agencies (MDAs) were on boarded onto the UMCS cumulatively bringing the total number of MDAs using the UMCS to eighty-three (83) MDAs with a total of 18,677 users. UMCS was rolled out to additional forty (40) Government Ministries, Departments and Agencies (MDAs) cumulatively bringing the total number of MDAs using the UMCS to eighty-three (83) with a total of 18,677 users across these Government entities (Figure 2.2.6).

Figure 2.2.6: Unified Messaging and Collaboration System; FY2018/19-FY2020/21

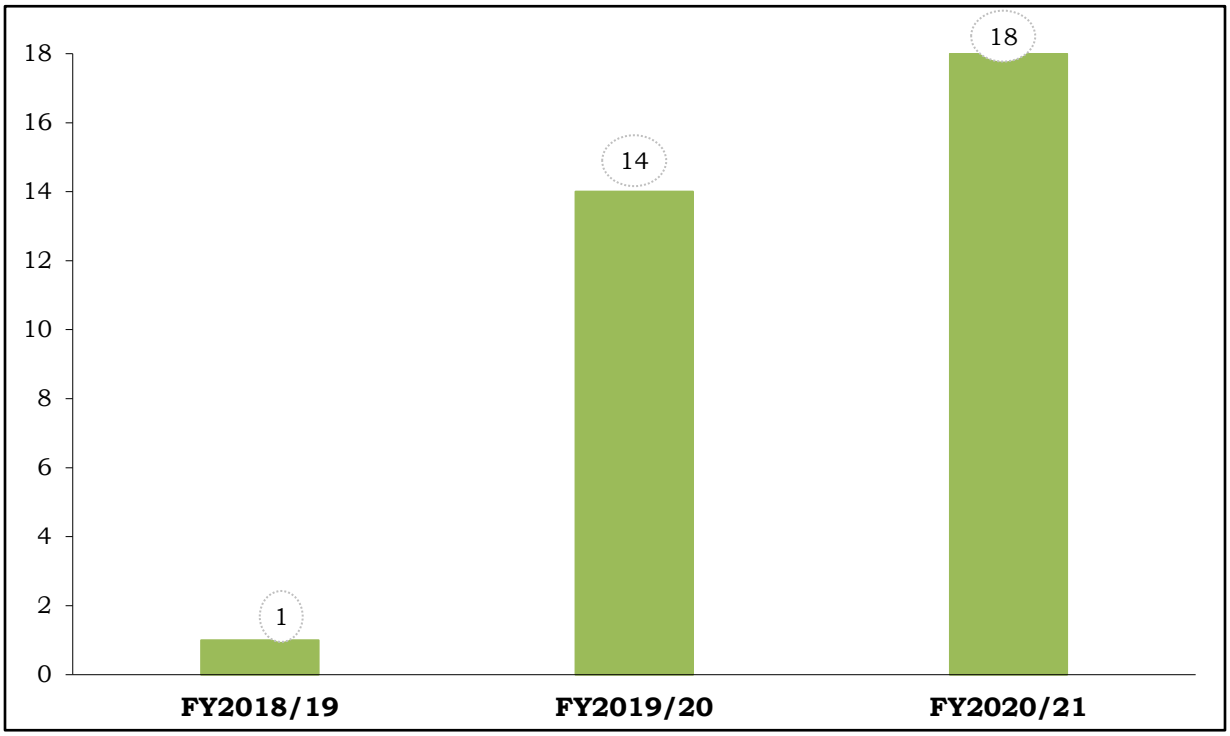


2.2.7 SMS Gateway

The SMS gateway was developed to provide a platform for dispatch of SMS in bulk by MDAs at affordable prices. Based on the market surveys carried out across Government entities, the SMS gateway costs are 40% cheaper thereby more affordable for citizens. Subscribers of MTN and Airtel can now receive SMS messages through the SMS Gateway with the short code 6120 and sender ID "NITA". The Subscribers can also access Government services through *260#.

In FY2020/21, an addition of four (4) government entities were on boarded for the SMS gateway making a cumulative total of eighteen (18) entities integrated with the SMS gateway utilizing twenty-two (22) services and a cumulative total of 31,200,000 SMSs had been pushed through from these entities.

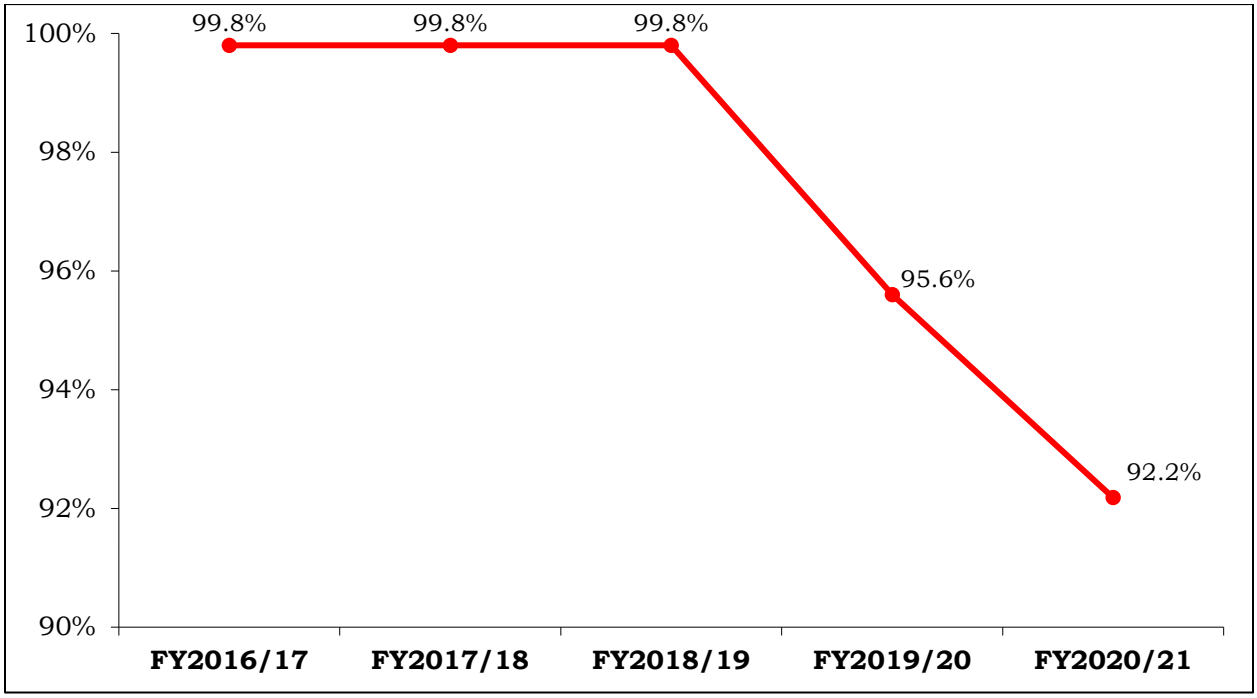
Figure 2.2.7: Number of services integrated with the SMS gateway; FY2018/17-FY2020/21



2.2.8 Availability for hosted public services

Furthermore, in FY2020/21, the level of availability for hosted public services (average uptime of the services hosted) declined to 92.2% up from 95.6% in FY2019/20 (Figure 2.2.8). On average, availability for hosted public services was as follows; an improvement from 82.0% in FY2019/21 to 93.2% on Internet Bandwidth services, 99.6% on leased line services maintained, a decline from 100% to 91% on Data Centre Services; 99.8% on IFMS services maintained and web services declined from 96.8% to 77.3%.

Figure 2.2.8: Level of availability for hosted public services; FY2016/17-FY2020/21



Source: National Information Technology Authority-Uganda

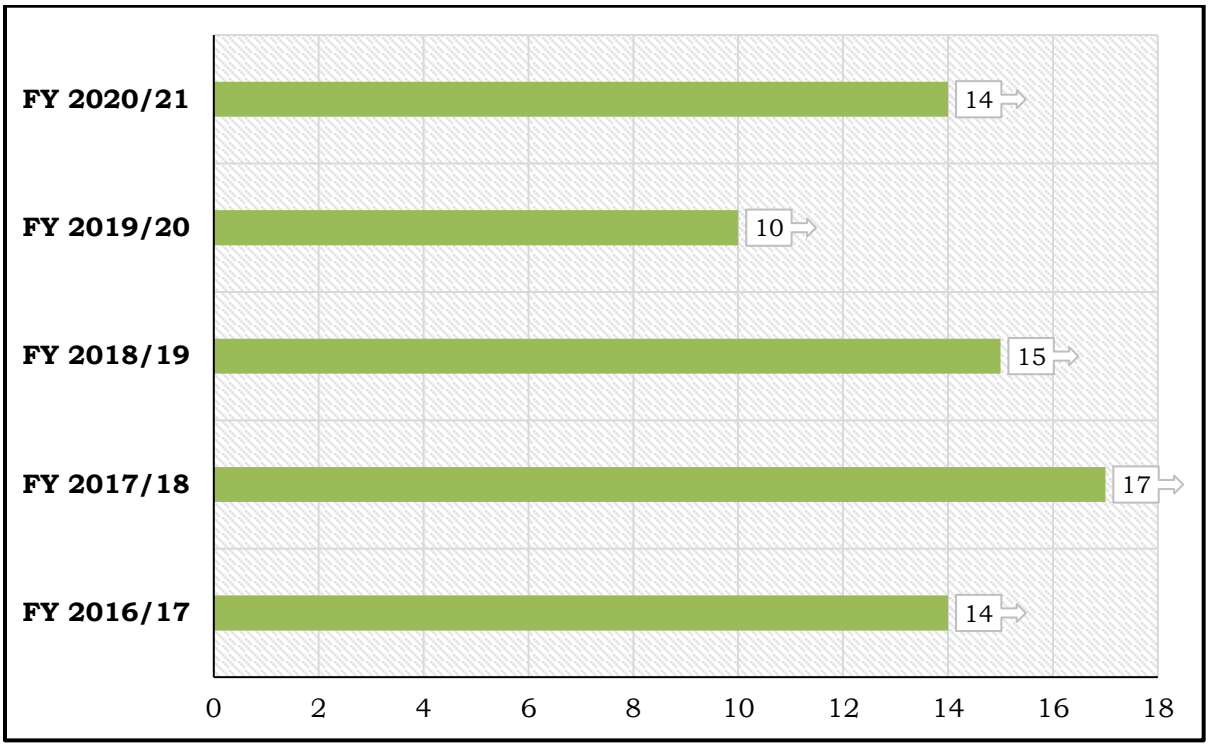
2.3 Priority IT Standards

NITA-U is charged with the responsibility of developing national information technology standards. These standards are developed through technical committees comprised of subject matter experts. These experts are sourced from different fields such as academia, industry, business, government regulatory bodies and independent researchers etc. In developing these standards, NITA-U prioritizes different competing needs and therefore the standards that have the greatest impact on the technological advancement of the country in line with the government's development programs are considered first for development. Such standards are considered to have a great impact on trade, security and affect positively the ability of government to deliver services in a fast, efficient, reliable and effective manner for all citizens which in turn has the effect of propelling the socio-economic development of the country.

In FY2020/21, a total of fourteen (14) National priority standards were developed, reviewed and approved for mandatory implementation by the National

Standards Council under the Uganda National Bureau of Standards (UNBS). The standards were developed in the areas of Cloud Data Management Interface (CDMI); Network cabling; Information Security; Concepts and vocabulary; Technical Risk Assessment; Securing communications; Guidelines for cyber-insurance respectively.

Figure 2.3.1: Number of IT Standards developed; FY2016/17-FY2020/21



Source: National Information Technology Authority-Uganda

2.4 Compliance to IT standards

NITA-U conducts compliance assessments in entities against the standards for structured cabling and guidelines; Standards for the acquisition of IT Hardware & Software; E-Government Regulations, 2015 and the Electronic Transactions Act, 2011.

In the FY2020/21, the average score for the eleven (11) MDAs assessed against

the Structured Cabling Standards was 71% from the 62% average score in FY2019/20. The average score achieved for the nine (9) entities assessed on the Guidelines and Standards for Acquisition of IT Hardware & Software for Government, 2013 was 80%, an improvement from the score of 76% in the past financial year. This translated into an improvement in the overall MDA compliance with the Standards from 69% in the previous financial year to 75.5% (Table 2.4.1).

Ten (10) online service providers were assessed against the consumer protection provisions under the Electronic Transactions Act, 2011 and on average scored 32% compared to a score of 49% for the entities assessed in the previous financial year.

Table 2.4.1: Number of Compliance Assessments and Compliance levels; FY2016/17-FY2020/21

Financial Year	**Number of MDAs assessed**	***Compliance levels (average score)***		
		Structured Cabling Standards, 2013	**Hardware & Software Standards, 2013**	**Overall score**
FY2016/2017	10	64%	73%	68.5%
FY2017/2018	10	62%	67%	64.5%
FY2018/2019	16	53%	-	59.0%
	11	-	65%	
FY2019/2020	13	62%	76%	69.0%
FY2020/2021	9	-	80%	75.5%
	11	71%	-	

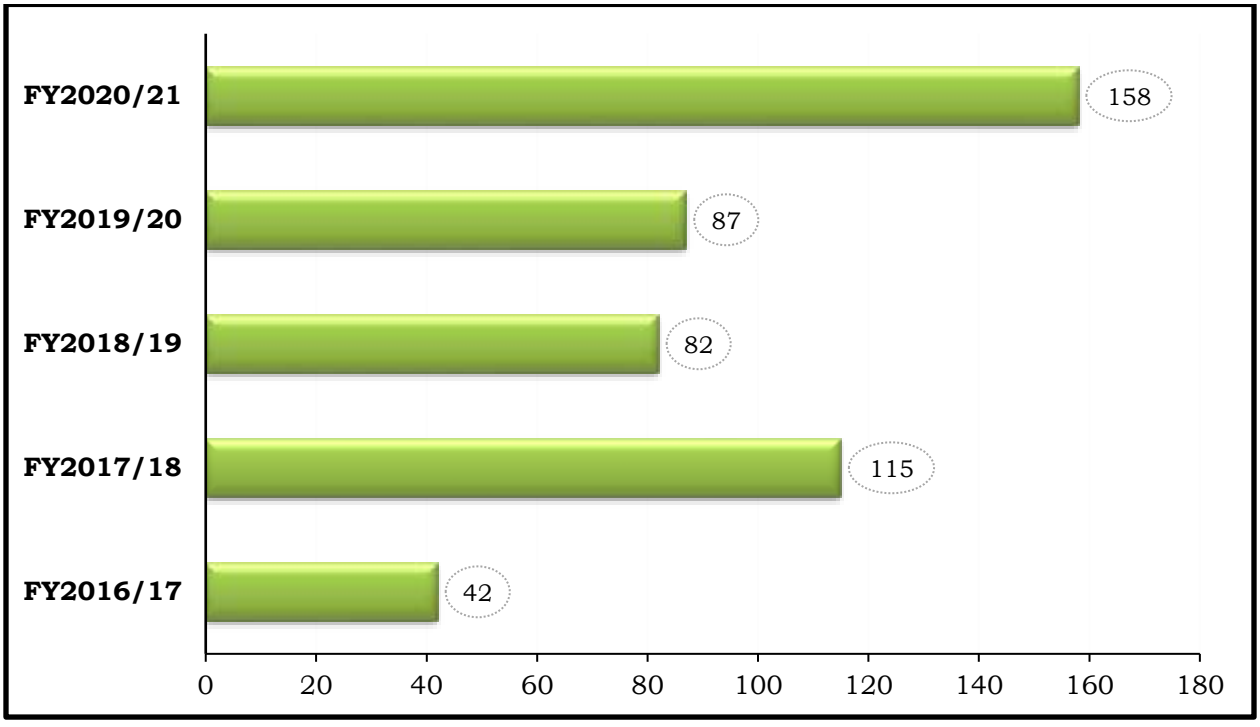
Source: National Information Technology Authority-Uganda

2.5 Certification of IT Service Providers

The National Information Technology Authority- Uganda (NITA-U) certifies and authenticates IT service providers and IT training institutions in Uganda for systematic growth of the sector and warrant of better-quality IT services for the consumers. The certification process enables the assessment/audit of firms to ensure that they are credible and are able to provide quality IT services to Government and citizens.

In FY2020/21, NITA-U certified one hundred fifty-eight (158) firms compared to eighty-seven (87) firms in FY2019/20. Cumulatively four hundred eighty-four (484) IT firms were certified since FY2016/17 the IT Certification Framework (Figure 2.5.1).

Figure 2.5.1: Number of IT Service Providers certified; FY2016/17-FY2020/21

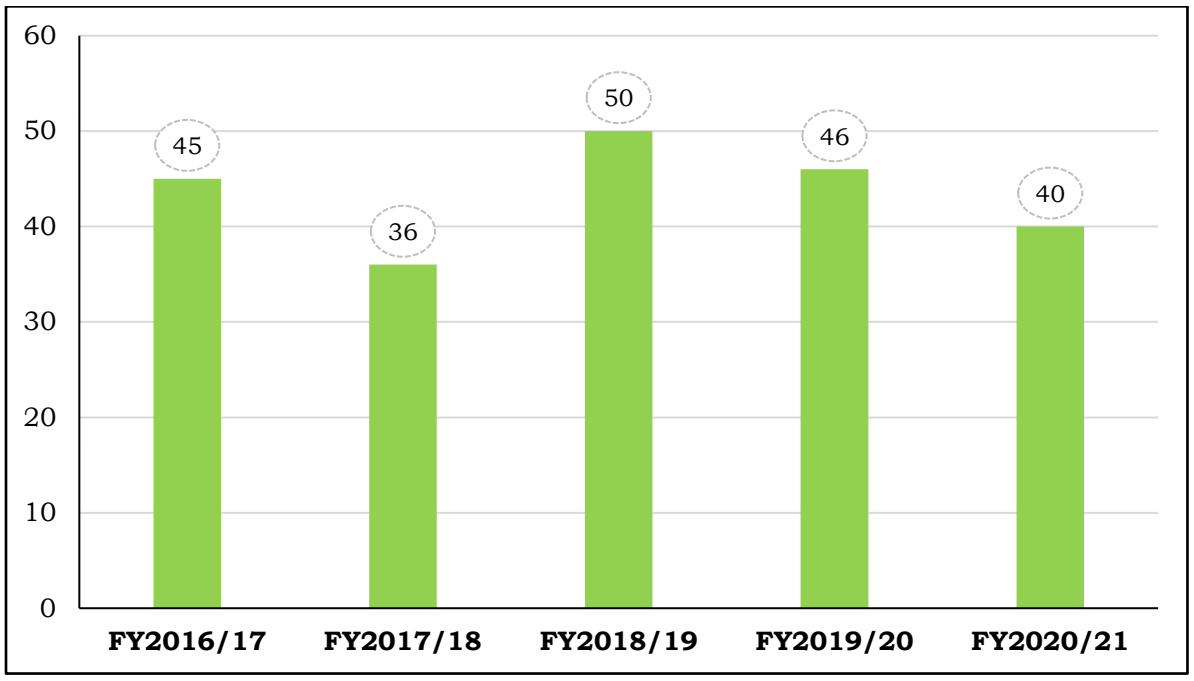


Source: National Information Technology Authority-Uganda

2.6 Cyber Laws and Regulations Awareness

Sensitization activities to enhance awareness of the existence and application of the cyber laws have been conducted over the years. In FY2020/21, forty (40) sensitisation and awareness activities were conducted in the public and private sector to promote awareness on the IT regulatory environment and to enhance awareness and compliance of IT Certification as compared to forty-six (46) sessions conducted in the previous year (Figure 2.6.1).

Figure 2.6.1: Number of sensitization sessions on cyber laws and Regulations; FY2016/17-FY2020/21



Source: National Information Technology Authority-Uganda

2.7 Information Security

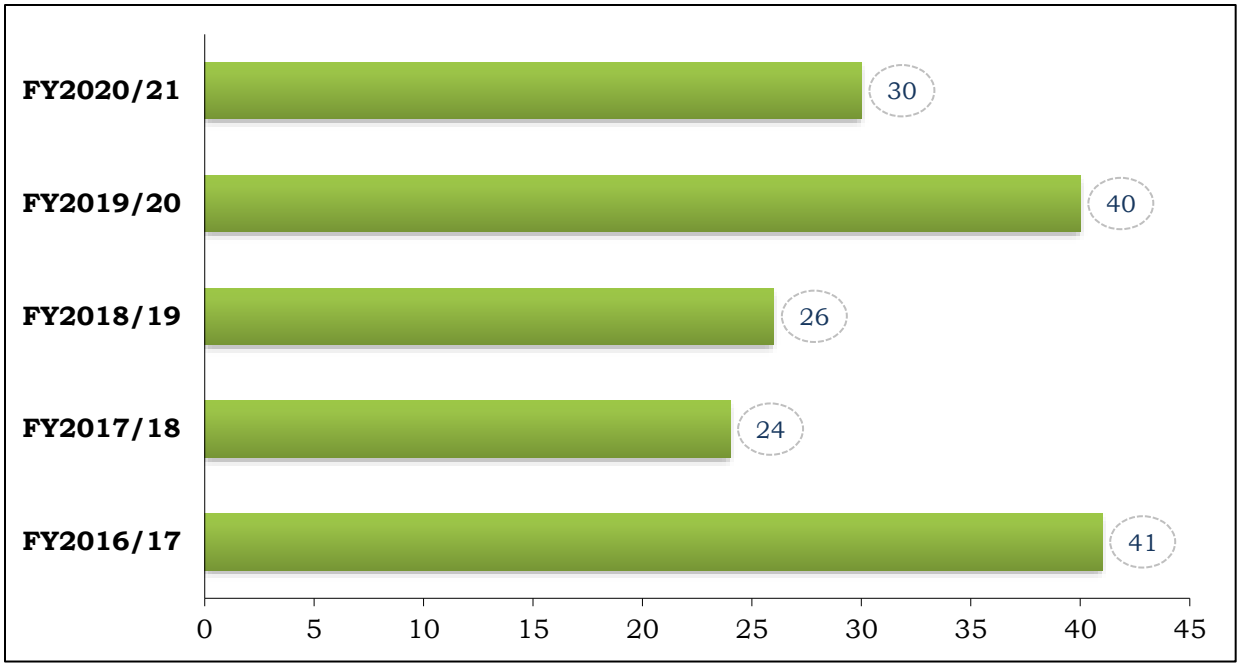
This section presents statistics on Information Security awareness sessions targeting numerous stakeholder groups, Information Security Advisories issued by the National Cyber Security Emergency Response Team/Co-ordination Centre (CERT/CC), MDAs implementing National Information Security Framework,

privacy protection for personal or confidential data collected, processed and stored as well as the availability for hosted public services.

2.7.1 Information Security awareness sessions

In FY2020/21, thirty (30) Information Security awareness were conducted and these were aimed at bridging the information gap of information security risks and vulnerabilities to the public. In FY2019/20, Forty (40) Information Security awareness were conducted (Figure 2.7.1).

Figure 2.7.1: Number of Information Security Awareness Sessions; FY2016/17-FY2020/21

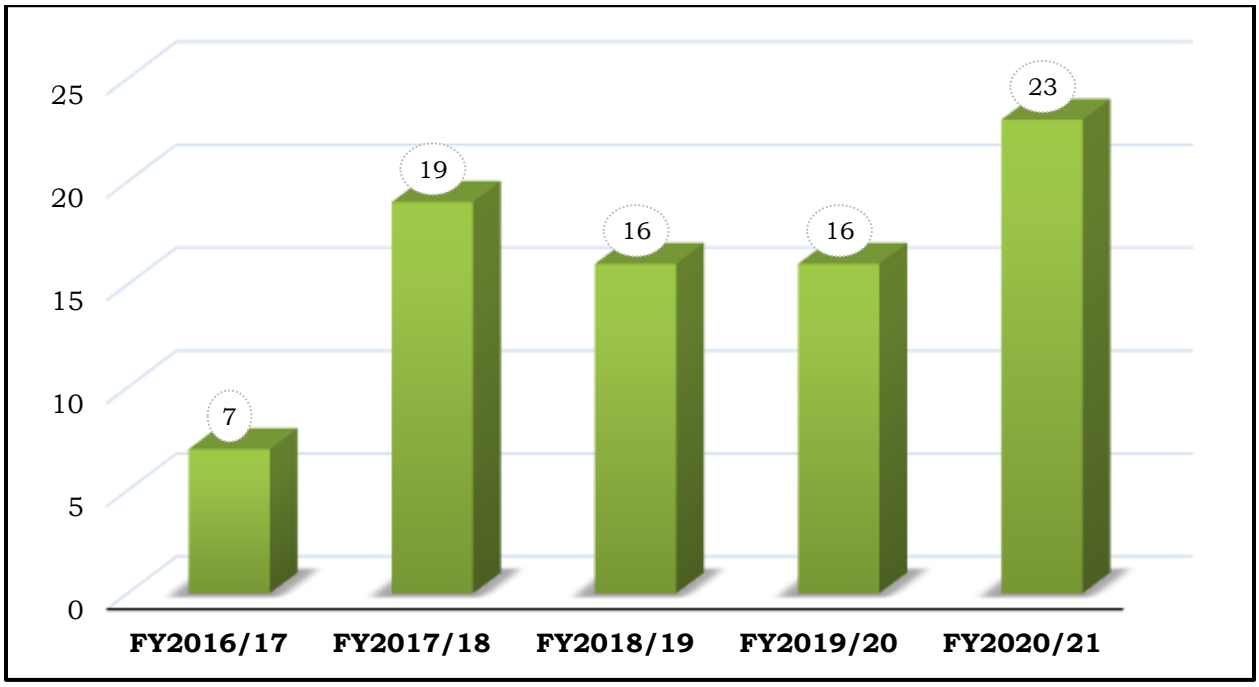


Source: National Information Technology Authority-Uganda

2.7.2 MDAs complaint with the National Information Security Framework

The number of MDAs compliant with the National Information Security Framework (NISF) in FY2020/21 were at twenty-three (23) as compared to sixteen (16) in the previous financial year (Figure 2.7.2).

Figure 2.7.2: Number of MDAs complaint with the National Information Security Framework (NISF); FY2016/17-FY2020/21



Source: National Information Technology Authority-Uganda

2.7.3 Information Security Advisories

For the FY2020/21, the National CERT/CC issued thirty-one (31) cyber security advisories about critical vulnerabilities in software, applications and systems and the possible mitigation procedures to the Critical Information Infrastructure Operators and other stakeholders. In the FY2019/20, fifty-seven (57) cyber security advisories were issued.

Figure 2.7.3: Number CERT services; FY2019/20-FY2020/21

Source: National Information Technology Authority-Uganda

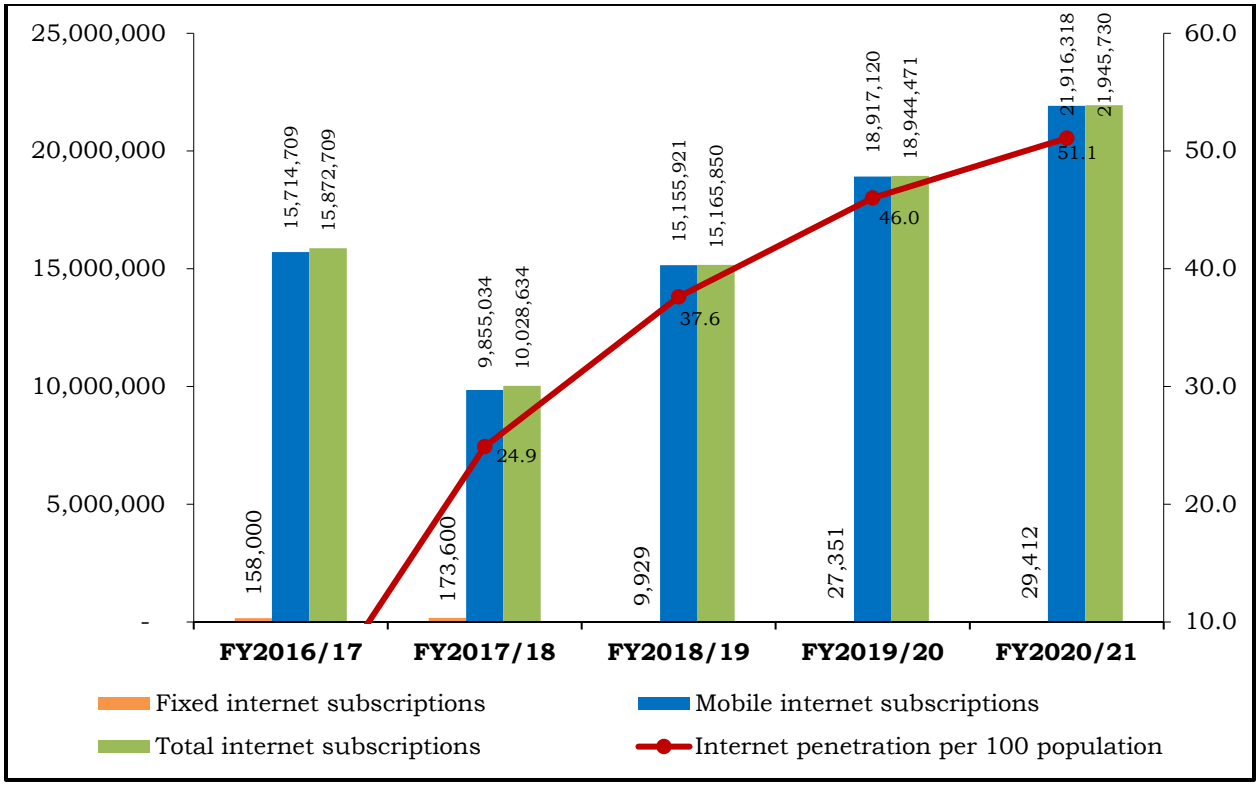
3. INTERNET AND TELEPHONY STATISTICS

This sub section covers some statistics on internet and telephone subscriptions; Smartphones and feature phones in Uganda.

3.1 Internet subscriptions and penetration

The number of mobile internet subscriptions increased by 16% from 18.92million in FY2019/20 to 21.92million in FY2020/21. In addition, there was an increase in fixed internet subscriptions from 27,351 to 29,412 subscriptions. Furthermore, the total internet subscriptions improved by 16% from about 18.94million in FY2019/20 to about 21.95million in FY2020/21 translating into a penetration of 51.1 internet connections for every 100 Ugandans as compared to 46 internet connections for every 100 Ugandans in FY2019/20 (Figure 3.1.1).

Figure 3.1.1: Internet subscriptions and penetration; FY2016/17-FY2020/21

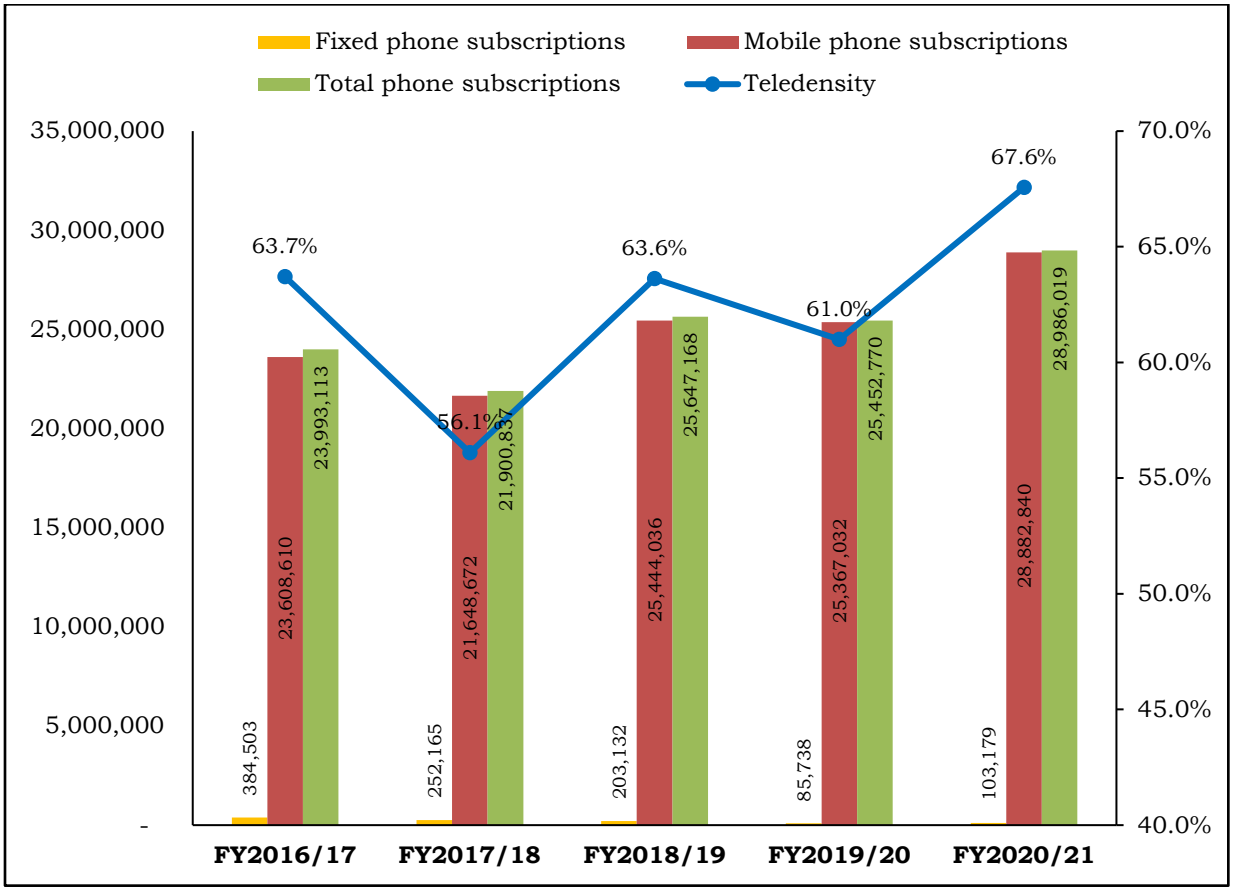


Source: Uganda Communications Commission

3.2 Telephone subscriptions and Tele-density

A total of 103,179 active fixed phone subscriptions was recorded in the FY2020/21 compared to 85,738 subscriptions in FY2019/20. In FY2020/21, an increase of 14% in mobile phone subscriptions was registered from 25.37million in FY2019/20 to 28.88million. In addition, total telephone subscriptions of 28.99million was recorded in FY2020/21 compared to 25.65million registered in FY2019/20. Similarly, there was an increase of 11% in telephone penetration per 100 subscribers from 61.0 in FY2019/20 to 67.6 in FY2020/21 (Figure 3.2.1).

Figure 3.2.1: Phone Subscriptions and tele-density; FY2016/17-FY2020/21

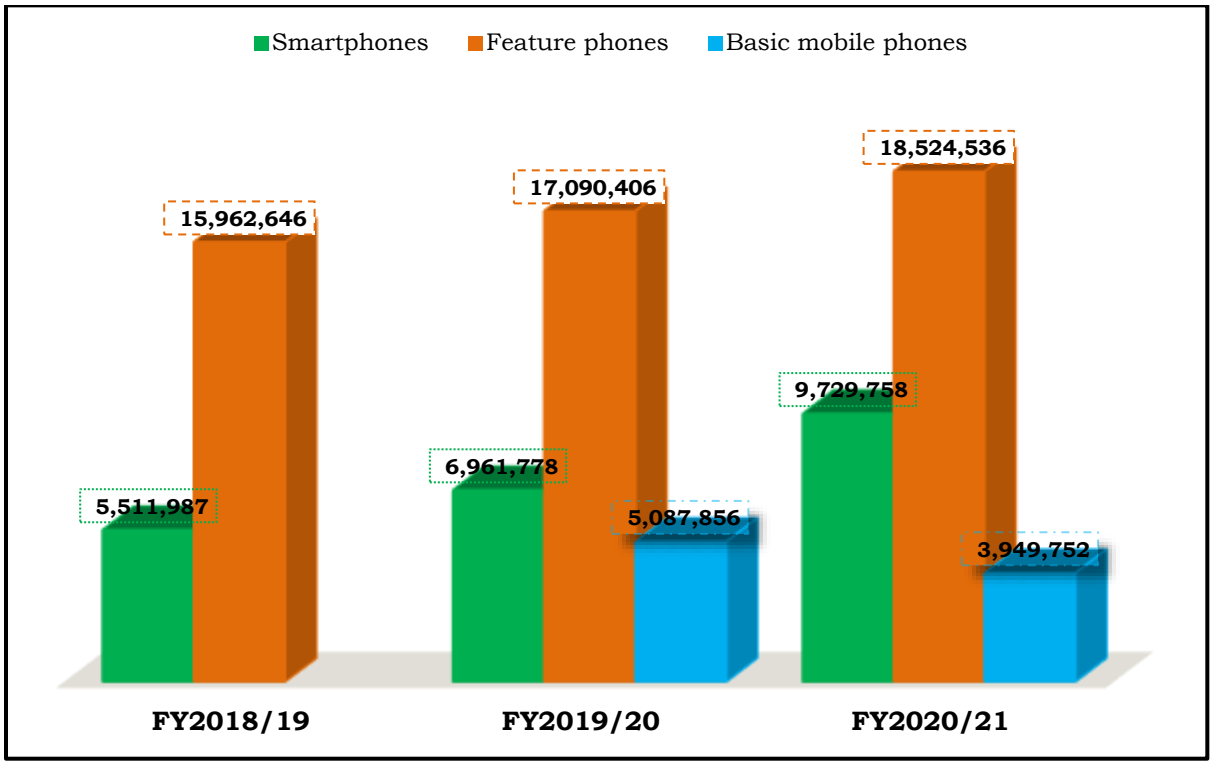


Source: Uganda Communications Commission

3.3 Smartphones, feature phones and Basic Phones

In FY2020/21, smart phone subscriptions increased by 40% from 6.96million in FY2019/20 to 9.73million as feature phone subscriptions increased by 8% from 17.09million to 18.52million. In addition, subscriptions in basic phones declined by 22% from 5.09million to 3.95million (Figure 3.4.1).

Figure 3.3.1: Number of phones by type; FY2018/19-FY2020/21

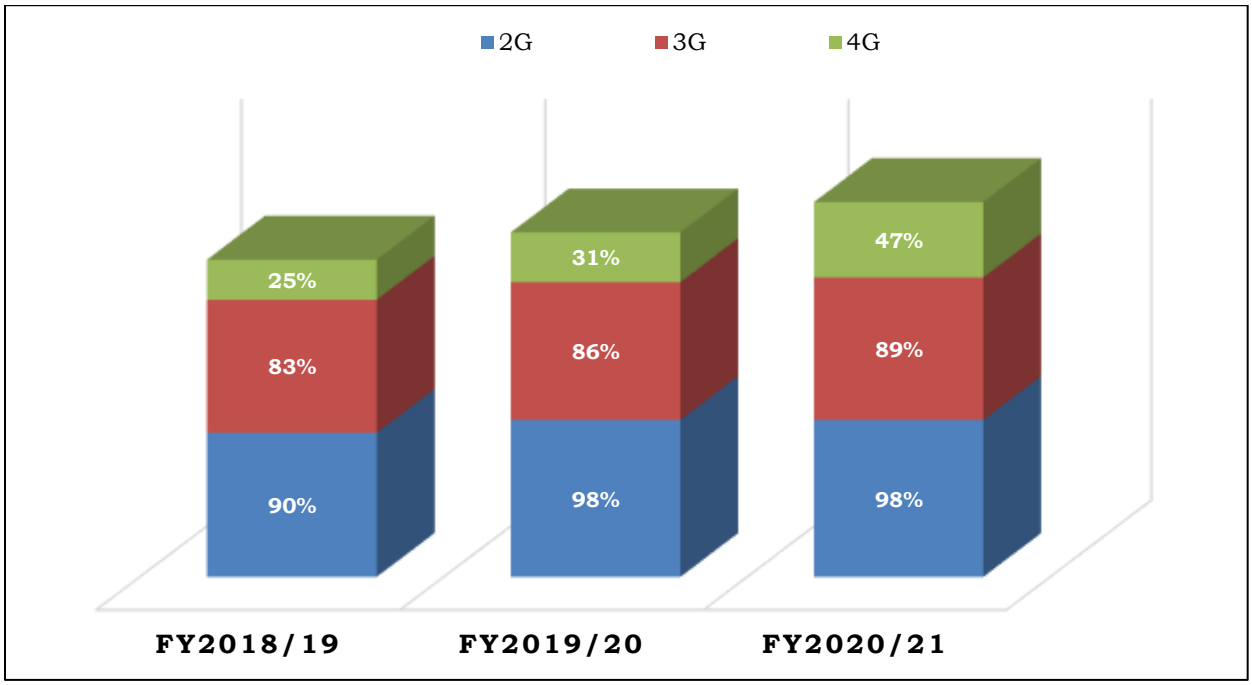


Source: Uganda Communications Commission

3.4 Mobile network coverage

Most of Uganda's population is covered by a mobile network signal, but blind spots remain. Ninety-eight percent (98%) of Uganda's population live in areas with 2G coverage. By the end of FY2020/21, mobile network coverage (3G or above) was available to 89% of the population. Between FY2018/19 and FY2020/21, 4G network coverage almost doubled to reach 47% of Uganda's population.

Figure 3.4.1: Population coverage by type of mobile network; FY2018/19-FY2020/21



Source: Uganda Communications Commission

4. E-WASTE STATISTICS

E-Waste is one of the new environmental threats arising out of huge global sales of Electric and Electronic Equipment (EEE), with symmetric volumes of waste generated after, whose disposal is a complicated process especially for developing countries such as Uganda.

4.1 Placed on the Market (sales)

The Placed on the Market variable is simply total imports less exports plus local manufactured Electric and Electronic Equipment (Domestic Production). Results reveal that, the amount of EEE placed on the market significantly increased by 53% from 424,427 in 2016 to 649,094 tonnes in 2020. The component of temperature exchange equipment forms the biggest percentage of electronics placed on the market since 2016. This is followed by large equipment such as AC and refrigerators. However, lamps have the least quantities of what is placed on the market (Table 4.1.1)

Table 4.1.1: Amount of EEE placed on the market as per EU-6 Classification (Tonnes); 2016-2020

EU-6 Classification	2016	2017	2018	2019	2020
Temperature exchange equipment	283,381	240,932	248,932	334,132	333,944
Screens, monitors, and equipment containing screens (..)	24,168	19,100	25,821	21,017	23,320
Lamps	630	516	476	440	435
Large equipment (excluding photovoltaic panels)	87,881	85,956	100,357	235,022	259,312
Small equipment	19,902	22,068	23,296	22,249	22,173
Small IT and telecommunication equipment	8,465	9,102	8,613	12,491	9,910
Total	**424,427**	**377,674**	**407,495**	**625,351**	**649,094**

Source: Uganda Bureau of Statistics

4.2 E-Waste Generated

The E-waste generated depends on the quantities placed on the market and various life spans for the various categories. The E-waste generated has increased over the years as shown in Table 4.2.1. In the year 2020, the amount of e-waste generated increased by 60% from 112,126 tonnes generated in 2016 to 179,537 tonnes. The biggest component of E-waste generated in 2020 was temperature exchange equipment which was followed by large equipment. E-waste generated has increased by 60 percent from 2016 to 2020.

Table 4.2.1: E-waste generated as per EU-6 Classification (Tonnes); 2016-2020

EU-6 Classification	2016	2017	2018	2019	2020
Temperature exchange equipment	23,487	32,369	42,258	53,544	66,067
Screens, monitors, and equipment containing screens (..)	38,489	38,746	38,436	37,684	36,591
Lamps	457	489	508	517	518
Large equipment (excluding photovoltaic panels)	30,557	34,350	38,353	43,849	51,144
Small equipment	14,921	15,864	16,786	17,569	18,247
Small IT and telecommunication equipment	4,215	4,917	5,536	6,323	6,970
Total	**112,126**	**126,735**	**141,877**	**159,486**	**179,537**

Source: Uganda Bureau of Statistics

5. ICT SECTOR PERFORMANCE IN THE ECONOMY

ICT sector plays an important role in the economy and its one of the most vibrant and fastest growing sectors since its liberalization in 2010. This section covers statistics on how ICT has contributed to the economy in terms of GDP, trade, revenue and investment.

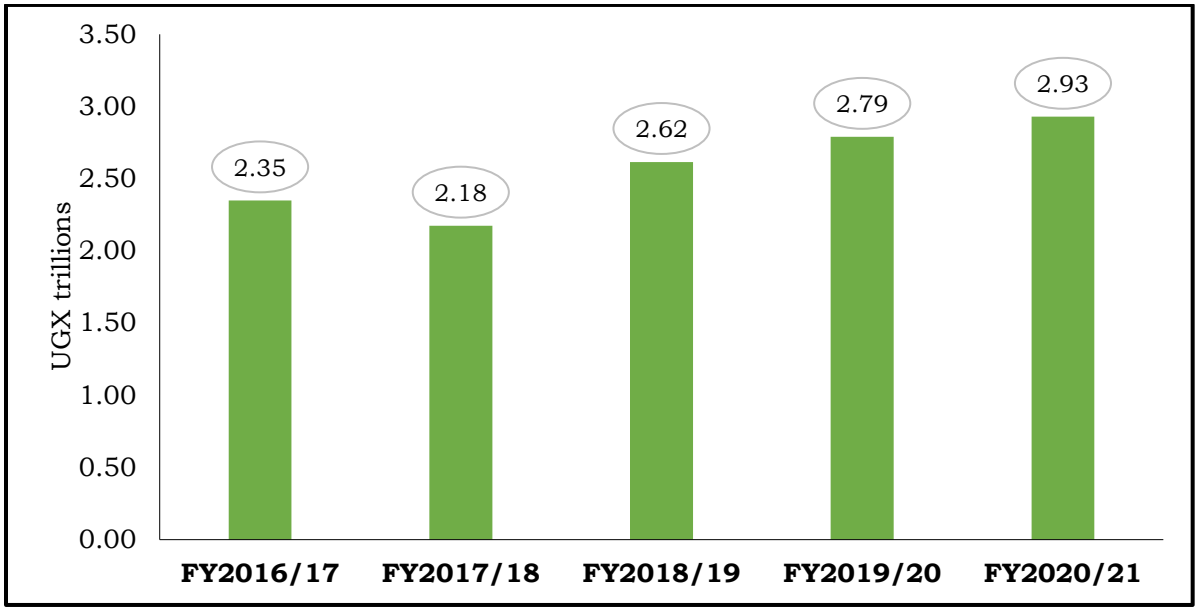
5.1 ICT sector Gross Domestic Product (GDP)

This sub section covers statistics on ICT sector gross value added, contribution of the ICT sector to the national GDP and real ICT GDP growth rate.

5.1.1 ICT sector value added at current prices

The ICT sector value added in nominal terms increased to UGX 2.93trillion in FY2020/21 from UGX 2.79trillion in FY2019/20 (Figure 5.1.1). ICT services represented 99.7% of total ICT sector value added. Telecommunications services alone represented 73% of total ICT sector value added (Table 5.1.1).

Figure 5.1.1: ICT sector gross value added at current prices (UGX trillions); FY2016/17- FY2020/21



Source: Uganda Bureau of Statistics

Table 5.1.1: ICT Activities Gross value added at current prices; FY2016/17-FY2020/21 (UGX billions);

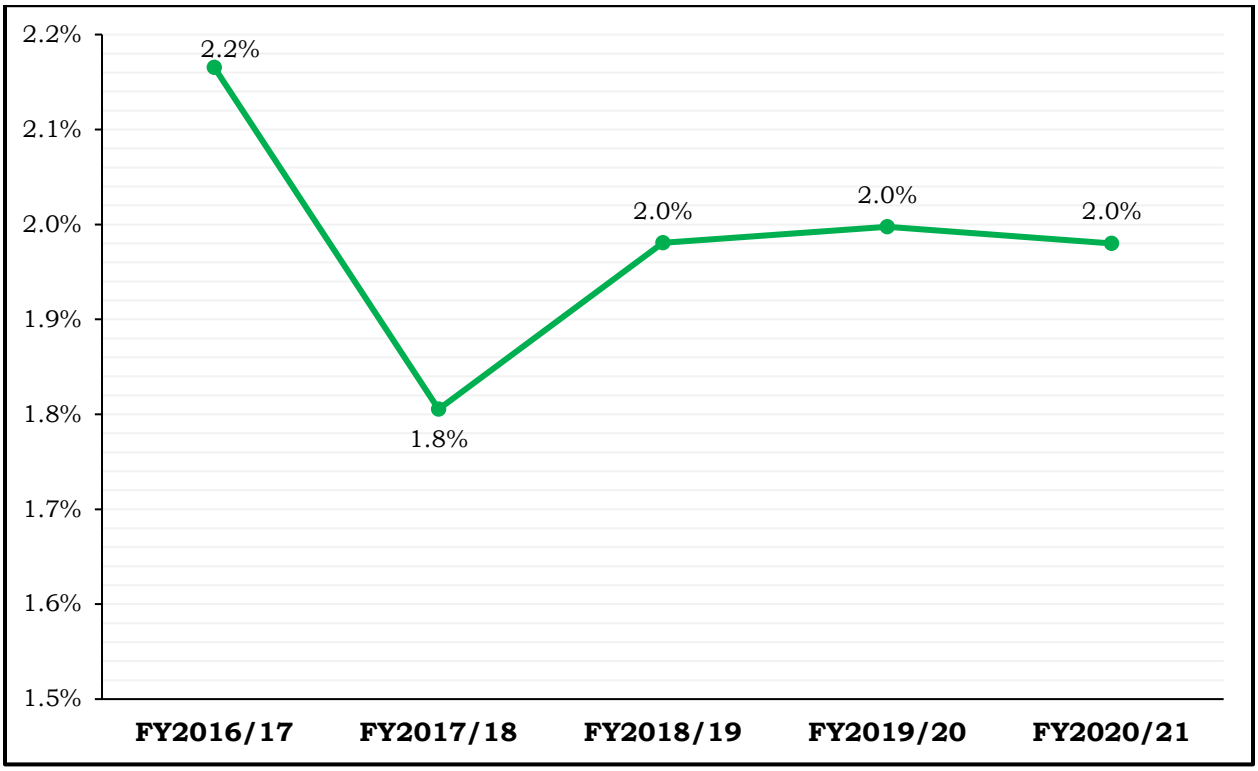
ICT Activities	FY2016/17	FY2017/18	FY2018/19	FY2019/20	FY2020/21
Computer, Electronic and Optical Products	3	4	4	5	10
Postal and Courier services	50	44	45	40	39
Audio-Visual Production and Distribution services	93	69	64	63	60
Broadcasting and Programming services	36	34	40	27	25
Telecommunications services	1,675	1,539	1,907	2,002	2,135
Computer Programming, Consultancy and Related services	135	134	177	218	211
Information Services	101	103	126	162	165
Repair of Computers and Personal and Household Goods service	257	249	254	273	284
ICT sector Gross Value Added at current prices	**2,350**	**2,175**	**2,616**	**2,790**	**2,929**

Source: Uganda Bureau of Statistics

5.1.2 ICT sector contribution to national GDP

The ICT sector contributed 2.0% of aggregate nominal GDP in FY2020/21 and this was the same in FY2019/20 (Figure 5.1.2).

Figure 5.1.2: Percentage contribution of ICT sector to national GDP; FY2016/17- FY2020/21

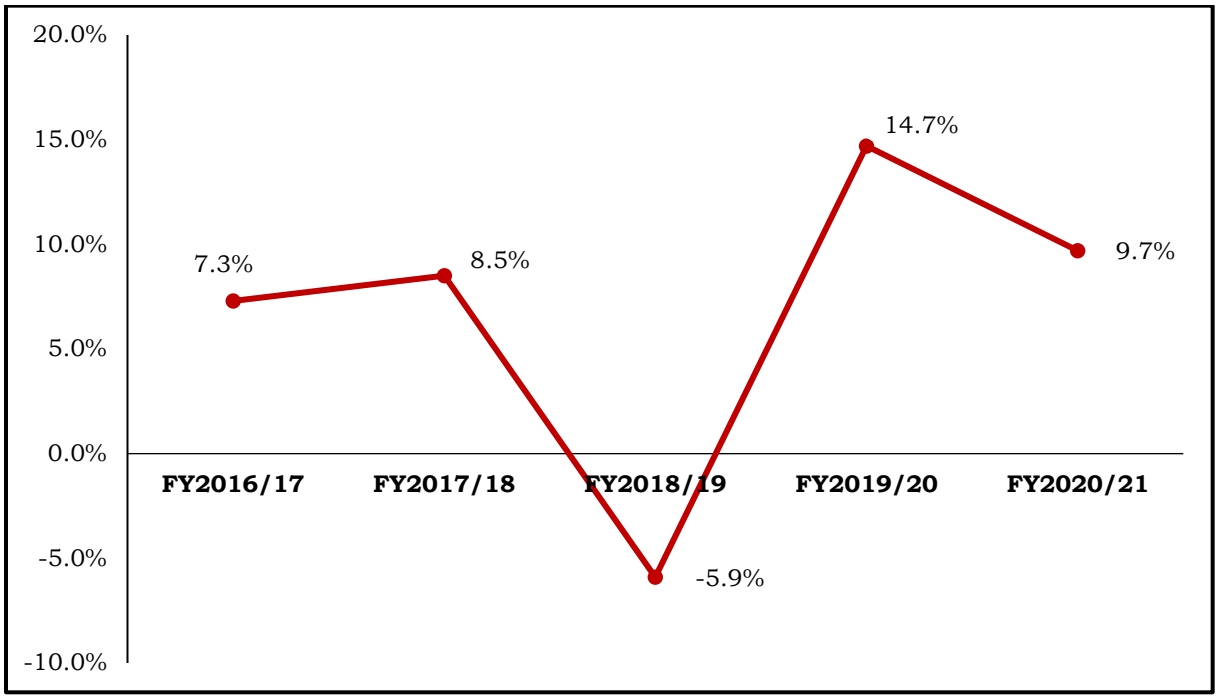


Source: Uganda Bureau of Statistics

5.1.3 ICT sector GDP growth rate

Uganda's Gross Domestic Product grew at 3.4% in FY2020/21 compared to the growth of 3.0% in FY2019/20. The ICT sector GDP alone grew at 9.7% in FY2020/21, compared to the growth of 14.7% recorded in FY2019/20, due to the effects of the COVID-19 (coronavirus) pandemic (Figure 5.1.3).

Figure 5.1.3: ICT sector real GDP growth rate; FY2016/17- FY2020/21



Source: Uganda Bureau of Statistics

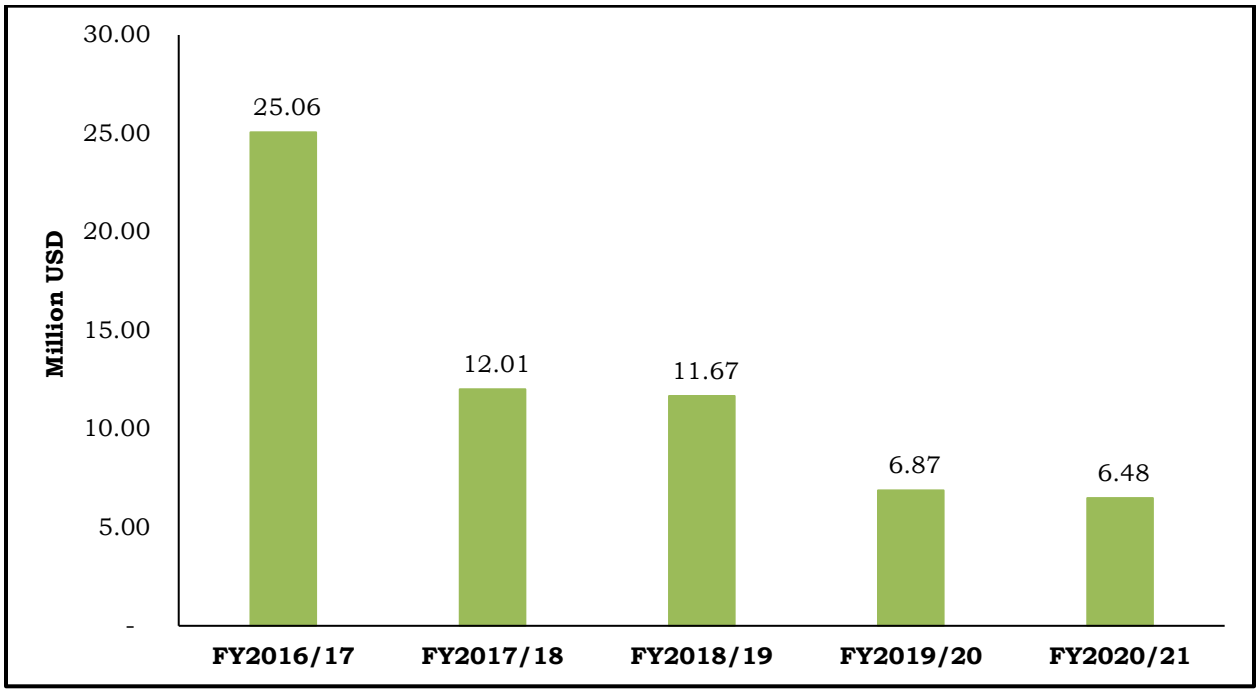
5.2 Trade in ICT goods

This section presents a summary of External Trade Statistics in formal ICT goods based on United Nations Conference on Trade and Development (UNCTAD) list of ICT goods (based on HS 2017).

5.2.1 Value of ICT export goods

During the FY2020/21, the total formal ICT export earnings reduced from USD6.87Million in FY2019/20 to USD6.48Million translating into a decline of 6%. Computers and peripheral equipment contributed 45%; Communication equipment 20%; Consumer electronic equipment 13%; Electronic components 13% and Miscellaneous 9% (Figure 5.2.1).

Figure 5.2.1: Value of ICT exports (Million USD); FY2016/17 – FY2020/21

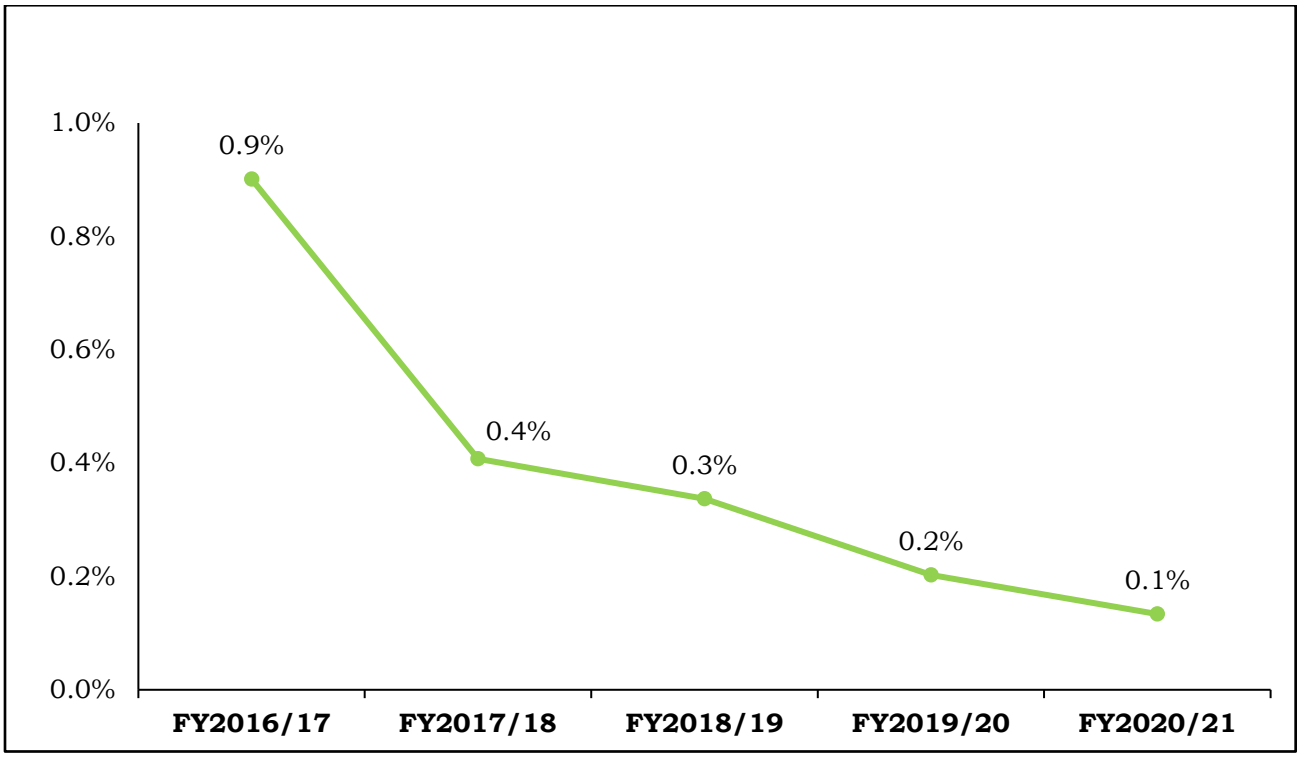


Source: Uganda Bureau of Statistics

5.2.2 Contribution of ICT to total exports

ICT goods exports as a percentage of total exports has been declining consistently over the past five years. In FY2020/21, it declined to 0.1% from 0.2% in FY2019/20 (Figure 5.2.2).

Figure 5.2.2: Percentage share of ICT goods to Total value of exports; FY2016/17 – FY2020/21

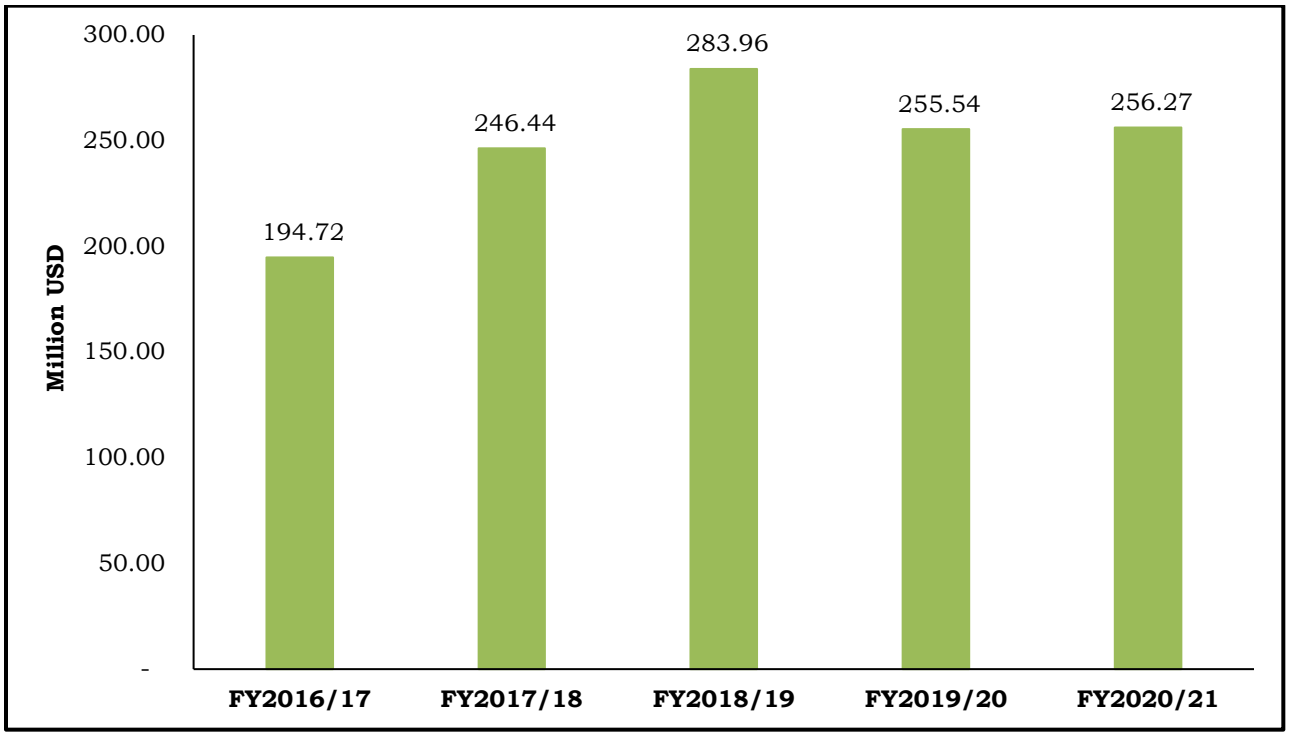


Source: Uganda Bureau of Statistics

5.2.3 Value of ICT goods imports

The total estimated formal ICT imports bill in FY2020/21 increased by 0.3% from USD255.54Million in FY2019/20 to USD256.27Million. Communication equipment contributed 46%; Computers and peripheral equipment 28%; Consumer electronic equipment 15%; Electronic components 9% and Miscellaneous 2% (Figure 5.2.3).

Figure 5.2.3: Value of ICT goods imports; FY2016/17 –FY2020/21

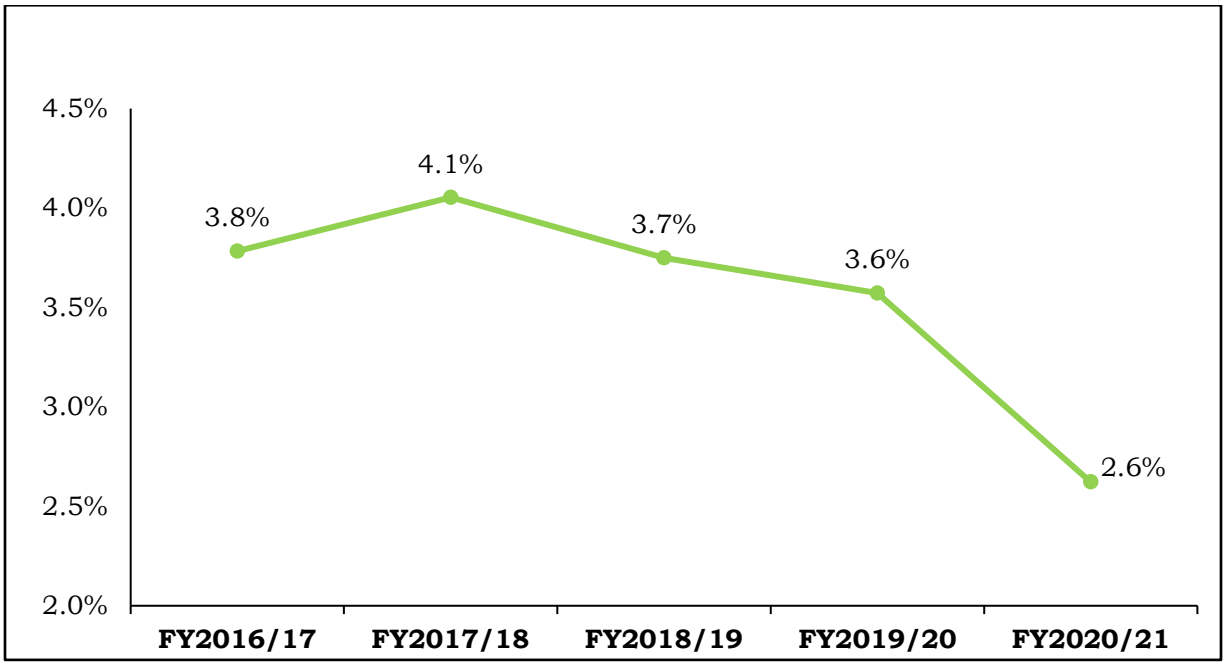


Source: Uganda Bureau of Statistics

5.2.4 Contribution of ICT to total imports

In addition, the share of ICT to the overall formal import bill declined from 3.6% in FY2019/20 to 2.6% in FY2020/21 (Figure 5.2.4).

Figure 5.2.4: Percentage contribution of ICT to Total imports; FY2016/17 – FY2020/21



Source: Uganda Bureau of Statistics

5.3 ICT Sector Revenue Collections

This section includes information on the Gross Revenues (includes all non-tax revenue) from the ICT sector.

5.3.1 ICT sector Revenue Collections

ICT sector revenue collections increased by 19% from 1.819 trillion in FY2019/20 to UGX 2.245 trillion in FY2020/21. Information and communication services represented 91.7% of the total ICT sector revenue. Telecommunications services alone represented 83.6% of total ICT sector revenue (Table 5.3.1).

Table 5.3.1: ICT sector Gross Revenue Collections [UGX Billions]; FY2016/17– FY2020/21

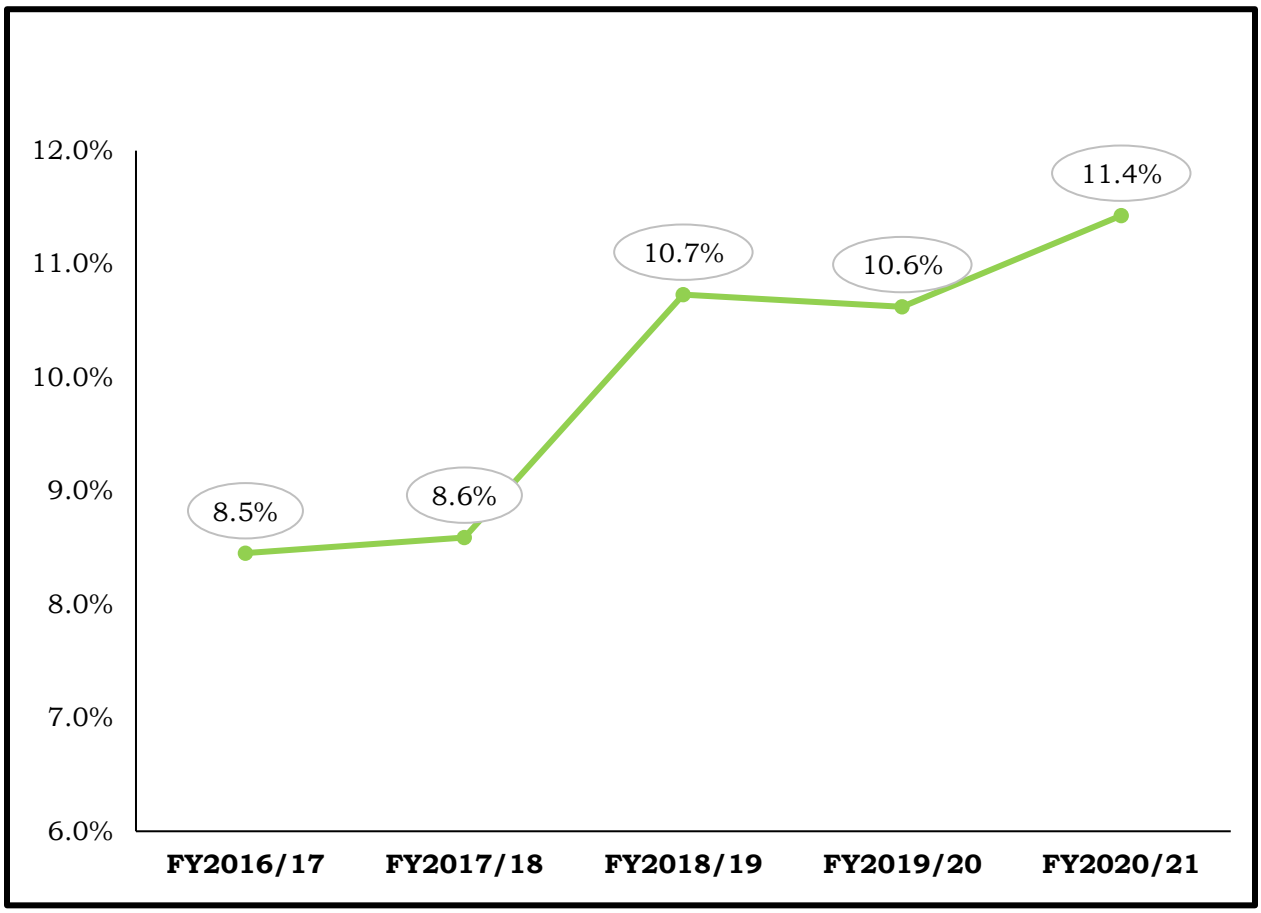
ICT Activity	FY2016/17	FY2017/18	FY2018/19	FY2019/20	FY2020/21
Manufacture of computer, electronic and optical products	0.67	0.69	0.54	0.49	1.28
Wholesale of machinery, equipment and supplies	88.62	117.38	130.12	138.25	142.11
Postal and courier activities	12.22	17.06	18.98	16.48	17.66
Publishing activities	31.29	30.37	32.99	30.40	27.62
Motion picture, video and television programme production, sound recording and music publishing activities	35.58	40.92	48.83	37.11	33.77
Programming and broadcasting activities	19.52	33.18	36.11	37.71	55.61
Telecommunications	848.42	951.90	1,472.98	1,477.51	1,878.36
Computer programming, consultancy and related activities	20.82	24.87	26.61	25.39	29.39
Information service activities	18.26	22.72	25.57	29.09	34.16
Activities of Mobile Money	3.57	6.51	16.23	15.06	12.53
Repair of computers and personal and household goods	10.91	13.62	10.94	11.71	13.12
Total	**1,089.89**	**1,259.22**	**1,819.90**	**1,819.21**	**2,245.60**

Source: Uganda Revenue Authority

5.3.2 Contribution of the ICT sector to Total Revenue

The ICT sector contribution to total Gross Revenue improved from 10.6% in FY2019/20 to 11.4% in FY2020/21 (Figure 5.3.1).

Figure 5.3.1: Percentage contribution of ICT sector to Total Gross Revenue Collections; FY2016/17– FY2020/21



Source: Uganda Revenue Authority

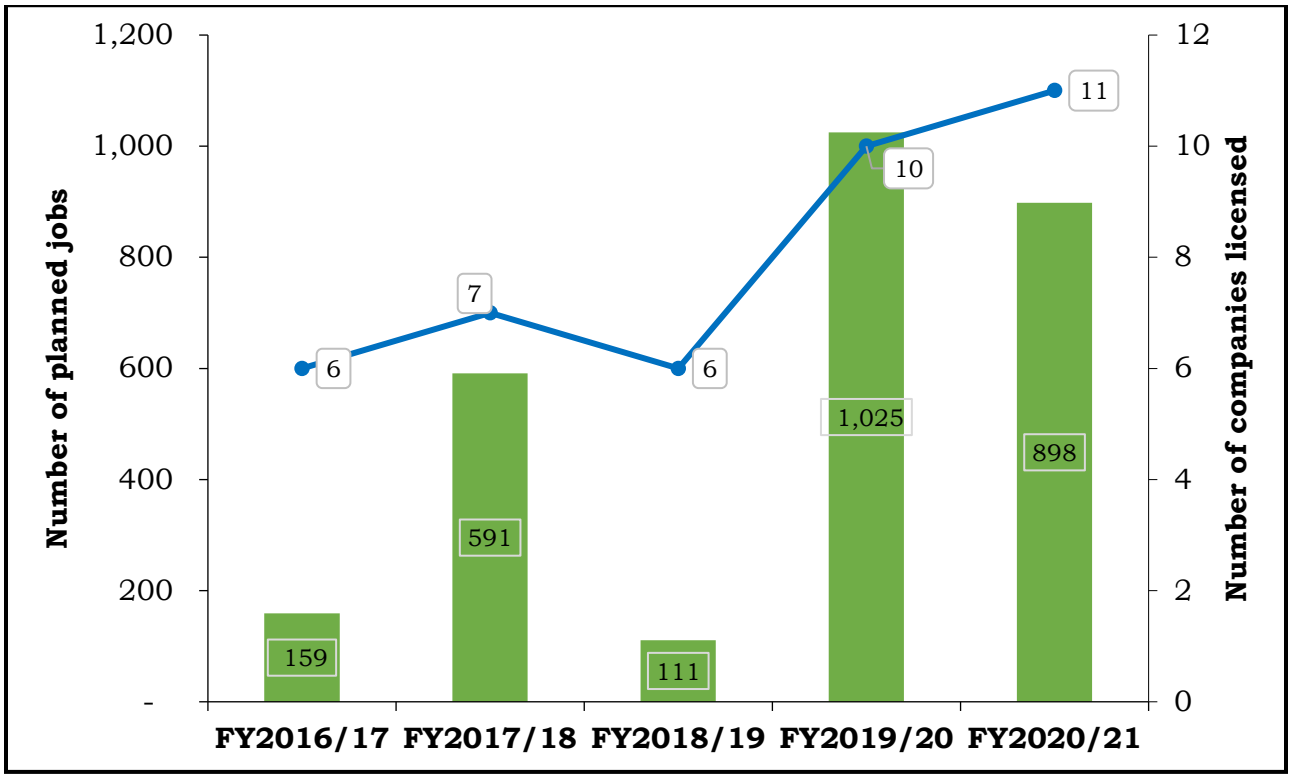
5.4 ICT planned investment

This section contains information on the planned investment projects in ICT in Uganda. It contains statistics on licensed companies, planned capital investment and jobs.

5.4.1 Number of companies licensed to carry out ICT projects/ services

The number of licensed companies to carry out ICT projects/services increased from ten (10) in FY2019/20 to eleven (11) in FY2020/21 (Figure 5.4.1).

Figure 5.4.1: Planned jobs and number of companies licensed to carry out ICT projects/ services; FY2016/17 – FY2020/21



Source: Uganda Investment Authority

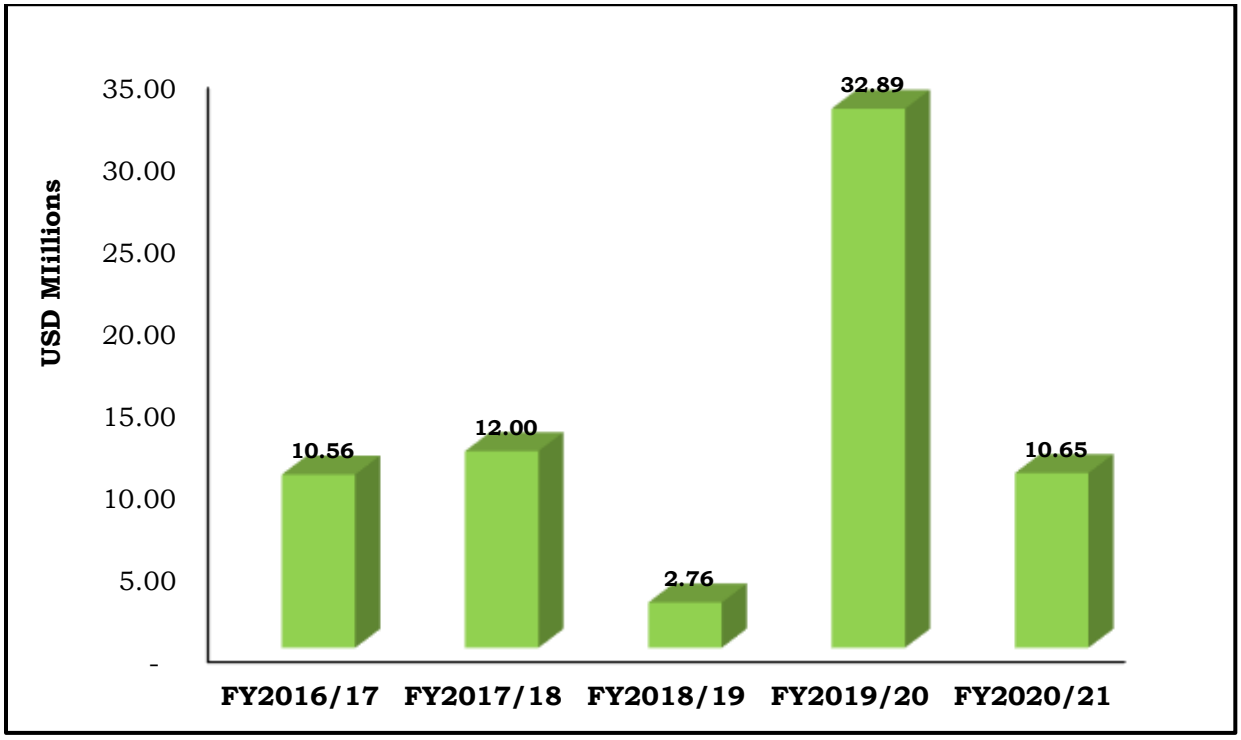
5.4.2 Total number of planned jobs in ICT investments

Similarly, the total number of planned jobs to serve in ICT investments declined from one thousand and twenty-five (1,025) in FY2019/20 to eight hundred ninety-eight (898) in FY2020/21 (Figure 5.4.1).

5.4.3 Planned capital investment in ICT

Planned capital investment in ICT decline by 68% from USD32.89million in FY2019/20 to USD10.65million in FY2020/21 (Figure 5.4.2).

Figure 5.4.2: ICT planned capital investment (USD Million); FY2016/17 – FY2020/21



Source: Uganda Investment Authority

6. UGANDA'S ICT RANKINGS ON THE GLOBAL SCALE

This section presents reviews on Uganda's global ranking in ICT as measured using the E-government Development Index; E-Participation Index; ICT Development Index; Networked Readiness Index; and Global Cybersecurity Index.

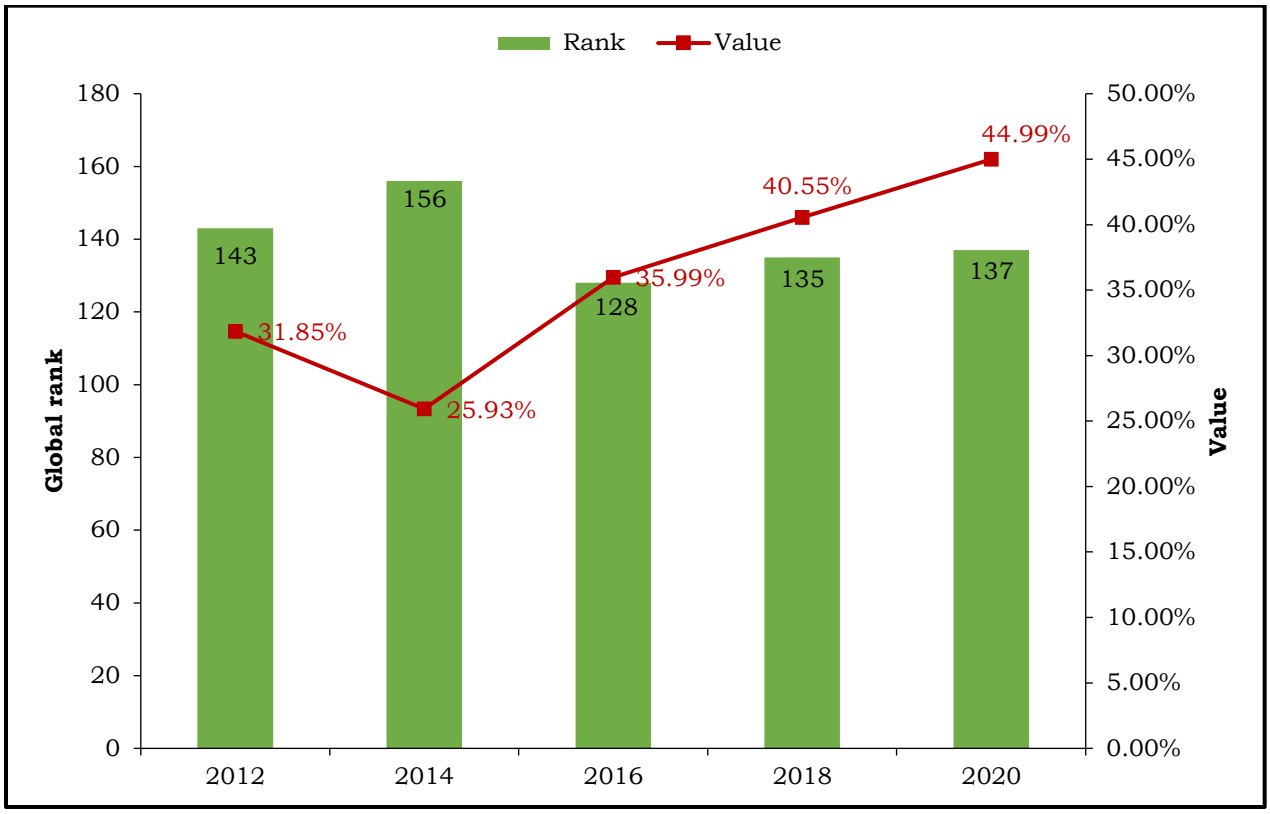
6.1 E-Government Development Index (EGDI)

The E-Government Development Index (EGDI) is a composite indicator that consists of three indices (online service index, telecommunication index and human capital index) that are equally weighted.

Uganda's E-government Development Index improved by 10.9% from 40.55% in 2018 to 44.99% in 2020 which is above Africa's average of 39.14%. Nevertheless, the average EGDI for Africa (39.14%) is below the world average of 60% (Figure 6.1.1).

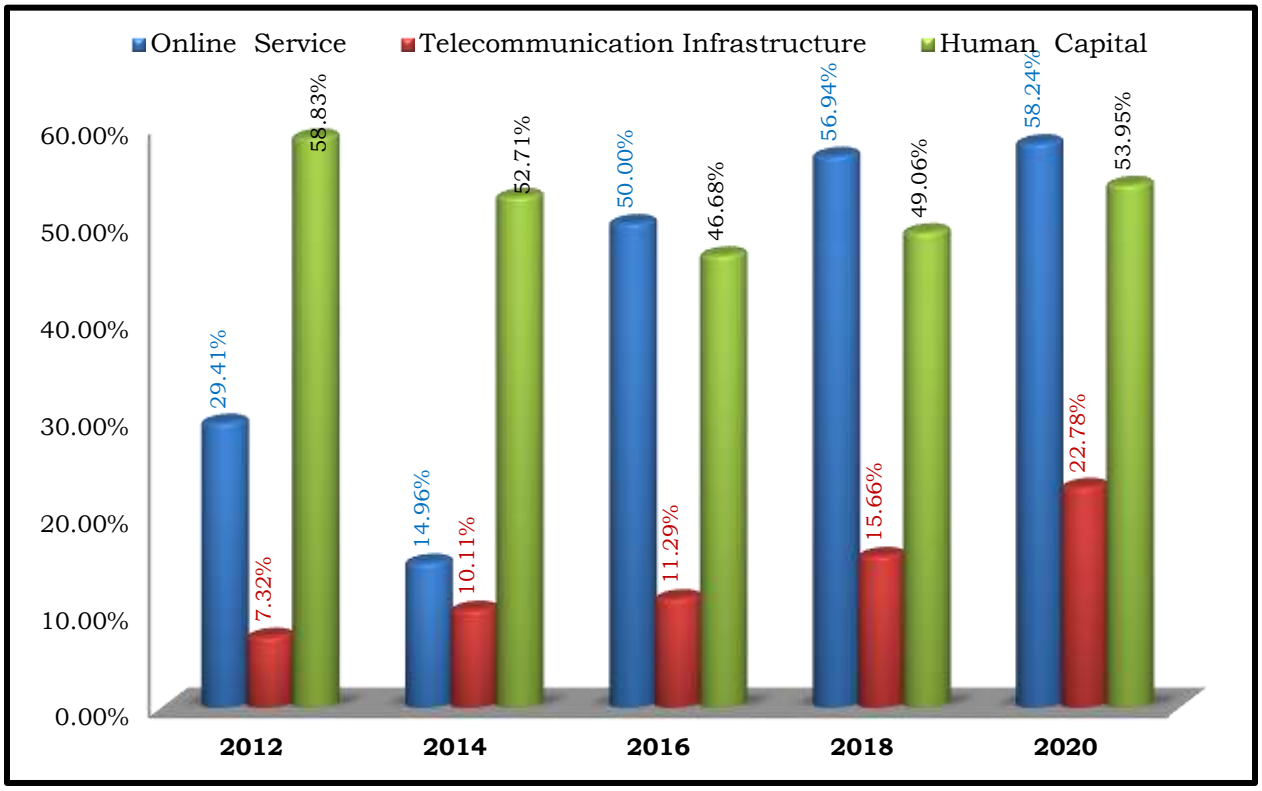
Uganda's Online Service Index (OSI) improved by 2.3% from 56.94% in 2018 to 58.24% in 2020 and is in the High OSI group. Uganda is among the promising examples of countries that offer online services above the average despite being landlocked and/or least developed. Telecommunication Infrastructure Index (TII) for Uganda improved by 45.5% from 15.66% in 2018 to 22.78% in 2020 and is in the low TII group. Human Capital Index (HCI) improved from 49.06% in 2018 to 53.95% in 2020 and is in the High HCI group (Figure 6.1.2).

Figure 6.1.1: Uganda's E-government Index; 2012-2020



Source: UN E-Government Survey Reports

Figure 6.1.2: Uganda's E-government index by components; 2012-2020

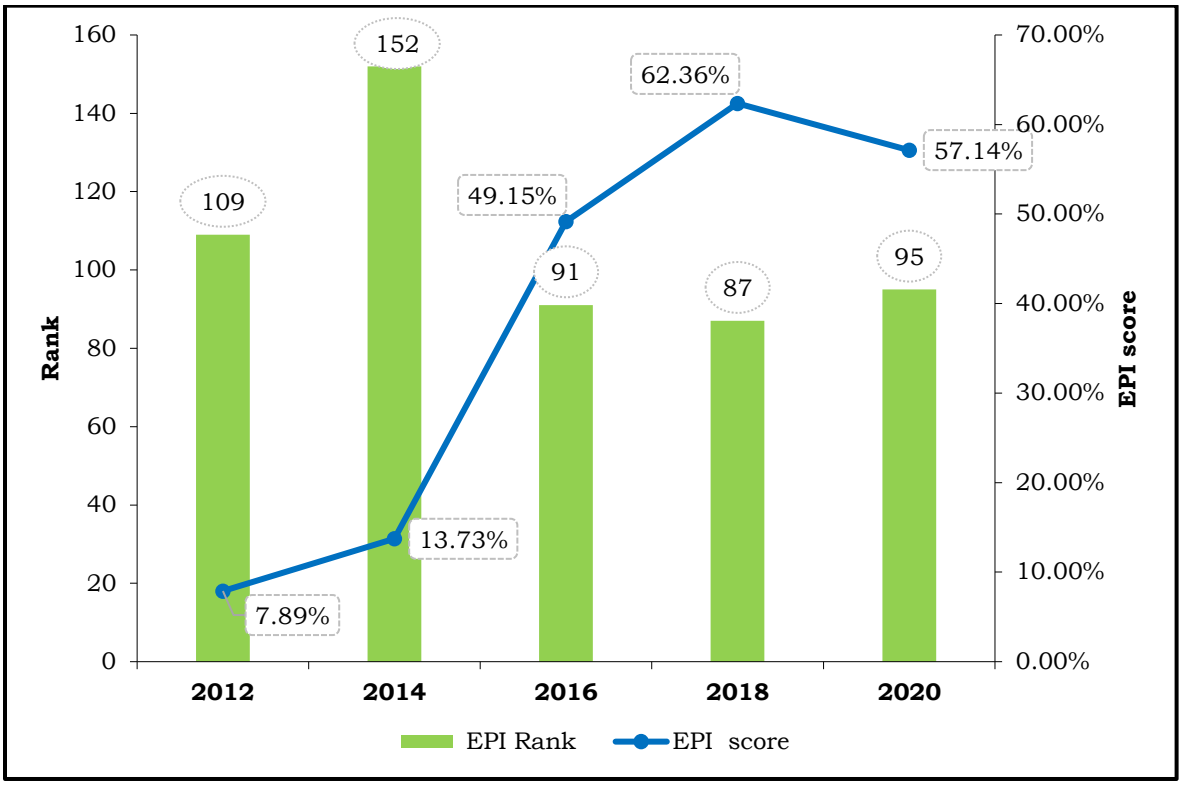


Source: UN E-government Reports

6.2 E-Participation Index

Uganda declined by eight positions in e-participation ranking from 87th in 2018 to 95th out of 193 countries in 2020. The e-Participation Index declined from 62.36% in 2018 to 57.14% in 2020 (Figure 6.2.1).

Figure 6.2.1: Uganda's e-Participation Index; 2012-2020



Source: UN E-government survey reports

6.3 Networked Readiness Index (NRI)

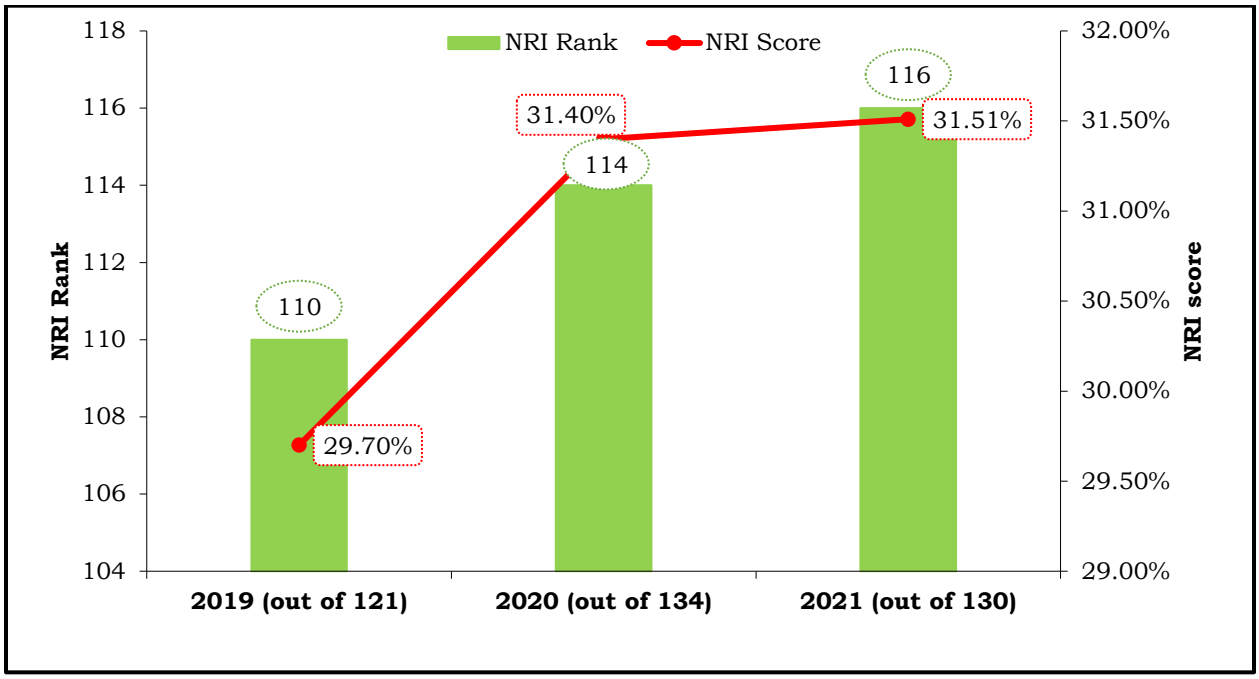
The Networked Readiness Index (NRI) maps the network-based readiness landscape of 130 economies based on their performances in four different pillars: Technology, People, Governance, and Impact. Each of these pillars is itself comprised of three sub-pillars spanning 60 metrics overall.

In 2021, Uganda ranked the 116th out of the 130 economies included in the Networked Readiness Index with a score of 31.51% and in 2020, the 114th out of 134 economies with a score of 31.40%. Its main strength relates to Governance pillar ranked the 94th with a score of 45.70%. The greatest scope for improvement concerns People pillar.

When it comes to sub-pillars, the strongest showings of Uganda relate to Inclusion (85th), Trust (87th) and Governments (101st), among others (Table

6.3.1). More could be done, though, to improve the economy's performances in the Access, SDG Contribution and Businesses sub-pillars.

Figure 6.3.1: Uganda's Network Readiness Index; 2019-2021



Source: Network Readiness Index reports by Portulans Institute

Table 6.3.1: Uganda Network Readiness rankings by sub-pillar; 2021

Network Readiness Index	Rank (out of 130) 116	Score 31.51
Pillar/sub-pillar	**Rank**	**Score**
A. Technology pillar	120	22.55
1st sub-pillar: Access	122	29.42
2nd sub-pillar: Content	118	16.02
3rd sub-pillar: Future Technologies	103	22.21
B. People pillar	126	24.88
1st sub-pillar: Individuals	110	39.35
2nd sub-pillar: Businesses	129	8.25
3rd sub-pillar: Governments	101	27.04
C. Governance pillar	94	45.70
1st sub-pillar: Trust	87	33.21
2nd sub-pillar: Regulation	102	51.08
3rd sub-pillar: Inclusion	85	52.82
D. Impact pillar	121	32.90
1st sub-pillar: Economy	107	22.90
2nd sub-pillar: Quality of Life	114	45.94
3rd sub-pillar: SDG Contribution	124	29.86

Source: Network Readiness Index reports by Portulans Institute

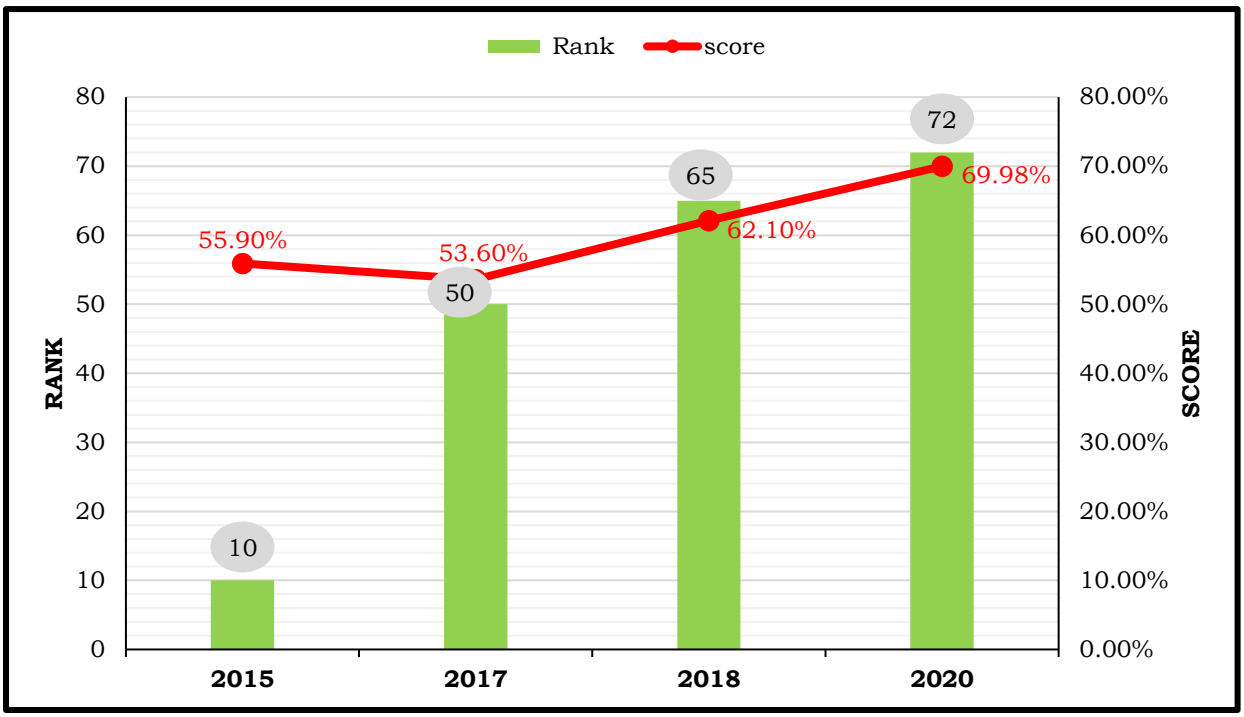
6.4 Global Cybersecurity Index (GCI)

The Global Cybersecurity Index is a composite index combining 25 indicators with regard to five pillars that include Legal, Technical, Organisational, Capacity Building and Cooperation.

Uganda ranked the 72nd globally in Cybersecurity out of the 182 countries in 2020 and the 9th out of 43 in Africa with a score of 69.98% from the 65th rank

out of 193 countries in 2018 and the 7th in Africa with score of 62.10%. Uganda performed fairly well on the legal measures pillar with a score of 15.64 out of 20 (78.20%), followed by cooperative measures with 15.64 out of 20 (78.15%), technical measures with a score of 14.19 out of 20 (70.95%), organisational measures with 13.65 out of 20 (68.25%) and least on capacity development with 10.87 out of 20 (54.35%) (Figure 6.4.1).

Figure 6.4.1: Uganda's Cybersecurity Index; 2015-2020



Source: Global Cybersecurity Index reports by ITU