



REPUBLIC OF KENYA

**MINISTRY OF INFORMATION,
COMMUNICATION, TECHNOLOGY,
INNOVATION AND YOUTH AFFAIRS**

DIGITAL ECONOMY STRATEGY

- DRAFT 1 -

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ABBREVIATIONS

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
BPO	Business Process Outsourcing
B2B	Business to Business
B2C	Business to Customer
CBC	Competency Based Curriculum
C2C	Customer to Customer
DLP	Digital Learning Programme
GDP	Gross Domestic Product
GPS	Global Positioning System
G2C	Government to Citizen
ICT	Information and Communication Technology
IoT	Internet of Things
ITU	International Telecommunication Union
ITES	Information Technology Enabled Services
ITax	Integrated Tax Management System
KENET	Kenya Education Network Trust
KICD	Kenya Institute of Curriculum Development
KNBS	Kenya National Bureau of Statistics
KPHC	Kenya Population and Housing Census
MDAs	Ministries, Departments and Agencies

MoICT	Ministry of ICT, Innovation and Youth Affairs
MTP	Medium Term Plan
NAS	National Addressing System
NCS	National Communications Secretariat
PDTP	Presidential Digital Talent Programme
PwDs	Persons with Disabilities
R&D	Research and Development
SACCO	Savings and Credit Co-Operative Society
SMEs	Small and Medium-Sized Enterprises
STEM	Science, Technology, Engineering and Mathematics
STP	Science Technology Parks
TIMs	Transport Integrated Management Systems
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization

FOREWORD

Kenya is ranked as one of the top ten fastest growing digital economies both regionally and globally. Kenya is therefore, well placed to take great advantage of the global digital revolution, a key component of the fourth industrial revolution. The Fourth Industrial Revolution (or 4IR) is a way of describing the blurring of boundaries between the physical, digital, and biological worlds. It's a fusion of advances in artificial intelligence (AI), robotics, the Internet of Things (IoT), 3D printing, genetic engineering, quantum computing, and other technologies: the collective force behind many products and services that are fast becoming indispensable to modern life. For example, GPS systems that suggest the fastest route to a destination, voice-activated virtual assistants that have the ability to recognize your face and tag you in a friend's photo. As a result of this perfect storm of technologies, the 4IR is paving the way for transformative changes in the way we live and radically disrupting almost every business sector.

This Strategy aims at setting the pace to place Kenya as one of the leading players of the digital economy in Africa and in the process unleash the new economic possibilities created by future industries and markets. The net expectation is to raise labour productivity, diversify our economy, and become an engine for stable economic growth, high-skilled talent and job creation for decades to come.

This Strategy is developed as a result of Kenya's adoption of the Digital Economy Blueprint for Africa and launched by H.E. President Uhuru Kenyatta in Kigali, Rwanda in May 2019 during the Transform Africa Summit, the flagship event of the SMART Africa Alliance. Kenya is the champion for Digital Economy pillar within the SMART Africa Alliance.

The strategy has been developed collaboratively between the private and public sector and it is envisioned that its implementation and realization will require the same collaborative process.

The Strategy focuses on six pillars (Digital Government, Digital Business, Infrastructure, Innovation and Entrepreneurship, Digital Skills and Values and Digital Inclusion) as well as the following cross-cutting themes: An Integrated Ecosystem, Data, Emerging Trends, Green ICT, Security and, Policy and Regulatory Framework. This Strategy is developed with every sector in mind and it is our hope that each sector will adopt this strategy and develop their own roadmap of how to tap into the global digital economy to help realize Kenya's full potential.

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ACKNOWLEDGEMENTS

The Digital Economy Strategy for Kenya is a culmination of collaborative work of multiple stakeholders under the leadership of the National Communications Secretariat (NCS) and Ministry of Information, Communications, Technology, Innovation and Youth Affairs (MoICT). The Strategy has been developed with input from the Taskforce and Technical Working Group Members who came from diverse backgrounds including, industry associations, private sector, civil society and academia.

This Strategy has benefited immensely from inputs from the Cabinet Secretary and Principal Secretaries in the Ministry, other Ministries, Departments and Agencies (MDAs), Institutions of Higher Learning, Service Providers, Private Institutions, special interest groups, and the general public each of whom devoted their time, effort and expertise.

The Strategy echoes the country's commitment to reap the full benefits of Kenya's digital economy through leveraging on sectors that operate using digitally-enabled communications and networks. It is our hope that the same collaborative commitment and spirit that enriched the development of this Strategy will be carried forward for its successful implementation.

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

The Digital economy represents a new ecosystem composed of sectors that use Internet and digital platforms to transact business and offer services. This allows businesses, individuals, and government to interact seamlessly through government-to-citizen (G2C)¹, business-to-customers (B2C), and business-to-business (B2B) interactions facilitated by online connections. The digital economy in Kenya has been recognized and supported by various national policies, legal, and regulatory frameworks that guide its growth and development.

The important instruments that have assisted in the development of the digital economy strategy include Kenya Vision 2030, National ICT Policy (2019), The Big Four Agenda and Kenya's Digital Economy Blueprint for Africa. Kenya's Vision 2030 overarching goal is to make Kenya a globally competitive and prosperous nation of middle-income level providing high quality life to all its citizens by 2030. The Vision has three pillars namely the Economic, Social and Political pillars that are anchored on a stable macroeconomic environment, continuous governance reforms; enhanced equity and poverty reduction and wealth creation. The Economic Pillar provides for the activities within the ICT sector where the target was to increase and sustain the level of Gross Domestic Product (GDP) growth rate to 10% in order to enhance the welfare of all Kenyans across the country by the year 2030. The Vision is implemented through a series of 5 Year Medium Term Plans (MTP).

Kenya's National ICT Policy (2019) aims to advance Kenya's vision as an industrializing information society and knowledge economy that creates dignified employment opportunities to ensure financial security and allows greater innovation. The objective of the Policy is to provide access to ICTs to all Kenyans with seamless local, regional and

¹ Government-to-Citizen (G2C) herein refers to interactions pertaining to persons seeking government services; including non-citizens such as refugees and foreign nationals

global connectivity. The Policy outlines how the ICT sector will enable the achievement of national development priorities including Kenya Vision 2030 and the Government's Big Four Agenda which seeks to raise the share of manufacturing sector to 15 per cent of GDP; ensure that all citizens enjoy Food security and improved nutrition by 2022; achieving Universal Health Coverage; and delivering at least five hundred thousand (500,000) affordable housing units. The ICT sector is therefore, positioned as an enabler to Kenya's socio-economic development.

This Digital Economy strategy is geared towards ensuring that Kenya leads the region towards the 4IR. The fourth industrial revolution is emerging from the third that among others seeks to use the Information Technology to automate production processes. This will require expansion of local and international broadband connectivity, development of domestic solutions to guarantee creation of online jobs, markets and quality skills that allow citizens to benefit from the shared economy.

1.2 RATIONALE FOR DIGITAL ECONOMY STRATEGY

1.2.1 Benefits of a Digital Economy

In the modern age most people around the globe are reliant on mobile wireless communication, internet access and social media for interactions with each other. These systems are also used for conducting business transactions and payments, sharing information, learning, marketing and obtaining new knowledge and services. However, governments and businesses increasingly prefer the Internet for disseminating information, delivering services, communications, marketing and doing business in general. A digital economy has potential to boost inclusive growth, expand opportunities, and improve service delivery. Digital technologies have the power to deeply transform the economy as a whole and across various sectors.

The digital economy plays a significant role in accelerating global economic development, enhancing productivity of existing industries, cultivating new markets and

industries, and achieving inclusive, sustainable growth. It is also becoming a powerful catalyst and a driver of inclusiveness, by linking communities to create a “global village”, by removing barriers to trade, encouraging information and knowledge sharing, and allowing countries to rise up the value chain.

1.2.2 Opportunities in the Digital Economy

The Government and the private sector have continued to work together to achieve the 10% annual GDP growth rate target, the average performance to date revolves around 5% for the last 12 years of Vision 2030 implementation². Undoubtedly, the digital economy has helped to unlock some of this growth by enabling both public and private sectors to leverage technology and platforms thereby creating opportunities to adopt more efficient, digital centred business models and job opportunities for youth. The digital economy has opportunity to create ‘jobs of tomorrow’ in the sector of online work, catalysed by the Ajira Digital Programme. Presently, various ‘gig economy’ platforms have been expanding in, and into, Kenya, facilitating 677,961³ digital/online workers and thousands more engaging in digitally-enabled work, such as ride hailing taxi drivers, and providing accountability and traceability to jobs which previously would have been exclusively in the informal sector. However, the ICT sector target, to contribute over 10% to the country’s GDP remains unachieved as the sector has so far only been able to reach 2%. This has been attributed to a number of factors and challenges that include slow adoption of the use of digital services, underdevelopment of the ecosystem for creation of local content, lack of access of broadband connectivity, and skills gaps, among others as outlined below.

The government, private sector and the civil society have not fully adopted the use of digital services which would facilitate the development of local content that, in turn, would trigger the growth of digital businesses in the country. For the Government, it

² <https://www.knbs.or.ke/gross-domestic-product-gdp/>

³ TIFA Kenya, April 2020, “Report on Survey on the Awareness of the Ajira Digital Programme and the Incidence on Online Workers in Kenya”.

should fully adopt digital technologies for convenient, transparent, efficient and secure public service delivery. This would foster the digital industry and create more employment opportunities through digitization and informatization of government services.

The current digital ecosystem is not fully developed to support production of local content and applications to build the required digital literacy to serve and attract demand for local users. This has led to the slower development of the ITES and BPO industry which is far below the projected growth under the Vision 2030. Globally, the volume of digital business, e-commerce and social media networks users is growing enormously, but Kenya is yet to achieve the development of adequate infrastructure, and a comprehensive policy and legal frameworks that fully support digital businesses is yet to be put in place.

Although efforts have been made to improve internet access and use, inequality in optimum broadband connectivity still exist with urban areas enjoying superior connectivity compared to rural areas. Expansion and upgrading of the current digital infrastructure is necessary to create a hyper-connected society that links people, things and space without any constraints.

The ICT skills and talent pool is yet to match the national requirement to drive the digital economy. The institutions charged with the development of the digital economy need to be strengthened to coordinate and implement the programmes and projects for the digital economy.

As an enabler and one of the fastest growing sectors of the economy, ICT sector cuts across all other sectors. The growth of the digital economy will have both positive and negative impact on those sectors and the government and all stakeholders should stay focused to develop and review policies, legal and regulatory frameworks to ensure that

digital business is conducted with integrity and in a secure and trusted environment. For instance, ICT being a major producer of e-waste, should start addressing the management and disposal of e-waste which is becoming a big issue.

According to the “*Digital Economy Report 2019 - Value Creation and Capture: Implications for Developing Countries*” by the United Nations Conference on Trade and Development (UNCTAD), Africa and Latin America combined account for only 1% of the market capitalization value of the world’s digital platforms. This is in spite of the fact that Africa remains one of the most populous continents in the world with a population of about 1.2 billion people. This is in stark contrast to the United States and China which together, account for more than 50 per cent of global spending on IoT, and more than 75 per cent of the world market for public cloud computing (UNCTAD, 2019). Also, these countries account for 90 per cent of the market capitalization value of the world’s 70 largest digital platforms. Therefore, it can be concluded that there is ample room for Kenya to improve its share in the digital economy. This should provide sufficient impetus for the Government and private sector alike to reassert its commitment to fully implement digital economy programmes and projects under Vision 2030. The imperative would be to address the emerging issues and challenges that may threaten the achievement of the goals arising out of the outcomes of the development of a national Digital Economy Strategy.

1.2.3 Risks for consideration:

As this strategy is implemented, the Government and stakeholders recognise the need to understand the risks that may be created by the growth of the digital economy and the importance of putting into place risk mitigation strategies. One risk is the potential to exacerbate exclusion and inequality for those who lack access to the digital opportunities due to challenges with connectivity, skills, access to digital devices and affordability. The section on inclusion provides relevant mitigation strategies to address this risk. The section on digital skills includes mitigations for risks presented by cybersecurity and cybercrimes. Another potential risk could be the concentration of market power that

could reduce opportunities for local micro, small and medium enterprises. The cross-cutting issues section highlights the needs for policy and regulation to address risks around consumer protection, data privacy and other risks. Recent examples of how these risks have played out include exploitive lending from some digital app credit providers, and the growth of mobile gambling, both of which have created financial stress for some Kenyans. While it is important to be cognisant of the inherent risks in the growth of the digital economy, the potential benefits for Kenya are significant and the tools to mitigate these risks can be implemented wisely to ensure that the benefits far outweigh the risks.

1.2.4 Flattening the Curve on COVID-19

As at the time of drafting this Strategy, Kenya had joined 213 countries and territories around the world in the fight against the coronavirus (COVID-19) global pandemic. This pandemic had caused untold loss of human life and brought health systems across the globe to its knees. In addition, the onset of the pandemic saw the global economy enter a synchronized recession unseen since the Second World War. The successive lockdown of national borders led to disruptions in production thus negatively impacting global trade. The Kenya Economic Update of April 2020 estimated that Sub Saharan Africa was projected to slip into its first recession in 25 years.⁴ With more than three billion people in isolation, the status of digital spaces is switching from an amenity to a necessity. This is premised on the fact that they have become not only the main way to access information and services, but also one of the only remaining vectors for economic, educational, and social interactions. However, not all are equals in terms of access to networks, connected devices, or skills required for optimal navigation of the computerized ecosystem. Though digital inequalities were in existence, the COVID-19 crisis has exacerbated them dramatically.

⁴ World Bank, April 2020: Africa's Pulse

This situation threatened to exacerbate inequalities across populations of poor nations who relied on these sectors to eke a living, and eroding years of meaningful progress in the building of capacities to grow these economies.

In March 2020, HE President Kenyatta ordered the closure of schools in an effort towards taking precautionary measures against possible spread of COVID-19. In the same address HE the President also urged all employers, including all government agencies to encourage their staff to work from home.⁵ This assumed equality access to digital devices, Internet, and skills to effectively use digital spaces and resources. The same assumption was extended to the basic education too where it turned out that only less than 25% of learners could participate in remote/online learning. Similarly, the Kenyan labour force are largely in the informal sector where working remotely was not a solution. Unfortunately, the measures that were put in place to address the digital inequalities during the pandemic were seen more as a necessity and not as priorities.

Given the emerging effects of the COVID-19 pandemic and the Government directive to contain it by having people work from home, avoid crowded spaces and use cashless transactions, Kenya like many other nations in the world is facing disruptions necessitating a shift in how we work, live and play. The digital world has offered many steps that can help mitigate risks to the economy and help sustain the economic wellbeing of the country.

This rapid shift in behaviour in the way ICT is used, has in many ways demonstrated the readiness of infrastructure for many. Institutions having high speed broadband at their offices and also at the homes of their workforce, have coped relatively well and have been able to shift core operations and rapidly accelerate their digital transformation. Online meetings have become the new normal for both government and private sector, and a rapid growth in internet traffic on Internet Exchanges in Kenya has been seen, with

⁵ <https://www.president.go.ke/2020/03/23/kenya-approves-roll-out-of-google-loon-4g-to-mitigate-coronavirus-work-disruptions/>

minimal disruption. Continuous operation of ICT Infrastructure has become critical to the national economy, which now includes digital commerce and money platforms, as well as underlying broadband, telecommunications, data centre and power infrastructure.

Native digital businesses, such as e-commerce and online entertainment have in fact begun to thrive, whereas before they were mostly in nascent stage. The restriction of being at home has encouraged people to use online platforms to buy a wider spectrum of goods and services online, from groceries to routine medical tele-consultations to online video streaming.

However, the digital divide has been exposed, especially in an area such as education. Well-equipped schools with high speed broadband, ICT skills enabled teachers, and a large number of students with unlimited home broadband, have adapted well to the shift to internet delivered learning. Schools with broadband and skilled ICT teachers have been able to adopt online learning to deliver schooling to a limited number of students who have access to devices and can afford mobile data, but many schools have not been able to deliver online learning at all.

It is perhaps not in doubt that ICTs play a crucial role in steering transformative change in our lives. It is why, therefore, the government needs to fast-track the implementation of this strategy in order to manage possible future pandemics and increase the presence of ICT across all sectors of our economy. Perhaps some of the immediate noticeable gains from this will include the facilitation of distance learning and the rollout of telemedicine services to remote areas and across national borders. These benefits will help support Kenya's education and the health sectors, both of which, have borne the brunt of the pandemic. It is estimated that the gains from such initiatives will go a long way towards setting Kenya up for success in its future endeavors while oiling the wheels of its economic transformation.

1.3 OVERVIEW

The Digital Economy Strategy for Kenya is focused on the advancing the implementation of programmes and projects under the Kenya Vision 2030 through the Five-Year Medium-Term Plans (MTPs) and the Big Four Agenda under the Jubilee Government. The Strategy is based on various policy, legal, and regulatory instruments and other dependencies within the general economic, social and political ecosystems that guides and influences the development and growth of the ICT sector in Kenya.

The Strategy prioritizes initiatives, programmes and projects that will be implemented to support the growth of digital economy in Kenya with the aim of fast-tracking the benefits of innovation and technology to transform the economy, promote national, regional and international integration and trade. In addition, it is expected to generate inclusive economic growth, stimulate job creation, and bridge the digital divide locally and internationally. The Strategy will facilitate poverty reduction, by harnessing the socio-economic opportunities brought about by the 4IR.

The Strategy commits various stakeholders to continually harness the potential of emerging technologies like IoT and the social media networks in the promotion of Information Technology Enabled Services. The strategy will also seek to increase wealth and job creation through programmes that leverage on online jobs such as the Ajira Digital Program that encourage, through training, the youth to obtain employment abroad on online platforms. Reference use of technology to explore talent, entrepreneurship, create jobs, digital business, mention the youth and need for job creation.⁶

Similarly, in the age of big data where every person, device and instrument has become a data emitter thereby encouraging the aggregation and storage of these enormous data volumes, the storage, analysis and interpretation of big data require specialized

⁶ See inset on Ajira Digital Jobs in section 5.4.4

techniques and equipment for which we must be prepared. Kenya is currently a net producer of data and the facilities, capability and interest needs to be developed, therefore, we need to take cognizance of the capacity to store and use our own data.

1.3.1 Structure and Organization of the Strategy

This Digital Economy Strategy is organized into seven chapters that includes five Digital Economy pillars that are essential for the digital transformation of Kenyan economy as follows: Chapter 2 highlights programmes and projects that will be implemented under the Digital Government pillar to improve service delivery by the public sector; Chapter 3 presents the initiatives, programmes and projects to be implemented to create a robust marketplace for digital trade, digital financial services and digital content under the Digital business pillar; Chapter 4 describes programmes to be implemented to modernize and uplift to first world class, the country's national Infrastructure. Chapter 5 sets out the programmes and measures necessary for the development of an Innovation-driven entrepreneurship ecosystem that supports home-grown firms to generate world class products and services. Chapter 6 explains specific programmes to be implemented to build Digital Skills and Values. Chapter 7 addresses Digital Inclusion and highlights specific groups that need focus such as the Youth, People with Disabilities and women to ensure they are not left behind in the digital transformation of the economy; and Chapter 8 outlines some policy, legal and regulatory interventions that the Government plans to take to address Cross Cutting issues that impact on the development of the digital economy.

CHAPTER TWO: DIGITAL GOVERNMENT

2.1 INTRODUCTION

The government has a duty to its citizens to provide responsive and prompt services; that there is efficient, effective and economic use of resources; that there is citizen involvement in processes including policy-making processes; and that the public is provided with accurate and timely information. The primary role of the Digital Government pillar is to transform and improve both local and foreign user experience while accessing a wide range of government services including, but not limited to, passport and visa applications, paying of land rates, filing of tax returns, processing driving license renewal requests, and registration of companies among others.

Therefore, the digital government pillar aims to facilitate the improvement of public service delivery through automation and digitalization. The benefits envisaged from a fully digital government include user convenience, reduced costs, increased efficiency, improved delivery of government functions, governance and effective program administration.

Kenya over the years has made substantial improvement in the use of digital platforms for public service delivery. Some of these platforms include the e-Citizen platform; the I-Tax system for tax administration; the Transport Integrated Management System (TIMS) for registration and licensing of motor vehicles and drivers' licenses; among others. The Government is also in the process of rolling out the National Integrated Identity Management System (NIIMS) (also known as '*Huduma Namba*' which is a Digital ID system. Digital IDs are crucial for facilitating transactions in a digital economy).

However, it is worthy to note that although the Government has made considerable progress in the digitization of its processes, many institutions across the MDAs continue to rely on manual processes. For instance, the Judiciary has yet to fully integrate ICT and automation processes to improve its efficiency, reduce case backlog and ease access to

courts. In addition, Kenya has yet to fully operationalize the National Integrated Identity Management System (NIIMS), which means Kenya still has a long way to go in achieving digitalization across the board.

The Government realizes therefore that, there still exists room for leveraging on new and emerging technologies and intends to digitize all its services to support a citizen-centric service delivery that leads to increased opportunities that a digital economy provides.

The impact of a fully digitalized government service is a public that fully participates in the national issues due to the ready access to information, growth in e-commerce, increased revenue to the government, wealth creation and an improved business environment.

2.2 FOCUS AREAS

The key focus areas of digital government pillar are: -

- 2.2.1 Integrated front-end and back-end government systems.
- 2.2.2 Centralized data infrastructure/sources for enhanced government planning and enhanced efficiency in service delivery.
- 2.2.3 Expanded e-government services.
- 2.2.4 Enhanced transparency and accountability in public service delivery through ICT.
- 2.2.5 Citizen-centric services.

2.3 OBJECTIVES

The main objectives of a Digital Government include:-

- 2.3.1 Ubiquitous services.
- 2.3.2 Efficiency through infrastructure sharing across government offices.
- 2.3.3 Fully digitized and integrated government services.

2.4 INITIATIVES

2.4.1 Established and Integrated Government through ICT

The Government will prioritise and promote the integration of government services including services such as '*Huduma Namba*' (Digital ID) for registration and identification of persons, Transport information management, movable property registry, Asset tagging/tracking for movable assets, payroll administration, supply chain management and revenue administration systems at national and county levels.

In addition, the government will promote the development and adoption of ICT systems in delivery of government services through integrated national addressing system; integration of a National payment gateway system with a standard interface for both web and mobile access (including digital payment portal/platform); development of systems such as common single window system, public health services management, investors portal and registry system, housing management and county reporting system, smart ID for livestock; among many others

The government will continue to support the smooth operations of the National Integrated Identity Management System, Transport Information Management, and Integrated Payroll System in counties. In addition, it will continue to enhance the capacity of the e-Citizen portal to facilitate more services offering; enable online registry for companies, investors, and land registration.

2.4.2 Expanded e-Government Services

The Government will facilitate public services on real time basis through integration of mobile applications and government portals and will target to have all services online. The expanded e-government services will be enabled by the implementation of a robust infrastructure.

Some key e-Government services to be developed relate to land-related transactions, public health services, company and organization registries, a common commodities

exchange portal, electronic open auction portal, end to end e-procurement portal and system for government.

2.4.3 A Citizen-Centric Government

The government will promote citizen participation in government business through automation and digitization of government processes and systems and promoting the use of emerging technologies in government. The government will ensure efficiency and reliable government services by promoting transparency in delivery of its services to all citizens, and use ICT to enhance its accountability in appropriation of public resources thus enhancing good governance in public service delivery.

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CHAPTER THREE: DIGITAL BUSINESS

3.1 INTRODUCTION

The backbone of a digital economy is a robust marketplace that leverages on technology to ensure that every citizen and business can trade goods, information and services.

As the economy continues to digitize, the lines between “digital trade” and “non-digital” trade has continued to blur. The digital trade sub-sector therefore prioritizes the initiatives that can drive the uptake of e-commerce in Kenya. It also involves trading that is digitally enabled but physically delivered goods and services. It is envisaged that digital trade will out-do the traditional trading model in the years to come by enabling e-commerce, digital payments and creating a fintech ecosystem. All these will lead to economic growth, wealth and job creation, increased fiscal revenues and more options for consumers.

Digital finance sub-sector focuses on access to financial services, typically over the mobile phone, electronic card or online platforms. Such financial services include but are not limited to payments for services rendered, loan requests and disbursements, savings deposits, insurance premium payments, pensions and capital markets products. In Kenya, the massive development of digital finance has led to the rapid growth in financial inclusion. Mobile money infrastructure has over time created new markets for businesses. Moreover, it has also served as a backbone for other industries to reach the market through mobile applications (Apps) integrations with business platforms for effective service delivery. Savings and Credit Cooperative Societies (SACCOs) for instance have integrated apps with mobile money solutions to be able to efficiently service their members⁷. The opportunity remains for Kenya to harness this capability to further grow and innovate around Digital Financial Services (DFS) to flourish and thrive in other aspects of the Kenyan society especially the underserved and unserved.

⁷The Sacco Societies Regulatory Authority (SASRA), a semi-autonomous Government Agency under the Ministry of Industrialization and Enterprise Development, Kenya.

Digital content sub-sector focuses on the digital creative economy. Digital content has spurred innovation and knowledge transfer across all sectors of the economy and is a critical sector to foster inclusive development. Digital content recognises that the creative economy is vibrant, vast and dynamic. There is opportunity for Kenya to harness the various facets of this dynamic industry that includes film, music production, games development, digital advertising and design. This will enhance national heritage and build a vibrant “Brand Kenya”.

Digital business as a whole will ensure that there is an increase in the economies of scale and massive opportunities will emerge for economic growth both locally and in the region.

3.2 FOCUS AREAS

The following are the key focus areas for the transformation of Kenya’s Digital Business landscape.⁸

- 3.2.1 Digital Trade.
- 3.2.2 Digital Financial Services.
- 3.2.3 Digital Content.

3.3 OBJECTIVES

The following are the objectives of the Digital Business Pillar:

- 3.3.1 To position Kenya as a global e-commerce hub contributing to economic growth, small and medium enterprise growth, job creation, increased fiscal revenues and more choice for consumers.

⁸ The success of the Digital Business pillar is dependent on the other key pillars within the Digital Economy Strategy. Key physical infrastructure for movement of goods and services such a robust National Addressing System (NAS) will play a key role in last-mile delivery of goods.

- 3.3.2 To harness Kenya's reputation as a global leader in digital finance innovations to enable an open, secure, and resilient digitised financial system powering a digitally driven and inclusive economy.
- 3.3.3 To attract investments in the digital economy.
- 3.3.4 To promote Kenya's national heritage through a vibrant digital creative economy.

3.4 INITIATIVES

3.4.1 Drive the uptake of e-commerce to create opportunities

E-commerce has great potential to contribute to Kenya's long-term growth objectives although as a nascent industry, it will be important for Government policy to align incentives in the short-term to help the industry flourish now to meet the objectives of small and medium enterprise growth, job creation, increased fiscal revenues and more choice for consumers. The Government will endeavour to build confidence in the digital business environment by ensuring the interests of the different players are protected in the e-commerce ecosystem. To this end the government will in collaboration with stakeholders, focus on protecting the cyber space to mitigate threats and loss of revenues through cybercrimes. It will promote a healthy competitive environment through the use of shared digital infrastructure and digital innovations for trade and business.

In order to expand the marketplace for digital trade, the government will foster bilateral and multilateral cooperation efforts towards achieving a single Northern Corridor, East African and African digital market. This move will encourage the free flow of goods within the region. The government will also provide an enabling environment for increased digital access to regional and global markets, showcasing our innovations. To facilitate regional trade of goods and services, the government will encourage businesses to embrace new and emerging technologies for delivery of goods and services.

The government will encourage stakeholders networking to embrace and promote best practices in digital business. This will encourage upholding of business standards and

support community growth, reduce redundancy between systems, improve reliability and efficiency and promote resource utilisation. Business will also be encouraged to assist in the uptake of new and emerging technologies through promotion of new innovations on e-commerce, by providing capacity building forums and environment for upcoming innovators.

The use of online platforms will be encouraged to access employment opportunities and provide services including labour especially among the youth to the rest of the world. In order to increase the uptake of online labour by employers abroad, the government will engage in capacity building in ICT skills, foster innovations and create science innovation parks that will groom the Kenyan market to provide services abroad. The promotion of e-commerce will also include penetration of value chains such as manufacturing, inventory, logistics, delivery and payments by way of digitalization of all these key value chain segments.

3.4.2 Increase innovation, interoperability and inclusivity of digital financial services

As outlined in the Digital Finance Strategy produced by the National Treasury, the country's position as a leader in the mobile money space will be leveraged upon to catalyse further development of Digital Financial Services to achieve financial inclusion. Under the leadership of the Central Bank of Kenya and the latest National Payments Strategy (NPS), this shall be realized through the promotion of interoperability and integration of customer-centric and world-class payment systems nationally, regionally and globally to encourage cross-border trade and services.

The government will put in place frameworks to ensure that all Kenyans have equal access to digital financial services by improving access to a wide range of digital financial services such as insurance, loans, pensions, investments and further supporting efficient credit information sharing including relevant data from mobile money and other electronic transactions.

Interoperability can only thrive where there is a secure financial systems infrastructure and to this end the government will encourage collaborative efforts between stakeholders to secure financial systems ecosystem. This will build an open, digitized financial system powering a digitally driven and inclusive economy that encourages local and regional integration in order to enhance trade and industry.

3.4.3 Unlock the potential of Kenya's digital creative economy

The creative economy is recognized as having both commercial and cultural value. Therefore, the government will expand and develop Kenya's creative digital economy with the aim of harnessing Kenya's youthful talent, stimulating economic growth and promoting the national heritage as well as build "*Brand Kenya*".

The government will create an enabling environment for the development of a Digital Media ecosystem that supports digital content creation and consumption. To this end, the government will promote and encourage local and foreign investments in digital content creation. This will be achieved through effective management of intellectual property and effective management of creative works, as well as, promoting the growth of digital media hubs.

This initiative will address key interests which include film and music production, games development (e-sports and video games), digital advertising and design. All these will bridge the unemployment gap for the youths, open more opportunities for investors as well as deepen Kenya's global competition in creative economy.

CHAPTER FOUR: INFRASTRUCTURE

4.1 INTRODUCTION

The Infrastructure pillar recognises that the digital economy relies on a robust infrastructure for delivery of digital services. The pillar, therefore, identifies the main challenges undermining digital investment, innovation and business. The policy makers, industry players and other stakeholders, need to work collectively to facilitate the expansion and modernization of digital infrastructures, and the physical infrastructure that underpins it which will, in turn, encourage investment and innovation throughout Kenya and promote the long-term growth of the digital economy. The infrastructure pillar focuses on addressing critical connectivity infrastructure and services gaps, enhancing affordability, accessibility and reliability of infrastructure, which is fundamental to achieving an inclusive digital economy.

The forms of infrastructure identified in this pillar include major national infrastructure networks such as roads, broadband networks, satellites, National Addressing System and energy supply which are critical enablers to the digital economy. The complimentary infrastructure that are important within this pillar are logistics (Airports, Ports, Railways, Postal and Courier services), appropriate and affordable devices, enabling utilities (roads, power, water etc.) and management of Digital Assets. Other forms of infrastructure include spectrum, cloud infrastructure and space-based communications infrastructure. On the next layer above that are the digital platforms, such as mobile and banking payment transaction platforms, cloud hosted communications and collaboration platforms, and ecommerce and 'gig working' platforms which are now also effectively part of the infrastructure of the digital economy. Their critical infrastructure status needs to be recognised also. A number of these platforms are hosted in cloud data centres outside of Kenya, and it needs to be encouraged for these platforms to host their network and cloud sources within in country datacentres.

The management and use of the various forms of infrastructure will lead to increased efficiency, revenue generation for the government and effective communication services. Examples of use of the various infrastructure in Kenya that has impacted the digital economy include; the use of cloud infrastructure to support educational players such as Kenya Institute of Curriculum Development (KICD) and Kenya Education Network Trust (KENET) who have launched cloud services to support basic education and higher education; the radio spectrum has become an indispensable element in a diverse range of applications such as broadcasting, mobile and satellite communications and radar. Vital services such as national defence, public safety, disaster warning, weather forecasts and air-traffic control all depend on access to spectrum; space-based communications infrastructure is also currently used for precision farming/agriculture which ensures maximal efficiency in equipment and application of fertilizer, natural resources management and, deforestation and forestry management. Space-based infrastructure can also be used for distance learning and telemedicine services to remote areas and across national borders, medical remote surveillance, disaster prevention and management, telecommunications capability in the absence of ground infrastructure, remote assessment of damage and pollution for insurance claims and lastly, the meteorology and climate change.

The pillar therefore is guided by the understanding that robust connectivity is a critical foundation to fast-track Kenya's socioeconomic development.

4.2 FOCUS AREAS

The following are the key focus areas for the Infrastructure pillar: -

- 4.2.1 Robust ICT infrastructure and Connectivity.
- 4.2.2 Devices.
- 4.2.3 Data Standards.
- 4.2.4 Logistics infrastructure.
- 4.2.5 Integrated ICT infrastructure development.

4.3 OBJECTIVES

The following are the objectives of the Infrastructure Pillar: -

- 4.3.1 Promotion of affordable, ubiquitous, reliable and sustainable infrastructure that is fundamental to achieve an inclusive digital economy.
- 4.3.1 Promotion of renewable and alternative energy systems to lower the prices of and demand for fossil fuel sources, and recognition of Kenya's leading position in renewable energy supply⁹, to promote it internationally as a destination for 'Green Data Centres'.
- 4.3.2 Promotion and adoption of best practice standards to enable reusability of data elements and their metadata that reduces redundancy between systems, thereby improving reliability and efficiency resulting in cost reduction.
- 4.3.3 Promotion of logistic systems that are cost-effective, timely and reliable to enable the transportation of goods and facilitate mass production.
- 4.3.4 Empower citizens digitally through easily accessible communications infrastructure and affordable end user devices to enable them effectively to participate in the digital economy.

4.4 INITIATIVES

4.4.1 Bridge gaps in broadband access and connectivity

The Government will put in place policy and regulatory measures to foster broadband access and connectivity by private sector in rolling out modern mobile and wireless broadband networks across the 47 counties of Kenya. The government will further expand coverage of the National Optic Fibre Backbone Infrastructure, in order to increase access and connectivity as well ensuring NOFBI service levels meet the needs of private sector telecoms companies. Private sector will also be encouraged to expand their fibre optic infrastructure, especially on the last mile. This will enhance the uptake of digital

⁹ Renewables 2018: Global Status Report
<https://www.ren21.net/wp-content/uploads/2019/08/Full-Report-2018.pdf>

skills, increase access to government services and reduce connectivity costs. Programmes such as the Digital Literacy Program (DLP) for primary schools will be expanded due to increased connectivity. The expanded broadband connectivity will also have a ripple effect on the uptake of locally assembled ICT manufactured devices used by learners.

The government will also ensure allocation and effective management of spectrum resources, increase efforts towards standardizing the affordable digital devices such as mobile phones, fixed phones, laptops, tablets, personal computers, IoT devices and sensors and ensure interoperability and their fit-for-purpose before adoption in the country. The government will support local assembly of end user devices to enhance availability and affordability of smart devices for all, including marginalised groups particularly, people with disabilities (PWDs).

It is anticipated that by undertaking there will be higher levels of productivity and profitability, efficiency, reduced connectivity costs and an increase in digital inclusion.

4.4.2 Support availability and affordability of data infrastructure

The Government will support and encourage the development and rollout of data centres to support cloud computing and big data analytics. The Data Center Infrastructure will host mission critical servers and computer systems, with fully redundant subsystems that will help the government and/or local firms store their data in a secure manner.

The government will also increase the number of public spaces with internet connectivity such as Constituency Innovation hubs and Youth Empowerment Centres. The private sector will also be incentivized and encouraged to deploy broadband connectivity in public spaces. Increasing the number of public spaces, innovation hubs and 'maker spaces' with connectivity will further form part of a network of R&D Incubation centres. Increasing the number of public spaces with connectivity will further form part of a network of testing centres for the application of new and emerging technologies such as

artificial intelligence, block chain, Internet of Things, among others. This initiative will help the country achieve data sovereignty while also encouraging innovation amongst the Kenyan public.

4.4.3 Developing and implementing the National Addressing System

The Government will prioritise the roll-out of the National Addressing System (NAS) which will, among other things, establish standards for naming roadways, posting street signs and assigning numbers to all land parcels, dwellings, principal buildings, businesses and industries. This will facilitate e-commerce, particularly digital goods and digital service delivery. It is noteworthy that the rollout of NAS will require collaboration with the relevant government departments for rollout of complementary infrastructure (roads, railways, ports, airports among others). In rolling out a NAS for the 21st Century, Kenya has an opportunity to leapfrog straight to digital addressing systems, which may form a better and cheaper baseline for the digital economy than traditional addressing systems which were designed for letter post.

4.4.4 Integrated Infrastructure Development to Accommodate ICT

The government will integrate ICT into all complimentary infrastructure development, such as roads, in order to avoid additional costs incurred when expanding ICT infrastructure. This will also ensure that new complimentary infrastructure is protected from destruction during laying of underground cables. The government will also facilitate the rollout of infrastructure through harmonization of levies and taxes for infrastructure both by national and county governments.

CHAPTER FIVE: INNOVATION-DRIVEN ENTREPRENEURSHIP

5.1 INTRODUCTION

The purpose of this pillar is to address barriers that limit the growth of digital entrepreneurship, promote innovations and uptake of new technologies that improve efficiency and, facilitate trade and industry. The pillar also seeks to support innovations that improve value propositions for businesses, promote communication and enable businesses to use innovations and technology to tap into new markets, hence broadening their customer base.

The pillar takes particular focus of disruptive products resulting in entrepreneurial businesses that completely challenge and changed an existing product market or sector by introducing innovation. Also included in this category are new products derived from technology advancements resulting in unique opportunities within the digital economy such as 4IR technologies.

In Kenya, many of the innovations are either bought off by venture capitalist from abroad, or gone to waste. There is need to establish a game changer of illuminating local innovation and commercializing them by supporting the innovators accordingly.

We outline innovation and its particular character in Kenya and the various challenges requiring intervention; the conducive environment for innovation elaborated in the local innovation system; the product/business development cycle; and finally, the entrepreneurship ecosystem where businesses scale. We set out the focus areas, objectives, and then propose interventions in the form of strategic opportunities unique to Kenyan innovation driven entrepreneurs in the digital economy.

Kenya has had immense success in the mobile money market with the advent of mobile money solutions. These solutions have enabled money to be transferred locally, regionally and globally with transactions being carried out from B2B, B2C and C2C almost on a real-time basis. Mobile money solutions have successfully also supported other industries, and enabled others such as micro lending solutions, mobile treasury bonds, pay-as-you-go solutions, mobile health and mobile agriculture platforms. The

ability of the mobile money market to scale nationally has not only enabled the efficiency of certain industries, it has also resulted in opening up markets and spinning off various new solutions that have benefitted from the reach afforded by the mobile money platforms. This surge has resulted in giving Kenya's digital environment a uniquely mobile character with an increase in connectivity and phone ownership across the country with increasing mobile (internet) digital enabled solutions.

The national innovation environment is exemplified by the triple helix of government, industry and academia. Effective innovation occurs when the linkages between industry, academia and government are efficient and in synchrony. Kenya has also proved to have high social innovation potential. A lot of innovations locally also emanate from the general public. The involvement of the Kenyan public and society has proved crucial for the success of certain ground-breaking technologies. Each of these nodes require effective intervention to create a conducive enabling environment for innovation and entrepreneurship. Governance of innovation is fragmented and requires a unified agenda and institutional focus. Academia requires to generate actionable research and knowledge driven initiatives that are investible. Industry needs to work collaboratively to create sustainable digital innovations locally, and finally the involvement of a digitally enabled Kenyan market will help scale these innovation-driven entrepreneurial businesses.

The path of innovative product development from research and ideation, through to prototype development and market launch needs to be strengthened. The Technology Readiness Levels offers a framework of understanding this path and highlighting areas of intervention. Starting with basic research, Kenya needs to invest in an innovation culture and encourage tech research champions; at the point of feasibility, solutions need to be guided by good evidence and data; when screening ideas and selecting them, the evaluation needs to be driven by a guided national innovation framework; the technology development process needs to be supported with well-equipped labs and hubs; test beds

that offer prototyping and market tests need to be developed; and finally going to market and commercialization needs to be encouraged to attract local investment.

Once in the market, the innovation-driven businesses and products need a supporting ecosystem. Promotion by leadership; a savvy end-user market with accessible and affordable internet; industry with lower barriers of entry; finance and capital options; skilled labour and cheap infrastructure. Eventually, the entire ecosystem needs to be underpinned by a knowledge and data driven approach.

Developing the entire value chain of innovation driven entrepreneurship will contribute greatly to the GDP of Kenya. Hence the need for a concerted and collaborative effort by government agencies, financiers, educators, R&D agencies, service providers, support agencies, and entrepreneurs towards achieving a robust inclusive model for a shared prosperity that will bring about the realization of conversion of Kenya into a '*Silicon Savannah*'.¹⁰ Efficiency gains, and SME multiplier effects afforded by the application of technology will also result in GDP gains (an objective of the digital economy) mobile internet as a platform for Kenya's digital market place.

5.2 FOCUS AREAS

- 5.2.1 Efficiency gains in the innovation system through collaborative mechanisms.
- 5.2.2 SME multiplier effects afforded by the application of technology.
- 5.2.3 Fostering an entrepreneurial spirit in innovators both within formal education and within the society to turn ideas into scalable and sustainable businesses.
- 5.2.4 Increased availability of seed capital, angel investment, venture capital, to provide capital for research and development and for investments.
- 5.2.5 Fiscal and other incentives (including subsidies and waivers), for ICT-centric local innovations for companies involved in production of digital products.
- 5.2.6 Support for business models that leverage on both open access and intellectual property systems.
- 5.2.7 Strengthened incubators and accelerators for innovation.

¹⁰ <https://siliconsavannah.go.ke/>

5.3 OBJECTIVES

The following are the objectives of this pillar: -

- 5.3.1 To increase the number of digital innovations and ensure their uptake locally and abroad.
- 5.3.2 To support an enabling environment for collaboration and partnerships for an influx of seed capital, angel investment, venture capital, for research and development and for investments.
- 5.3.3 To enhance the contribution of innovation driven entrepreneurship to the growth of the digital economy in Kenya.
- 5.3.4 To increase the accessibility of innovation driven products in the market.
- 5.3.5 To encourage more inclusive approaches that increase access of opportunities and reach to all within the country.
- 5.3.6 To increase collaboration and integrated approaches to innovation driven entrepreneurship.

5.4 INITIATIVES

The initiatives under the Innovation-Driven Entrepreneurship Pillar include:

5.1.1 **Developing and spearheading a National Unicorn Project**

The Government in collaboration with the private sector and academia will develop the necessary prerequisites to bring rise to Unicorn projects that will result in technology export similar to the success story of mobile money. This will support the scale up of innovations that are viable and can be scaled up to a national level. A clear unicorn can be derived from the government's Big 4 agenda where the project can piggy back and enable a national agenda initiative giving it reach across the entire country whilst assisting the achievement of the Big 4 goals. One other major transformation is in the labour market over the past decade, which has seen the emergence of online digital labour platforms. This new form of work has not only disrupted existing business models

but also the employment model upon which these business models relied (ILO, 2018). For example, the Ajira Digital Jobs project, which is an innovation that enables Kenya to position itself as a global digital jobs hub.¹¹ While the Ajira Digital jobs project, offers a gateway to the world to access and buy/pay for skills in Kenya, we need another hub for commercialization of innovations from Kenya. Some innovations could be sold for millions of dollars that will generate revenue and foreign exchange and benefit a number of entrepreneurs especially the youth. The Government of Kenya, through the Ministry of ICT, Innovation and Youth Affairs in partnership with academia, civil society and private sector, established the Ajira Digital Program in 2017 to bridge the gap between skills demand and jobs. The program aims to introduce young people to digital and digitally enabled work and provide the tools, training and mentorship needed for young people to work and earn an income with dignity. The Ajira Digital Program seeks to position Kenya as a choice labor destination for multinational companies as well as encourage local companies and public sector to create digital work. This will catapult Kenya onto the Global map, recognized as a Freelance hub by 2022. As of January 2020, 638,000 Kenyans have sourced work from digital and digitally enabled jobs and over 2 million Kenyans have been introduced to the concept of digital and digitally enabled work opportunities. Ajira Digital Program creates economic activities and income generation at the grass roots and under the program, Ajira has roll-out of 172 Constituency Innovation Hubs (CIH) countrywide and five Studios under the Studio Mashinani project. The CIHs are community venues that provide free access to a physical space, internet connectivity and trainings. The Ajira Digital Program also targets young people in higher learning institutions through Ajira Digital Clubs. Currently there are over 40 Ajira Digital clubs spread throughout Kenya. The clubs are run by students for the students and offer an enabling ecosystem for students to learn and mentor each other in sustainably sourcing and earning from digital platforms.

¹¹ See Inset in section 5.4.4 below

Further, in order to encourage local consumption of home-grown digital solutions there is a need to develop and encourage media coverage for home-grown entrepreneurial Start-Ups through having an enabling environment. This will increase the uptake of digital solutions for various industries. There will also be targeted promotion for the establishment of platforms that capture unique cultural and local IP capital through creating a conducive investment framework for prospective investors.

5.1.2 Development of a National Innovation Framework

A unified National Innovation Framework, will, at the National level, identify collaborative mechanisms between institutions at national, regional and international level as means to build innovative capacity and culture locally. This will avoid a multitude of programs, duplication of effort and added efficiency in making local innovations scale.

The National innovation framework will bring coherence and cohesion to the governance structure and build synergies through platforms and integrated approaches in the support of innovation.

This will eventually bridge the gap between public and private sectors as well as considering factors beyond science, research and technology and including entrepreneurship and international partnerships.

5.1.3 Developing a local digital market place

The innovation industry through a collaborative and integrated approach shall develop a unified local digital marketplace which will carry only high quality innovation driven products and initiatives acting as a gateway to local and grassroots solutions which shall act as a portal and environment where the local market can obtain solutions and where local innovators can easily and quickly reach the local market.

5.1.4 Leverage on existing partnerships and creating new engagements

The government will encourage and participate in the development of partnerships and collaborations with stakeholders, including industry and academia, to help innovators

who may require professional and scaled up testing of innovative products, and provide equipped spaces with a more specialized support in their entrepreneurial journey.

For example's Kenya's SDG Accelerator Lab which is a collaboration agreement between the Government of Kenya, the Center for Effective Global Action (CEGA) at the University of California, Berkeley, the Rockefeller Foundation, and the United Nations. The initiative builds technology-intensive partnerships that bring new financing, data, and innovations into Kenya's Big Four Agenda. The collaboration is implemented through Kenya's SDG Accelerator Lab - a Government-UN platform for developing, testing, and scaling novel approaches to development. This initiative will build technology-intensive partnerships that bring new financing, data, and innovations into Kenya's Big Four Agenda.

5.1.5 Leverage on both open access and intellectual property systems.

Government will promote policies that will promote local content adoption in the country by encouraging local assembly, design and production. Similarly, strategies that will encourage development of Science Technology Parks (STP) through partnerships in order to encourage knowledge sharing and transfer of knowledge and technology development will be developed. Furthermore, a national innovation framework on open source and local development utility tools will be created.

5.1.6 Collaborative Research and Development

Collaboration between relevant stakeholders for research and development of technology that can be commercialised will be encouraged while providing an enabling environment for development of centres of excellence for young innovators, and encouraging local companies to absorb promising innovators for purposes of mentorships. Academia will be supported for growth of knowledge in innovation-driven solutions on priority areas as identified by R&D initiatives.

CHAPTER SIX: DIGITAL SKILLS AND VALUES

6.1 INTRODUCTION

The Digital skills and values pillar is focused on developing skills set and values for its citizens and especially the ICT professionals to meet the competencies and expertise required for the digital economy. The pillar is aimed at developing capacities in anticipation of the changing needs for work and life. This pillar aims to increase the number of graduates trained in digital skills, demonstrating required competencies for the digital economy; retrain the workforce to ensure they advance their digital skills and competencies; and bridge the digital talent gap for workers with digital skills.

Various initiatives by the Government to improve these skills include, but are not limited to, the DLP in the primary schools, developing curricula and creating centres of excellence in all levels of education system. The importance of these initiatives is to move education as an ecosystem of simple schooling to learning with a priority on the development of ICT soft and hard skills. These skillsets will include critical thinking, problem solving, and creativity which are requirements for emerging jobs in the twenty-first century.

Digital skills and values are key to digital entrepreneurship, digital adoption and transformation, and even successful conceptualization and implementation of digitization projects in both the private and public sectors. Digital skills as a whole will thrive and function in the connected digital economy and society together with other abilities such as strong literacy and numeracy skills, critical and innovative thinking, complex problem solving and the ability to collaborate and socio-emotional skills.

It is worth noting that the digital transformation process will progress speedily through the collective effort by Stakeholders both in the public and private sector, who offer internships to ICT graduates. Other support mechanisms may include competitive innovation programmes such as digital talent acquisition and recognition programmes,

the Presidential Digital Talent Programmes, among others.¹² To take advantage of the opportunities, year by year, the ministry of labour should be giving the public the five years projected local, Africa, and global jobs opportunities, required matching skills and level. This will then force skill developers and trainers to align to market skill and level demands

It is anticipated that the development of digital skills and values will lead to quality and responsive education, promoting decent work and economic growth, and building industry, innovation, and infrastructure. These skills will allow the youth to have access and opportunities to bid for the tens of millions of jobs around the world.

6.2 FOCUS AREAS

The digital skills and values pillar has been divided into three (3) focus areas:

6.2.1 Basic Skills

Basic skills are fundamental skills that enable the populace to function at a minimum level in society and are the foundational skills for performing basic tasks. There is growing consensus that the capacity of one to have basic digital skills corresponds to a foundational literacy, taking its place alongside traditional literacy and numeracy. Basic digital skills will lead to an enriched life that enables one to interact with others digitally and access government, commercial and financial services digitally.

6.2.2 Intermediate Skills

Intermediate skills enable the use of digital technologies in an even more meaningful and beneficial manner, including the ability to critically evaluate technology or create content. These are effectively job-ready skills since they encompass those skills needed to perform work-related functions such as desktop publishing, digital graphic design and digital marketing. For the most part, these skills are generic, meaning their mastery prepares

¹² Presidential Digital Talent Programme (PDTP), an internship programme that develops the ICT talent pool in Kenya through a collaboration between the public and private sectors. It is a partnership between government, public and private sector stakeholders and is to be implemented by the Ministry of Information Communications and Technology (MoICT) through the ICT Authority (ICTA). <https://digitalent.go.ke/>

individuals for a wide range of digital tasks needed to participate as engaged citizens and productive workers.

6.2.3 **Advanced Skills**

Advanced skills are typically acquired through advanced formal education, but also through other channels for learning, such as coding boot camps, that are viable options for many countries. Advanced skills are those needed by specialists in ICT professions such as computer programming and network management. Advanced skills also include AI, big data, coding, cyber security, IoT, and mobile app development.

6.3 **OBJECTIVES**

- 6.3.1 To enable individuals to use ICT devices, to access information, government services, entertainment, jobs and for social connections necessary to participate successfully in the digital economy on daily basis for information, and to trade.
- 6.3.2 To equip individuals with digital skills to discover, acquire or use digital goods and services available and further empower them to make, avail, sell and manage digital goods and services.
- 6.3.3 To increase Kenya's competitive advantage, both in the private and public sector through successfully building, deploying and maintaining home-grown technologies, platforms, systems, applications, software and networks to reap the benefits of a truly digital nation.

6.4 **INITIATIVES**

- 6.4.1 Equip all citizens with the skills to discover, acquire and use digital goods and services available for them through integrating digital skills curriculum in the education system at all levels and sensitizing all citizens on the benefits of acquiring digital skills.
- 6.4.2 Sensitize all citizens on the benefits of digital skills and their application in the digital economy.
- 6.4.3 Sensitize citizens on digital skills and responsible online behavior to enable them to be active and successful participants in the digital society and raise

awareness of risks in terms of digital rights and subsequent responsibilities, online safety and security.

The impact of the digital skills initiative in Kenya is an increased number of responsible and productive ICT professionals, increased innovation and digital entrepreneurship, incorporation and utilization of ICT in business models, and increased ICT production. Employment models will also embrace digital skills such as work from home and virtual offices. The greatest impact will be the availing of Kenya labor abroad thus creation of jobs for the youth and expansion of job market for digitally skilled workforce in Kenya.

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CHAPTER SEVEN: DIGITAL INCLUSION

7.1 INTRODUCTION

Youth, women, minorities, the elderly, rural communities and persons with disability (PWDs) are disproportionately affected by digital transformation of the economy despite the fact that they constitute a sizeable proportion of the population. Some of the challenges that perpetuate digital exclusion amongst these marginalised groups include, but not limited to: skills gaps and mismatches, insufficient connectivity coverage, information gaps and limited mobility, limited ownership and control of assets, as well as safety and security concerns.

The following statistics show different dimensions of digital inequality:

Mobile phone use

- 21.5% of rural youth (18 to 35years) don't own mobile phones while their urban counterparts, only 6.9% do not own mobile phones
- 22% rural dwellers have no mobile phones vs 7.9% urban dwellers
- 13.4% men vs 19% women

Financially excluded (no formal or informal)

- Rural youth are 16.6% financially excluded while among the urban youth, 5.9% are financially excluded
- 10.8% men excluded vs 11.3% women (financially excluded)
- 14.4% rural formally excluded vs 6.1% urban

Formally excluded

- Rural youth are 24.9% formal financially excluded while among the urban youth, 8.6% are formal financially excluded
- 19.7% women (formal financially excluded) vs 14.4% men
- 22.7% rural formally excluded vs 8.9% urban

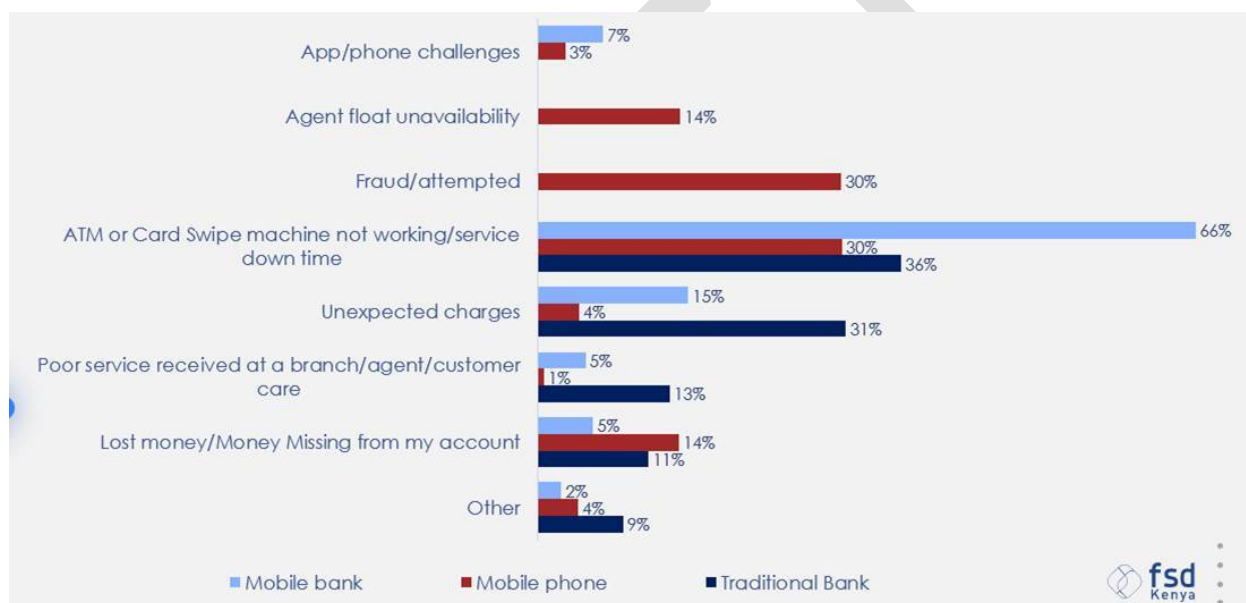
Mobile money (fin. digitally excluded)

- 27.1% rural youth have no mobile money accounts; 10.7% urban youth have no mobile money accounts

- 23.7% women have no mobile money accounts; 17.4% women have no mobile money accounts
- 27% rural vs 11.4% urban

For usefulness

1. Financially **NOT** healthy: 75.6% men are healthy vs 80.8% women
2. Low use of digital services (mobile money, mobile bank accounts, digital apps + banks/insurance, assuming these have digital infrastructures) for meeting needs – liquidity, dealing with shocks and meeting future goals – 13.3%, 14.9% and 29.3% respectively
3. Below for quality of service



The Digital Economy Strategy seeks to change the narrative by remodelling the approach to digital inclusion. It thus seeks to transform these marginalised groups into a digitally adaptive, skilled, and innovative workforce that will not only comprehend, adopt, and move with global trends but chart their own digital pathways towards inclusive growth and development.

The Strategy complements key government undertakings as spelt out in the National ICT Policy where the government seeks to create job opportunities and provide assistance to the disadvantaged; people with special needs, women and the youth to acquire ICT skills

through e-inclusion and e-accessibility activities and programmes. It is for this reason that this document calls for legal and institutional reforms at both the national and county levels to protect and promote the rights of these groups as enshrined in the Constitution of Kenya.

This strategy focuses on bridging the gap of exclusion amongst these main focus groups: Youths, Persons with disabilities, minorities and marginalized groups, and Women

7.2 YOUTH

According to the 2019 Kenya Population and Housing Census (KPHC) Report, Kenya has a total population of 47.6 million Kenyans up from 38.6 million in 2010. This increase has led to a new set of challenges for the government especially in the areas of job creation for the youth, who currently make up 71.5% of the population. The Report approximates that 2.6 million Kenyans are actively searching for jobs, representing an 18.2 percent rise in the number of the unemployed over the last 10 years. In this regard, data from Kenya National Bureau of Statistics indicates that the country manages to inject only about 800,000 new jobs each year against an unemployed population of 7 million Kenyans.

In the National ICT Policy, the Government undertakes to recognize and leverage on Kenya's youth demographic as a competitive advantage in the global market. Over 1M youth enter the job market every year hence this presents a huge potential for government to use ICT as an enabler in providing jobs, dignity and financial stability to the youth.

The Digital Economy Strategy for Kenya aims to complement other key national documents such as the National Youth Development Policy of 2019 in the areas of: Creativity, Talent Identification and Development; Investing in Skills and Entrepreneurship development, apprenticeship, training, and employment; and Youth and Information Communication Technology Development. Already, the government, through the Ministry of ICT, Innovation and Youth Affairs has taken a lead role in engaging the youth with active online jobs through the Ajira Digital Platform; and incubating innovative ideas through the Whitebox initiative. However, there exists much

more room for growth in the ICT sector if the country is going to realize an all-inclusive ecosystem that supports the integration of the youth in the Digital Economy.

7.2.1 FOCUS AREAS

In order to maintain inclusive youth participation in the rollout of this strategy in pursuit of shared prosperity, the focus will be on two areas: -

7.2.1.1 Establish an Inclusive ICT Development Ecosystem.

7.2.1.2 Revise or Establish Existing Legal Framework to Support Youth Participation in the Digital Economy.

7.2.2 OBJECTIVES

The following are the objectives of youth involvement in the Digital Economy:

7.2.2.1 To create employment opportunities for the youth.

7.2.2.2 To increase the pool of ICT skilled personnel and support talent development.

7.2.2.3 To encourage entrepreneurship amongst the youth in the ICT sector.

7.2.2.4 Create a facilitative framework that supports youth participation in the Digital Economy.

7.2.3 INITIATIVES

7.2.3.1 Invest in the Youth

Policies that will facilitate training for the youth on ways to take advantage of the digital environment for employment and to scale up their enterprises and access the marketplace digitally.

Private sector to use digital models for their businesses in order to create, expand and encourage adoption and use of new and emerging technologies and innovations. This will in turn encourage the youth towards digital innovation and entrepreneurship.

Expansion of programs such as the Whitebox Initiative will help loop-in more Kenyan innovators. Incentives for private sector to provide seed capital for start-ups.

7.2.3.2 Provide an enabling legal environment for the youth to participate in the Digital Economy

An enabling legal environment for the growth of Kenya's gig economy. This will include putting in place safeguards that will protect online workers through advancing fair labour practices.

It is anticipated that these initiatives will create a conducive legal, policy and regulatory environment that will make it easy for the youth to innovate, invest, or participate in ICT sector.

7.2.3.3 Encourage digitization of companies

Policies that will encourage adoption and use of new technologies by businesses of all kinds, not just tech companies. This will include providing an enabling environment that will provide access to capital for youth-owned enterprises and remove barriers on registration of businesses.

These initiatives will help create more opportunities for the youth to apply their digital skills as well as encourage the setting-up of new businesses that seek to conduct research and development on issues facing the country.

7.3 PERSONS WITH DISABILITIES AND MINORITIES

Article 54(1) of the Constitution provides for various rights in relation to persons with disabilities. These include the right to reasonable access to public information, use Sign language, Braille or other appropriate means of communication and access materials and devices to overcome constraints arising from the person's disability. Kenya has taken great strides to effectuate the aforementioned article through legislations such as Persons with Disabilities (Amendment) Act, 2019 which address the protection and promotion of the welfare of persons with disabilities. Some achievements include use of sign language

inset or subtitles in all newscasts and other programmes as well as provision of braille to schools with visually impaired persons. However, the representation of PWDs is still a point at issue. Achieving at least five per centum in job placements will require diversification of job opportunities. The Digital economy strategy is missioned to creating more digital jobs which help to meet the above target.

Besides, article 56(1) of the Constitution provides for affirmative action programmes designed to ensure that minorities and marginalized groups are provided with special opportunities in education, economic fields, and employment and have reasonable access to infrastructure.

Furthermore, in the National ICT Policy, the Government undertakes to provide an ICT environment fully accessible to persons with disabilities. It also commits to providing equal treatment to people with disabilities with respect to the use and benefit of ICT services, programs, goods and facilities in a manner that respects their dignity and that is equitable in relation to the broader public.

The extension of broadband access to reach all the 47 counties has immensely spurred communication services to reach PWDs in every corner of this country. The Digital economy will help realize the dreams of PWDs and minorities by unlocking the potential of digital trade, provision of relevant infrastructure, acquisition of relevant digital skills, bringing government services closer, creating digital jobs and promoting innovation.

7.3.1 FOCUS AREAS

In order to maintain inclusive participation of PWDs in the rollout of this strategy in pursuit of shared prosperity, the strategy will focus on three key areas as follows:

- 7.3.1.1** Leadership and governance.
- 7.3.1.2** Connectivity and devices.
- 7.3.1.3** Inclusivity.

7.3.2 OBJECTIVES

The following are the objectives of PWDs involvement in the Digital Economy:

- 7.3.2.1 Promotion of social and economic welfare.
- 7.3.2.2 Accessible communication infrastructure to enable them to participate in digital economic transformation.
- 7.3.2.3 Promote job and wealth creation for PwDs, minorities and marginalized.

7.3.3 INITIATIVES

7.3.3.1 Establish ICT Facilitates and Expand Connectivity

The government will encourage and promote the provision of ICT facilities compatible with the PWDs and promote access to digital infrastructure for these persons. The government will further facilitate training of ICT professionals for PWDs, the marginalised and minority groups. This will enable them to access to information, government services and promote their businesses by enabling them to access the common marketplace with all other citizens.

Policies and strategies that will facilitate the acquisition of mobility aids, ICT devices and assistive technologies required by PWDs through incentivizing the respective ICT devices, enabling the locally assembly and manufacturing of these devices will be put in place. This initiative anticipates the requirements to be met by manufacturers of devices or service providers in order to make devices and content more accessible and responsive towards the needs of persons with disabilities.

Policies that will encourage absorption of PWDs in employment positions that require digital skills will also be promoted.

7.3.3.2 Establish standards and guidelines for communication services and providers

An enabling environment that addresses standards and guidelines to facilitate reasonable access for PWDs to communicate will be promoted. This initiative will address requirements by makers or exhibitors of films to make such films accessible to persons with disabilities.

7.3.3.3 Establish a framework for talent identification

Policies and strategies to be put in place for mechanisms for early identification of digital talent for purposes of development and support for PWDs, minorities and marginalized groups. This will help in focusing on unique abilities thus encouraging inclusion in digital innovation and digital deployment for all.

7.4 WOMEN

In the National ICT Policy, the Government undertakes to provide an all-inclusive ICT environment by encouraging gender equality.

Women have not been left behind in digital inclusion as they are currently involved in accessing digital markets, for example, for promotion of their business, using digital devices for communication and trade. However, there are major inequalities in digital skills in both developing and developed countries along, notably, socio-economic status, race, gender, geography, age and educational background. Gender divides in digital skills are severe: women are 1.6 times more likely than men to report lack of skills as a factor impeding their use of the internet (UNESCO, 2019). The proportion of women using the Internet is 12% lower than the proportion of men using the Internet, and the gender gap in Internet usage has widened between 2013 and 2017, in particular in least developed countries (UNESCO, 2019).

In Kenya, gender barriers to digital transformation on issues of affordability, traditions, and lack of digital skills have continued to persist. This is in spite of women constituting 51% of the Kenyan population (KNBS, 2019). According to a 2019 GSMA Mobile Gender Gap Report, women in Kenya are 39% less likely than men to have access to mobile

internet¹³. They are also 23% less likely to own a smartphone. The Digital Economy Strategy presents a huge potential to champion Kenya as an enabler for women in technology by creating a platform to develop digital skills that will enable them to thrive in today's world, and to participate equally in creating the world of tomorrow. This therefore means that, opportunities exist for specific intervention in the digital skills programs and projects that are targeted to empowering women and girls in training, access and application in a digital economy.

7.4.1 FOCUS AREAS

The following are the key areas for increasing women participation in the digital economy:

- 7.4.1.1** Create an enabling environment that supports women in the innovation space and ensure their safety.
- 7.4.1.2** Increasing the number of women in key leadership positions in the ICT sector.
- 7.4.1.3** Advancing digital inclusion for women.

7.4.2 OBJECTIVES

The following are the objectives of Women involvement in the Digital Economy:

- 7.4.2.1** Increase the participation of women in the technology sector and digital economy.
- 7.4.2.2** Promote digital literacy amongst women.
- 7.4.2.3** Ensure internet safety and security by implementing measures that prevent, identify and counter sexual and gender-based abuse, harassment and the threat of violence against women in the digital context.
- 7.4.2.4** Improve digital access for women by making devices more affordable.
- 7.4.2.5** Increase interest, participation and promotion of women in technical jobs by offering them scholarships programs in ICT-related programs.

¹³ The Mobile Gender Gap Report of 2019. Available on <https://www.gsma.com/mobilefordevelopment/blog/accelerating-digital-inclusion-for-women-in-kenya>

7.4.3 INITIATIVES

7.4.3.1 Empowerment of women for digital inclusion

Policies that will encourage acquisition of digital skills for women through collaboration with relevant institutions and stakeholders. This will help address attrition within digital jobs programs by increasing digital literacy among women.

Strategies that encourage equal opportunity for women in the field of ICT and especially technical jobs by offering opportunities to train in advanced ICT skills, recognizing and promoting ICT talent in women.

Policies that will encourage deliberate recruitment of women in ICT specialized jobs by encouraging and supporting the training of women in advanced digital skills.

It is anticipated that these initiatives will promote participatory approaches, by encouraging equal levels of participation and providing learning support inside and outside the classroom for women.

7.4.3.2 Provide an enabling environment for safety of women

Policies that will foster a safe environment for access to ICT that protects the woman. The government will further encourage an enabling environment to allow for easy acquisition of ICT devices by women.

The Civil Society to undertake sensitization forums for women to enable them access relevant knowledge key to their success in the digital economy and educate them regarding safety and security. These programs will enable them to obtain jobs.

CHAPTER EIGHT: CROSS-CUTTING ISSUES

8.1 INTRODUCTION

This pillar aims to explore the possibilities for developing the policy, legal and regulatory indicators that the government can put in place to promote the digital economy. The primary focus is on key national legal, policy, and regulatory bottlenecks holding back the development of the digital economy. The pillar also lays out the key reviews that shall be updated from time to time to harmonize and facilitate the availability of the digital platform and enable everyone pays their fair share of tax where applicable to society.

Other policy, legal and regulatory frameworks that need to be reviewed are in broadband connectivity, digital payments, consumer protection, data privacy and protection, cybersecurity, electronic transactions (e-payments and e-signatures), as well as logistics.

The pillar shall take into consideration of relevant international and regional regulations and laws frameworks where Kenya is signatory and ensure harmonization with the same.

8.2 FOCUS AREAS

The cross-cutting issues are identified as follows:

- 8.2.1 Data Access and Management.
- 8.2.2 New and Emerging Technologies.
- 8.2.3 Security.
- 8.2.4 Intellectual Property.
- 8.2.5 Digital leadership.

8.3 OBJECTIVES

The following are the objectives of the cross-cutting pillar:

- 8.3.1 To facilitate universal access to digital services through efficient data management.

- 8.3.2 To proactively identify and leverage on new technologies that have the potential to transform the digital economy.
- 8.3.3 To promote efficient and sustainable end-to-end management of ICTs towards realisation of a zero-waste goal.
- 8.3.4 To foster safety, confidence and trust in the digital economy ecosystem.
- 8.3.5 To promote the use of IP as a tool for growth of ICT-centric innovations
- 8.3.6 To develop fiscal policies adaptive to the digital economy.
- 8.3.7 To position Kenya as a leader in digital transformation in Africa.

8.4 INITIATIVES

8.4.1 Data Access and Management

The Government will facilitate data access and management by developing an open data policy, standards and guidelines and establishing standards for data handling and sharing. This could go beyond the one-off data that is collected at the time of on-boarding onto different services (static data/information) to take a more holistic approach and include wider informational context that users and customer generate throughout various touchpoints and consumption journeys (dynamic data/information). From a financial services perspective, dynamic data is just as vital as static user data in terms of safeguarding and protection.

It is anticipated that these initiatives will go a long way towards facilitating easy access of data for Kenyan businesses and individuals to use and bring about social, economic and environmental benefits to the country. In establishing standards for data handling and sharing, the government will achieve compliance and accountability amongst partners in the ecosystem by ensuring that data handlers adhere to all existing regulations.

8.4.2 Early adoption of New and Emerging Technology

The Government will develop regulatory approaches that facilitate adoption of new technologies. These include regulatory sandboxes, incubation hubs and collaborative research and development. This legal framework will help align Kenya with the global standards that encourage investments and increased protection for Kenyan innovators in the ICT space.

8.4.3 Fostering Green ICT

The Government will also encourage the use of alternative energy sources such as solar, wind and champion the utilization of ICT to minimize pollution and well as reduction of carbon footprint by reducing consumption of energy by ICTs. The Government will also address the issue of electronic waste and ensure that it is adequately managed to mitigate the nuisance brought about by their random disposal.

It is anticipated that these environmentally responsible policies will help shield Kenya from the negative impacts of an expanding ICT ecosystem; and promote the positive benefits of ICT. It is expected that these policies will address all environmental concerns at every level of the manufacturing process, delivery and use of ICT products and services.

8.4.4 Security

The Government will strive to build consumer trust in digital services around areas of concern such as safeguarding the privacy of consumers on digital platforms. The Government will also seek to protect children from harmful and offensive online content.

These initiatives will ensure that digital businesses are conducted with integrity in a manner that results in safety, confidence and trust thus resulting in increased activity on digital platforms. Children will also be shielded from exploitation by predators or from obscene or harmful content.

8.4.5 Intellectual Property

The Government will ensure ease of access to IP information and administration services for innovators. This will entail digitization and integration of IP information management systems which will help innovators to develop/create new products with the confidence that their products are protected against copyright infringement and piracy.

8.4.6 Digital Leadership and governance

The Government will position Kenya as a testbed for new ideas enabling multi-sided platforms in emerging digital economy contexts. It will actively exchange experiences and expertise in the roll-out and management of digital products and services spearheaded by a multi-stakeholder digital economy committee made up of business leaders, academia and MDAs.

Towards promotion of good governance in the digital transformation journey the government will provide direction that ensures conformity to acceptable standards are encouraged.

Kenyans with recognized digital skills and knowledge will be encouraged and supported to take leadership roles and positions in regional and international forums and organizations that deal with ICTs.

These initiatives will ensure that the Kenyan government continues to push for more services online and enable more complex and intensive online interaction through leading the efforts in research and testing of new ideas.

8.5 IMPLEMENTATION

Implementation of this Strategy is very critical to achieve the envisaged objectives in accelerating the digital economy ecosystem, and will require cooperation between Government Agencies and Private Sector to draw and implement different specific projects under their purview as guided by the objective and initiatives in every pillar.

8.6 CONCLUSION

Kenya has over the years made commendable progress in the growth of its ICT sector. Experts agree that continued growth of this sector has the potential to cause radical socio-economic change. At present, the ICT sub-sector is Kenya's fastest growing sector driven by dynamism in mobile telephony, uptake of e-commerce and penetration of internet usage¹⁴. According to a World Bank Kenya Economic Update Report of 2019, the sector has grown by an average of about 10.8 percent per year since 2016. Already, Kenyan Public and Commercial platforms are capable of competing with those from developing countries.

It is noteworthy that there is ample room for further growth in the sector. The dynamic changes that have been occurring over the last decade have led to intense interest in ICT related development in the country thus this has raised prospects in the growth of its Digital Economy. However, like most developing economies, Kenya continues to be held aback by issues relating to weak digital and physical infrastructure, a low ICT-skilled population, a less than ideal business environment that supports e-commerce, untapped entrepreneurial potential, and weak policies that support the digital economy. It thus remains the aim of this strategy to support Kenya's digital economy to ensure that Kenya realizes its untapped potential in the digital space.

In summary, the pillars of the Digital Economy Strategy aim to achieve the following:-

Digital Government: - to expand access to innovative user-centric public services encourages and enables Kenyans to transact, access government services and information, as well as exchange data over digital platforms. This pillar also strives to ensure that government is inter-connected and ICT-enabled thus steering it away from manual processes

¹⁴ Kenya Economic Update of October, 2019

Digital Business: - to develop a robust digital market characterized by increased quality of financial inclusion, fair competition, resilient data infrastructure, advanced consumer protection and greater regional integration across 3 focus areas namely, Digital Trade, Digital Financial Services and Digital Content.

Infrastructure: - to improve connectivity access of both physical and digital infrastructure so as to leverage digital technologies to create new markets and innovative services.

Innovation-Driven Entrepreneurship: - to prepare the entrepreneurship ecosystem to capitalize on gains in the world of tomorrow by creating an industry-appropriate digitally skilled talent pool, engaging key stakeholders in the entrepreneurship ecosystem, and reforming the business environment.

Digital Skills: - to create an enabling climate for digital skills development

Cross-cutting Themes: - to design and implement policy and institutional reforms that promote the growth of a sustainable digital economy.

Implementing this strategy will involve the following:

i. Defining the roles of all stakeholders in realizing a vibrant digital economy.

It is imperative to note that the journey to realizing a vibrant digital economy will require the concerted efforts of all stakeholders including, but not limited to, the government, the private sector, and the general public. We must strive to ensure that no one is left behind in this transformative journey

ii. Prioritizing the ICT sector in national plans and encouraging investment.

The government will be required to prioritize the ICT sector in its national plans and budgetary allocations in order to ensure that enough resources are channeled towards the sector. The government may also partner with, or, encourage private investment in enabling infrastructure that supports the digital economy.

iii. Building and maintaining sustainable collaborative efforts between industry, academia and other sectors.

This strategy will require of government to continue to work hand-in-hand with industry, academia and other sectors to coordinate, discuss, and collaborate on activities that strengthen Kenya's ICT sector. This will further provide information on further actions that the government ought to take in order to help support the implementation of this strategy.

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