Africa Digital Rights Hub

Africa's Digital Economy: The Case Of African Continental Free Trade Area And The Readiness Of Five Countries – Kenya, Nigeria, Rwanda, South Africa, And Ghana

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Executive Summary

This report contextualises the legal, regulatory and policy frameworks of the digital economy landscapes in five African countries – Ghana, Nigeria, South Africa, Kenya and Rwanda. It examines these landscapes on the basis of their preparedness for economic transformation through digital economies, within context of the African Continental Free Trade Area – AfCFTA. With specific focus on the five countries, the report's analysis demonstrates an inclination to embrace the digital economic revolution – powered by a young population embracing technology, and environments that create spaces for digital and technological innovations. Nevertheless, the report also finds that the potential for a transformative digital economic revolution may be held back by limited capacities and gaps in policy and legal frameworks, as well as weaknesses in the regulatory infrastructures. For the opportunity within AfCFTA to be realised, there is need for coherence in approaches to legal and policy frameworks, and in regulation. As demonstrated in these country reports, even domestically, these are still largely incoherent.

This report is the outcome of a study of the impact of the digital economy in five countries in Africa: Ghana, Kenya, Nigeria, Rwanda, and South Africa. It is premised on the potentially transformative impact the digital economy can have on the economy of African countries. African governments and policymakers recognise this potential and have taken several domestic measures concerning the digital economy. This report highlights these domestic measures regarding the promise of the landmark African Continental Free Trade Agreement (AfCFTA).

Within context of the digital economy, this report focuses on the domestic legal, regulatory and policy frameworks in each of the five countries. Each country analysis contains an overview of specific policies, laws, and regulations, as well as a description of their goals and the potential for change or reform . The report largely finds that even within states, laws and policies can be duplicitous and incoherent. This makes the legal and policy landscape more cumbersome to navigate than necessary. However, the report also notes that under the auspices of institutions like the World Bank, some countries such as Ghana and Nigeria are gearing up for more reforms to achieve requisite coherence in their legal and policy frameworks.

The role of African governments in the digital economy and the Digital Revolution is also central to this report. The report notes that despite Africa's rather late entry into the digital revolution, governments are eager and poised to manage the transition into the digital age. In that effort, African governments will need to partner up and have been partnering with Africa's private sector. In Kenya, for example, M-Pesa has shown the potential contribution that the private sector could make. It is noteworthy to observe that the governments of all five countries are taking concrete steps to transform themselves and create an enabling environment for Africa's digital private-sector players to thrive. In Ghana, we see start-ups thriving in pharmaceutical and, agriculture sectors, and in software development through deliberate government policy. In Rwanda, we see the optimisation of government processes with digital tools that create efficiency and enhances political participation and ultimate confidence in state institutions. In South Africa, we see the dividends that government investment in primary digital infrastructures such as fibre-optic lines and home telephony can yield for the entire economy.

Ultimately, whether the digital transition will succeed or not will depend heavily on how the ordinary citizen in Africa is prepared for the transition. Each country considered in this report has recorded exponential growth in the information and communications technology

(ICT)-related sector in the last two to three decades. Yet, digital literacy has not matched this growth. The report analyses measures by the countries studied in incorporating digital skills training within the school system for children of school-going age and other non-formal opportunities for youth and even the elderly outside of school.

The AfCFTA allows African countries to leapfrog some cycles in the digital transition. With the coming together of 54 countries and a market of about 1.2 billion people, African firms, with the support of African governments, can leverage collaborations and investments, accumulate capital, and create niches where they operate at scale, grow faster, and help in the reduction of poverty on the continent. But this will not be achieved without some careful and deliberate choices as will be highlighted in the report.

The report also notes some concerns regarding the digital economy in Africa and its interface with the AfCFTA, such as the disparities between middle-income African countries and poorer African countries in terms of technological advancement, and the digital divide within countries between urban and rural communities.

In addition, the report further notes that despite the proliferation of ICT-related value chains, data protection is still in its infancy on the continent. There is a real danger that without the requisite measures and legal requirements being in place, cyber security breaches can derail the steady growth of the digital economy, particularly if the already fragile market loses trust in digital tools.

Moreover, the vast and unregulated informal sector in many African states will pose real challenges for regulating digital tools and business set-ups in the informal economy within the digital economy. Issues of contract enforcement, cross-border trading and taxation will pose real challenges to policymakers.

The report concludes with recommendations applicable within states and at the continental level, which can fix and forestall some of the bottlenecks we can anticipate as we go through the digital transition at this momentous time in Africa's history. Below is a summary of some of the key recommendations:

- Governments must invest significantly in digital infrastructure and related utilities to reduce the transaction cost within the digital economy.
- Governments must provide financial and technical support to digital entrepreneurs and innovators to permit a continental scaling of their operations.
- Ideally, local policies and laws related to the digital economy and the implementation of the AfCFTA must be harmonised to reduce operational barriers and inconsistencies.
- Governments must invest in promoting an educational system that supports digital literacy and capacity building. This way, the local and continental markets for digital businesses can be expanded. More citizens will also have the necessary skills to function as employees and entrepreneurs within the digital economy.
- Governments and non-state partners must insist on an inclusive lens in designing and implementing policies, laws, and programmes that shape the digital economy.

Overall, the report finds an encouraging digital economy in Africa and the interface between the digital economy and the AfCFTA. The potential in these two trends for Africa's economy, business, governance, trade, and security are enormous. However, the benefits resulting from a broader a continental digital economy must not be hijacked by a few elites but should be distributed equitably across nations and citizenry.

Introduction

The term 'digital economy' generally refers to incorporating several general-purpose technologies and the array of economic activities individuals carry out with the help of the Internet and other associated technologies. The digital economy encompasses the physical infrastructure that digital technologies are built on, the devices used for access, the applications they power, and their functionality. The digital economy has permeated several aspects of our contemporary lives, including the transportation sector, manufacturing and retail, agriculture and education.

Digital platforms can be defined as 'multisided marketplaces with business models that enable producers and users to create value together by interacting with each other'. They enable users to replicate traditional market activities with the help of digital technologies, ample data storage, and access to information. The benefits of digital platforms stem from their ability to virtually connect people and things, facilitating digital transactions/ interactions, including the exchange of information, goods, and services. Digital platforms leverage economies of scale and network effects to generate efficiency gains and enable participants to create value by interacting with each other. They can serve people, businesses, and government agencies all in multiple ways.[1]

Digital entrepreneurship can be defined as creating new ventures and the transformation of existing business through digital technologies. Digital entrepreneurs include (i) new (digital start-ups) and mature (digital scale-ups) firms that have digital technologies at the core of their business model (i.e., they develop/transform digital technology to deliver new/improved products/services to their customers); and (ii) digitally-enabled businesses which utilise digital technologies (e.g., social, mobile, analytics, and cloud solutions) to improve business operations, sharpen business intelligence, and engage with customers and stakeholders through new (digital) channels.[2]

This report analyses the evolution of the digital economy within some of Africa's leading economies, namely, Ghana, Kenya, Nigeria, Rwanda, and South Africa. It also reports on the domestic policy and regulatory environment and preparatory works underway in these countries in the background of the AfCFTA. In connecting the digital economy to the AfCFTA framework, this report also concentrates on how these countries are preparing their citizens with digital and entrepreneurial skills, digital tools, infrastructure, and protections such as cyber security to ensure that they can maximise their benefits from both the digital economy and the AfCFTA.

The global economy is undergoing rapid transformation. A change from the traditional procurement of physical products and services to digital tools as a primary mode of trading is almost complete in many places around the globe.[3] The change is attributed to the advancements in, and increased utilisation of information and communications technologies (ICTs).[4] With the number of devices and people using digital services ever-increasing, the role of digitally interconnected value chains, technology, and digital data in the future global economy will continue to deepen.

Advanced economies in Europe, the Americas, and Asia already have well established digital

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[1] Ibid.
[2] Ibid.
[3] Wayne Cascio and Ramiro Montealgre, 'How Technology is Changing Work and Organizations' 3 Annual Review of Organizational Psychology and Organizational Behaviour 1, 2016, 351.
[4] Ibid, 350.

economies resulting in economic prosperity and improved living standards for their citizens.[5] A well-developed digital economy can support the inclusive growth of any country regardless of the level of development.[6] For example, the adoption and widespread use of mobile technologies are expanding access to basic financial services, and increasing financial inclusion across many developing countries worldwide.[7] Such a trend will have long-term consequences for economic growth across the developing world.

The digital economy is not a mere phenomenon of the modern age but a crucial aspect of the overall economy that, for some countries, is now indispensable. Developing countries that have been slow to catch up with advancements in digital technology are increasingly seeing their economies transformed by it. In part, the change is a result of the proliferation of more affordable and accessible digital technologies. South Africa, for example, has seen its digital economy grow in proportion to its uptake of ICTs and the recognition of their use in crafting regulatory frameworks. Given that the digital economy technologies are primarily externally driven, a challenge arises concerning designing regulatory frameworks that are advantageous to various countries. Additionally, for a fragmented continent like Africa, policymakers must work even harder to create harmony and find synergies in laws and policies surrounding the digital economy for collective growth. In that endeavour, Africa has drawn some inspiration from the European experience and has created a platform, the AfCFTA, within which an African collaborative effort and response to the digital economy can be forged.

The AfCFTA creates a free trade area that presents an opportunity for African countries to establish a single market that promotes intra-African trade, allowing free movement of goods, services, and people. The AfCFTA is a treaty between 54 of the 55 African states, signed at the African Union (AU) Assembly in Kigali, Rwanda, on March 18, 2018. It requires members to remove tariffs from 90% of goods and allow free access to commodities, goods, and services across the continent. The AfCFTA secretariat is headquartered in Ghana and aims to eliminate barriers to trade and investment and create Africa's largest free trade area, with a combined gross domestic product (GDP) of about USD 2.5 trillion and a market size of 1.2 billion people (African Union, 2018).

The underlying economic rationale of the AfCFTA is to provide more significant opportunities to reap economies of scale, efficiency through greater competition and specialisation, a more attractive internal market for investment (both foreign and domestic), and acceleration of intra-regional trade and stimulation of economic growth to lift people out of poverty (African Union, 2018). Therefore, the AfCFTA must consider the current reality of inter-continental trading: goods and services are driven increasingly by the digital economy. Digital trade is undoubtedly critical for achieving economic development in the world today.

[5] Carl Dahlman, Sam Mealy, and Martin Wermelinger, 'Harnessing the digital economy for developing countries' The OECD Development Centre, Working Paper No.334, 2016, 8.
[6] Ibid, 9.
[7] Ibid, 19.

Chapter 1: **Kenya**

Defining a Digital Economy in the Kenyan Context

The digital economy in Kenya involves a predominant use of the Internet and digital platforms in the transaction of commercial activities by businesses, the government, and individuals.[8] By having a digitised economy, nations adopt innovative ways of thinking in critical sectors such as industrial policies, cybersecurity, labour market, competition, and trade. Then, a digital economy allows the three levels – individuals, businesses, and government entities – to interact and transact through the available digital platforms seamlessly.

Major Components of the Digital Economy in Kenya

The digital economy is integrating itself into the operations of the broader economy. The different technologies and economic aspects of the digital economy in Kenya can be broken down into three general components:

i. The Primary aspects comprise fundamental innovations such as semiconductors and processors, core technologies including computers and telecommunication devices, and enabling infrastructures such as the Internet and telecoms networks.[9]
ii. The Information Technology (IT) environment plays a crucial role in harnessing core digital technologies to produce products and services such as in provision of public sector services, payment services (M-Pesa, Airtel Money, T-Kash, etc.), mobile applications, and so on. It is worth noting that the digital economy is affected by advancements in the IT sector and has immense potential for improvement. [10]
iii. The set of all sectors where digital technologies can be plugged in, including sectors such as commerce (e-commerce, e.g. MASOKO), finance (digital banking, payment services), transportation (taxi and motorcycle hailing apps such as Little Cab, Safe Boda, and Bolt), media, and tourism. In these sectors, digital technologies have revolutionised traditional business models into vibrant new models that feed into the digital economy.

One key takeaway is that with the increasing digitalisation of the economy, there is a need to have a digitally literate population that can keep up with the ever-changing trends. [11]

Digital Economy Landscape in Kenya

Over the last decade, the Kenyan government has gradually focused on a digital economic strategy based on the perceived intersectionality of its ICT sector with the social, economic, and political pillars that are vital for a resolute economic environment, which has been implemented in line with Kenya's Vision 2030 goals of making the country globally competitive and allowing all its citizens to enjoy a high quality of life by 2030. [12]

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[8] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 11-17.
[9] United Nations Conference on Trade and Development, Digital Economy Report 2019 – Value Creation and Capture: Implications for Developing Countries, 2019, 4.
[10] Ibid, 4.
[11] Ibid, 5.
[12] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 26.

A 2019 World Bank publication, Kenya Economic Update: 'Securing Future Growth', indicates that the country continues to experience steady economic growth, with an annual expansion of GDP of about 5.6% between the fiscal years of 2014 and 2018.[13] This growth is perceived to directly stem from an input of a digital-based economy within the country.

However, the decline in economic growth for 2019 can be blamed on slowed economic activity based on weakening private investment and relatively limited access to credit by private businesses.[14] Nonetheless, Kenya's economy is becoming reliant on the digitisation process. Therefore, both its citizens and businesses need more preparation for the upcoming changes in the economy, general society, and available jobs in the future.[15]

The Government of Kenya (GoK) has attempted to assist in developing a digital economy by implementing Kenya's Digital Economy Blueprint for Africa, Kenya Vision 2030, and the National ICT Policy (2019). The role of ICT is to ultimately assist the Kenyan economy by increasing the level of GDP growth rate to 10% by the year 2030 and maintaining it there. For this to be possible, the ICT sector has become one of the chief contributors to Kenya's employment creation and economic development attempts.

Kenya saw a 10.8% annual increase in its ICT sector between 2016 and 2019.[16] The job creation from this growth indicates unrelenting intersectionality between this sector and Kenya's economy. The presence of supporting infrastructure has allowed the number of Internet users in Kenya to reach 22.86 million at the start of 2020, a 16% increase from 2019.[17] Further, the percentage of mobile broadband subscribers in Kenya between 2012 and 2020 increased hundred-fold, while the cost of data further decreased by 50% primarily due to increased competition between network providers.[18]

This success comes from the development of Internet exchange points (IXPs) in the country.[19] According to a report by the Internet Society, the combination of critical infrastructural development and peering has improved connectivity within the country.[20] The report shows that Kenya's IXP membership has been enhanced through better local and international membership and hence its ability to localise its content to 70% in 2019, from as low as 30% in 2012.[21] This approach ultimately allowed the service providers to improve their efficiency without additional charges and, consequently, lower added costs to the end-users in Kenya. Further, the 2009 introduction of the undersea fibre-optic cable TEAMS has allowed Kenya to get cheap, reliable, and fast broadband services.[22]

The Kenyan economy has taken critical steps in embracing a digitalisation process, and the impact has been substantial. The country is now home to a USD 1 billion technological scene with more than 200 start-up firms. Digital incubation and co-working spaces such as iHub have been established to assist emerging tech companies to scale up their operations successfully. Established firms such as IBM, Google, Intel, and Microsoft have also set up operations in Kenya. This tech-based economic expansion has led to Kenya being termed as the 'Silicon Savannah'.[23] The emergence of these tech-based companies in Kenya has necessitated an

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[13] World Bank Group, Kenya Economic Update: Securing Future Growth – Policies to Support Kenya's Digital Transformation, 2019.
[14] Ibid, iv.
[15] Ibid, v.
[16] World Bank Group < https://www.worldbank.org/en/country/kenya/publication/kenya-economic-update-accelerating-kenyas-digital-economy > on 14 March 2021.
[17] Kemp S, 'Digital 2020: Kenya — DataReportal – Global Digital Insights' (DataReportal – Global Digital Insights, 2020) < https://datareportal.com/reports/digital-2020-kenya> on 23 January 2021.
[18] Ibid.
[19] Michael Kende, 'Anchoring the African Internet Ecosystem' The Internet Society, 2020, 3, https://www.internetsociety.org/wp-content/uploads/2020/06/Anchoring-the-African-Internet-Ecosystem-Lessons-from-Kenya-and-Nigeria.pdf on 12 March 2021.
[20] Ibid.
[21] Ibid.
[22] Ministry of Information, Communication, Technology, Innovation and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 47.
[23] World Bank Group < https://www.worldbank.org/en/country/kenya/publication/kenya-economic-update-accelerating-kenyas-digital-economy > on 14 March 2021.

improvement to the economy by solving some of the country's most significant social problems, such as poverty, unemployment, and illiteracy. Problem-solving efforts, for instance, have been seen by companies such as BRCK, who have been connecting schools in highly remote areas of Kenya to the Internet using solar-powered routers.[24]

This kind of problem-solving and creativity traces Kenya's most influential innovation, M-Pesa, created in 2007. M-Pesa is also Africa's first mobile money platform and has been adopted widely by people within Kenya.[25] Kenyans immediately acknowledged the importance and effectiveness of a digital wallet. Over 1.1 million Kenyans had registered to use M-Pesa and transacted over USD 87 million within eight months of the platform's launch in March of 2007.[26] Over the years, this platform has played a role in poverty reduction by allowing reliable mobile money transfers and empowering marginalised demographics due to easy access to credit.[27]

Conversely, there are still significant gaps that have curtailed Kenya's progress as a digital economy. A critical example is the ever-present digital divide, where 44% of the urban population has access to Internet services compared to 17% in rural areas.[28] This issue is exacerbated by the impact of COVID-19 in 2020, where reliance on digital platforms and Internet connectivity has risen, placing those Kenyans in rural areas at a significant disadvantage. This disconnect has affected the Kenyan judiciary, a vital sector in any economy; while urban courts have digitised and continue to operate, rural courts lack both Internet and power.[29]

Kenya is positioning itself as an ICT and digital hub in Africa. Its progress, however, will be reliant on bridging emerging gaps such as the limitation of basic digital skills for both young people and adults in and out of school.[30] The continued existence of such a gap will only limit business development in the country and create a lag in Kenya's digital economy propulsion.[31]

Rationale for Digital Economy in Kenya

Socio-cultural Factors

How citizens interact with their governments, their expectations of government, and their interactions with each other have been revolutionised worldwide by globalisation, social media, and Internet access, leading to rapidly evolving behavioural norms.[32]

Government has a critical role in the facilitation and promulgation of the digital economy in Kenya, which is due to its centrality within the national ecosystem, given that it is the controller of significant monetary and natural resources.[33] The government holds the regulatory power to reduce transactional and operational costs in the digital economy ecosystem and expedite innovation in the digital economy space.[34]

Economic Factors

The digital economy is slowly integrating into the mainstream economy as more economic transactions take place online.[35] With the advent of e-commerce platforms, local businesses face stiff competition from international companies that offer a wider variety of goods at competitive rates.[36]The government must facilitate a vibrant digital

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[24] Toby Shapshak, 'How Kenya's SupaBRCK Aims To Solve Africa's Internet Problems' Forbes, 7 March 2017, https://www.forbes.com/sites/tobyshapshak/2017/03/07/how-kenyas-supabrck-aims-to-solve-africas-internet-problems/?sh=3662099617f3 on 13 March 2021.
[25] Isaac Mbiti and David Weil, 'Mobile Banking: The Impact of M-Pesa in Kenya' National Bureau of Economic Research, Working Paper 17129, 3.
[26] Ibid, 3.
[27] Ibid, 14.
[28] World Bank Group, Kenya Economic Update: Securing Future Growth – Policies to Support Kenya's Digital Transformation, 2019, 35-36.
[29] Kubwa Carolyne, 'Urban courts digitize while rural ones lack net, power' The Star, 11 November 2020, https://www.the-star.co.ke/news/big-read/2020-11-11-urban-courts-digitise-while-rural-ones-lack-net-power/ on 29 January 2021.
[30] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 60.
[31] Ibid, 60.
[32] Ibid, 19.
[33] Ibid, 19.
[34] Ibid, 19.
[35] Ibid, 21.
[36] Ibid, 21.

economy with a thriving digital business scene to assist local businesses in competing against international e-commerce companies.[37] The digital economy in Kenya can also create jobs in the ICT sector that will boost the country's GDP.

Political Factors

To achieve its objectives of improving public services, the government must digitalise its internal ICT systems. By digitising the government's work and functions, the government can provide a foundation for accelerated digitised service delivery.[38] Government investment in ICT will lead to better, faster, and more efficient services for the citizens. Digitising health records and automating processes will lead to improved healthcare delivery.[39] Agricultural information systems connecting government, farmers and agro-business will improve food security. Digitising land records will reduce fraud and unlock value. Further, integrating ICT in education will increase the skills base.[40]

Main Pillars of the Digital Economy in Kenya

The figure below shows the pillars of the digital economy in Kenya. This section will discuss each of the pillars in detail and their contributions to the digital economy.

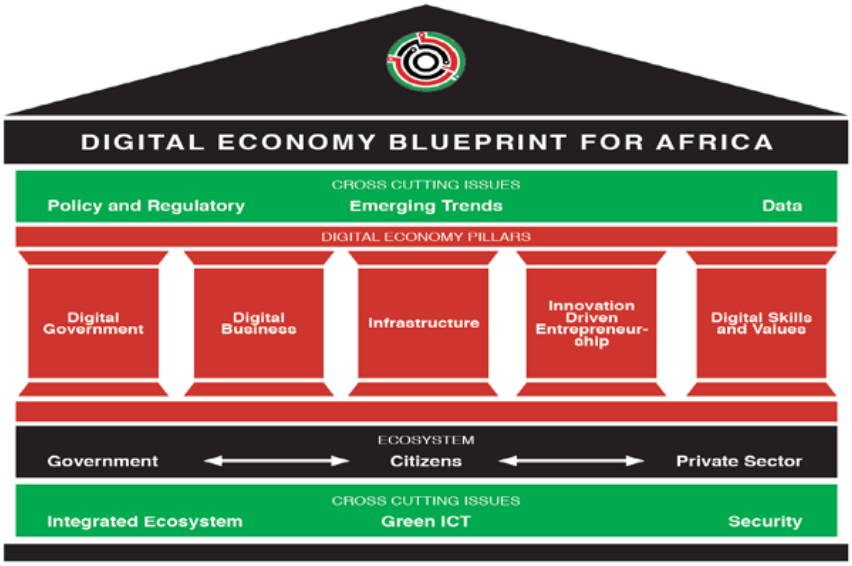

Figure 1[41]Digital Economy Blueprint for Africa

[37] Ibid, 21.
[38] Ibid, 20.
[39] Ibid, 20.
[40] Ibid, 20.
[41] Ibid, 28.

Digital Government

The United Nations Department of Social and Economic Affairs (UNDESA) defines E-Government as '…the use of ICT to more effectively and efficiently deliver government services to citizens and businesses'.[42] The fundamental principle of digital government, which is supported by a solid institutional and legal structure, is to improve the internal processes of the public sector by significantly reducing turnaround times in accessing government services and reducing financial costs. Through leveraging digital technologies in the public sector, the government can increase revenues through improved tax collection systems, reduce essential services delivery costs to its citizens and create jobs in the ICT sector, such as the Ajira Digital Program. The digitalisation of government services also leads to increased transparency, accountability, and good governance.

Measuring the Digital Government in Kenya

The UNDESA created a framework for measuring the level of digital government across its 193 member states, including Kenya, using the E-Government Development Index (EGDI).[43] In measuring the digital government in Kenya, we shall employ the Online Services Index (OSI), a component of the EDGI. The OSI is a good metric for gauging digital government as it measures how national governments use ICT in the provision of public services.[44] The metric has been min-max normalised to values between 0 and 1, with 1 corresponding to the highest rated online service provision and 0 to the lowest level.

The graph below shows the OSI index as a benchmark for digital government in Kenya from 2008 to 2020. The graph shows that the provision of online government services in Kenya has steadily increased. However, the OSI index is not an absolute measurement of government online service delivery. Rather, it is a relative comparison of service delivery across countries. According to the UN E-Government Survey 2020, Kenya had an OSI value of 0.6765 and was ranked under the High OSI category with Israel, South Africa, and Mauritius.[45]

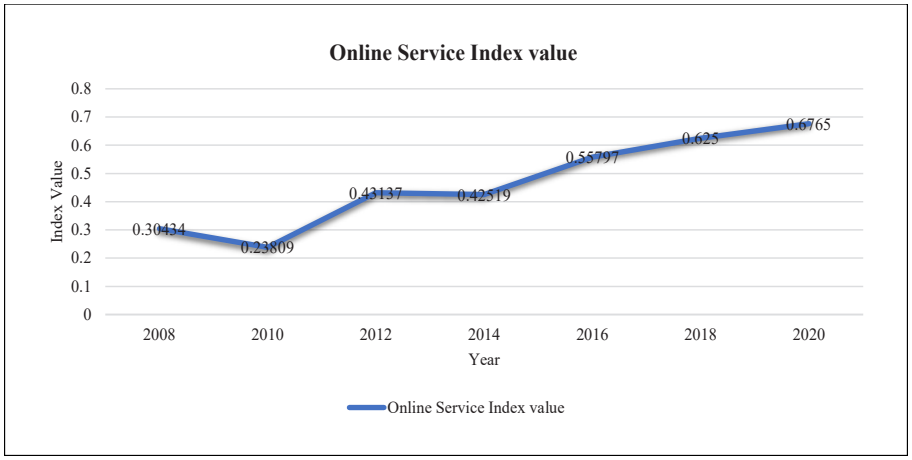

Figure 2: Data Source: UNDESA Open Source Data

[42] <https://publicadministration.un.org/egovkb/en-us/About/UNeGovDD-Framework > on 29 January 2021.
[43] <https://publicadministration.un.org/egovkb/en-us/About/UNeGovDD-Framework> on 29 January 2021.
[44] United Nations Department of Social and Economic Affairs, E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development, 2020, 15-19. Available at: https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf on 3 January 2021.
[45] Ibid, 15-19.

The Kenyan government has made remarkable progress in ensuring the accessibility of online government services. One of the critical milestones is the introduction of the government's Citizen Portal, known as e-citizen, which provides integrated services offered by various state ministries, departments, and agencies. [46] On the e-citizen platform, services are divided into seven main categories:

1. Kenya Revenue Authority (KRA): Under this category, citizens can register for a valid KRA Pin, which is a prerequisite for filing taxes, file and declare their taxes online, apply for tax compliance certificates, and lodge complaints with the Revenue Authority, among other services.
2. Business: A citizen can register a business name with the Registrar of Companies Online and conduct an online search to identify the existence or lack thereof of an alleged company.
3. Marriages: Citizens can file the statutory notice of intention to marry and apply for a marriage certificate, among other things.
4. Driving: A citizen can apply for a provisional driving license when they join a driving school, apply online for their driving tests, and even apply for their interim and full driving licenses upon passing their driving tests.
5. Lands: A citizen may apply for a land rates clearance certificate, which is vital for specific land transfers to occur, and conduct an online search of land titles.
6. Immigration: A citizen can apply for a new passport or to renew an expiring passport.
7. Civil Registration Services: Citizens can apply for birth and death certificates. [47]

The government also introduced Huduma centres to supplement the services offered to e-citizens. The basic idea behind the Huduma centres is to have a convenient 'one-stop-shop' for Government Services accessible to all citizens.[48]

Digital Business

The digital business pillar focuses on creating and developing a vibrant digital market space characterised by increased financial inclusion, fair competition, resilient data infrastructure, advanced consumer protection, and greater regional integration.[49] In Kenya, developments in digital technologies have been instrumental in establishing new markets and products, and connecting consumers to businesses and other consumers.

Advancements in mobile-phone-based technologies have had significant implications for financial inclusion and the electronic payment systems witnessed in the retail sector today. M-Pesa, Kenya's leading mobile money transfer service, has been very successful due to the rural-urban divide that characterises the Kenyan economy. The 'send money home' mentality was the cornerstone to the success of M-Pesa.[50] M-Pesa allows its registered users to deposit and withdraw money using their handsets by visiting various agent stores countrywide. Using what Safaricom terms as the Hakikisha Service, they can verify who they are sending money to before sending out money to any individual or business organisation with a registered M-Pesa account.[51]

Over the years, this simple technology has evolved to encompass aspects such as retail payment systems (Till Number and Pay bill) that have made it easier for Kenyans to pay utility bills and make payments at points of sale using M-Pesa.[52]

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[46] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 47. For more information on e-citizen see < https://www.ecitizen.go.ke/ecitizen-services.html > Citizens of Kenya with a validly issued Citizen National Identity.

[47] For more information on e-citizen see < https://www.ecitizen.go.ke/ecitizen-services.html > on 15 March 2021.

[48] <http://www.ist-africa.org/home/default.asp?page=doc-by-id&docid=5181> on 29 January 2021.

[49] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 47.

[50] Ndung'u Njuguna, 'Digital Technology and State Capacity in Kenya' The Center for Global Development, CGD Policy Paper 154, 2019, 3.

[51] See < https://www.safaricom.co.ke/personal/m-pesa/getting-started/using-m-pesa > on 15 March 2021.

[52] See <https://www.safaricom.co.ke/personal/m-pesa/getting-started/using-m-pesa > Another product that M-Pesa offers is Lipa na M-Pesa which is a loose translation for 'pay with M-Pesa'. See < https://www.safaricom.co.ke/personal/m-pesa/lipa-na-m-pesa/what-is-lipa-na-m-pesa > This product, which is mainly made up of two components, paying bill and buying goods, allows customers of a business or retailer to pay money via their handsets through various designated accounts usually acquired by the business holder from Safaricom.

M-Pesa has furthermore been integrated with the banking system thus enabling payments through and to bank accounts as well as withdrawals from ATMs. In 2012, Safaricom, the mobile network service provider that launched M-Pesa, introduced a savings account and credit supply platform known as M-Shwari. It enables one to open and operate an M-Shwari bank account through the M-Pesa platform without visiting any bank to fill out account opening forms. A customer can then transfer money from their M-Shwari savings account to their M-Pesa account at no charge. M-Shwari also enables one to save and earn interest on one's saving balance.[53] This breakthrough fintech has enhanced financial inclusion.

E-commerce is an equally important aspect of the Kenyan digital business space and holds great potential for advancements. E-commerce platforms in Kenya such as Jumia, Masoko, and MYDAWA are quickly gaining popularity due to their convenience instead of traditional brick and mortar businesses.[54] These platforms, most of which are local, except Jumia, function exactly as their international counterparts such as Amazon and E-bay. The success of e-commerce in Kenya is attributed to mobile money payment services such as M-Pesa, where payments are quick and secure. The restrictions imposed at the onset of the COVID 19 pandemic led to exponential growth of ecommerce particularly in the delivery services.

Infrastructure

The availability of affordable, accessible, resilient, and reliable infrastructure has been identified as one of the five core pillars necessary to facilitate the growth of the digital economy.[55] This section differentiates between the traditional understanding of roads and smart digital infrastructures such as smart roads and smart power. Smart digital infrastructure, which is the focus of this section, is beneficial due to its connectivity, enabling machine-to-machine communication and learning and supporting the Internet of Things (IoT).[56] Combining these capabilities creates an enabling platform for the digital economy that supports interconnected life through wearable technologies, smart healthcare, smart retail, intelligent transportation, and smart cities such as Konza Technopolis.[57] Konza Technopolis is a smart city in Kenya that is scheduled to be in operation by 2030. It will have an integrated urban ICT network that supports the delivery of connected urban services and efficiently manages them on a large scale.[58]

Therefore, governments must reconsider how they plan and implement or upgrade infrastructure regarding today's technological strides. The Kenyan government's commitment to infrastructure development is reflected in the national ICT infrastructure master plan.[59] Some of the objectives of this masterplan are to:

1. Provide ICT network connectivity to all government ministries, departments and agencies.
2. To deliver cost-effective digital services through secure data transmission and storage.
3. To facilitate skilled human resources to manage and maintain ICT infrastructure and skilled users to exploit all the capacity provided by the network.
4. To facilitate well-organised secure integrated networks that facilitate the deployment of Smart Cities across Kenya.
5. Support the medium-and long-term goals of consolidation and delivery of online services through multiple channels supporting advanced computing, infrastructure, application, and disaster recovery facilities.[60]

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[53] See < https://www.safaricom.co.ke/faqs/faq/273 > on 14 March 2021
[54] < https://biznakenya.com/e-commerce-in-kenya/ > on 14 March 2021.
[55] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 27.
[56] Ibid, 44.
[57] Ibid, 44.
[58] < https://www.konza.go.ke/smart-city/ > on 16 March 2021.
[59] Ministry of Information, Communication, and Technology, Draft National ICT Infrastructure Masterplan 2019-2029, 2019.
[60] Ibid, 21.

The government anticipates that one of the desired outcomes of implementing the master plan will be an additional contribution of 3.9% to GDP. [61]

Driven Entrepreneurship

Entrepreneurship is a key driver for economic growth in any modern economy. Traditional entrepreneurship is not immune to the disruptions caused by the digital transformations in the economy. For entrepreneurs to keep up with the trends in the digital economy, there must be a conducive innovation-driven entrepreneurial ecosystem that is dependent on inclusivity, accessibility of investments and international collaborations in research and development.[62]

The digitalisation of businesses through innovative technologies will have varying impacts on business operations and success depending on the sector it is operating in and the extent to which the business has adopted digital technology. The micro, small, and medium enterprises (MSMEs) stand to benefit significantly from digital entrepreneurship programs.

To meet the objectives of innovation-driven entrepreneurship, the Government of Kenya should focus on the following key areas:

i. Tax incentives towards innovation-driven enterprises, which will encourage more start-ups in the digital ecosystem.
ii. More private and state funding towards research and development in digital business and entrepreneurship.
iii. Creation of incubation centres that will assist upcoming digital entrepreneurs. An example is the government's initiative through the Ministry of ICT's Huduma Whitebox.[63]

Digital Skills and Values

The digital skills and values pillar of the Kenya Digital Economy Blueprint highlights the importance of developing digital skills among the citizens. The Blueprint divides digital skills into three main categories:

a) Basic skills enable society to function at a minimum level, interacting with others and accessing government, commercial, and financial services.[64] Basic skills cover hardware (for example, using a computer), software (for example, word processing), and basic online operations (for example, sending an email).
b) Intermediate skills are job-ready skills necessary to perform work-related functions such as desktop publishing, digital graphic design, and digital marketing. For the most part, these skills are general, meaning their mastery prepares individuals for a wide range of digital tasks needed to participate as engaged citizens and productive workers.[65]
c) Advanced skills are the kind of skills required by ICT specialists, such as computer programming. They are essentially acquired and advanced mainly through the use of formal education and training.[66] The blueprint further explains another skill-set under the advanced category, terms as 'digital entrepreneurship', which combines traditional entrepreneurial skills with new digital technologies.[67]

Without the necessary digital skills, it would be impossible for citizens to benefit fully from and actively participate in the digital economy.[68] The government continues to promote digital skills through various initiatives such as undertaking

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[61] Ibid, 30.
[62] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 54.
[63] For more information, see https://www.whitebox.go.ke/ on 29 January 2021.
[64] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 60.
[65] Ibid, 61.
[66] Ibid, 61.
[67] Ibid, 61.
[68] Ibid, 60.

staff training in government offices,[69] developing frameworks for digital skills training from primary education level to university level,[70] and the Presidential Digital Talent Programme. (PDTP)[71] The latter is an internship programme that develops the ICT talent pool in Kenya through a partnership between government, public, and private-sector stakeholders. It is to be implemented by the Ministry of ICT through the ICT Authority.[72]

Enablers and Key Players of the Digital Economy in Kenya

One of the critical enablers of the digital economy in Kenya is the societal willingness to adopt digital technologies. The Government of Kenya plays a key role in enabling the digital economy through enforcing data protection and consumer protection policies. For the digital economy in Kenya to take root, there must be coordination among the various stakeholders. The key players in the digital economy space in Kenya include:

i. The Ministry of ICT – The Ministry is responsible for all the policy formulation for the broadcasting, telecommunication, and postal sectors. It also provides consulting services and market surveillance for the government on ICT and ICT equipment and infrastructure.[73]
ii. County governments – These governments have a mandate under the constitution to ensure trade development and regulation that includes but is not limited to markets, issuance of trade licenses, and regulation of fair-trade practices.[74]
iii. Konza Technopolis Development Authority – Their mission is to ensure that Konza grows into a sustainable world-class technology hub and a significant economic driver for the nation, with a vibrant mix of businesses, workers, residents, and urban amenities.75
iv. National Communication Secretariat – Their mandate is to advise the government on the adoption of policies that, among other things, foster national safety and security, economic prosperity, and the delivery of critical social services through post and telecommunications.[76]
v. Communication Authority of Kenya – It is responsible for facilitating the development of the information and communications sectors, including broadcasting, cybersecurity, multimedia, telecommunications, electronic commerce, and postal and courier services.[77]
vi. ICT Authority – This is a state corporation under the Ministry of ICT tasked with rationalising and streamlining the management of all Government of Kenya ICT functions.[78]
vii. Civil Society – Engaging with the government, private sector, and businesses for collaboration on policy issues that demand innovative problem-solving.[79]
viii. Office of the Data Protection Commission – regulation of processing and protection of personal data in Accordance with the Data Protection Act, 2019.

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[69] Ibid, 30.
[70] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 54.
[71] For more information, see https://www.whitebox.go.ke/ on 29 January 2021.
[72] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 60.
[73] Ibid, 61.
[74] Ibid, 61.
[75] Ibid, 61.
[76] Ibid, 60.
[77] <https://africabusinesscommunities.com/tech/tech-news/kenya-government-expands-staff-training-on-digital-skills-to-enhance-digitization- efforts/ > on 14 March 2021.
[78] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 61.
[79] Ibid, 60.

Cross-cutting and Emerging Issues

There is a global recognition of the rapid pace of digitalisation of numerous processes and transactions that have resulted in the transformation of economies and society, bringing about both opportunities and challenges.[80] Like various past technological and industrial revolutions, it is up to the government to collaborate with other stakeholders such as consumers and civil society to formulate and implement various national and international policies that foster inclusive and sustainable development outcomes.[81]

The Kenya Digital Economy Blueprint identifies that this requires the implementation of the following:

i. Adaptive regulation: A shift from 'regulate and forget' to a responsive, interactive approach.
ii. Regulatory sandboxes: Prototype and test new approaches by creating sandboxes and accelerators.
iii. Outcome-based regulation: Focus on results and performance rather than form.
iv. Risk-weighted regulation: Move from one-size-fits-all regulation to a data-driven, segmented approach.
v. Collaborative regulation: Align regulation nationally and internationally by engaging a broader set of players across the ecosystem.[82]

The blueprint also notes various emerging activities and trends that have had an impact on the digital ecosystem, such as the growing IoT. This refers to the network of physical objects that feature an IP address for Internet connectivity and the communication between these objects and other Internet-enabled devices and systems.[83]

Furthermore, it is the recognition of the rapid development of artificial intelligence (AI), which refers to both the theory and the actual development of computer systems able to perform tasks typically requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages (Siri, Alexa, Bixby).[84]

Lastly, the blueprint recognises the emergence and growing trend of distributed ledger and blockchain technology. Distributed ledger technology (DLT) has developed rapidly over the last few years and has challenged traditional systems of creating, holding, and sharing information and records. The applications of DLT have ranged from creating cryptocurrencies like Bitcoin to developing 'smart contracts' and other record-keeping forms.[85]

All these emerging and rapidly expanding activities and trends need to be examined under the framework provided above.

The Link Between Kenya's Digital Economy and AfCFTA

The proliferation of ICT in Kenya has been steady, and just like in other countries, it has upheavals and profound implications. Digital trade and transactions have become part of day-to-day activities. They are increasing because of Internet services, affordable data-enabled devices, increased popularity, and access to money transfer services and general infrastructure.[86] The use of ICT is well received because of its high efficiency, effectiveness, transparency, reduced expenses, and resulting ease. The realisation of digital dividends also gives impetus to traders to take up ICTs. These benefits are realised at the consumer, enterprise, and government levels.

The 2004 E-Governance Strategy established the government's commitment to using ICT to facilitate better and more efficient delivery of information

[81] Ibid.
[82] Ministry of Information, Communication, Technology, Innovation, and Youth Affairs, Digital Economy Blueprint: Powering Kenya's Transformation, 2019, 67.
[83] Ibid, 67.
[84] Ibid, 67.
[85] Ibid, 68.
[86] Nganga T., Mbithi M., The digital trade era – opportunities and challenges for developing countries: The case of Kenya, World Trade Organization 2021.

and service to the citizens and promote productivity among public servants. The E-Government Strategy outlines the objectives and processes for the modernisation of government to enhance transparency, accountability, and good governance. The goal is to make the government more result-oriented, efficient, and citizen-centred, and enable citizens and businesses to access Government Services and Information as efficiently and as effectively as possible using the Internet and other channels of communication.[87]

The Kenya ICT policy of 2006 and its draft revision were implemented as part of the government agenda of promoting increased use of ICT. The policy aims to promote ICT as a developmental tool through increased use of IT, the development and use of e-government to improve efficiency and the quality of public service delivery, and ICT infrastructure development.[88]

The Digital Economy Blueprint of 2019 is another policy document that seeks to provide a conceptual framework adopted by Kenya to realise a successful and sustainable digital economy.[89] The pillars of the blueprint are digital government, digital business, digital infrastructure, innovation-driven entrepreneurship, and digital skills and values.

The ICT Policy of 2019 captures the ICT ambitions of Kenya and outlines the framework to be used in the timely realisation of those ambitions. The policy is cognizant of the regulatory framework, capacities, and capabilities of the policies that are in place to achieve the policy's objectives.

The Huduma Kenya Integrated Service Delivery Model Programme provides a one-stop-shop for government services through its integrated technology platform. This programme offers the potential to reshape the public sector and build relationships between citizens and the government through providing convenient access to government information and services.[90]

Like the policies, there is no single omnibus statute regulating the digital economy. Instead, there is an array of scattered statutes regulating different aspects. The statutes are discussed herein.

- The Data Protection Act of 2019 seeks to protect personal data.[91]
- The National Electronic Single Window System Act, 2016 aims to address challenges related to the processing of import and export cargo documentation by use of an online platform that interfaces with and integrates automated export and import information from business and government agencies, issuing documents such as export and import permits, licences, and certificates, among others.[92]
- The Kenya Information and Communications Act of 2009, amended in 2013, governs e-commerce transactions in Kenya, allowing and recognising electronic contracts for digital transactions. The Act provides for the Communications Authority of Kenya CAK to regulate e-commerce and protect consumers.
- The Information and Communications Act provides for adequate cyber security for government systems.
- The Consumer Protection Act of 2012, revised in 2016, provides for the protection of consumers and the prevention of unfair trade practices in consumer transactions.
- The Access to Information Act provides for the protection of personal data and the right to privacy.

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[87] Republic of Kenya, E-Government Strategy: The Strategic Framework, Administrative Structure, Training Requirement for Standardization Framework (2004).
[88] Ministry of Information and Communications, National Information & Communications Technology (ICT) Policy (2006)
[89] Republic of Kenya, Digital Economy Blueprint: Powering Kenya's Transformation (2019) https://www.ict.go.ke/wp-content/uploads/2019/05/Kenya-DigitalEconomy-2019.pdf accessed 13 March 2021.
[90] Agweli Philip Were, 'Strategies adopted by the Kenyan Government in Introducing E- governance'<erepository.uonbi.ac.ke/handle/11295/13152> accessed 13 March 2021.
[91] Data Protection Act, Act No 24 of 2019.
[92] Nganga T., Mbithi M., The digital trade era – opportunities and challenges for developing countries: The case of Kenya, World Trade Organization 2021.

- The Computer Misuse and Cybercrimes Act, 2018 governs offences relating to computer systems; facilitates the timely and effective detection, prohibition, prevention, response, investigation, and prosecution of computer-related crimes and cybercrimes; and facilitates international cooperation in dealing with computer-related and cybercrime issues.

Opportunities Presented by AfCFTA

The AfCFTA came after Kenya had developed its framework on the digital economy. The framework is incomplete because certain aspects of the evolution of the digital economy are still in transition, including regulations on virtual banking. Nonetheless, Kenya can start harnessing the benefits of the AfCFTA. The opportunities presented by a liberalised continental economy are numerous.

The AfCFTA offers Kenyan small and medium-sized enterprises an alternative route to market their goods by creating the advantage of connectivity, low transaction costs, and improving information asymmetries.[93]

Integrating Africa into a single digital market will create economies of scale and opportunities to grow local and regional economies.[94] Sellers have a larger market of consumers, and physical boundaries no longer inhibit business interactions and transactions. The transport, communication, tourism, and education sectors will most likely expand and create multiple opportunities.

Using digital platforms reduces intermediaries and rent-seekers between producers and consumers, which reduces the long chain and enables a more equitable distribution of accrued value to the different participants along the value chain.[95]

Concerns Presented by AfCFTA

The implementation and realisation of the benefits of AfCFTA face some challenges related to technology. Other challenges reflect the low level of human development in African countries, while other challenges are attributed to the framework. The three-pronged approach to the challenges is discussed below.

Technological weaknesses: Human beings are naturally risk-averse and constantly have concerns over digital economy platforms, especially in the era of cybercrimes. The uptake of ICT may be good, but if security breaches are regular, individuals who may already be leery of using technology may avoid and even shun the use of online services that require personal information.[96] Other technological concerns include unfriendly user portals and little consideration of access for persons living with special needs.[97]

Access: The 'digital divide' was once considered a lack of access to the Internet and hardware, such as computers, phones, and mobile devices.[98] But access has improved through technological progress and affordability, such as access to mobile phones.[99] However, new digital divides have emerged, such as the speed and quality of those devices and digital literacy or the know-how to use them. Hence, the debate has moved from 'a' digital divide to 'multiple' digital divides, which are not only a global challenge but also local contextualised problems in terms of availability of content, bandwidth, and skills, among other issues.[100]

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[93] Ibid.
[94] Ibid.
[95] Ibid.
[96] A Project of InfoDev, The Centre for Democracy & Technology, The E-governance handbook for developing countries (2015) P17.
[97] Kennedy Okong'o, Michael Kyobe, `Empirical Examination of e-Government in Developing Countries and its Value in Kenya's Public Service` (2018) 21(1) The Electronic Journal of Information Systems Evaluation.
[98] Department of Economic and Social Affairs; United Nations E-government Survey 2018: Gearing E-government to Support Transformation Towards Sustainable and Resilient Societies`, (2018) at P34.
[99] Ibid.
[100] Ibid.

Many factors account for the digital divide – levels of e-literacy and an unreceptive culture have implications on the digital economy. The level of development also dictates access. Access relates to infrastructure: the Internet infrastructure such as broadband and fibre, the infrastructure relied upon for deliveries such as the road and rail network and air and water transport, and postal services. Additionally, financial constraints on individuals may lead to logistical failure, prohibitive costs for the initial start-up and creditworthiness, which may create vulnerabilities in economies that lack the capabilities to start a robust economy because of capitalism.

Limitations within the framework: The regulations on the digital economy are scattered in different statutes and policy documents. Additionally, the protocols are not standardised. The absence of a single protocol in the content limits the implementation of the agreement.

The regulatory framework is inadequate, and this leads to disputes. For instance, the interoperability of mobile money platforms and banks is a concept that is still evolving and is not regulated in its entirety; the fact that cybercrime occurs within the legal framework is proof that the framework is insufficient.

Conclusion

The age of the Internet has globalised the world. At the same time, it has accentuated the inequalities between the developed and the developing countries, which has not inhibited the diffusion of digital technologies. Kenya is poised to realise the benefits of AfCFTA because of the scale of development already present in it. Digital technology in liberalised markets may disadvantage sections of the population that cannot harness technology's benefits, thereby continuing their marginalisation. The digital economy also presents more benefits: the consumers who can purchase from a market with variety, thereby eliminating monopolies, the sellers who have a bigger market, and the government.

In sum, Kenya has made significant progress in digital trade. Its continued digitisation of border procedures and the establishment of blockchain transport corridors in customs and other border agencies in the EAC member countries are ahead of many countries in Africa. Further, it keeps up with trends in world markets such as crypto-currency, cybercrime, and more effective data protection, putting it in a strong position to benefit from the AfCFTA. Additionally, the AU's Digital Transformation Strategy for Africa and Kenya's Digital Economy Blueprint have been launched and help enhance domestic efforts at universal access to ICT services and utilisation. However, challenges such as data privacy and cybercrimes must be tackled in collaboration with international players to support Kenya's march towards a truly digital economy to become a global player in e-commerce.

Chapter 2: **Nigeria**

Defining a Digital Economy in the Nigerian Context

Technology's penetration into various aspects of life has been rapid, and, in the Nigerian economy, it is ubiquitous.[101] The services sector has spawned the emergence of collaborative projects facilitated with a premium on use value rather than ownership, on repair instead of replacement, on local or shared financing rather than bank loans. In industry, it is increasingly leading to a situation where intelligent production lines will volatilise worker input to produce a new form of cooperation between humans and machines.[102]

In many ways, technology has created a new economic model entailing zero marginal cost, which has led to a 'gold rush' of technology adoption to applications aimed at monetising, organising, and managing[103] the new areas of possibilities that have opened up sectors such as transport, delivery, accommodation, financing, repairs (plumbing, electricity, etc.), and hiring services, that will in no time at all become the major driving forces of economic growth and job creation.[104]

In Nigeria, mobile telephony has equipped and empowered individuals to become producers, content creators, and service providers, which brings them extra income. In this sense, the digital economy spawned by technology is a harbinger of new opportunities.[105]

Although the image painted above may appear unreal, [106] these three components have come to form the fulcrum of a new economy and, hence, a new world economy[107] – a digital economy.

Major Components of the Digital Economy

Digital tools are increasingly remodelling the global economy. They are permeating every facet of quotidian life and, in the process, altering the way Nigerians live and conduct their affairs – the way they learn, work, trade, network, and access public and private services and information;[108] this paradigm shift has been labelled 'digital revolution'. This revolution has not only affected existing norms and ways of living, conducting business, and rendering services in Nigeria, but also made Nigeria revamp and enact new policies and regulations – such as the Cybercrimes (Prohibition and Prevention) Act 2015, Federal Competition and Consumer Act 2018, Nigeria Data Protection Regulation 2019, Nigerian Data Protection Bill 2020, National Payment Systems Vision (2020), Nigerian National Broadband Plan 2020–2025, Nigeria Broadcasting Code 2020 (6th edition), and Guideline for Online Hailing Business Operation of Taxi in Lagos State 2020 – to meet the current trends associated with the usage of these digital tools,

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[101] Ifeyinwa Angela Ajah and Chioma Chigozie-Okwum, 'Prospects of ICT for Digital Growth and National Development in Nigeria' https://www.researchgate.net/publication/335343376_Prospects_of_ICT_for_digital_growth_and_national_development_in_Nigeria (last accessed 17 May 2021).
[102] Degryse n1.
[103] D. Soule, A. Puram, G. Westerman, and D. Bonnet, Becoming a Digital Organization the Journey to Dexterity (MIT Centre for Digital Business).
[104] Degryse n1.
[105] Ibid.
[106] Ibid.
[107] Manyika et al., McKinsey Global Institute: 'Disruptive technologies: Advances that will transform life, business, and the global economy' (2013).
[108] Ibid.

In 2016, it was recorded that the global digital economy was worth some USD 11.5 trillion, equivalent to 15.5% of the world's overall GDP.[109] It is expected to reach 25% in less than a decade, quickly outpacing the growth of the overall economy. However, countries like Nigeria are currently capturing only a miniature or fraction of this growth. They need to strategically invest in the foundational elements of their digital economy to keep pace.[110] As we continue to accede to a digitised economy in our daily life, it is fashioning new technological platforms and industries on the one hand while augmenting the efficiency and productivity of existing industries on the other. [111] The different technologies and economic aspects of the digital economy can be broken down into three broad components:

i. Core aspects or foundational aspects of the digital economy, which comprise fundamental innovations (semiconductors, processors), core technologies (computers, telecommunication devices) and enabling infrastructures (the Internet and telecoms networks).[112]
ii. Digital and IT sectors, which produce vital products or services that rely on core digital technologies, including digital platforms, mobile applications (Hellium Health, 54gene, trade depot) and payment services (Paystacks, Flutterwave).[113] The digital economy is greatly affected by innovative services in these sectors, making a growing contribution to economies and enabling potential spillover effects to other sectors.[114]
iii A broader set of digitalising sectors, including those where digital products and services are increasingly used (e.g. e-commerce platforms such as Konga, Jumia, Jiji, Obiwezy).[115] Even if a change is incremental, many sectors of the economy are being digitalised in this way, including digitally-enabled sectors in which new activities or business models have emerged and are being transformed as a result of digital technologies. Examples include finance, media, tourism, and transportation (Taxify, pickmeup). It is not often highlighted, but digitally literate or skilled workers, consumers, buyers, and users are crucial for the growth of the digital economy.[116]

The Digital Economy Landscape in Nigeria

The components of ICT – information and communication technologies – have been buzzwords in the last few decades. However, in recent years, a convergence of the sub-sectors of ICT is taking place, which involves IT, telecommunications, and broadcasting. The term ICT expresses the idea of technology usage. Digital Technologies build upon and extend the concept of ICT to focus on creation or innovation, not just technology usage or consumption. ICT also encompass emerging technologies and the potential for datafication that they provide.[117]

Nigeria is one of those countries whose economy, in recent years, has been built upon and extended beyond the use of ICT to technology innovation. Nigeria prides itself as the giant of Africa for many reasons, but mainly its economy. Nigeria has the

[109] Ibid.
[110] World Economic Forum. (2016), 'Global Information Technology Report'.http://www3.weforum.org/docs/GITR2016/WEF_GITR_Full_Report.pdf (last accessed 15 May 2021)
[111] n9.
[112] n12.
[113] Janet John, 'Top ten Nigerian Companies and capital raised in 2020', (17 January 2021, Nairametrics) https://nairametrics.com/2021/01/17/top-10-tech-companies-and-capital-raised-in-2020/ last accessed 16 May 2021.
[114] n12.
[115] 'Top 10 E-Commerce Websites For Online Shopping In Nigeria', https://invoice.ng/blog/best-ecommerce-websites-in-nigeria/ last accessed May 16, 2021.
[116] n12.
[117] n9.

biggest economy in Africa[118] with the largest population and one of the youngest worldwide,[119] with an average age of just 18 years,[120] boasting a GDP of USD 406 billion and a population of 186 million people. Nigeria – a political federation of 36 autonomous states and its capital FCT Abuja – has a multi-ethnic and culturally diverse society. In terms of Nigeria's geographic position, it is lies between the central and western parts of Africa. It offers ready access to over half of the African continent, represented by those that reside in Western and Central Africa and the 186 million people living in Nigeria itself.[121] Just like China, India, and the USA are the leading nations thriving in their region's digital economy as a result of their population, Nigerian's numerical strength can be used to an advantage in the development of a viable digital economy there.

Nigeria's per capita GDP is USD 2,640 (in PPP adjusted terms USD 5,900), which is higher than that of other developing countries such as India, Kenya, and Zambia. Lagos, its commercial hub, has more than 20 million people and a GDP/capita of USD 6,238. The 70,000 small and medium enterprises (SMEs) in Nigeria represent a pool larger than in countries such as Israel, Kenya, and Zambia. Together with the 37 million micro-enterprises in Nigeria, MSME economic activity constitutes 47% of the country's GDP. [122]

For decades, Nigeria's economic development has stalled as it relies heavily on natural resources. It is Africa's biggest oil exporter and has the largest natural gas reserves on the continent. The Nigerian economy contracted in 2016 by 1.7 per cent. In recent years, a drastic drop in global oil prices increased currency volatility, foreign exchange shortages, peaking inflation, and unrest in the North have resulted in disruptions and scarcity in fuel supplies.[123] Thus, the need to solve Nigeria's dependency on oil and gas led to rapid adoption and growth of ICT. Plans are underway to position the Nigeria to play a leading role in contributing to this economy. [124]

The Nigerian ICT sector, which gradually expanded from 0.6 per cent of GDP in 2001 to 9.8 per cent in 2014, has been a key driver of the country's economic recovery. The sector is now the 4th largest in the country and has been nicknamed the 'infrastructure of infrastructures'. The proper, adequate, and efficient functioning and running of many other key sectors of the economy and government, including agriculture, commerce, banking and finance, health, and transportation are championed, enabled, and accelerated by the ICT sector.[125]

Nigeria has a blossoming digital innovation ecosystem.[126] The fastest-growing component of Nigeria's GDP is ICT, and it is in pole position to become the most critical long-term growth prospect. In the second quarter of 2019, ICT contributed immensely with 13.85% to the GDP calculations against oil and gas with 8.82% [127]The recently launched National Digital Economy Policy and Strategy (2020–2030) captures the great promise to improve Nigeria's existing ICT regulation in building an inclusive digital society. [128] With the digital economy strategy in place, the digital technology sector is estimated to double its contribution to the economy over the next five years.[129] Nigeria has also adopted an e-government masterplan

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[118] OC & C, 'Tech Entrepreneurship Ecosystem in Nigeria', https://www.occstrategy.com/media/1307/tech-eship-in-nigeria.pdf last accessed 16 May 2021.
[119] Simona Varella, E-Commerce in Nigeria and Statistics and Facts', https://www.statista.com/topics/6786/e-commerce-in-nigeria/#dossierSummary last accessed 15 May 2021.
[120] n9.
[121] Ibid.
[122] n29.
[123] Ibid.
[124] n9.
[125] n29.
[126] Laying Roots for Digital Society in Nigeria: Network Readiness in Nigeria (23rd March 2021, Portulans Institute) https://portulansinstitute.org/laying-the-roots-for-a-digital-society-network-readiness-in-nigeria/ last accessed 18 May 2021.
[127] n9.
[128] n38.
[129] n9.

which is currently being implemented. This plan will provide a one-stop-shop for interacting with the government. It will also provide an enterprise architecture and e-government interoperability framework to assist platforms that can enhance and facilitate interactions between government institutions on the one hand and government and citizens on the other.[130]

It was as a result of the progress and potentials of ICT in Nigeria that His Excellency Muhammadu Buhari GCFR (the President of Nigeria), in his speech at the 2019 E-Nigeria Conference, Exhibition, and Awards globally, stated that 'Nigeria's Digital Economy is expanding at a very fast pace. In just a few years, this platform has transitioned from being a luxury to an absolute necessity'.[131] Given this rapid digital transformation, Nigeria set out a day known as 'Digital Nigeria Day', celebrated on 24 October – a day that has also been designated by the United Nations as the 'World Development Information Day'.[132]

According to the United Nations Conference on Trade and Development (UNCTAD), Nigeria's e-commerce spending will rise to USD 75 billion in 2025. The platforms created by supporting the service infrastructure pillar will play an essential role in this projection. The digital services development and promotion pillar aims to drive the growth in the number of digital jobs and digital entrepreneurs in the country. Thus, with an average age of just over 18 years, Nigeria has a potentially critical mass of 'digital natives' that can transform into a regional and global digital powerhouse.

These creative Nigerians can play a key role in creating digital jobs across all sectors of the country, jobs that are either based on ICTs or are dependent on ICTs.[133]

Furthermore, Nigeria's youthful population is driving smartphone penetration, financial inclusion, and cashless payments to create the perfect recipe for a thriving sector.[134] Youth are the enablers of any digital revolution. Therefore, with a population having an average age of just over 18 years and 60% of the country represented by youth, Nigeria is ready to be the foundation of an African digital economy.[135] Some of these digital evolutions undertaken by the young Nigerian digital natives will be illustrated hereunder to establish the growth and development of Nigerian's digital landscape.

E-commerce ventures dominate Nigeria's start-up ecosystem. It is recognised as the e-commerce epicentre or capital of Africa, with start-ups such as Konga, Jumia (which raised USD 150 million to expand into other African markets), Mall for Africa (which raked in USD 17 million in sales in 2014), and Supermart (specialising in grocery deliveries and more).

Additionally, irokotv, a successful platform for video-on-demand content from Nigeria's Nollywood, has attracted huge investments that have enabled its owner, Jason Njoku, and his business partner to launch Spark – a company building and incubating other start-ups. Spark is enabling the next generation of start-ups like Hotels.ng, which recently raised USD 1.2 million from Omidyar and EchoVC partners after being seeded with USD 250,000 by Spark three years ago. Olumide Soyombo and Kazeem Tewogbade built Bluechip Technologies, a business intelligence company, from scratch and are now using the proceeds to seed the next generation of entrepreneurs through their accelerator and seed fund called Leadpath.[136]

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[130] Ibid.
[131] Ibid.
[132] n9.
[132] n9.
[134] Outlook 2021, Emerging Technologies Have Potential to spur Growth (25th Feb 2021, Pro Share Intelligent Investment) https://www.proshareng.com/news/Reviews%20&%20Outlooks/Outlook-2021--Emerging-Technologies-Have-Potential-to-Spur-Growth/55968 last accessed 18 May 2021.
[135] n9.
[136] Bright, J. (2016). Nigerian fintech company Interswitch could become Africa's first public start-up unicorn. Tech Crunch Accessed 12 Feb 2016. Available at: http://techcrunch.com/2016/01/28/nigerian-fintech-company-interswitch-could-become-africas-first-public-startup-unicorn/ last accessed 18 May 2021.

Irokotv, dubbed as the Netflix of Africa, is an example of a next-generation company.[137] The company purchases the rights to Nigerian films and distributes them online. Its subscription platforms stream music and movies in 178 countries.[138] Irokotv has since built a global audience. The company secured USD 8 million from investors to scale up the platform to target a global audience soon after its lunch.[139] Interswitch, a digital payment company, is another next-generation business from Nigeria. It is in line to become Africa's first public tech unicorn, with announcements to list on both the London and Lagos stock exchanges.[140]

These Nigerian start-ups continue to lead the way in digital space. Its tech start-up ecosystem has already produced three exits of over USD 100 million, namely Andela, Konga, and Jumia. The e-commerce company Jumia launched in Lagos in 2012, has over 3 million customers and 3,000 employees and operates in 23 countries. The group became the continent's first 'unicorn' with a 1 billion USD+ valuation in 2016.[141] Concerning Jumia and Konga, an e-commerce company, the overall numerical strength of visitors in online marketplaces has grown exponentially and exceeded 250 million in 2019. In addition, the results of different surveys conducted by Statista in 2020 show that Nigerians have very positive attitudes towards online shopping. Clothing, shoes, and consumer electronics were the most common items purchased online among Nigerian respondents.[142]

Another example is the software firm Andela, which has trained hundreds of software developers and engineers for companies around the world. Andela has received over USD 80 million in capital investments to train 100,000 software developers across Africa.[143]

According to UNCTAD data and the 2019 Digital Economy report, Nigeria is among four economies (including Egypt, South Africa, and Kenya) that account for 60 per cent of digital entrepreneurial activities in Africa. Nigeria's digital entrepreneurs are part of a generation exploring 'creative solutions to fill gaps left by the state', with impressive innovations in education technology (edutech) as a result of the weak public education system, thereby making learning more accessible, and financial technology (fintech), which engages segments of the population that cannot access traditional financial services.[144] Nigeria is now home to over 200 fintech standalone companies, including several fintech solutions offered by banks and mobile network operators as part of their product portfolio.[145]

Moreover, agricultural technology ('agritech') start-ups are seeking to solve the logistics of food waste in the country, learn how to get produce from the farm to the end consumer most efficiently and effectively,[146] and provide farmers with farm inputs, training, and easy market access for the farm produce (Farmcrowdy).[147] Health technology (healthtech) – such as Nigeria's digital blood bank, LifeBank Nigeria, which has transported over 9,000 units of blood for frontline health facilities across the country and attracted over USD 200,000 in funding last year – has helped the economy grow, thus combating gaps in governance.[148]

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[137] Iwuoha, J. P. (2016). How these 10 super successful African entrepreneurs raised money to start their businesses. Smallstarter. Available at: http://www.smallstarter.com/get-inspired/10-super-success-african-entrepreneurs-and-how-they-raised-money-to-start-their-businesses/ last accessed 18 May 2021.
[138] Bright n 48.
[139] Ibid.
[140] Ibid.
[141] n29.
[142] Varella n30.
[143] Vijaya Ramachandran, Jennifer Obado-Joel, Razaq Fatai, Junaid Sadiq Masood, and Blessing Omakwu, 'The New Economy of Africa: Opportunities for Nigeria's Emerging Technology Sector' (19th November 2019) Centre for Global Development https://www.cgdev.org/reader/new-economy-africa-opportunities-nigerias-emerging-technology-sector?page=0 last accessed 20 May 2021.
[144] n38.
[145] n46.
[146] Ramachandran n55.
[147] Ibid.
[148] n38.

All these tech start-ups reside in Yabacon Valley, an area in Yaba, a suburb of Lagos perceived as Nigeria's own Silicon Valley.[149] Like Kenya, the Nigerian government is constructing an idyllic campus called Technology Village outside the capital, Abuja, 400 miles north of Lagos, which will help train persons interested in ICT.[150]

The Nigerian economy has been hit hard by the coronavirus pandemic. Despite this, a certain aspect of the Nigerian economy and businesses continues to thrive: ICT firms, telecommunication firms, companies, and banks who were quick to adopt the use of ICT in their operations were able to stay afloat and record improvements. For instance, MTN Nigeria recorded an increase in its revenue by 48% making NGN 638 billion in Q2 2020 from NGN 329 billion in Q1 2020. The Q3 result was even more outstanding as MTN posted almost NGN 1 trillion as revenue.[151]

Furthermore, some companies' decision to work from home meant that tech companies in Nigeria remained profitable as video conferencing apps like Zoom, Skype, and Google Meet and telecommunication companies like MTN, Airtel, Glo, and 9mobile recorded an increase in data usage. This global crisis saw official meetings being held online, and webinars were the order of the day. It meant that more Internet data would be used for both official and personal activities. Therefore, notwithstanding the pandemic, many companies such as network providers and tech companies continued to thrive, and the economy grew.[152]

From all indications, Nigeria's digital landscape is flourishing. The country has one of the best network coverage and infrastructure for mobile connectivity in Africa. Internet penetration is around 60 per cent and is projected to increase steadily. Mobile ownership reached almost 50 per cent. Mobile devices are frequently used to access the Internet rather than desktops.[153] One of Africa's most substantial Internet economies, with nearly 80 million online shoppers, is Nigeria.[154] In 2019, the business-to-consumer (B2C) index value for e-commerce, which shows a country's preparedness for online shopping, recorded Nigeria at 53.2 points, the fourth-highest in Africa.[155]

The Nigerian Communications Commission (NCC) has recorded that over 96 per cent of the population are Internet users. However, a significant issue is barriers to access. Many rural areas suffer from patchy broadband coverage. Nationally, the mean download speed is just 1.56 Mbps, one of the lowest globally, reflecting poorly on Africa's largest tech market. As pointed out in the World Bank's 'digital diagnostic' report on Nigeria, to harness the promise of Africa's largest mobile market, Nigeria needs to take steps to build better connectivity infrastructure, digital platforms, more robust regulation and enhanced access to mobile financial services: 'through innovations and investments, the Nigerian economy can harness digital data and new technologies'.[156]

The rapid progress in Nigeria's digital economic ecosystem has been hindered by low educational levels; digital illiteracy; lack of a reliable power supply; and poor road conditions, transportation, and accessibility and affordability of both mobile and fixed Internet connectivity. Stakeholders argue that these obstacles to conducting business in Nigeria are substantially greater than in other countries and thus contribute to the high rate of business failures.[157] Undoubtedly the structural challenges facing Nigeria's businesses mirror those of its peers in other African countries, including inconsistent policies, a challenging business environment,

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[149] Akwagyiram, A. (2015). Nigeria tech enclave springs up in Lagos suburb. Reuters. Available at: http://www.reuters.com/article/nigeria-technology-yaba-idUSL5N1012KT20150727 last accessed 18 May 2021.
[150] Bright n48.
[151] n46.
[152] Ibid.
[153] Varella n30.
[154] n38.
[155] Varella n 30.
[156] n38.
[157] n29.
[158] Ibid.

insufficient ICT and physical infrastructure, and human resource skills gaps. Despite these issues, data from the Nigerian Bureau of Statistics show that Nigeria's MSMEs contribute 47% to Nigeria's GDP and employ 84% of Nigeria's workforce, suggesting strong economic returns would come from addressing the barriers in the small business sector. Hence, the government should collaborate to review business procedures and digital policies and align the regulatory framework with the ecosystem's needs and global practices.[158]

Rationale for Digital Economy in Nigeria

Political Factors

There are many actors involved in the tech ecosystem. However, the role of government is the most crucial. Government policy affects all actors and components of the ecosystem, from resource providers to entrepreneurs and the broader environment within which they operate. The government's contribution is essential because of its direct impact on the ecosystem by creating favourable terms and incentivising high-growth start-ups. Moreover, the government exerts its influence on all components to create a constructive environment and facilitate interconnectivity between them.[159] Undoubtedly, the government has a critical role to play in facilitating and promulgating the digital economy in Nigeria.

Economic Factors

Improved digital connectivity can only achieve the desired transformational impact on economic opportunity and inclusive growth if combined with improvements in digital skills and literacy. This includes digital identity schemes, access to digital payments and other financial services, and digital support to start-ups and existing businesses. With such capabilities, the African economy can harness digital data and new technologies, generate new content, link individuals with markets and government services, and roll out new and sustainable business models.[160] A key area of concern has been that widespread adoption of automation and other digital technologies can cause significant net job losses. Though automation may displace jobs through 'creative destruction', it ends up creating new ones. To develop safeguards for job markets, developing countries in Africa, such as Nigeria, need to invest in systems and requisite skills early on, including the digital domain. Those skills are tied to meaningful jobs, helping to strengthen the country's competitiveness in the global marketplace.[161]

Socio-cultural Factors

A digital economy can change the way economies of scale are achieved, particularly with online service delivery, as the incremental cost of offering an additional product or service may become negligible. The digital economy provides better matching of buyers and sellers in a competitive marketplace. It can address specific concerns with asymmetric information, solving some principal-agent problems where buyers and sellers are separated by intermediaries or even multiple levels of intermediaries. It may also strengthen people's trust in firms or governments by enabling decentralised forms of trust (such as a blockchain) where centralised authorities are not trusted;and allow products and services to be customised and targeted, enabling both better inclusion and easier ways to exclude some.[162] Generally, how government relates with citizens, citizens' expectations of their government, and how they communicate with one another have been transformed by Internet access, social media, and globalisation, bringing about change to behavioural norms and new hitherto undiscovered psychological susceptibilities.[163]

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[159] n29.
[160] World Bank, Nigerian Digital Economy Diagnostic Reports, http://documents1.worldbank.org/curated/en/387871574812599817/pdf/Nigeria-Digital-Economy-Diagnostic-Report.pdf last accessed 18 May 2021.
[160] Ibid.
[161] Ibid.
[162] Ibid.
[163] Ibid.

Main Pillars of the Digital Economy in Nigeria

Digital Infrastructure Pillar

High-speed Internet (or broadband) has the potential to accelerate Nigeria's socioeconomic development. Extensive research confirms the impact of increased investment in broadband on economic growth. World Bank research estimates that a 10% increase in broadband penetration in developing countries is associated with a 1.4% increase in GDP Connectivity and can shape the country's development path through several interrelated channels:

i. It can bridge the information gap, alleviate asymmetry problems, and improve communication;
ii. It is the most cost-effective and fastest means of connecting all citizens, especially those living in remote areas, to markets and services;
iii. It increases productivity, lowers transaction costs, and optimises supply chains.[164]

The digital economy creates unprecedented opportunities for countries to unleash new opportunities, create jobs, and transform people's lives. Fast Internet provides a platform for innovation that is a key input across sectors and reverberates throughout the economy. It potentiates entrepreneurship, with businesses and individuals using fast Internet to create new applications and services in e-commerce and financial services. It also enables game-changing digital service delivery in sectors critical to inclusive growth, such as education, health, and agriculture. Likewise, it allows the public sector to deliver services to citizens and businesses more effectively and inclusively. On these accounts, broadband has the potential to transform Nigeria's economy and help the country leapfrog development stages, provided that all sectors of the Nigerian economy put in place effective policies that encourage its use as an essential input for growth.[165]

Despite recent growth in fibre installations, national fixed-line infrastructure is still poor, and mobile systems remain the primary means for carrying retail and enterprise data traffic in Nigeria. According to the International Telecommunications Union (ITU), in 2018, 19.9% of the population used their cell phones to connect to the Internet. Overall Internet usage in Nigeria stands at 27.7%, above the average for Africa (22.1%). Fixed broadband penetration in Nigeria is very low, with a household penetration rate of 0.04% at the end of 2018, below the African regional average (0.6%) and well below the world average (13.6%) (ITU, 2018). Fixed broadband remains a 'niche' service used by public institutions and some businesses, as well as a few privileged households, meaning that there are critical digital divides in fixed broadband, both along gender and urban-rural lines.[166]

Mobile broadband has become the most common and popular way through which people in Nigeria access the Internet. According to ITU, 3G coverage reaches 54% of the population and LTE/WiMAX, 50.8%.[167]

Furthermore, the increased competition in the telecommunications and broadband market, due to continued efforts by the government to liberalise it, has driven growth in the sector. The establishment of the sector's independent regulator in 1999, the NCC ended the monopoly of M-Tel, the mobile subsidiary of the fixed-line incumbent, NITEL. The process of liberalisation kickstarted with the awarding of three GSM spectrum licenses, via an auction, to MTN, GLO, and Econet Wireless Nigeria Ltd. The NCC has facilitated market entry over the years through the transparent licensing of various communications services.[168]

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[164] Ibid.
[165] Ibid.
[166] Ibid.
[167] Ibid.
[168] Ibid.

Nigeria is connected to high-speed Internet via five international undersea links: Main One; Glo; West African Cable System (WACS); SAT-3/WASC; and ACE submarine cable system. The situation was very different in 2010 when only one international link was available, and Nigerian operators were therefore heavily dependent on VSAT systems and nTEL's notorious SAT3 (the de facto monopoly submarine cable system, which was generally expensive and unreliable) for international bandwidth. Multiple international links have significantly reduced constraints in terms of international bandwidth usage and prices and boosted network capacity. Unlike its West African peers, such as Ghana and Senegal, Nigeria does not have a national backbone network through which high-speed Internet connectivity can be extended across the entire country. Presently, all the operators contribute about 33,000 km of fibre and 24,000 towers, significantly fewer than in far smaller countries and economies.[169]

Internet data tariffs have significantly decreased due to Nigeria's connection to undersea international links and increased competition in the market. Since 2010, there has been a 2,705% increase in the wholesale submarine bandwidth capacity available to Nigerian telecommunications operators due to the launch of four new undersea cable systems with landing points in Lagos. This additional capacity can potentially change the landscape of Internet service provisioning and data connectivity in Nigeria through lowered wholesale international bandwidth prices and higher speeds. According to ITU, the mobile broadband prepaid handset-based price (500 MB) stood at 1.89% of Gross National Income (GNI) per capita. This situation, that is, a mobile broadband price below 2% of GNI, is currently present in only five countries in Africa: Mauritius, the Seychelles, Gabon, Cabo Verde, and South Africa.[170]

Therefore, while it is true that submarine cables have expanded the capacity of overall international bandwidth, inland locations within the country are yet to experience any significant lowering of broadband prices. Recent Research by ICT Africa (RIA) surveys show that data rates are still high while browsing speeds are slow and unreliable, especially for retail consumers. Despite the enormous growth and intensive competition among operators, there is still poor quality of service and network congestion. Lack of coverage and quality of services in terms of network quality and download speed often force subscribers to own multiple SIM cards. As a result, according to the report 'The State of ICT in Nigeria 2018', at least half of mobile subscribers own more than one SIM card.[171]

The telecom companies with the most extensive infrastructure and substantial network assets are, in descending order, MTN, Glo, IHS, Airtel, 9Mobile, Phase 3, and nTEL (formerly NITEL). In addition, there is a strong imbalance among the three leading telephony operators (MTN, Glo-Mobile, and Airtel) in the endowment of national connectivity infrastructure. MTN has a much stronger fibre-optic network than any other operators (in part due to their spectrum acquisition in the 2016 auction), and access to MTN's network is not sufficiently regulated to ensure open and non-discriminatory access. This lack of open access is a significant obstacle to stimulating competitive broadband development and the sustainability of the business model of the Internet service providers (ISP) that have recently entered the market.[172]

To address this, the NCC divided the country into seven regions and awarded seven new InfraCo licenses to different operators between 2014 and 2018 to support an open-access and non-discriminatory network. The seven InfraCo licenses include BCN for the North-West; Zinox Technologies for the South-East; Brinks Integrated Solutions for the North-East; MainOne for Lagos; Rae-anna Technologies Limited for South-South; and O'odua InfraCo Resource Limited. Due to initiatives like

[169] Ibid.
[170] Ibid.
[171] Ibid.
[172] Ibid.

this one, it is expected that the number of fixed voice lines will more than double, from 146,300 in 2017 to 341,700 by 2022, and led by increasing VoIP subscriptions and fixed broadband, lines will grow from 136,800 in 2017 to 377,500 by 2022 (reaching 0.19% of the population). Finally, fibre broadband accounted for 49.2% of total broadband lines in 2017 and will continue to lead the fixed broadband market to 2022.[173]

Fixed broadband, which has very high construction costs, is in short supply, even within towns (except in Lagos and Abuja), through DSL, cable networks, and FTTH/FTTB. Despite the current influx of fibre-optic operators into the country, which correlates with the potential of the country's communications market, last-mile infrastructure deployment to end-users remains minimal. Therefore, the Internet sector is increasingly dependent on wireless access technologies. Internet solutions and services are also provided by fixed wireless operators, which offer EVDO and HSPA products, and ISPs, which mainly utilise WiMAX and fibre-optic solutions. At the core of access, networks are 2G, covering 87% of the Nigerian population. In contrast, according to ITU, 3G/4G is presently only available to 30% of the population. The reliance on older access technologies is at the heart of poor mobile data reliability, pronounced throughout the country. [174]

Nigeria ranks 6th out of 49 countries on RIA's African Mobile Pricing (RAMP) Index, and 10th on the 1 GB prepaid mobile data index. Even though Nigeria compares well in the affordability and price rankings, these rankings need to be weighed against the accompanying broadband objectives of increased penetration and quality of service on which the country fares less favourably. Individual Internet penetration is relatively low in Nigeria, at around 30%. By comparison, South Africa has the highest individual Internet penetration in Sub-Saharan Africa at 53%, despite having considerably higher prices.[175]

Nigeria is still a long way from achieving widespread broadband use because of significant infrastructure challenges and market failures, particularly in rural areas. High costs of the right of way, damage to existing fibre infrastructure due to cable theft, road works, and other operations, and the lack of reliable grid electricity supply, coupled with low commercial returns, render services not commercially viable on their own. These costs induce a lack of interest from operators and ISPs in deploying infrastructure in rural areas. Network Operators have focused on the most profitable geographical areas, primarily major urban areas, capital cities, and intercity routes, to the disadvantage of the majority who live outside those areas.[176]

Digital Platform

Governments worldwide are implementing the GovTech agenda, focusing on digital platforms that increase the efficiency and effectiveness of core functions and services. Additionally, they reduce unnecessary duplication of IT systems and registries; combat fraud and corruption by increasing the security and traceability of transactions; improve civic engagement and accountability; and provide improved service delivery to citizens that increases user convenience, provides savings, and significantly improves efficiency.[177]

For businesses, commercial platforms are an efficient mechanism to exchange goods and services and tap into underutilised assets and new markets. Efficient public digital platforms can reduce their cost of doing business and facilitate trade and innovation.[178]

Implementing GovTech in public services such as the use of the Bank Verification Number (BVN), Treasury Single Account (TSA), and the Integrated Payroll and Personnel Information System (IPPIS)[179] in Nigeria is central in the fight against corruption and for improving the effectiveness of services to citizens. There is a strong correlation between

[173] Ibid.
[174] Ibid.
[175] Ibid.
[176] Ibid.
[177] Ibid.
[178] Ibid.
[179] n9.

automation and ease of online government services and the reduction of corruption.[180]

At the federal and state levels, several new initiatives have been taken to provide digital services. The Government of Nigeria has recently launched the Central Portal for Government Services (www.services.gov.ng), created to reflect ease of doing business initiatives of government ministries, agencies, and departments in line with the federal government executive order. The objectives of the Central Portal for Government Services include creating a single point of entry to government information and services, enhancing accountability to improve the delivery and quality of public services through technology-enabled civic engagement, and transforming public administration efficiency through technology. The Central Portal for Government Services currently offers the following categories of services: (i) Government to Citizen Services, (ii) Government to Foreigners Services, (iii) Government to Business Services, and (iv) Other e-Government Services. The GovTech plan in Nigeria can be broadly grouped into five categories:[181]

1. Government core operations: These applications are increasing as automation enters government offices. Some of the primary back-office operations being used are financial management systems: almost 70% of the states in Nigeria have introduced integrated financial management information systems. These systems are intended for budget preparation and expenditure management through digital payments. The states use Oracle (Edo and Bayelsa), SAP (Delta and Rivers), MS Dynamics (Kaduna), and many other systems. There is considerable variability at the state levels, which is now starting to be introduced at local government levels as well. These systems have enabled improved cash management and reporting. The Federal Government uses the Government FMIS (GFMIS). The Federal Government and 17 States operate the TSA system that has helped improve cash management and reduce the quantum of idle cash in bank accounts. The federal government was the first to introduce an integrated pay and personnel management system to eliminate ghost workers and improve efficiency. This system was initiated in 2007, but until 2018 only covered around one-third of federal employees.[182]
2. Government services: These include government services to individuals and businesses. The average time to register a business has been reduced by 25% at the federal level. The Corporate Affairs Commission transitioned its processes from manual systems to online. Many other states have followed suit. In 2007, the government passed the National Identity Management Commission (NIMC) Act and set up NIMC as the government agency responsible for identification in Nigeria. To date, NIMC has generated approximately 31.5 million National Identification Numbers (NINs). However, the identity (ID) landscape is fragmented over 13 federal government agencies, and at least three state agencies offer ID services in Nigeria. Many capture biometrics and issue ID cards independently without establishing links with other systems, resulting in duplication and waste of resources.[183]
3. Citizen's engagement: Over the last five years, there has been enormous interest in this area. Several states invest in this area since digital technology provides the vehicle for obtaining citizen feedback directly, without intermediation. The best example of this is the 'Eyes and Ears' Program in Kaduna State, an app that uses citizen feedback to track the implementation of

[180] *Ibid.*
[181] *Ibid.*
[182] *Ibid.*
[183] *Ibid.*

over 3,000 government programs.[184]

4. Public data platform: Nigeria is a leader on the continent in making high-quality satellite data available. The GRID project (Geo-Referenced Infrastructure and Demographic Data for Development) started in the northeast of Nigeria as part of the polio campaign funded by the Gates Foundation four years ago. The entire country has now been mapped. High-resolution satellite data have been cross verified with field data collection. Five hundred thousand points of interest have been identified, including 45,332 schools, 44,109 public water points, 18,539 health facilities, and so on. The federal government has made these data available in the public domain (grid-nigeria.org). Several state governments have started using the data (primarily through their State Bureaus of Statistics) for planning purposes.[185]
5. Other key issues: The Nigeria Open Data Policy presents an excellent opportunity to increase access and improve accountability. Although the policy is still in the process of being adopted, the draft already contains elements of Open Data principles, including data completeness, timeliness, data propriety, and licensing.[186]

    a) Privacy and data protection: Nigeria does not have a Privacy and Data Protection Act, limiting the growth of e-commerce and a data economy. However, a stopgap measure is the Data Protection Regulatory Guidelines by National Information Technology Development Agency (NITDA), which came into effect in 2019. However, a Data Protection Bill, modelled after the GDPR and Convention 108 principles, has been passed by parliament and is awaiting presidential assent to become law.[187]

    b) Cybersecurity: The security and integrity of digital data and systems are a significant challenge in Nigeria, where gaps in cybersecurity capacity create significant risks across sectors. Cybercrime threats, such as malware, impersonation, malicious codes, misuse of data, and hacking via readily available tools, are significant issues requiring protection. Nigeria has a Cybercrimes (Prohibition and Prevention) Act and Cybersecurity Act (2015). The Act provides a framework for preventing, detecting, and punishing cybercrimes and protecting critical national information infrastructure. However, the law fails to provide for cybersecurity, according to a legislative review conducted in 2018.[188]

    c) The fintech ecosystem has contributed immensely to the development of the Nigerian digital economy. A significant contribution has been in attracting investments. Investment funding for Nigerian start-ups, including fintech, was more than USD 100 million in 2016 and increased to USD 117 million in 2018.[189]

    d) e-Payment platforms: Nigeria's steady transition into the new realities of the digital economy is also reflected in the increasing adoption of e-payment channels. There has been sustained growth in transactions carried out across e-payment channels as more people are included in the financial systems and have access to mobile phones and the Internet. Additionally, the government's willingness to implement digital and cashless policies and guidelines, such as the 2012 cashless policy and the

[184] *Ibid.*
[185] *Ibid.*
[186] *Ibid.*
[187] *Ibid.*
[188] *Ibid.*
[189] *Ibid.*

National Payment Systems Vision 2020 (NPSV 2020), has been a catalyst for the growth in e-payment transactions. The data show that overall, e-payment channels (ATM, POS, Mobile, Web, NIP, and E-Bills) have continued recording a positive trend in the value and volume of transactions. In 2018, these channels recorded transactions worth NGN 92 trillion from 1.9 trillion transactions, a 40% increase from the previous year.[190]

e) e-Commerce: UNCTAD's B2C report for 2018 noted that Nigeria is Africa's biggest B2C market, both in terms of revenue and shoppers. In 2018, the e-commerce spending in Nigeria was estimated at USD 12 billion. It is projected to increase to USD 75 billion in revenues by 2025 by McKinsey. In overall rankings, Nigeria was ranked second in Africa, below Mauritius, by UNCTAD in 2018.[191]

However, a significant issue is emerging regarding the application of the Nigerian tax regime on digital platforms, as this issue has not been contemplated by Nigerian tax laws. Though these platforms are taxable, the Nigerian tax regime, which is driven by payer presence and residence, does not provide any guidance or clarity on how they should be taxed. This is mainly because most of these platforms have little physical presence to aid tax enforcement, coupled with the fact that some of them operate across continents and in several jurisdictions, making income tax assessment extremely difficult. The taxation of digital platforms, therefore, is still very much a grey area in Nigeria.[192]

Digital Financial Service

In Nigeria, traditional financial institutions – commercial, microfinance banks, and non-bank finance companies – have been slow to embrace digital financial products. On the one hand, each of the 10 largest commercial banks in Nigeria offers online banking and a smartphone app, with some smaller institutions following in their footsteps. These online banking services allow users to check their balances, download transaction history, pay bills, and make onus credit transfers. Sometimes they also include domestic interbank credit transfer functionality. In summary, these are basic features considered standard for digital banking throughout the 2000s. However, none of the apps offers budgeting tools, transaction analytics, or integration with social media profiles or messaging apps. Similarly, they do not build on possibilities offered by card tokenisation.[193]

The usage of digital payments is relatively low. Just about 30% of adult Nigerians have made or received a digital payment in the past year, according to the 2017 Global Findex data. More worryingly, Nigeria is the only large economy of Sub-Saharan Africa, where the proportion of the population making or receiving digital payments fell between 2014 and 2017. Nigeria also scores second-worst in adults using mobile phones or the Internet to access an account and the share of adults who have sent or received domestic remittances using a mobile phone. Available supply-side data confirm this low score: an average adult in Nigeria made 0.4 mobile payments per year – more than a hundred times fewer than in Ghana, Kenya, or Uganda.

Furthermore, the Nigerian financial sector has not successfully addressed the needs of the country's poor. The World Bank estimates that in 2018 about 50% of Nigerians lived in extreme poverty – on less than USD 1.90 a day – with only 25% of the poorest 40% of adults having an account with a bank or a mobile money provider. There must be broad adoption of Digital Financial Services (DFS) to improve its financial institutions. Indeed, the Nigerian economy stands to benefit from the growth in the supply and usage of DFS. DFS providers are better positioned to address the needs of the

[190] *Ibid.*
[191] *Ibid.*
[192] *Ibid.*
[193] *Ibid.*

poor. They also create the 'rails' enabling digital entrepreneurs from other sectors to market their products at scale. As a result of Nigerian financial institutions' regional and pan-African footprints, the country can export its digital finance ventures beyond its borders, diversifying the economy and fostering regional integration within the Economic Community of West African States (ECOWAS). An improved DFS can also mean stronger links with the Nigerian diaspora, boosting the inward remittance streams, encouraging investments, and facilitating the exchange of human capital.

DFS can create the perfect opportunity to upend that cost structure through leveraging economies of scale and dramatically reducing the marginal costs of providing services. In essence, serving the poor becomes more profitable, and financial institutions have incentives to cater to their needs.[194]

However, the importance of DFS for Nigeria also belies potential dangers associated with their use and abuse. For instance, the Financial Action Task Force has noted several studies of attempted use of formal financial services to finance terrorist activity in the Lake Chad Basin. Additionally, New Ponzi schemes are regularly uncovered in Nigeria: 'Mavrodi Mundial Moneybox' (MMM) in 2017 defrauded over 3 million Nigerians, who had joined the scheme because of economic recession, out of NGN 18 billion. Fraudulent schemes like MMM and subsequent fraud attempts, such as 'Loom' or 'Growing Circle', are highly dependent on new technologies. Growth in DFS not accompanied by higher awareness among consumers and higher capacity of financial intelligence units may ultimately lead to more losses and diminished trust in the financial system.[195]

Furthermore, the Nigerian law enforcement agencies have waged long-standing battles with online and financial fraud, and the country faces an ongoing struggle with terrorism and armed conflict in its northern states. In the absence of adequate regulation and oversight, both issues can be exacerbated by the advent of DFS and the ease of obtaining instant credit and making real-time domestic and international money transfers. Furthermore, the country scored 144th out of 180 economies in the 2018 Corruption Perception Index of Transparency International. The organisation's survey found that 43% of Nigerians reported paying a bribe to access public services at least once in the preceding 12 months.[196]

Being the largest country in Africa both interms of population and the economy makes Nigeria well-positioned to create a vibrant fintech sector. These established fintech companies can attract new talent and create new synergies across the ecosystem. However, they offer only e-commerce payments, digital saving, and lending. Few create new value by using innovative data and integrating financial services with other digital products (social media, ridesharing, 'sharing economy'). However, the space is fast evolving and more complex use cases are being gradually introduced.[197]

In other African markets, the unbanked would primarily be driven by mobile money providers or other non-banks, which has not been the case for Nigeria, where – according to the same research – only 1.7% of respondents had a registered mobile wallet. Out of the 10 largest economies of Sub-Saharan Africa, only Ethiopia scores worse on mobile money account ownership because e-money issuance or mobile money is effectively not permitted there. While elsewhere in Africa, mobile money drove gains in financial inclusion, Nigerian mobile money providers have so far reached only customers that are already banked (EFInA reports that 90% of mobile money customers already had an account with a commercial bank).[198]

Finally, Nigeria's prevalent use of 'cash on delivery' payments in African e-commerce as opposed to

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[194] *Ibid.*
[195] *Ibid.*
[196] *Ibid.*
[195] *Ibid.*
[198] *Ibid.*

online payments has negatively affected the bottom lines of online marketplaces. Thus, Nigeria must tailor its financial space to more adoption to have a more vibrant digital economy. DFS as technology has become the driving force of most economies, especially in the financial sector.[199]

Digital Entrepreneurship

Digital entrepreneurship provides increased economic opportunities for the large number of youths entering the labour force. According to the NCC, both mobile penetration (49% unique subscribers) and Internet penetration (32%) are increasing rapidly, which could propel the creation of technology-based start-ups and improve the productivity and competitiveness of existing firms.[200]

Despite its entrepreneurial potential, Nigeria remains a minor player in the global digital economy in terms of exports of digital goods and services. The ICT sector expanded in the last decade: its contribution to GDP doubled in 2010–2017 and accounted for 12.2% of the GDP in 2018. In 2018, the sector contributed 9.65% to GDP growth. However, in 2017, only 5% of Nigeria's exports were in the ICT sector. The profit margins in the digital industry are comparable to the average profit margins of other sectors in Nigeria but are significantly lower than global industry trends. The software sector's gross profit margins in 2018 were 74.36% on average, with a return on investment of 30.6%. The lower profit margins are based mainly on challenging business environments, lower productivity and skills, and higher input costs (e.g., equipment price, energy, and cost of capital).[201]

The use of digital technologies by traditional firms, however, remains limited. Although urban SMEs are increasingly using digital platforms for trading, the digitalisation of firms in traditional industries and rural locations is low. For example, a recent survey of smallholder farmers in Nigeria found that 77% of mobile phone users use basic phones without Internet capability, 88% have never used the Internet as a source of information, and 49% never use cell phones and SMS services for business purposes, a result of low digital usage, low levels of digital literacy, limited Internet access, and high costs. Larger firms are more actively using digital technology for primary business purposes, like communication with customers, but more advanced technology use remains limited. Fewer Nigerian firms (13.8%) spend on research and development (R&D) compared to firms from Ghana and Kenya, the Sub-Saharan African average (17.4%), and all countries (15.6%) that participated in the enterprise survey.[202]

Notwithstanding its current shortcomings, the dynamism of the Nigerian digital entrepreneurship ecosystem presents development opportunities. Digital entrepreneurs and investors are attracted by market opportunities in Nigeria, the vibrant entrepreneurial scene and talent, improvements in telecommunications, and government-led reforms. However, the growth of digital firms is plagued by a challenging business environment, a lack of early-stage financing, limited market opportunities outside of Lagos and Abuja, and a lack of digital skills.[203]

The cost and complexity of doing business in Nigeria is a significant impediment to the development of digital entrepreneurship. The latest Doing Business report ranks Nigeria 146 out of 190 economies, the worst performance among countries with similar endowments and levels of economic development. Digital entrepreneurs are mainly constrained by the infrastructure challenges (e.g., lack of electricity), the multi-layered and cumbersome tax system, and the complexity of the public procurement processes.[204]

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[199] *Ibid.*
[200] *Ibid.*
[201] *Ibid.*
[202] *Ibid.*
[203] *Ibid.*
[204] *Ibid.*

Policies for stimulating investment in the digital industry are outdated and ineffective. The lack of data on digital industries poses challenges for the formulation and implementation of targeted policies. Improvements in credit infrastructure, including a recent law on secured transactions, a new collateral registry, and active credit bureaus, have not translated into better financial access for digital entrepreneurs.[205]

Even in cases where there have been legislative reforms, there is a lag in utilisation, such as the case for credit reporting and secured transactions. The legislative framework does not match the needs of digital industries, but recent legal reforms demonstrate a government commitment to improve the situation. The absence of adequate regulations for cybercrime prevention, detection, and punishment is a deterrent for digital start-ups and investors. The recent Nigerian Data Protection Regulation, passed in January 2019, improves data compliance.[206]

In 2001, the Ministry of Communications established the NITDA to create a framework for IT practices, activities, and systems. NITDA created the Office for ICT Innovation and Entrepreneurship to improve the growth of tech start-ups and the environment for digital innovation. The Ministry of Industry, Trade, and Investment is also an important player. It oversees the development of SMEs, the promotion of exports and foreign direct investment, and the expansion of trade. The presidency created the Technology and Creativity Advisory Group (TCAG) under the Industrial Policy and Competitiveness Advisory Council to address the lack of inter-ministerial coordination and policy coherence. The TCAG brings together 28 digital entrepreneurs, 13 leaders in the creative industry (music and film), and 14 government agencies to promote public-private dialogue and facilitate the resolution of regulatory and systemic barriers to Nigeria's digital and entertainment sectors. However, for the moment, the TCAG has limited administrative capacity and resources to be effective.[207]

Nigeria has over 100 digital hubs (incubators, co-working spaces, and accelerators) across the country, and the numbers are on the rise. Nigeria has also attracted several multinational companies, including Google, Microsoft, and Facebook, which have set up their incubators/accelerator programs. Most existing digital hubs are operated by the private sector and provide valuable co-working spaces to start-ups. Still, they operate in isolation, have limited funding, and fail to establish market linkages.[208]

Access to finance remains one of the critical challenges for entrepreneurs, and it is even more acute for digital entrepreneurs. There is a lack of understanding of the digital sector among local financial institutions and private investors, adding to the general gap in financial products for local entrepreneurs. Given the intangible nature of digital entrepreneurship, most businesses do not qualify for lines of credit.[209]

Nigeria is Africa's largest market for digital products and services, but its growth is constrained. Despite its protracted economic recession, Nigeria remains Africa's largest ICT market with 82% of the continent's telecom subscribers and 29% of Internet usage. However, overall digital literacy rates remain low, especially among women and low-income and rural populations.[210]

Furthermore, the pan-African market is the most plausible internationalisation strategy for Nigerian digital entrepreneurs to attain a sizeable scale and diversified risk that would entice domestic and international investors. In Nigeria, workers and online outsourcing firms report that very little of

[205] *Ibid.*
[206] *Ibid.*
[207] *Ibid.*
[208] *Ibid.*
[209] *Ibid.*
[210] *Ibid.*

their work is driven by local or regional demand. In most cases, outsourcing firms, such as Andela and software development industries in Nigeria, are driven by clients in the developed world. With the right mix of strategies and supporting framework in place, Nigeria's digital entrepreneurship ecosystems can rapidly accelerate overall opportunities within the digital ecosystem.[211]

Digital Skills

Digital technologies can drive productivity, but its prospects are contingent on increasing numbers of digitally skilled workers than has previously been the case. Digital skills are a sine qua non for executing any digital work. With 46% of work activities in Nigeria susceptible to automation, digital skills will qualify workers for jobs in traditional sectors while empowering them to thrive in emerging sectors and even launch their own businesses. As the nature of work continues to change, digital skills cannot be overlooked by workers engaged in new forms of work, such as virtual freelancing, the gig economy and other online job marketplaces.

It must be stated that there are currently no detailed data on the state of digital literacy in Nigeria. Still, data on technology adoption, financial inclusion, and broadband penetration in rural areas suggest the level of digital literacy is relatively low. There is a need to support a programme for mass digital literacy.[212]

It cannot be predicted what jobs will emerge, disappear, or change in the future due to digital technologies. Therefore, Nigeria's education sector needs to be flexible to respond to new jobs in ICT professions, e-commerce, online service provision, and changes in traditional industrial and artisan jobs. Conversely, consumers will also need to acquire digital skills in order to execute transactions, communicate, or study. In relation to studying, technology-based teaching and learning, such as the Bridge Academy in Lagos and Edo, will bring increase the demand for personalised self-learning using online resources/mobile learning labs. All these changes will pose considerable demands on the existing skill development system in Nigeria. [213]

In conclusion, new work systems/structure will offer individuals and entrepreneurs novel prospects irrespective of the sector or occupation. An example of these new work systems/structures is online platform work, which has risen globally, including Sub-Saharan Africa. The region currently boasts 56 e-ridesharing services, most of which are homegrown apps launched over the last three years. In Africa, online talent platforms can create significant benefits by moving people from informal to formal jobs and increasing workforce participation and formerly underemployed or inactive hours. By 2025, this could result in 1.9 million jobs and USD 20 billion additional GDP in Nigeria.[214]

The massive adoption of ICT into Nigeria's body polity, notwithstanding its potentials and advantages to Nigeria's economy, has led to growth in cybercrime activities and insecurity driven by online disinformation, which emboldened Nigeria's adoption of more technology-related policies and regulation. This toughened some of her policies and position on technology start-ups and existing technology corporations.

Cybercrime activities are on a constant increase in Nigeria. The last two years have witnessed a regulatory ban or limitation on the use of online media (Twitter), crypto-currency trading (Bitcoin),[215] online securities trading (Bamboo, Trove),[216] and online asset management. These bans or limitations are due to legitimate concerns

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[211] *Ibid.*
[212] *Ibid.*
[213] *Ibid.*
[214] *Ibid.*
[215] Josephine Uba, 'Is Cryptocurrency Legal in Nigeria? – Actions Towards the Regulations of Cryptocurrency in Nigeria', Mondaq (27th Auf=gust 2021) https://www.mondaq.com/nigeria/fin-tech/1105924/is-cryptocurrency-legal-in-nigeria-actions-towards-the-regulations-of-cryptocurrency-in-nigeria last accessed 12 November 2021.
[216] Tage Kene-Okafor, 'Nigeria's SEC warns investment Platforms to stop trading Unregistered Foreign Securities;, Techcrunch (8 April, 2021) https://techcrunch.com/2021/04/08/nigerias-sec-warns-investment-platforms-to-stop-trading-unregistered-foreign-securities/ last accessed 12 November 2021.

and incidents such as the disruptions and huge financial losses to government institutions and official members of the government and increased attacks on government websites during the #ENDSARS protests carried out in October 2020 against the brutality meted out by the Police Special Anti-Robbery Squad. These incidents and more have led to increased regulatory oversight and a tough stance on ICT in Nigeria. However, the promulgation of these regulations is geared towards protecting the national interest, security, and traditional institutions, but in doing so, they have increased bureaucracy in the digital sector and slowed-down innovation in Nigeria – especially for technology start-ups and corporations.

A good example was in June 2020, when the National Broadcasting Commission (NBC) adopted the sixth edition of its broadcasting code with provisions to bring an end to exclusive content for broadcasting platforms like pay-tv and video-on-demand platforms,[217] which drew the ire of several technology entrepreneurs, especially Jason Njoku, Founder of irokotv and Rok Studios. Towards the end of 2020, IROKO shut down its African operations. [218]

Nigeria's woes in the digital economy are attributed mainly to the governments' desire to regulate and control the sector, poor literacy skills, and lag in essential regulations such as the Cybercrimes Act 2015 (which does not provide for cybersecurity) and laws on cybersecurity, the Data Protection Bill, and the Digital rights and Freedom Bill, which will help checkmate government's control over its citizens and some of these social media platforms and start-ups.

Enablers and Key Players of the Digital Economy in Nigeria

The primary enabler of digital economy in Nigeria is the societal willingness to adopt digital technologies in daily transactions. For the digital economy in Nigeria to take root, there must be coordination among the various stakeholders. The key players of the country's digital economy are, but not limited to, the following:

i. The government through the Federal Ministry of Communication and Digital Economy: The Government of Nigeria plays a key role in enabling the digital economy through enforcing data and consumer protection policies. Furthermore, it is strongly believed that a digital economy will accelerate the attainment of the government's key objectives of improving security, reducing corruption, and expanding the economy. To this end, the president directed the Honourable Minister of Communications and Digital Economy to work with all relevant government agencies to ensure that the country rapidly expands its digital economy to take advantage of the immense opportunities on the continent and across the globe. This clear directive is reflected in various areas of public service, some of which are the digitisation of key activities such as the use of the BVN, TSA, and the IPPIS (President Buhari's speech at the conference on National Digital Economy Policy and Strategy 2020–2030).
ii. Financial Institutions: Before the Nigerian financial sector underwent a significant transformation, banks were seen as exclusive spaces for a selected portion of the population – places where high earning individuals were the only ones entitled to world-class banking products and services. This misconception left a large part of the population unable to benefit from essential financial services. Digital technology has proven to be a highly effective tool in changing this narrative, driving a change in operating and business models, improving platforms for innovation, and creating

[217] Emmanuel Paul, '9 changing Policies that rocked Nigeria's tech community 2020', Techpoint (January 5th, 2021) https://techpoint.africa/2021/01/05/9-policies-nigerias-tech-2020/ last accessed 12 November 2021.
[218] *Ibid.*

immense opportunities for monetisation. This access to financial services has been a significant boost to the country's economy.

iii. The NCC: The NCC, as the regulatory body of a very dynamic industry, is aware of the ever-changing trends in technology. The entry of mobile communications technology has transformed banking, insurance, e-commerce, trading, aviation, pension, entertainment, education, e-health, e-agriculture, and so on,. As service providers opt for new business models, the regulatory agency is at its best at monitoring these changes to keep them within the bounds of the law and the benefit of the economy.

iv. Civil Society: Civil society engages with the government, private sector, and businesses for collaboration on policy issues that demand innovative problem-solving.

The Link between Nigeria's Digital Economy and the AfCFTA

The Federal Executive Council ratified Nigeria's membership in the African Continental Free Trade Area on 11 November 2020, which occurred more than a year after Nigeria signed the AfCFTA in July 2019.

Three months after signing the agreement, it became imperative for Nigeria to strengthen its digital landscape. On 17 October 2019, the president approved the re-designation of the Ministry of Communications as the Ministry of Communications and Digital Economy. The change of name expanded the mandate of the Ministry to include a vital aspect of the priority areas set for the Ministry by the Federal government, which is the 'Development and Implementation of the Digital Economy Policy and Strategy'. [219]

The digitalisation of the economy requires new ways of thinking about competition, intellectual property, taxation, industrial policy, privacy, cybersecurity, the labour market, immigration, skills, and trade. The Internet powers the wheels of international trade.[220] From the minor informal trade to a significant supply agreement, contracts are transacted online via email, e-commerce store, or digital platforms. Therefore, it is said that digital trade is the next big thing.[221] Any formal trade relies on the Internet for implementation – financing, documentation, and logistics are all digitally-driven and becoming increasingly so. Whether it is an emailed order, an online purchase, or merely the financial arrangements behind the transaction, the Internet will inevitably be used in conducting international trade, which explains why Nigeria is poised to leverage the recent launch of AfCFTA for its Agricultural and Halal food products with its public-private partnership with OneAgrix, a global Agriculture and Halal marketplace. [222]

In tandem with the signing of the AfCFTA, Dr Noel Akpata has launched a 'Nigeria Feeds the World Initiative' that will economically empower the country's smallholder farmers and SMEs, allowing those in the agro-food sector to access markets within the continent and beyond, especially markets that cater to halal consumers. All these are made possible through the OneAgrix marketplace platform, the country's official technology and platform partner under this initiative. OneAgrix and Nigeria Feeds the World Initiative will bridge the connection between suppliers and international buyers digitally.

Opportunities Presented by AfCFTA

For Nigeria, the potential gains from the AfCFTA are significant. The AfCFTA would: [223]

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[219] n9.
[220] 'Trade in the Digital Economy, a Tralac Guide', www.tralac.org last accessed on 16th May, 2021
[221] Kingsley Ighobor, 'Secretary General of AfCFTA, Wamkele Mene, in an interview with Africa Renewal's Kingsley Ighobor', (14th July 2020, African Renewal's) https://www.un.org/africarenewal/magazine/may-2020/coronavirus/implementing-africa%E2%80%99s-free-trade-pact-best-stimulus-post-covid-19-economies last accessed on 16th May, 2020.
[222] Press release dated 30th January, 2021 last accessed on 16th May, 2021.
[223] Aderonke Alex-Adedipe and Olawale Atanda, 'AfCFTA and trade benefits in Nigeria', (20th November, 2020 Mondaq) https://www.mondaq.com/nigeria/international-trade-investment/1007942/afcfta-and-trade-benefits-to-nigeria last accessed 18 May 2021.

- Expand market access for Nigerian exporters of goods and services, spur growth and boost job creation;
- Eliminate barriers against Nigeria's products;
- Provide a dispute settlement mechanism for stopping the hostile and discriminatory treatments directed against Nigerian natural and corporate businesspersons in other African countries;
- Establish rules-based trade governance in intra-African trade to invoke trade remedies, safeguarding the Nigerian economy from dumping an unfair trade practice;
- Support the industrial policy of Nigeria through the negotiated and agreed exclusion and sensitive category list to provide space for Nigeria's infant industries;
- Improve competitiveness and the ease of doing business;
- Provide a platform for Nigeria's continued leadership role in Africa;
- Consolidate and expand Nigeria's position as the number one economy in Africa;
- Provide a platform for SMEs' integration into the regional economy and accelerate women's empowerment;
- Provide an expanded platform for Nigerian manufacturers and service providers for connection to regional and continental value chains.

Concerns Presented by the AfCFTA

The provisions of the AfCFTA will potentially affect current company rules regarding minimum capital, directorship, and shareholding in many African countries. It will also affect capital control exchange regulation and local content rules.

Therea need to harmonise existing rules, such as the rules of origin that differ between various Regional Economic Communities (RECs) on the continent, ranging from 60 per cent of local content of total raw materials used for wholly produced goods originating from the Economic Community of West African States (ECOWAS) region to 40% material content rule in the Common Market for Easter and Southern Africa (COMESA) to a more complex product-specific low import and high value-added requirements in the Southern Africa Development Cooperation (SADC).[124] Similarly, plastics are not allowed in some African countries, so this must be considered in the packaging of goods destined for export to other countries.

Some stakeholders have raised concerns about the risk of trans-shipment and dumping of goods, which may hurt domestic businesses, especially infant industries. However, the AfCFTA already has provisions to address these concerns, as real the issues are not with the AfCFTA but its potential implementation. The best way to solve the problems is to work with other countries in shaping the Free Trade Area to ensure a win-win outcome for all parties. Member states should take the following actions:

i. Review and harmonise trade policies
ii. Identify areas of competitive advantage
iii. Build institutional capacity
iv. Address non-tariff barriers
v. Develop safeguards
vi. Engage key stakeholders and build consensus.

Policy experts have claimed that the AfCFTA has the potential to eradicate poverty in Nigeria and increase manufacturing output. However, for this to be attained, Nigeria must change and follow some targeted industrial policy and structural reforms to get the best out of this Agreement. Some of these policies include the following: upgrade the customs infrastructure; address the high domestic cost of doing business; reduce red-tape, port processes, and transportation costs;[125] promote digital

[224] Taiwo Oyedele, 'African Continental Free Trade Agreement: The Real Issues for Nigeria', www.pwcnigeria.typepad.com last accessed on 17th May, 2021.
[225] Yewande Olapade and Chukwuka Onyekwena, 'Quantifying the Impact on Nigeria of the African Continental Free Trade', https://www.brookings.edu/blog/africa-in-focus/2021/09/22/quantifying-the-impact-on-nigeria-of-the-african-continental-free-trade-area/ accessed 13 November 2021.

marketing and e-commerce by adopting required and flexible rules;[226] create targeted awareness about the AfCFTA policy as a survey of Nigerian businesses conducted by the Centre for the Study of the Economies of Africa shows that over 60 percent of Nigeria's businesses are still unaware of the recently signed AfCFTA;[227] provide a dispute settlement mechanism for stopping the hostile and discriminatory treatment directed against Nigerian natural and corporate businesspersons in other African countries; establish rules-based trade governance in intra-African trade to invoke trade remedies;negotiate agreements that will support Nigeria's Industrial Policy through Exclusion and Sensitive category lists to provide space for Nigeria's infant industries;[228] provide laws that protect small businesses against intellectual property rights, intellectual property theft, strong monopolies, and labour rights;[229] encourage most African countries to adopt similar regulations to increase unity and nurture a single trade market, which is the very essence of the AfCFTA; and adopt a data protection regulation, which will provide for provisions and rules governing transfer of data or negotiate agreements with different countries over the sharing and transfer of personal data.

Conclusion

The last decade has seen the advent and growth of two strongly linked phenomena, leading to essential changes in the global economy. The first is the development of the digital economy, based on the digitalisation of previously existing goods and the development of new purely digital goods. This technology has not only permitted the creation of many new goods or services, but also dramatically changed the way an entire category of goods in the economy are created, produced, distributed, exchanged, and consumed. Digital technology has caused a drastic decrease in reproduction costs and distribution costs (and even, sometimes, in initial production costs), thereby leading to critical structural changes in the economy and potentially a global rise of social welfare, due to the increase in quantity, quality, and variety of goods and services available in the economy. While initially restricted to a few types of goods (software, primarily), the scope of use of digital technology has progressively increased to encompass many kinds of goods: music, films, photos, books, and so on.[230]

The impact can be understood as a disruption of existing economic processes, systems, and sectors, re-shaping existing consumer behaviour, business interactions, and business models.[231] Within individual sectors, we see this readily reflected in the dominance of new firms: Uber (the world's largest taxi company), Facebook (the world's most popular media company), Alibaba (the world's biggest and most valuable retailer) and Airbnb (the world's largest 'hotelier'). Additionally, new business models have come to dominate the discourse even if not the economic realities: the notion of 'Industry 4.0'.[232]

In Portulan's deep-dive analytical article on Africa's digital economies, Nigeria is a member of what digital innovation thought leader, Eric Osiakwan, calls 'Africa's KINGS' – a group of African economies (Kenya, Ivory Coast, Nigeria, Ghana, and South

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[226] The Process and Benefits to Nigeria of the African Continental Free Trade Agreement, https://www.proshareng.com/news/Trade%20Investment/The-Process-And-Benefits-To-Nigeria-Of-The-Africa-Free-Trade-Area--AfCFTA-/38946 last accessed 13 November 2021.
[227] Yewande Olapade and Chukwuka Onyekwena, 'Quantifying the Impact on Nigeria of the African Continental Free Trade', https://www.brookings.edu/blog/africa-in-focus/2021/09/22/quantifying-the-impact-on-nigeria-of-the-african-continental-free-trade-area/ accessed 13 November 2021.
[228] Fact sheets on African Continental free Trade Area Benefits for Africa and Nigeria, https://www.tralac.org/documents/resources/african-union/2026-fact-sheet-on-the-afcfta-benefits-for-africa-and-nigeria-notn-june-2018-1/file.html last accessed 13 November 2021.
[229] The Process and Benefits to Nigeria of the African Continental Free Trade Agreement, https://www.proshareng.com/news/Trade%20Investment/The-Process-And-Benefits-To-Nigeria-Of-The-Africa-Free-Trade-Area--AfCFTA-/38946 last accessed 13 November 2021.
[230] Thierry Rayna, Understanding the Challenges of the Digital Economy; the nature of digital goods. https://poseidon01.ssrn.com/delivery.php? ID=614013119120123084020085097109122092105043009037074058009067020100110088092096027030019063049055116046060086024068018075113087061033035058053060061181131191141220880110430931230810060911020311170730761000910840810770960740790040900790981210251040 21&EXT =pdf&INDEX= TRUE last accessed 18 May 2021.
[231] Dahlman, C., Mealy, S., and Wermelinger, M., 2016. Harnessing the Digital Economy for Developing Countries, OECD, Paris. http://www.oecd-ilibrary.org/docserver/download/4adffb24-en.pd last accessed 18 May 2021.
[232] *Ibid.*

Africa) driving an 'unstoppable wave of technological innovation' for the continent. Particularly in the field of digital entrepreneurship. Nigeria demonstrates optimistic levels of digital or network readiness.[233]

As discussed in the body of this work, all these indicators describe the potential that can be harnessed to develop the Nigerian economy and its citizenry. However, several things must be put in place before this latent potential can drive the economy.[234] To drive the digital economy, it is important to develop and provide the regulatory and infrastructural groundwork and incentives to enhance trust and governance further[235] and to have a large pool of digitally literate and digitally skilled citizens.

[233] n38.
[234] n9.
[235] n38.

Chapter 3: **Rwanda**

Advancements in ICTs has resulted in an unprecedented level of global interconnectedness. Technology has become indispensable and ubiquitous in the current day and age. Digital technologies have become the foundations of the global economy.

Africa has been slow in economic digitisation, but it is now emerging as a place of innovation in the digitisation of economic activities. Rwanda has been one of the African pioneers in digital economies. It has given prominence to its digital economy through policy for over two decades. The recently established African Continental Free Trade Area presents opportunities for Rwanda to bolster its economy through deepening its digitisation agenda. In that effort, it is vital to understand Rwanda's policies thus far to situate Rwanda within the larger AfCFTA framework.

Defining a Digital Economy in the Rwandan Context

Rwanda aims to become a middle-income, knowledge-based economy by 2030 and an upper-middle-income country by 2035. The government has prioritised investment in ICTs and digital economy development, which has emerged as a central facet of this strategy.[236] Quite notably, Rwanda's National Strategy of Transformation (NST1) identifies ICT as an enabler for development.[237] Greater digital adoption and ICT-driven innovation are seen as instrumental in supporting productivity gains across primary and non-primary sectors and creating off-farm jobs.[238] The development of digital tools and platforms is also expected to spur growth in the service sectors, which have been increasingly driving the expansion of access to new markets through e-commerce and offering a range of benefits to users, including means to enhance household income generation and access to digitally-enabled services.[239]

Major Components of the Digital Economy in Rwanda

In its *Digital Economy Report of 2019*, the UNCTAD discussed digital economies' implications on value creation for developing countries. The UNCTAD report categorises the different technologies and economic aspects of the digital economy into three broad components:

i. Core aspects or foundational aspects of the digital economy – comprising fundamental innovations (semiconductors, processors), core technologies (computers, telecommunication devices), and enabling infrastructures (Internet and telecoms networks).[240]
ii. Digital and IT sectors – producing key products or services that rely on core digital technologies, such as digital platforms, mobile applications, and payment services. Innovative services in these sectors significantly affect the digital economy, as they make an increasing contribution to economies and create a possible spillover effect to other sectors.[241]
iii. A broader set of digitalising sectors

[236] The World Bank, *Rwanda Digital Acceleration Project, 2020, 3.*
[237] Government of Rwanda, *7 Years Government Programme: National Strategy for Transformation (NST1)* 2017–2024.
[238] The World Bank, Rwanda Digital Acceleration Project, 2020, 3.
[239] *Ibid.*
[240] United Nations Conference on Trade and Development, *Digital Economy Report 2019 – Value Creation and Capture: Implications for Developing Countries, 2019, 4.*
[241] *Ibid.*

involves increasingly using digital products and services (e.g., e-commerce). The digitisation of these sectors comes at a slow and steady pace. It includes digitally-enabled sectors that have emerged and transformed new activities or business models due to digital technologies.[242]

Digital Economy Landscape in Rwanda

While there is insufficient data available to quantify the digital economy's contribution to Rwanda's overall GDP, it is evident that ICT plays an immense role within Rwanda's economy. The government has adopted an ambitious digital agenda articulated by a suite of five-year strategies, culminating in the SMART Rwanda Master Plan.[243] The Plan constitutes the fourth generation of National Information and Communications Infrastructure (NICI) Plans, each of which had a specific focus:

- NICI I focused on creating the foundational legal and regulatory framework to liberalise the telecommunication sector and attract private-sector investments.
- NICI II focused on accelerating infrastructure rollout to connect the people through increased coverage of telecommunication networks, licensing more operators, and implementing the National Fibre-Optic Backbone.
- NICI III focused on services and extending the benefits of increased connectivity to people through the transformation of services by the government to citizens and businesses.[244]

The Master Plan builds on the NICI Plans to further strengthen Rwanda's economic base and improve its economic environment for accelerated growth towards achieving an information- and knowledge-based economy. The key deliverables of the Master Plan are:

- 24-hour Self-Service Government – all government services are to be online by 2018.
- Cashless and Paperless Government – all government financial transactions to be made electronically and via mobile by 2018.
- Over USD 50 million saved through efficiency gains – savings through outsourcing and reduction of future wage bill by preceding recruitment of additional government of Rwanda ICT staff.
- Almost USD 1 billion value of opportunities for the private sector – this is the approximate value of projects to be implemented by SRMP and most through the PPP model.
- Smart Rwanda to contribute 10% to GDP – broadband access and other ICT infrastructure projects to offer a platform for economic growth.
- Close to 100,000 jobs to be created directly by investment based on the Smart Rwanda Master Plan – foster an enabling environment for private investments to drive job creation, productivity and competitiveness supported by technology and innovation.[246]

This Master Plan supports the progressive rollout of digital infrastructure and public e-service to increase digital skills to position Rwanda as a regional ICT hub, underpinned by strong government institutions and leadership.[247] Mobile phone usage drives the achievement of this goal. By 2018, Rwanda had 9.7 million mobile phone subscribers – 82 for every 100 people.[248] The use of mobile phones has facilitated the digitalisation of

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[242] *Ibid*.
[243] Government of Rwanda, SMART Rwanda Master Plan 2015 – 2020.
[244] I*bid,* 6.
[245] *Ibid,* 17.
[246] *Ibid,* 15.
[247] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, iv.
[248] *Ibid*, 4.

other services, among them, financial, agriculture (e-Soko),[249] health (Mobile e-Health),[250] and administrative services (Irembo).[251]

The country's policies and investments in ICTs reflect a commitment to its digital growth plan. These encompass significant investments in the nation's fibre backbone, the rollout of e-government infrastructure and services, as well as new digital skills schemes.[252] Rwanda's digital commitment is also evidenced in the many high-level strategies produced and leadership demonstrated at a pan-African level. For example, Kigali is home to the Smart Africa Secretariat, which hosts the annual Transform Africa Summit. This initiative seeks to accelerate Africa's development by increasing access to broadband and usage of ICTs and creating a single digital market across the continent to enable the free flow of digital communications, services, and e-commerce.[253] As a result of the country's steps towards becoming more digital, Rwanda's ICT sector has been multiplying over the last five years, witnessing a 12.7 per cent value-added increase in 2014–2018.[254] Presently, the ICT sector represents about 1.4 per cent of Rwanda's GDP.[255] The World Economic Forum's Networked Readiness Index has rated Rwanda first among East African nations in its readiness to exploit the opportunities offered by ICT to boost growth and competitiveness.[256]

Rationale for a Digital Economy in Rwanda

Increasing digitisation in Rwanda has led to the expansion of the digital economy. Two sectors exemplify this growth: the health and education sectors.

Health Sector

In 2016, in conjunction with the Rwandan Government Ministries of Health, Youth, and ICT, a British telemedicine firm launched a mobile-based healthcare scheme at a trade exhibition in Kigali. The program is focused on easy and quick access to live medical doctors and medical professionals via a mobile device.[257] The program caters to both smartphone and feature phone users,[258] with apps for the former and an Unstructured Supplementary Service Data (USSD) code for the latter for consultation. This innovation is making up for the shortage of doctors and health personnel in the country by expanding the reach of the few medical services personnel to a wider population. It is cost-effective as citizens pay less for consultation, and they can pinpoint symptoms and connect with doctors for medical advice.[259] In 2016, the Rwandan government partnered with a Silicon Valley-based tech company to deliver blood and vaccines to hospitals and clinics via drones. Before this, most hospitals outside Kigali would have to travel several times a week to procure blood from the primary source in Kigali.[260] This is yet another result of the digital economy, improving healthcare in Rwanda in the long term, especially in rural areas.

Education Sector

In 2017, the Rwandan government rolled out a new system of teaching in collaboration with Microsoft. In general, the project's goal is to help students access computers and essential software, digitise subject content delivered in schools, and help students access the Internet in their schools. The long-term goal of this project is to implement smart classrooms in every school in the country.

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[249] See http://www.esoko.gov.rw/esoko/Dashboard/Login.aspx?DashboardId=4&dash=true&Login=true on 1 May 2021.
[250] See https://www.ncbi.nlm.nih.gov/books/NBK310723/ on 1 May 2021.
[251] See https://irembo.gov.rw/home/citizen/all_services on 1 May 2021.
[252] ICT and Governance, 'Rwanda pushes to close digital skills gap' ITWeb, 11 August 2016 - https://itweb.africa/content/LPwQ57l6b2rqNgkj on 30 April 2021.
[253] See https://smartafrica.org/ on 30 April 2021.
[254] National Institute of Statistics of Rwanda. 2019. 'Gross Domestic Product – 2018'. http://statistics.gov.rw/publication/gdp-national-accounts-2018 on 30 April 2021.
[255] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 4.
[256] World Economic Forum, Networked Readiness Index, 2016. See also World Bank Group, Rwanda Economic
[257] Friedrich Ebert Stiftung, What is Digitization? Opportunities and Challenges in East-Africa, 13.
[258] application functionality. See https://www.techopedia.com/definition/26221/feature-phone on 30 April 2021.
[259] Friedrich Ebert Stiftung, What is Digitization? Opportunities and Challenges in East-Africa, 13.
[260] Dr Hempel Digital Health Network, 'Is Rwanda the testing market for latest digital health technology? | Digital health sector in Rwanda' Dr Hempel Digital Health Network, 24 January 2019 - https://www.dr-hempel-network.com/health-policies-in-india/digital-health-sector-in-rwanda/ on 30 April 2021.

Part of the Plan in the partnership is to ensure that by the year 2020, all schools in the country will have two smart classrooms, and all subjects will have been digitised.[261] Another important example is the 'One Laptop per Child' (OLPC) project in Rwanda, which is an international project and is in place in several countries but has been uniquely successful in Rwanda because of the high level of collaboration with the Rwandan government. In 2014, the country had distributed 204,000 laptops to 407 schools – making it the third largest deployment in the world after Peru and Uruguay – under the OLPC project.[262] The country's most prominent universities and educational institutions support the project team. Despite some technical challenges faced in implementing the project,[263] it is an important step forward for the country as the education system evolves into one that equips its students with necessary digital skills.

Main Pillars of the Digital Economy in Rwanda

The key pillars of Rwanda's digital economy have been identified and illustrated in the figure below:

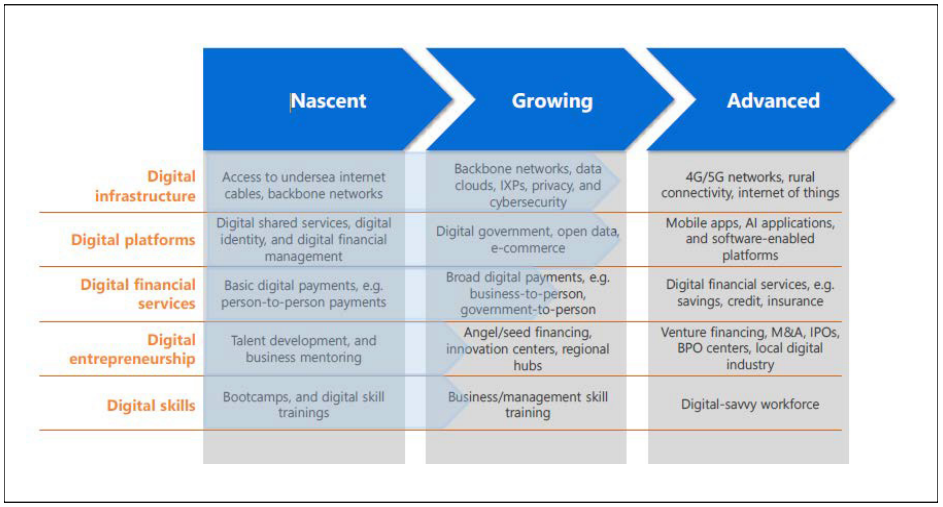

Figure 1 Status of Digital Economy in Rwanda[264]

Digital Infrastructure

Rwanda's access to international bandwidth has increased tenfold in the last five years, thanks to new cross-border terrestrial links that allow Rwanda to access undersea cables landing in Kenya and Tanzania.[265] Meanwhile, the rollout and extension of a national fibre-optic backbone network have helped spread connectivity across Rwanda, bringing new population segments closer to getting high-speed Internet.[266] Rwanda's mobile network coverage provides last-mile access to broadband for a majority of existing users. 3G network coverage is now at 93.5 per cent, compared with a regional average of 76 per cent. Rwanda has also achieved remarkable 4G network coverage thanks to a public-private partnership (PPP) between the Rwandan government and Korean Telecom to facilitate the introduction of a 4G wholesale network, which resulted in the creation of Korean Telecom Rwanda Networks (KTRN). Rwanda now has 96.6 per cent

[261] Kwambuka E, 'Government to roll out digital education in June' The New Times, 17 April 2017- https://www.newtimes.co.rw/section/read/210813 on 1 May 2021.
[262] Friedrich Ebert Stiftung, What is Digitization? Opportunities and Challenges in East-Africa, 13.
[263] Bizimungu J, 'Meet the Rwandan innovation for One-Laptop-Per-Child' The New Times, 5 June 2018 - https://www.newtimes.co.rw/business/meet-rwandan-innovation-one-laptop-child on 2 May 2021.
[264] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 4.
[265] *Ibid*, 20.
[266] *Ibid,* 20.

4G coverage, which is an impressive degree of coverage for Rwanda's socioeconomic status.[267]

Despite remarkable digital infrastructure expansion, considerable gaps remain in the uptake of high-speed Internet services in Rwanda. Internet penetration is at 58.3 per cent,[268] but the numbers of actual Internet usage are much lower based on the number of active subscribers reported by mobile network operators (MNOs).[269] The low Internet usage is due to a mix of barriers linked to digital literacy, affordability, service quality, and perceived relevance and value – these appear to be hampering the uptake of broadband and access to other digital services that require users to be connected first. The affordability of devices and broadband also constitutes a barrier. The cost of handsets prevents some 37 per cent of households from owning a phone, which reduces the use of mobile phones to access mobile and broadband services.

Further, cheap smartphones with outdated technology incompatible with 4G restrict access to basic 2G or slower 3G Internet services for some 74.3 per cent of current Rwandan mobile subscribers.[270] The government is committed to addressing the issue, through ongoing discussions with mobile operators and manufacturers and the launch of new schemes.[271] Attempts to improve local manufacturing, such as the Mara Group's recent launch of local smartphone production and assembly, have failed to lower the cost of smartphones for those at the bottom of the pyramid.[272] The affordability of broadband services is also a critical factor that adversely affects Internet consumption. Although Rwanda has some of the lowest absolute prices, broadband services are still prohibitively expensive compared to average incomes and fall short of the global affordability mark.[273] The average monthly cost of 1 GB of data was USD 0.56 in 2018, equivalent to 5.1 per cent of the median monthly income and more than double the Alliance for Affordable Internet (A4AI) target of 2 per cent.

Despite the government's sizeable investment in 4G, the network remains underutilised. The two main MNOs have prioritised upgrading and promoting their 3G networks and services over the advancement of 4G services utilising the KTRN wholesale network. The MNOs are prevented from further upgrading their networks to offer 4G services due to the KTRN 4G license exclusivity. 4G service offerings and active promotions therefore mostly come from smaller ISPs utilising the KTRN network. Despite the rapid growth of these ISPs, they still cover only a small consumer base. These factors, combined with the limited affordability of 4G capable devices, have resulted in lower-than-expected 4G penetration.[274] As part of its broader efforts to ensure a favourable environment for broadband market growth, the government is aggressively trying to fix these bottlenecks.

Digital Platforms

Rwanda has put in place many of the key building blocks needed to support government digitisation. These have allowed it to quickly scale its e-service offering from a very low base. An example of this is that the e-services offered by the government increased from 5 in 2015 to 89 in 2018.[275] Rwanda has made significant strides in digitising public records, extending the use of management information systems, and deploying shared cloud-based technology, allowing for greater data exchange between government agencies. The development of Rwanda's e-government ecosystem has also benefited from a robust and centralised

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[267] *Ibid*, 20.
[268] Rwanda Utilities Regulatory Authority, *ICT Statistics Report (as of September 2019)* - https://rura.rw/index.php?id=60 on 1 May 2021.
[269] World Bank Group, *Rwanda Economic Update: Accelerating Digital Transformation in Rwanda*, 2020, 21.
[270] Rwanda Utilities Regulatory Authority, *ICT Statistics Report (as of September 2019)* - https://rura.rw/index.php?id=60 on 1 May 2021.
[271] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 21.
[272] World Economic Forum, *Rwanda launches first made in Africa smartphones*, 2019 - https://www.weforum.org/agenda/2019/10/rwanda-launches-first-made-in-africa-smartphones/ on 31 April 2021.
[273] Alliance for Affordable Internet (AFAI), 'UN Broadband Commission Adopts A4AI '1 for 2' Affordability Target.' 'Alliance for Affordable AI, 23 January 2018 - https://a4ai.org/un-broadband-commission-adopts-a4ai-1-for-2-affordability-target/ on 31 April 2021.
[274] Rwanda Utilities Regulatory Authority, ICT Statistics Report (as of September 2019) - https://rura.rw/index.php?id=60 on 1 May 2021.
[275] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 25.

institutional framework, the application of an innovative PPP with Online Rwanda Ltd to roll out new digital services, and the development of critical enabling platforms such as identification (ID). Rwanda has developed one of the strongest foundational ID systems in Africa, providing near-universal (98 per cent) ID coverage.[276] Today, the government's Irembo portal gives people and businesses access to an increasing number of public e-services from the government, including online visa/residency permit applications, online land management and ownership administration, and civil registration.[277] Nonetheless, public e-service usage remains low. Most current customers opt to use Irembo's services through agents and pay in cash for services rather than using the platform's digital interface and payment options,[278] which can be attributed to weak mobile phone ownership, limited Internet usage, and gaps in digital skills.[279]

The local e-commerce ecosystem is growing from a small base to a competitive level, with the country ranking 19th in Africa in the 2018 UNCTAD *Business-to-Consumer E-commerce Index*.[280] Rwanda's low ranking is primarily due to limited Internet usage, server access, and postage reliability. Utilising e-commerce as a more significant driver of growth will require tackling several interrelated challenges. For example, MSMEs, which dominate the local commercial landscape, have generally been slow to adopt online business practices. Many companies and customers are still wary of doing business online. Users are held back by economic and knowledge barriers, including how to market goods and services online.[281] Goods-focused e-commerce companies in Rwanda also face growth challenges due to the cost and reliability of last-mile postage, transportation and logistics services; the absence of a national addressing system; the speed and costs of customs; a culture of face-to-face transactions; and low transaction volumes.[282]

Digital Financial Services

The use of DFS has increased rapidly in recent years, owing to the adoption of MNO wallets. However, much of its potential remains untapped. The overall uptake of DFS remains relatively low when compared to neighbouring Kenya and Uganda.[283] According to the World Bank's Findex survey, only 31 per cent of adults owned a mobile money account in 2017.[284] MNO wallets are currently offered by the two leading operators, MTN and Airtel (who acquired the third largest MNO, Tigo)[285] but are mainly restricted to basic transactions.[286] MTN leads the way in spearheading further innovation, partnering with the Commercial Bank of Africa to offer mobile savings and short-term loan services – yet, uptake of related services has been limited. Low customer awareness and merchant acceptance remain the two major obstacles to greater adoption. Banks are only just starting to enter the digital payments sector and have been slower to embrace digital channels and support innovation. However, several banks have begun to offer mobile and online banking services and update their core systems to create more innovative products and services through open Application Program Interfaces (APIs).[287] While utilisation of related services continues to grow, it is yet to gain scale. For example, in late 2016, 1 million account holders reportedly used mobile banking services, performing just 4 million

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[276] *Ibid,* 25.
[277] *Ibid,* 25.
[278] *Ibid,* 25.
[279] *Ibid,* 25.
[280] United Nations Conference on Trade and Development, UNCTAD B2C E-COMMERCE INDEX 2019: UNCTAD Technical Notes on ICT for Development, 2019.
[281] Nsabimana E, 'What is holding back the uptake of e-Commerce in Rwanda' The New Times, 28 December 2018 - https://www.newtimes.co.rw/news/what-holding-back-uptake-e-commerce-rwanda on 1 May 2021.
[282] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 26.
[283] World Bank Group, Findex, 2017.
[284] *Ibid*
[285] See Aulk G, 'Bharti Airtel to acquire Tigo, to become second-largest telco in Rwanda' ETT Special, 19 December 2017 - https://telecom.economictimes.indiatimes.com/news/bharti-airtel-to-acquire-tigo-in-rwanda/62128526 on 1 May 2021. See also Mingas M, 'Ghanaian government buys AirtelTigo for $25 million' Capacity, 29 October 2020 - https://www.capacitymedia.com/articles/3826793/ghanaian-government-buys-airteltigo-for-25-million on 1 May 2021.
[286] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 26.
[287] Ibid, 26.

transactions annually. Although the number of ATMs and card-reading points of service has grown, a mere 5 per cent of adults reportedly owned a debit card in 2016. Current DFS regulation and payment infrastructure have aided in levelling the playing field and increasing interoperability among financial service providers (FSPs).[289] However, a few bank-specific restrictions continue to limit banks' ability to participate and compete with other 'non-bank' FSPs fully.

Digital Entrepreneurship

The government plays an active role in fostering the still-nascent local innovation and entrepreneurship ecosystem. These efforts include initiatives to create vital support infrastructure for aspiring digital innovators, such as establishing the pre-incubator KLab and its sister organisation FabLab and developing the Kigali Innovation City complex, which aims to bring together key ecosystem players.[290] While the local tech community has welcomed related initiatives, stakeholder consultations have revealed that the private sector had not grown enough to make the digital entrepreneurship ecosystem independent of government and donor funding. Meanwhile, there appears to be a limited pipeline of viable start-ups that can attract investment.[291]

While Rwanda boasts a handful of successful digital start-ups, such as Zipline, existing start-ups typically face many challenges in scaling their business. Start-ups have limited support infrastructure beyond a particular growth stage, including incubators and accelerators. There is also weak access to growth-oriented financing for early-stage enterprises. Rwanda also lacks diverse funding channels available in more developed entrepreneurial markets, such as venture capital funding, angel investors, and seed-stage investment.[292]

Digital Skills

The government has made efforts to incorporate digital skills training in the national education system. Basic digital skills are now included in the national competency-based curriculum. At primary and secondary school levels, learners study a curriculum spanning from 'befriending the machine' and learning essential use in lower primary school to optional and advanced programming and database management courses in upper secondary school.[293] Moreover, schemes such as the OLPC mentioned above and the more recent SMART classrooms initiative have sought to boost access to devices. In 2017, some 44 per cent of primary schools and 60.2 per cent of secondary schools thus reportedly had access to ICT for teaching and learning.[294] However, a fundamental digital skills gap emerges as a significant cross-cutting roadblock to greater digital adoption and innovation. The government reports that just 8.4 per cent of the population is computer literate.[295] This reduces the need for devices and makes it difficult to use even the simplest digital technologies and software. The government has thus launched a plethora of initiatives aimed at tackling this issue head-on. However, insufficient access to critical enablers in schools, like connectivity, digital devices, reliable electricity, digital content, and adequate teacher capacity, impedes ICT integration and digital skills training delivery. [296]

Rwanda is presently unable to produce the required number of digital experts of the required quality to propel its cross-sectoral digital transformation.[297]

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[288] *Ibid,* 27.
[289] *Ibid,* 2020, 27.
[290] Mwai C, Government, 'Africa50 to establish firm to develop Kigali Innovation City project' The New Times, 27 August 2019 - https://www.newtimes.co.rw/business/government-africa50-establish-firm-develop-kigali-innovation-city-project on 2 May 2021.
[291] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 27.
[292] *Ibid,* 27.
[293] *Ibid,* 22.
[294] Ministry of Education, ICT in Education Policy, 2016.
[295] Himbara D, Kagame's 'Rwanda Has Computer Literacy Rate Of 8.4% In A Country Seeking To Become A Regional ICT Hub' Medium, 31 January 2020 - https://medium.com/@david.himbara_27884/kagames-rwanda-computer-literacy-rate-is-8-4-in-a-country-seeking-to-become-a-regional-ict-hub-62a2350ba432 on 2 May 2021.
[296] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 22.
[297] Ministry of Information Technology and Communications and Innovation, National Digital Talent Policy, 8.

While ICT courses are offered by most technical and vocational education (TVET) institutions, few are at the digital specialist level. While a handful of universities offer courses in cutting-edge technology, few students can afford to access this training. A culmination of the above and other factors results in an 'inadequately educated workforce' emerging as one of the barriers to doing business in Rwanda, identified by some 28 per cent of employers. Many other African nations thus outperform Rwanda when it comes to overall digital skills acquisition in the workforce.[298]

In collaboration with the World Economic Forum (WEF) and the Global Opportunities Trust, the Rwandan government launched the flagship Digital Ambassadors Program in 2017 to provide 5 million people with basic digital skills training.[299] The government has also partnered with a for-profit training provider, Andela, to offer rapid advanced digital skills training in coding. It has also sought to attract world-renowned academic institutions such as Carnegie Mellon University, which established its Africa campus in Rwanda in 2011.[300] Additionally, in early 2019, the government launched the Rwanda Coding Academy, targeting TVET institutions. The private sector also contributes to informal basic digital skills training; for example, Tigo launched a Mobile Internet Skills Training Toolkit with GSMA in June 2017.

Enablers and Key Players of the Digital Economy in Rwanda

Digital skills gaps emerge as critical cross-cutting barriers to increasing digital adoption and expanding digital innovation. For Rwanda's digital transformation to be realised, the private sector must play a much more significant role in spearheading digitisation alongside the government's ambitious initiatives. However, key enablers must be in place for the private sector's contribution to the digital economy to grow and areas like e-commerce to flourish. The World Bank has identified some of them:

i. Greater adoption of broadband
ii. Digital payments
iii. Access to a larger market of digitally-savvy consumers that allow digitally-enabled new companies to scale quickly.[304]

Given its small market size, Rwanda will need to be at the forefront of efforts to build a larger, more integrated regional digital market, which will help customers save costs to do with digital services and allow digitally-enabled firms to grow faster.[305]

Cross-cutting and Emerging Issues

According to the SMART Master Plan, the Rwandan government aims to move towards a '24-hour, self-service, cashless and paperless government'.[306] It has taken decisive steps to build up its e-service capabilities. While the report thus far has indicated that Rwanda has taken great strides in building its digital economy, it is arguably still far from achieving government-wide digital transformation.[307] Unfortunately, several factors still prevent public e-services from having a more significant impact in terms of both expanding services delivery, access, efficacy, and innovation, including low user uptake; weak application of user-centric design; ineffective use of shared systems and services; limited depth and breadth of digitisation of sectors and services; digital skills gaps in the civil service; the security

[298] World Economic Forum, The future of jobs and skills in Africa, 2018, 5.
[299] Ministry of ICT & Innovation, How Digital Ambassadors Program (DAP) is Increasing Citizen's Digital Literacy.
[300] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 22.
[301] MINICT, 'Rwanda Launches the First Coding Academy' MINICT - https://www.minict.gov.rw/news-detail/rwanda-launches-the-first-coding-academy on 1 May 2021.
[302] See https://www.gsma.com/mobilefordevelopment/resources/mobile-internet-skills-training-toolkit-tigo-rwanda-pilot-evaluation/ on 2 May 2021.
[303] World Bank Group, Rwanda Economic Update: Accelerating Digital Transformation in Rwanda, 2020, 19.
[304] *Ibid*, 19.
[305] *Ibid*, 19.
[306] Government of Rwanda, SMART Rwanda Master Plan 2015 – 2020.
[307] World Bank Group, Rwanda Digital Acceleration Project (P173373), 2020, 5.

of digital transactions; as well as little support for private-sector innovation.[308]

In addition, various challenges facing the digital economy took centre stage at the summits that Rwanda has hosted in the past. Many firms and entrepreneurs still face the problem of raising capital for their businesses. Many investors are unwilling to take a chance given the risks that come as part of business and need to be convinced by minimising the potential risks of using more advanced business strategies.[309] Additionally, digital business growth within a relatively small market like Rwanda would yield the optimum growth for which they hoped. Hence, there is a need to expand its digital businesses to other markets in the long term. Establishing mutually beneficial partnerships with other countries, especially neighbouring nations, is a way to go. Moreover, it has already been emphasised previously in this report that developing digital skills and talent among the population remains crucial. Finally, it is necessary to develop and implement a strategy to raise technological awareness and knowledge.[310]

The Link between Rwanda's Digital Economy and the AfCFTA

The AfCFTA brings together all 55 AU member states, thus covering a market of more than 1.2 billion people, including a growing middle class and a combined GDP of more than USD 3.4 trillion.[311] In 2018 Rwanda was one of 44 nations in Africa to sign the AfCFTA and has subsequently ratified the treaty and its instruments, being the first country to ratify all the instruments under the AfCFTA.[312] For the agreement to take effect, it required a minimum of 22 ratifications, and thus far, it has received 36.[313] In line with a Decision and Declaration 13th Extraordinary Session of the Assembly of the Union on 5 December 2020, trading under the AfCFTA Agreement began on 1 January 2021.[314]

The AfroChampions Initiative developed the AfCFTA Year Zero Report, rating and ranking the 55 AU Nations' commitment and implementation readiness regarding the AfCFTA. In doing so, the rubric used involved four leading indicators (Commitment to the Free Trade Agreement; Commitment to Free Movement; Trade Facilitation Readiness; and Access to Credit).[315] It also included 10 sub-indicators, each of which had a percentage weight that, when added together, was representative of each country's commitment to and readiness for the AfCFTA. The study revealed that Rwanda was the most committed country to the AfCFTA, scoring 83.93%.[316] In terms of implementation readiness, Rwanda scored 67.8%, falling in second place behind South Africa, which scored 68%, a difference of only 0.2%.[317] However, Rwanda comes out on top in terms of overall country performance, with a combined overall performance of 74.26%,[318] placing it at the pinnacle of implementation readiness for the AfCFTA.

Without a doubt, despite any country's readiness to implement this agreement, the COVID-19 pandemic hampered the smooth start of the AfCFTA. However,

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[308] *Ibid*, 5.
[309] *Ibid,* 12.
[310] *Ibid,* 12.
[311] Nganga T., Mbithi M., The digital trade era – opportunities and challenges for developing countries: The case of Kenya, World Trade Organization, 2021.
[312] Bishumba N., 'Rwandan Parliament ratifies AfCFTA protocol' TRALAC, 25 April 2018 - https://www.tralac.org/news/article/12981-rwandan-parliament-ratifies-afcfta-protocol.html on 3 May 2021.
[313] These are Ghana, Kenya, Rwanda, Niger, Chad, Eswatini, Guinea, Côte d'Ivoire, Mali, Namibia, South Africa, Congo, Rep., Djibouti, Mauritania, Uganda, Senegal, Togo, Egypt, Ethiopia, Gambia, Sahrawi Arab Democratic Rep., Sierra Leone, Zimbabwe, Burkina Faso, São Tomé & Príncipe, Equatorial Guinea, Gabon, Mauritius, Central African Rep., Angola, Lesotho, Tunisia, Cameroon, Nigeria, Malawi, and Zambia. See https://www.tralac.org/resources/infographic/13795-status-of-afcfta-ratification.html on 3 May 2021.
[314] African Union, 'Thirteenth extraordinary session on the AfCFTA: The Assembly of the Union adopts decision on the start of trading' African Union, 5 December 2020 - https://au.int/en/pressreleases/20201205/thirteenth-extraordinary-session-afcfta-assembly-union-adopts-decision-start on 3 May 2021.
[315] The Afrochampions Initiative, AfCFTA Year Zero Report: An Assessment of African Governments' Commitment and Readiness for AfCFTA Start of Trading in light of COVID-19, 11.
[316] *Ibid,* 14.
[317] *Ibid,* 15.
[318] *Ibid,* 18.

the prioritisation of digital processes everywhere is arguably a positive effect of the COVID-19 pandemic. This is arguably Africa's opportunity to accelerate e-commerce, the digital economy, and the Fourth Industrial Revolution and reinforce opportunities in clean and green 'industries without smokestacks'.[319]

Opportunities Presented by the AfCFTA

Discourse on the AfCFTA has been met with much enthusiasm in Rwanda.[320] Reflected in its clear commitment to implementing the AfCFTA, Rwanda is aware of the numerous benefits and opportunities that the Free Trade Area could potentially bring. The Rwandan government has identified opportunities in several local products for exports under the recently launched Free Trade Area. The products targeted for exports under the new regime are those with the potential for significant production increases. They are expected to drive Rwanda's exports to the African continent from USD 1.6 billion annually to about USD 5 billion in 10 years.[321] Rwanda's tea and coffee production has increased steadily, but they are mainly exported to the Middle East and Europe. This agreement could see the products enter new, previously untapped markets on the continent, which have always had high tariffs limiting exporters' interest, among the markets that will bring fortunes to local exporters and traders, including the neighbouring Democratic Republic of Congo, one of the leading markets for Rwandan produce.[322]

Rwanda is looking to expand to other markets like the ECOWAS; Nigeria, Ghana, and Senegal; the Economic Community of Central African States; Gabon, Congo-Brazzaville, and Angola. Rwandan producers will also be looking to make the most of the Southern African market in countries such as South Africa, Botswana, Zambia, and Namibia, among other niche markets.[323] The AfCFTA could see Rwanda's market reach grow exponentially, leading to markets that were previously impossible to reach. Moreover, Rwanda's import bill could see a reduction with the agreement in place. Rwanda could easily import raw materials for industries such as textile for value addition and exports. In addition, the State Minister in charge of the East African Community, Manasseh Nshuti, pointed out a further advantage to Rwandan traders that the National Carrier, RwandAir serves multiple African destinations.[324] It is worth noting that Mr Michel Minega, the Permanent Secretary of Rwanda's Ministry of Trade and Industry, says that the implementation of AfCFTA is an opportune time for Rwandan businesses to expand while tapping into the rapidly growing markets both within the region and throughout Africa.

Furthermore, the job-creating potential of the AfCFTA deserves mention. According to the UN Economic Commission for Africa (ECA), the Eastern Africa region is anticipated to generate USD 1.8 billion in welfare gains and benefit from over 2 million jobs from the successful implementation of AfCFTA.[325] Andrew Mold, Chief of Regional Integration and the AfCFTA in the ECA Office for Eastern Africa, says that the AfCFTA will create exciting opportunities for diversification for all the region's economies. He stressed that with the Eastern Africa firms exporting more, the sub-region would earn an extra USD 1.1 billion on the strength of higher exports of processed food, textiles, clothing, and light manufacturing. He further added that:

Small and Medium-Sized Enterprises which account for 80 per cent of the region's businesses but which struggle to penetrate foreign markets are also

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[319] Ibid, 7.
[320] Economic Commission for Africa, 'Rwanda prepares for the start of trading under the AfCFTA' ECA, 23 December 2020 – https://www.uneca.org/storys/rwanda-prepares-start-trading-under-afcfta on 3 May 2021.
[321] Mwai C., AfCFTA: 'What are Rwanda's export-ready products?' The New Times, 18 January 2021 - https://www.newtimes.co.rw/news/afcfta-what-are-rwandas-export-ready-products on 2 May 2021.
[322] *Ibid*.
[323] *Ibid*.
[324] *Ibid*.
[325] Economic Commission for Africa, 'Rwanda prepares for the start of trading under the AfCFTA' ECA, 23 December 2020 - https://www.uneca.org/storys/rwanda-prepares-start-trading-under-afcfta on 3 May 2021.

expected to get a major boost by the new trade deal as regional value chains emerge.[326]

Finally, in principle, the implementation of the AfCFTA will pave the way for a rapid dismantling of impediments to cross-border trade. Alongside removing tariff barriers, the AfCFTA will also focus attention on outstanding non-tariff barriers (NTBs), an essential step towards increased trade in the region, as studies consistently show that NTBs constrain intra-regional trade much as or even more than tariff barriers.[327]

Concerns Presented by the AfCFTA

While boasting numerous benefits and opportunities, the implementation of the AfCFTA will not come without its challenges and hurdles. To facilitate the success of the Free Trade Area, countries like Rwanda should seek to overcome these hurdles. The poor overall quality of Africa's physical infrastructure (roads, rail, port facilities, and telecommunications infrastructure) is a significant impediment to intra-African trade. Promoting greater investment in Africa's trade-related infrastructure is crucial for enabling intra-African trade and ensuring the success of the AfCFTA.[328]

Improving the current state of digital connectivity is also crucial for boosting intra-African trade under the AfCFTA, especially given the increased attention on e-commerce in Africa. Since the onset of COVID-19, digital technologies such as cloud services and online platforms have enabled e-commerce and facilitated trade in services, both of which have become increasingly important drivers of economic activity. Digital tools can also drive trade facilitation in Africa, reducing transaction costs and barriers to cross-border trade. The use of online information portals, single windows, digital documentation, electronic payments, electronic certificates (e.g. certificates of origin) and signatures, and automated processing of trade declarations can help simplify, streamline, and expedite trade-related procedures at borders.[329]

Unfortunately, most African countries currently lack the infrastructure to take advantage of these digital opportunities fully. This serves as a severe impediment to the full-fledged implementation of the AfCFTA. For trade opportunities under the AfCFTA to be fully realised, the digital divides between Africa and the rest of the world and between and within African countries need to be addressed.[330] Significant investments in physical ICT and digital infrastructure are needed, as is an enabling regulatory climate promoted by COMESA's Digital Free Trade Area.[331] Furthermore, digital skills training is also required to ensure that Africa's citizens can take advantage of digital trade opportunities.[323]

Conclusion

Rwanda has seen exponential growth in its economy and productivity in recent years, despite a global pandemic that has shaken the world and perhaps brought much of life to a standstill. This report indicates that this growth will only continue if Rwanda takes full advantage of its opportunities. While its digital economy is still in its nascent stages, Rwanda is gearing to develop this relatively novel feature of its economy, which is clear from the

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[326] Mold A., 'The countdown to implementing the African Continental Free Trade Area in East Africa' Brookings, 20 October 2020 - https://www.brookings.edu/blog/africa-in-focus/2020/10/20/the-countdown-to-implementing-the-african-continental-free-trade-area-in-east-africa/ on 3 May 2021.
[327] Ibid.
[328] Apiko P., Woolfrey S., and Bylers B., 'The promise of the African Continental Free Trade Area (AfCFTA)' Discussion Paper No. 287, ecdpm, 11.
[329] Hartzenberg T., Hope A., and Stuart J., Trade in the Digital Economy: a TRALAC collection, Stellenbosch, Tralac.
[330] Apiko P., Woolfrey S., and Bylers B., 'The promise of the African Continental Free Trade Area (AfCFTA)' Discussion Paper No. 287, ecdpm, 11.
[331] Tralac, 'COMESA to set up team on digital free trade area' Tralac, 26 July 2018 – https://www.tralac.org/news/article/13303-comesa-to-set-up-team-on-digital-free-trade-area.html on 3 May 2021.
[323] Apiko P., Woolfrey S., and Bylers B., 'The promise of the African Continental Free Trade Area (AfCFTA)' Discussion Paper No. 287, ecdpm, 11.

policy environment being created and investment priorities. It can thus be concluded that the AfCFTA and a well-supported digital economy may be two necessary ingredients for Rwanda to become a middle-income, knowledge-based economy, as is the country's goal. The interaction between the two becomes ever more essential when digital technologies may become the primary means of service provision.

Chapter 4: **South Africa**

The marketplace has undergone a great transformation in recent years. One of the catalysts of this change – or perhaps the change itself – has been ICT. Advancement in technology has generated novel options that promise to improve efficiency and effectiveness in whatever space they occupy. Therefore, the role of digital technologies in the global economy cannot be understated.

The digital economy is not a mere phenomenon of the modern age but a crucial aspect of the overall economy that, for some countries, is now indispensable. Developing countries that have been slow to catch up with advancements in digital technology are increasingly seeing their economies transformed by it. In part, the change is a result of the proliferation of more affordable and accessible digital technologies. South Africa has seen its digital economy grow, as its uptake of ICT and recognition of its use informs its policy and regulatory framework. The interplay between the digital economy and the African Continental Free Trade Area, both of which South Africa has geared itself to take advantage of, is an important area of study.

Defining a Digital Economy in the South African Context

While increasingly being interpreted as the carrying out of business through Internet-based markets, the digital economy has been defined as an economy based on digital technologies. Other terms, such as the Internet Economy,[333] the New Economy,[334] and the Web Economy, also describe it.[335]

However, digital economy in the South African context can be more accurately captured by a more recent definition by Deloitte in the report entitled What is Digital Economy?, where the concept is defined as:

...the economic activity that results from billions of everyday online connections among people, businesses, devices, data, and processes. The backbone of the digital economy is hyperconnectivity which means growing interconnectedness of people, organisations, and machines that results from the Internet, mobile technology, and the Internet of things (IoT).[336]

Major Components of the Digital Economy in South Africa

As has been stated in preceding chapters, digital technologies have become foundational and integral to the functioning of the broader economy. In its *Digital Economy Report of 2019*, the UNCTAD categorises the different technologies and economic aspects of the digital economy into three broad components:

i. Core aspects or foundational aspects of the digital economy[337]
ii. Digital and IT sectors;[338] and
iii. A more comprehensive set of digitalising sectors.[339]

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[333] Kogut B., The Global Internet Economy, MIT Press, Massachusetts, 2003.
[334] D'Costa A., 'The New Economy in Development: ICT Challenges and Opportunities' UNU-WIDER, 2006.
[335] Vafopoulos M., 'Modelling the Web Economy: Web Users and Goods' National Center for Scientific Research Demokritos, 2011.
[336] Deloitte, 'What is digital economy? Unicorns, transformation and the internet of things' Deloitte, -< https://www2.deloitte.com/mt/en/pages/technology/articles/mt-what-is-digital-economy.html# > on 26 March 2021.
[337] United Nations Conference on Trade and Development, Digital Economy Report 2019 – Value Creation and Capture: Implications for Developing Countries, 2019, 4.
[338] *Ibid*, 4.
[339] *Ibid*, 4.

Digital Economy Landscape in South Africa

Unfortunately, there is currently insufficient data available to accurately quantify the size and nature of South Africa's digital economy because its official statistics do not currently separate the digital economy from the traditional economy.[340] While there are accurate estimates of the size and contribution of the ICT sector, the digital economy cannot be limited only to ICT – it encompasses the value added from digital service providers and digital applications in almost every industry in the country.

However, a combination of the information from more informal sources suggests that the contribution of South Africa's digital economy ranges from anywhere between 2%[341] and 19% of the country's GDP.[342] Moreover, there have been estimates that South Africa's digital economy could boost total GDP by 3% overall, or USD 12 billion.[343] Indeed, there are areas of rapid digital economy development in parts of South Africa's economy, for example, the well-developed digital banking sector and growing fintech market.[344]

Yet, SMMEs are lagging in developing the digital economy. The Global Entrepreneurship Monitor 2017 and SME South Africa have noted that 45% of emerging businesses have little to no new technology orientation. Another 50% consider access to technology a challenge to growth and lack the skills to use it.[345] This apparent lack of parallel development and the dual economies that have developed in South Africa have meant that the digital economy has not significantly impacted inclusive growth and transformation in the broader economy.[346]

This situation is by no means hopeless. There is indeed great hope and potential for South Africa's digital economy. South Africa is arguably poised for its potential transformation into a fully digital society,[347] characterised by a widespread diffusion, uptake, and usage of ICTs in the whole society. There are thus ongoing interventions by the government to increase growth and facilitate economic and social inclusion. The ICT sector undoubtedly has a significant role in driving and enabling the new growth and developmental trajectory, recognised and given life from a policy point of view.

South Africa's National Development Plan Vision 2030 states that:

a single cohesive National e-Strategy is essential to ensure the diffusion of ICTs in all areas of society and the economy. ICT as an enabler, can speed up delivery, support analysis, build intelligence and create new ways to share, learn and engage.[348]

The National e-Strategy itself builds on various policies that focus on ICT and related sectors: the Integrated ICT Policy White Paper,[349] ICT RDI Roadmap[350] and the Industrial Policy Action Plan.[351] The e-Strategy seeks to guarantee a coordinated approach to implementing various initiatives arising from these and other government policies. As a result, the National e-Strategy should be read together with these and other policies, establishing a policy ecosystem to base the digital society.

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[340] Genesis Analytics, ICT and Digital Economy Masterplan for South Africa, 2020, 4.
[341] See Department of Telecommunications and Postal Services, More Actively Fulfilling the Potential of the Digital Economy In SA, 2012. This was a media statement by the Department of Telecommunications and Postal Services.
[342] See Seedat Y., 'Converting scale to value in the digital economy' BizCommunity, 2017 - <https://www.bizcommunity.com/Article/196/379/156149.html> on 26 March 2021.
[343] Accenture, Harnessing the power of open innovation through digital collaboration, 2015, 5.
[344] Genesis Analytics, *ICT and Digital Economy Masterplan for South Africa, 2020, 4.*
[345] Global Entrepreneurship Monitor, South Africa Report: Can Small Businesses Survive in South Africa?, 2017, 7.
[346] Genesis Analytics, *ICT and Digital Economy Masterplan for South Africa, 2020, 4.*
[347] What is meant by 'digital society' is a reference to a widespread diffusion, uptake and usage of high speed, quality, secure, and affordable ICTs by all segments of society, be they individuals or organisations, and is underpinned by the effective coordination and building of an ecosystem of certain critical issues.
[348] South African Government, National Development Plan – 2030, 2013.
[349] Department of Telecommunication & Postal Services, National Integrated ICT Policy White Paper, 2016.
[350] Department of Science & Technology, ICT RDI Roadmap, 2007.
[351] Department of Trade and Industry, Industrial Policy Action Plan, 2016.

Despite this arguably robust policy framework and the suitable environment for the digital economy's growth that it creates, South Africa still, unfortunately, falls short in terms of taking advantage of the digital revolution. This has become very clear in the face of the current COVID-19 pandemic, which has pushed most workspaces onto digital platforms.[352] Further evidence of South Africa's poor performance includes the country's downgrading in the International Telecommunications Union's Information Society Index regarding access to fixed broadband[353] – from 77th out of 144 countries to 104th between 2002 and 2018.[354] This index measures countries' evolution towards becoming information societies based on three measures: readiness, intensity, and impact. Readiness, for instance, is measured through indicators of access and skills. The index thus points to a lack of readiness on the part of South Africa.

Various factors account for South Africa's declining position. The lack of continuity in the political and administrative leadership of the national ICT portfolio; between 2009 and 2018, South Africa had 11 different ministers responsible for telecommunications. Moreover, under the previous administration, the country's ICT portfolio was split over two departments – the Department of Telecommunications and Postal Services (DTPS) and the Department of Communications (DoC) – which would naturally cause a divergence between telecommunication broadcasting and IT.[355]

South Africa is taking active steps to remedy any factors that put it at a disadvantage in the digital revolution. One crucial action taken in 2018 was the merger of the aforementioned DTPS and DoC to improve the overall institutional framework to promote faster decision-making and clarifying mandates.[356] Even though it has much work to do, South Africa leads the region in Internet usage (54%) and mobile phone penetration (80%), and broadband coverage (99%).[357] However, when benchmarked against other middle-income countries and more dynamic economies, South Africa lags. Internet usage among more impoverished South Africans remains low, with as much as 60% of the population paying more than the affordability benchmark of 2% of GNI per capita.[358]

The World Bank has suggested proactive, effective, and coordinated government policies to holistically support the digital economy and make South Africa more competitive.[359] The World Bank's *Country Private Sector Diagnostic Report identified* ICT as a sector where medium-term reforms could unlock private investment. In 2013, an assessment showed that increased broadband investment of ZAR 65 billion in the following ten years could create more than 400,000 jobs and add ZAR 130 billion to the GDP of South Africa.[360] Policies with strong monitoring and evaluation will be needed to reduce risks from increased automation and digitisation. For example, doubling the rate at which the workforce acquires skills required by the Fourth Industrial Revolution[361] could reduce the proportion of at-risk jobs from 35 per cent to 14 per cent by 2025.[362]

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[352] Waiwyn D. and Cloete L., 'South Africa has failed to harness the digital revolution: how it can fix the problem' The Conversation', 2020 -< https://theconversation.com/south-africa-has-failed-to-harness-the-digital-revolution-how-it-can-fix-the-problem-147799> on 27 March 2021.
[353] This is undoubtedly indispensable for the digital economy.
[354] International Telecommunications Union, Measuring the Information Society, 2017.
[455] Waiwyn D. and Cloete L., 'South Africa has failed to harness the digital revolution: how it can fix the problem' The Conversation', 2020 -< https://theconversation.com/south-africa-has-failed-to-harness-the-digital-revolution-how-it-can-fix-the-problem-147799> on 27 March 2021.
[356] World Bank & Digital Economy for Africa, Digital Economy Diagnostic, 2019, 17.
[357] *Ibid*, xvi.
[358] *Ibid*, xvi.
[359] *Ibid,* xvi.
[360] Katz R., The impact of South Africa Connect on jobs and the economy, 2013.
[361] The Fourth Industrial Revolution (4IR) refers to the automation of traditional manufacturing and industrial practices, incorporating digital technologies. See https://www.4irsa.org/.
[362] Accenture Consulting, Creating South Africa's Future Workforce, 2018, 10.

The Rationale for the Digital Economy in South Africa

Socio-cultural Factors

There is an increasing social urgency for South Africa to develop its digital economy. Over the last decade or so, the economy's growth has not been fast enough to create enough jobs. The unemployment rate is 32.5%, inequality has increased, and half of the population lives in poverty.[363] The dualism that stems from the legacy of demographic and spatial exclusion in South Africa is reflected in the digital economy landscape. A large share of the South African population thus remains disconnected from the opportunities it has created.[364]

Although the South African government has consistently attempted to use ICT for development since the 1990s, policy choices have not always been optimal. Implementing outlined reforms and programs has proven difficult in many of the fundamental pillars. Uncertainty in policy and regulation has hindered and slowed private investment. Advances in digital technologies offer an opportunity for South Africa to reverse declines in productivity and service delivery, enabling it to step closer to the National Development Plan's goals of a diverse and inclusive growing economy. Moreover, digital technology can positively impact people's lives by improving education and health outcomes and providing better citizen services.[365]

Economic Factors

In South Africa, digital technologies can generate more than ZAR 5 trillion in value for industry and society over the next decade through digital technologies in key industry sectors, including agriculture, public infrastructure, administration, financial services, and manufacturing.[366] All these can create approximately 4 million jobs, which can help reduce unemployment over the next decade.[367]

Political Factors

Due to digital technologies increasing the efficiency and effectiveness of information systems, the government has much to gain from adopting said technologies. This is critical for the government to accelerate growth and facilitate economic and social inclusion. The ICT sector has a significant role in driving and enabling the new growth and developmental trajectory.[368]

Main Pillars of the Digital Economy in South Africa

Digital Economy for Africa (DE4A) has identified five main pillars of the digital economy in South Africa, illustrated in the figure:

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[363] Reuters Staff, 'South Africa's unemployment rate jumps to new record high' Reuters, 2021 -< https://www.reuters.com/article/us-safrica-economy-unemployment-idUSKBN2AN0S1> on 28 March 2021.
[364] Strauss M., 'A historical exposition of spatial injustice and segregated urban settlement in *South Africa*' *Fundamina* 15(2), 2019.
[365] Accenture Strategy, *Unlocking Digital Value for Business and Society in South Africa*, 2019, 3.
[366] Ibid, 3.
[367] Ibid, 4.
[368] Digital Society South Africa, South Africa's National e-Strategy towards a thriving and inclusive digital future, 2017.
World Bank & Digital Economy for Africa, Digital Economy Diagnostic, 2019, vi.

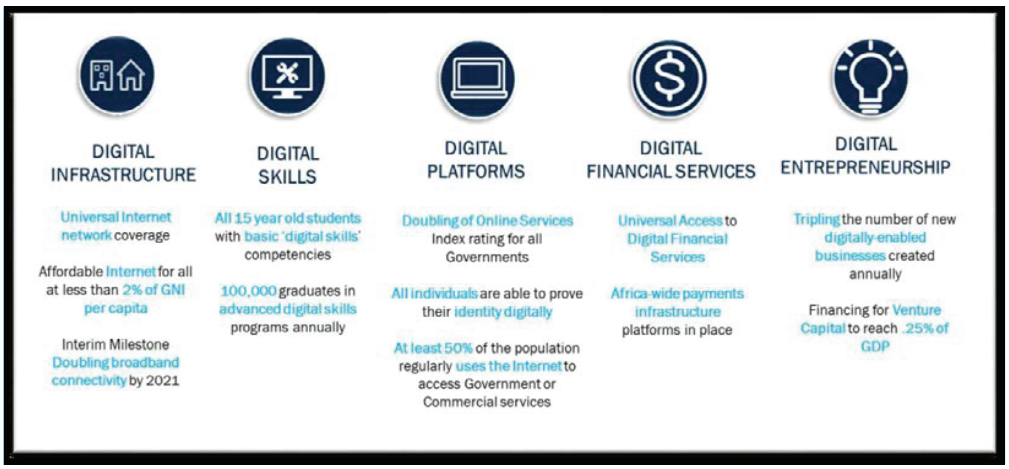

Figure 1[369]

Digital Infrastructure

The overall state of South Africa's digital infrastructure is relatively stable, enabling customers to benefit from relatively superior business outcomes. South Africa was the second-best performing African country in the 2016 WEF Networked Readiness Index. Mobile download rates are the highest on the continent.[370] In the past 10 years, it has moved to an open, competitive regime in terms of its international connectivity, with a good number of submarine cables connecting it to the rest of the world, resulting in the fast growth of international bandwidth usage.[371]

MNOs have played a key role in delivering connectivity across the country, resulting in impressive 3G and 4G network coverage. International connectivity has benefited from the shift from monopoly to an open and competitive regime after 2009.[372] The digital economy for Africa target of 100% of the population covered by mobile broadband networks has almost been reached. Fixed-line Internet and especially fibre-optic connections to homes and businesses have experienced rapid growth in recent years, showing much promise. In international connectivity, competition resulted in five international submarine cables with more to come online, lower prices, and a rapid increase in international bandwidth usage, which doubled from 2016 to 2018.[373]

With about 200,000 kilometres of fibre installed, South Africa has the continent's most comprehensive backbone infrastructure, but it is concentrated in metropolitan areas and has a lot of network duplication. Even though the state plays a significant role in the market, commercial fibre providers have contributed to the infrastructure growth. SANREN, South Africa's non-profit national research and education network, is also noteworthy for its contribution.[374]

Digital Public Platforms

According to the 2018 UN EGDI, South Africa is one of the region's pioneers in digital public channels, second only to Mauritius in Africa.[375] Digital public networks are a crucial enabler of the digital economy, helping public and private-sector entities create new or enhanced results for people. Citizen engagement is a strong suit for South Africa. To direct the country's digital transformation, the government adopted solid strategies in the National

[369] World Bank & *Digital Economy for Africa, Digital Economy Diagnostic*, 2019, vi.
[370] World Economic Forum, W*EF Networked Readiness Index,* 2016.
[371] World Bank & Digital Economy for Africa, *Digital Economy Diagnostic*, 2019, 17.
[372] *Ibid,* 17.
[373] *Ibid,* 17.
[374] *Ibid*, 17.
[375] United Nations, e-Government Index, 2018 -<https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018> on 27 March 2021.

E-Government Strategy and Roadmap in November 2017. At the sub-national level, there is progress at the provincial levels, especially in Gauteng and Western Cape, where much drive for government innovation happens.[376]

Substantial fragmentation and proliferation of institutions responsible for various platforms and ICT services impede growth in the sector. The major agencies have overlapping mandates and obligations that are blurred, overlapping, and often undefined. At the regional level, the institutional picture appears to be more coherent. South Africa has an adequate legislative structure for data protection and privacy protection, but the capacity to exchange data between departments and agencies is limited. Open data policy and initiatives are still at a pilot phase, with no clear benefits. In the public sector, there is a drive towards acquiring the capacity to use big data analytics. Key back-office systems are mostly digitised at the national level in South Africa. South Africa has a recently updated national-level policy document on interoperability, with the State Information Technology Agency (SITA) having a central controlling role. However, legacy systems and lack of connectivity pose hurdles for implementation. No strong push for mainstreaming open APIs within the public sector exists.[377]

The national e-Strategy emphasises digital services and encompasses several specific objectives linked to public service delivery and innovation in the public and private sectors, including developing capacity and skills for effective service delivery.[378] A National e-Government Central Portal was launched in 2018, for access to selected online services, as a part of the new e-Government roadmap; however, there is currently no inventory or registry of all online services maintained by the Department of Public Service Administration (DPSA) or Department of Telecommunication and Postal Services (DTPS).[378]

Digital Financial Services

Individuals and households may use DFS to pay, invest, and borrow conveniently and cost-effectively. According to a 2017 Global Findex study, 60% of South African adults (ages 15+) said they had made or received a digital payment in the previous year, significantly higher than the Sub-Saharan Africa average. Traditional account ownership is also slightly higher in South Africa than in Sub-Saharan Africa and on par with middle-income countries.[380]

However, there is a stark dualism in South Africa's financial services. The use of debit cards (other than for cash withdrawals) and other electronic payment instruments by low-income households is still low, with cash remaining their primary mode of transaction. Furthermore, only a fifth of adults used a cell phone or the Internet to access their accounts, compared to 72 per cent in Kenya.[381] According to the World Bank's South Africa Retail Banking Diagnostic (2017), central banks' transaction account product design and fees do not differentiate between low- and high-income customers, making these products prohibitively expensive for low-income customers.[382]

South African fintech is relatively robust with 219 firms, benefiting from good mobile phone and Internet penetration, though it is rising and gaining international recognition. However, there are still several major hurdles to tackle. As issuing e-money is considered deposit-taking in South Africa, only locally registered banks are allowed to do so, which has led to low mobile money use despite high mobile phone penetration. Non-banks claim that the low percentage is due to a legal system that forces them to provide their services in partnership with a bank, reducing their viability and flexibility in product and service offerings.[383]

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[376] World Bank & Digital Economy for *Africa, Digital Economy Diagnostic*, 2019, 18.
[377] *Ibid,* 18.
[378] Digital Society South Africa, *South Africa's National e-Strategy towards a thriving and inclusive digital future*, 2017.
[379] Department of Telecommunications and Postal Services, National e-Government Strategy and Roadmap, 2017, 9.
[380] World Bank & D*igital Economy for Africa, Digital Economy Diagnostic*, 2019, 19.
[381] Ibid, 19.
[382] World Bank, South Africa Retail Banking Diagnostic, 2017.
[383] World Bank & *Digital Economy for Africa, Digital Economy Diagnostic*, 2019, 19.

Digital Entrepreneurship

South Africa has become a significant player in digital entrepreneurship in Africa, acting as a 'hub' for many projects and investments across the continent. Still, policymakers are grappling with key policy, regulatory, and human capital bottlenecks. Digital talent is rare at all skill levels and becoming a critical hindrance for the growth of digital start-ups, particularly for higher-end/global skills. Issues in the implementation and coordination of policies, coupled with limited monitoring and evaluation, lead to a sub-optimum allocation of resources, making the country less competitive than rising continental tech hubs, including Kenya, Rwanda, Botswana, and Nigeria. Specific policies, including the R&D tax incentive scheme, IP legislation, exchange controls, and labour legislation, hinder entrepreneurial growth.[385]

Policies are required to improve various digital entrepreneurship support services like early and growth-stage finance to help entrepreneurs scale.[386] Sector-specific clusters, such as those focused on fintech, edtech, or agritech, are emerging, with some attracting significant foreign investment. Most assistance is given during the early stages of business formation and is concentrated in Gauteng's and Western Cape's wealthy urban areas. Availability of early and growth-stage finance for growth-oriented businesses has increased significantly over recent years in the context of overall difficulties in accessing credit for SMEs. But more effort is required to help high potential digital businesses grow.[387] Supply increase has come chiefly from more mature digital businesses thanks to a significant tax incentive. Finance gaps persist throughout most of the lifecycle of digital start-ups, including the very early stage. Although leading the way on the African continent, most South African later stage funds still lack sufficient capacity, inclusiveness, and critical size to fund and facilitate the rapid internationalisation of South African digital businesses.[388]

Despite calls for more regional initiatives and integration, South African digital entrepreneurs struggle to access domestic, regional, and foreign markets. South Africa has developed many local digital business models and services. It is a crucial entry point for global digital companies on the continent and an expanding digital market.[389] However, the high cost of data continues to be a concern, and key players with high growth and job opportunities, such as e-commerce and other digital private channels, are subject to constraints and costs when it comes to processing online payments. Smaller companies are disadvantaged by long private and public procurement periods.[390]

Digital Skills

A lack of digital skills delays the growth of a digital economy in South Africa. A vibrant, competitive, and inclusive digital economy necessitates a pool of qualified digital entrepreneurs to start new companies, as well as a large labour pool to work with technology,[391] which is an area that needs to be tackled, as shortages in essential skills plague the South African labour market, especially in sectors like ICT. The World Bank's Systematic Country Diagnostic and Country Private Sector Diagnostic for the country highlight skills as the key mechanism for South Africa to foster competitiveness and economic inclusion. This could not be truer for the ICT sector. Skills are also critical in making sure that Fourth Industrial Revolution does not lead to massive job losses.[392]

Digital skill weaknesses stem from inefficiencies in South Africa's education system. Even though South Africa leads African countries in some aspects of digital developments, it ranks only 116th out of 140 countries in the Global Competitiveness

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[384] *Ibid,* 20.
[385] *Ibid,* 20.
[386] *Ibid,* 20.
[387] *Ibid,* 20.
[389] *Ibid,* 20.
[390] *Ibid,* 20.
[391] *Ibid,* 20.
[392] *Ibid,* 21.

Report's digital skills assessment.[393] It ranks 126th out of 157 countries on the World Bank's Human Capital Index, below peer African countries with less income.[394] When schooling is adjusted for learning, the average 18-year-old would have completed 9.3 years of actual schooling, but a learning equivalent to 5.1 years, implying a learning gap of over four years. In turn, weak outcomes in primary education result in low tertiary education enrolment and low graduations – including in ICT-related qualifications.[395]

In addition, there is also a long way to go in terms of improving digital skills in classrooms. Many schools still lack computers and Internet access, many do not provide ICT-related subjects, and teacher training in successful technology use is a problem. These problems compound the challenges of attaining full digital literacy. Post-school graduates are not developing enough advanced digital skills to meet labour market demands, and curricula are not changing fast enough to meet rapid changes in demand. Lack of strong national leadership and cohesion also impedes the development of professional digital skills, resulting in inconsistency in institutional offerings.[396]

Enablers and Key Players of the Digital Economy in South Africa

South Africa's ICT and Digital Economy Masterplan identifies specific digital economy big bets that the country will have to make to have a successful digital economy industrial policy. These are illustrated in the figure below:

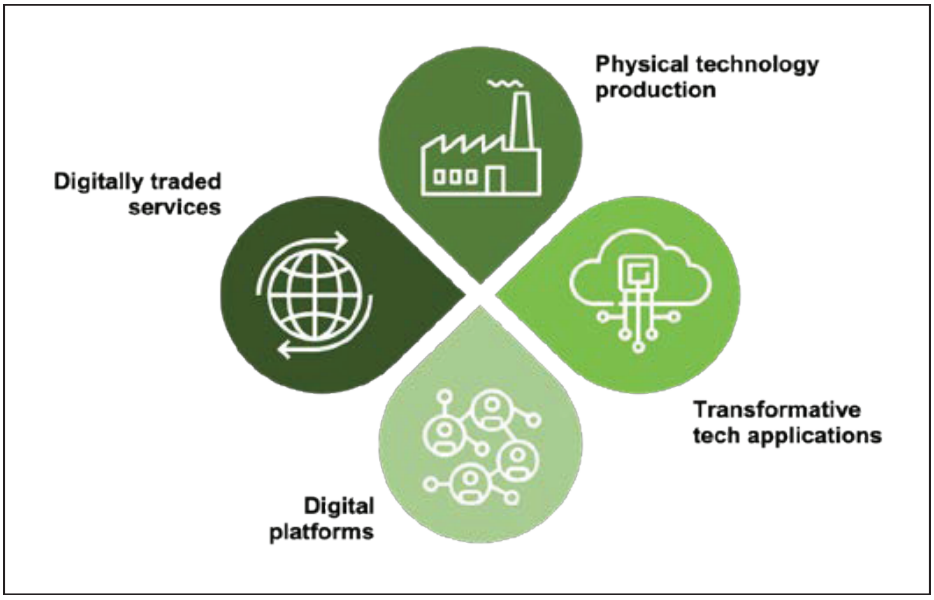

Figure 2[397]

[393] World Economic Forum, *Global Competitiveness Report,* 2019.
[394] World Bank, *Human Capital Index*, 2019.
[395] World Bank & Digital Economy for Africa, *Digital Economy Diagnostic*, 2019, 21.
[396] *Ibid,* 21.
[397] Genesis Analytics, *ICT and Digital Economy Masterplan for South Africa,* 2020, 6.
[398] *Ibid,* 6.

The Masterplan highlights the risk in placing said big bets in specific sectors. Rather, a digital economy industrial policy should place bets on economy-wide phenomena that impact multiple sectors. Moreover, there are five identified critical enablers for digital economy development that must be in place to realise the big bets, shown in the figure below:

Figure 3[399]

These enablers will ensure that businesses, individuals, and the public sector have affordable access to digital networks and infrastructure. They will also ensure that appropriate skills and resources are available to support the emergence and scaling of innovative products and services. The public sector is well-positioned to regulate innovators and support their scaling safely. The objectives of these enablers are described as follows:

i. Digital inclusion ensures that all South Africans can connect to and participate in the digital economy by enabling affordable access and reliable digital infrastructure.[400]
ii. Skills for work establish an education and skills development ecosystem that provides all South Africans with the necessary skills to create and participate in the economic and social opportunities in the digital economy.[401]
iii. Responsive governance develops forward-looking regulatory frameworks and enables innovation and growth while protecting consumers from potential risks.[402]
iv. Innovation and competitiveness ensures that South African businesses are empowered to create local digital products and services that can be exported globally.[403]
v. Government digitisation enables the government to directly stimulate job creation and improve citizen-centric services by becoming a source of demand for digital and ICT products and services.[404]

The key players in South Africa's digital economy will be highlighted and discussed in Annexes I and II of this report.

[399] *Ibid,* 6.
[400] *Ibid*, 35.
[401] *Ibid*, 39.
[402] *Ibid*, 41
[403] *Ibid,* 44.
[404] *Ibid*, 53.

Cross-cutting and Emerging Issues

The digital economy is such that it cannot be viewed as a standalone concept or as merely a part of the ICT sector because it cuts across all industries and aspects of life.

One such issue is the preparation of the youth for the digital economy. Unfortunately, the digital skills of South African youth, both sophisticated and entry-level, are still marginally behind those of young people in other developing countries. It is essential to understand this in addressing the problem.[405]

Specific challenges to digital proficiency have been identified in earlier pages. Most young people in South Africa who have grown up in poverty have a crippling fear of failure that prevents them from trying new things, mainly digital technology.[406] Since their opportunities are limited and the costs of failure are high, poverty limits young people's willingness to innovate and take risks. Young people need inspiration and trust in a country where a significant portion of the population lives in poverty.[407] The government, NGOs, and program implementers must work together to build environments that promote confidence, bring about progress, encourage curiosity and innovation, and encourage young people to take chances, such as using and exploring technology.

Access to free and reliable Internet outlets is another crucial enabler of digital proficiency. The Hole in the Wall experiment in India demonstrates that unrestricted Internet access is a fertile ground for research, discovery, and creativity. Regardless of who they were or what language they spoke, the experiment provided communities in India with free and public access to computers and the Internet. Children in those communities became computer literate on their own, taught themselves to use email, chat, and search engines and learnt to search the Internet for answers to their questions, among other things.[408]

In South Africa, the high cost of data restricts young people's access to the Internet and desire to explore. The power of South Africa's telecommunications regulators and a lack of state political will to interfere are two reasons why data prices remain high.[409] There is a need for free Internet access (or at a much-reduced cost) and high-quality Internet through municipal wi-fi, free applications, and state intervention. These opportunities could help young people develop the skills required for the changing global economy.[410]

Furthermore, other trends may hinder South Africa's ability to advance in digital technology. At just over 40%, smartphone penetration is still lower than global averages. Given that smartphones are often the first step into digital technology, it is worrying that most young people in South Africa lack access.[411]

The Link between South Africa's Digital Economy and the AfCFTA

Digital trade and transactions on a day-to-day basis are increasing to the delight of policymakers; these processes are underpinned by higher efficiency, effectiveness, ease of use, and reduced expenses. The advantages of the digital economy are felt at all levels, from consumers to enterprises and the government.

Policies and Acts of Parliament

South Africa has created a robust policy framework for the digital economy and ICT at large. South Africa's National Development Plan Vision 2030 clarifies that a single cohesive National e-Strategy is essential to ensure the diffusion of ICTs in all areas

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[405] E4D, *How to prepare South African youth for the digital economy* (Report from the TechSalon session in Joburg in June 2018), 2018, 1.
[406] *Ibid, 2.*
[407] *Ibid, 2.*
[408] Mitra S, *'The Hole in the Wall Project and the Power of Self-Organized Learning' Edutopia*, 2012 -< https://www.edutopia.org/blog/self-organized-learning-sugata-mitra> on 28 March 2021.
[409] E4D, *How to prepare South African youth for the digital economy* (Report from the TechSalon session in Joburg in June 2018), 2018, 2.
[410] *Ibid, 3.*
[411] *Ibid, 3.*

of society and the economy. ICT is identified as an enabler and is said to speed up delivery, support analysis, build intelligence and create new ways to share, learn, and engage.[412]

South Africa's National e-Strategy aims to position South Africa as a significant player in developing ICTs throughout the sector's value chain and accelerate the uptake and usage of ICTs in other social and economic sectors.[413] The e-Strategy builds on various policies that focus on ICT and related sectors, including the Integrated ICT Policy White Paper,[414] ICT RDI Roadmap,[415] and the Industrial Policy Action Plan.[416] The e-Strategy seeks to guarantee a coordinated approach to implementing various initiatives arising from these and other government policies.

In terms of the statutes regulating the digital economy, while there is no single statute, there are a set of statutes that create a constructed regulatory framework when read together. These are:

- *Electronic Communications and Transactions Act, 2002* – this Act aims to facilitate and enable electronic communications in the public interest. In doing so, its purpose is to, among other things, recognise the importance of the information economy for the nation; promote the understanding, acceptance, and growth of electronic transactions; and promote legal certainty and confidence with regards to electronic communications and transactions. The Act calls upon the Minister to develop the National e-Strategy, as highlighted above.[417]
- *Cybercrimes and Cybersecurity Bill, 2017* – the objective of this Bill is to create offences and impose penalties on acts that constitute cybercrime and criminalise the distribution of harmful data messages, among other things.[418]
- *Promotion of Access to Information Act (PAIA), 2000* – the PAIA is an Act that allows for access to any information held by the State and any information held by private bodies required for the exercise and protection of any rights. This Act is in line with the Constitution of South Africa, which provides that access to information is a fundamental right and that legislation should be enacted to effect this.[419]
- *Consumer Protection Act, 2008* – the Act seeks to advance the socioeconomic welfare of South African citizens by, among other things, establishing a legal framework for the maintenance of a consumer market that is fair, efficient, sustainable, and responsible for the consumer's benefit. Additionally, the Act aims to promote fair business practices, improve consumer awareness and information, and provide consumers with an accessible, consistent, harmonised, effective, and efficient redress system.[420]
- *Protection of Personal Information Act, 2013* – the Act aims, among other things, to promote the security of personal information processed by public and private bodies and to introduce certain conditions to establish minimum requirements for the processing of personal information. The Act gives effect to the right to privacy as enshrined in the South African Constitution.[421]

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[412] South African Government, *National Development Plan* – 2030, 2013.
[413] Department of Telecommunication & Postal Services, *Digital Society South Africa: South Africa's National* e-Strategy towards a thriving and inclusive digital future, 2017, 2.
[414] Department of Telecommunication & Postal Services, *National Integrated ICT Policy White Paper*, 2016.
[415] Department of Science & Technology, *ICT RDI Roadmap,* 2007.
[416] Department of Trade and Industry, *Industrial Policy Action Plan,* 2016.
[417] *Electronic Communications and Transactions Act,* 2002.
[418] *Cybercrimes and Cybersecurity Bill,* 2017.
[419] *Promotion of Access to Information Act,* 2000.
[420] *Consumer Protection Act,* 2008.
[421] *Protection of Personal Information Act,* 2013.

- *Customs and Excise Act, 1964* – this Act aims to provide for the levying of customs and excise duties, and the prohibition and control of the importation or manufacture of certain goods and matters incidental to that. It was most recently amended by the Tax Administration Laws Amendment Act, 2020.[422]

The AfCFTA unites all 55 AU member states, covering a market of more than 1.2 billion people, including a growing middle class, and a combined GDP of more than USD 3.4 trillion.[423] South Africa endorsed the AfCFTA negotiations at their launch during the 24th AU Assembly in June 2015. The Department of Trade, Industry, and Competition led the negotiations, and the South African Revenue Service (SARS) played a vital role in the negotiating team.[424] As of February 2019, South Africa has deposited its instruments of ratification following its Parliament's ratification of the establishing agreement of the AfCFTA. Cyril Ramphosa, the South African President, had expressed that this ratification reaffirmed the country's position to foster a single, unified and diversified African market free of trade barriers.[425] As a reflection, South Africa has been the leading importer and exporter in inter-African trade for the past decade, leading and entering into a duty-free Southern African Customs Union and the Free Trade Agreement (FTA) in the SADC region.[426] The AfCFTA creates the opportunity for South Africa to realise this objective at a larger scale with better coordination from the AU. Further, some industrial and immigration policy changes are required to allow for the free movement of goods and possibly, persons.

Opportunities Presented by the AfCFTA

The AfCFTA presents numerous opportunities for all AU member states. South Africa accounts for 27% of all intra-African exports and 12% of all intra-African imports, thus accounting for a disproportionate share of intra-African trade in 2019.[427] However, the country's reach into the North and West African markets is hindered by steep import duties. Implementing AfCFTA and the relaxation of import duties on several products could open new markets for South African companies, thus increasing employment creation and GDP growth.[428]

Furthermore, as the leading exporter of petroleum oils (excluding crude) and electric energy, South Africa could take the opportunity created by the removal of trade tariffs to advance the National Development Plan's sustainable development and energy security initiatives.[429] Through remodelling SASOL on biofuels and ESKOM with renewable energy, South Africa could lead the climate-sensitive development discourse in Africa. SASOL already exports a significant amount of petroleum oils to Africa, and ESKOM already supplies energy to several SADC member states. South Africa's intergovernmental panel on climate change has been deliberating on adapting to a climate-smart economy without causing widespread economic hardship.[430]

Moreover, the AfCFTA could mean more tax revenue through employment creation, VAT, and corporate tax, which acts as the substitute for the loss of income from removing tariffs and other NTBs, considering the numbers in exports and imports.[431]

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[422] Customs and Excise Act, 1964.
[423] Nganga T., Mbithi M., The digital trade era – opportunities and challenges for developing countries: The case of Kenya, World Trade Organization 2021.
[424] https://www.sars.gov.za/Legal/International-Treaties-Agreements/Trade-Agreements/Pages/AfCFTA.aspx.
[425] The Presidency Republic of South Africa, 'President Ramphosa concludes Working Visit to Ethiopia', 11 February 2019 - < http://www.thepresidency.gov.za/press-statements/president-ramaphosa-concludes-working-visit-ethiopia-0>.
[426] Chidede T., 'South African Customs Union (SACU)'s trade and tariff profile' Tralac, 14 Dec 2018 -< https://www.tralac.org/blog/article/13807-southern-african-customs-union-sacu-s-trade-and-tariff-profile.html>.
[427] Komane N., 'South African Trade and the African Continental Free Trade Agreement (AfCFTA)' Institute for Global Dialogue, 2020.
428 Rampiar A., 'African Continental Free Trade Area and what it means for South Africa' Shipping and Freight Resource, 2021.
429 Komane N., 'South African Trade and the African Continental Free Trade Agreement (AfCFTA)' Institute for Global Dialogue, 2020.
[430] *Ibid.*
[431] *Ibid.*

It is also important to note that the AfCFTA caters to South Africa's regional integration position, targeting a more developed and peaceful region. The AfCFTA provides SADC member states with the ability to sell their goods and services to other markets without tariffs, resulting in more revenue to be spent on much-needed growth in their respective countries. South Africa's contribution to the AU and Agenda 2063 necessitates its support for the AfCFTA, as the agreement's establishment is a prerequisite of the agenda. Economic interdependence has served as a stabilising force in regions. As the European Union has shown, by forming alliances that go beyond economics, African states will have to accept a more significant role in ensuring that any arising dispute is resolved quickly through the AU Peace and Security Council to avoid spirals.[432]

Concerns Presented by AfCFTA

The road to the AfCFTA is not without its hurdles; indeed, there are still potential concerns that come about at its onset.

First, concerns over the use of digital economy platforms, especially in cybercrimes, are not uncommon. While ICT adoption may be extensive, if security breaches are frequent, people who are already wary of technology may avoid or even refuse to use online services that require the submission of extensive personal details.[433] Other technological concerns include unfriendly user portals and the inaccessibility of technology for special needs persons.[434]

Second, the 'digital divide' concept has evolved from merely being used about the lack of access to the Internet and hardware to such things as computers, phones, and mobile devices.[435] Falling prices of devices like computers and mobile phones can solve the digital divide problem over time.[436] However, new digital divides have arisen, such as the difference in the speed and quality of those devices. There are multiple digital divides now, which pose challenges globally and locally – problems in terms of content availability, bandwidth, and skills, among other issues.[437] Digital divides are perpetuated by many factors such as e-literacy and culture; for instance, an unreceptive culture has implications on the digital economy.

Third, as stated previously, regulations on the digital economy are all over the map. There exists no uniform statute or unified framework per se. Furthermore, the protocols therein are not standardised, and the absence of a single protocol on the content limits the agreement's implementation. Such a murky regulatory framework is inadequate and will inevitably lead to disputes.

Conclusion

Technology and its advancements have transformed the way that the world operates, having encroached on all areas. ICT has accelerated globalisation while simultaneously shedding light on the 'great divide' between the developing and developed countries. Nevertheless, incorporating said technologies is a necessary step in any country's development, and South Africa has made significant efforts in adapting them to its benefit. Events in recent years indicate a positive attitude towards digital technologies, reflected in South Africa's regulatory and policy direction. Though more needs to be done for South Africa to better position itself to take full advantage of the digital economy, its current trajectory is at the very least hopeful.

Further, notwithstanding the few concerns

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[432] *Ibid.*
[433] A Project of InfoDev, The Center for Democracy & Technology, *The E-governance handbook for developing countries* (2015) P17.
[434] Kennedy Okong'o, Michael Kyobe, `Empirical Examination of e-Government in Developing Countries and its Value in Kenya's Public Service` (2018) 21(1) *The Electronic Journal of Information Systems Evaluation.*
[435] Department of Economic and Social Affairs; *United Nations E-government Survey 2018: Gearing E-government to Support Transformation Towards Sustainable and Resilient Societies`¸* (2018) at P34.
[436] *Ibid.*
[437] *Ibid.*

surrounding the AfCFTA, South Africa's commitment to implementing the agreement is key to its success. While the date of entry into force was initially July 2020, the COVID-19 pandemic caused a postponement to January 2021. SARS expressed its readiness to implement the agreement before the revised due date. *The agreement establishing the African Continental Free Trade Area* was published effective 1 January 2021 per Notice R1433 in Government Gazette 44049 of 31 December 2020.[438]

[438] Notice R1433, *Government Gazette* 44049.

Chapter 5: **Ghana**

Defining a Digital Economy in the Ghanaian Context

The ICT sector lies at the core of the digital economy and impacts all types of business activity, public service provision, and daily life for individuals. The services sector constitutes the most significant part of Ghana's economy, with ICT contributing about 3.6 per cent of the country's GDP. The contribution of ICT services in 2019 was USD 1.7 billion, according to an IFC report. The contribution of Ghana's ICT sector to the overall GDP of the country has grown steadily over the years, becoming one of the best performing sectors in the country's economy. The World Bank's 2019 Stocktaking Report on the Digital Economy of Ghana showed the country's digital sector had experienced impressive growth with credits to early liberalisation and deregulation of the telecommunications market in the late 1990s. Combining a competitive market structure, improved international connectivity, private-sector investment in communications infrastructure, and a reduction in telecommunications prices, particularly at the wholesale level, has been instrumental in fuelling innovation and investments in the broader ICT sector. Emerging out of this is the digital economy, which includes IT and IT-enabled Services.

Major Components of the Digital Economy in Ghana

Ghana has one of the highly recognised digital economy landscapes in Africa. This journey dating back to the early 2000s has resulted from various government interventions to facilitate the growth and development of an enabling environment. These interventions have been by way of legal, regulatory, and institutional frameworks; infrastructure development; skills development; R&D; and local and foreign direct investment promotions.

Significant policy and regulatory interventions have been key to the relative success of the reforms and progress made to date. These include the ICT for Accelerated Development (ICT4AD) Policy (2003), the pro-investment National Telecommunications Policy (2004), and National Broadband Policy (2012). It is important to note that some policies require updating, especially those dating back to over a decade. In order to facilitate trust and integrity in the operations of the ecosystem, various legal and institutional frameworks have also been developed, to strengthen the ICT and other related regulatory institutions.

In the private sector, Ghana is seeing a vibrant IT sector emerging with companies such as mPedigree, Rancard, Softtribe, Hubtel, mPharma, Logiciel, and Nosmay competing globally in software and applications platforms for everything from finance, payments, and agriculture to medical services. Ghana also has over 20 registered business process outsourcing companies, a handful of IT parks, and over 50 innovation hubs for incubating and providing training and mentorship to start-ups, an excellent sign for the country in its efforts to facilitate digital trade.

The Digital Economy Landscape in Ghana

In recent years, the adoption of disruptive technologies has gathered pace in Ghana. Initiatives by the government of Ghana have contributed to this growth. For example, the Ministry of Lands and Natural Resources in Ghana is working with IBM towards a blockchain-based solution for land administration, changing the current inefficient paper-based central land records system to an immutable and secure decentralised ledger of land records. Rancard, a Ghana-based company leader in social recommendations and AI-powered customer engagement technology, has recently launched R2. This virtual agent uses best-in-class machine learning and AI to automate business and customer interactions.

There have been a series of policy and infrastructure-related reforms by the government in recent years, including the ICT4AD Policy, the National Telecommunications Policy, the Payment Systems and Services Act, the Data Protection Act, the Electronic Transaction Act, the Electronic Communications Act, the Cybersecurity Act, and the implementation of a fibre-optic backbone. These are expected to put the country on a solid footing for sustained economic growth, improved service delivery, and more effective policymaking. Liberal policies and strategic initiatives for private-sector participation have created a highly competitive digital market in Ghana. In 2003, the ICT4AD Policy set out the plans to engineer an ICT-led socioeconomic development process with the potential to transform Ghana into a middle-income, information-rich, knowledge-based, and technology-driven economy and society (ICT4AD Policy, 2003). The government is currently taking steps to update the ICT4AD Policy towards a new digital roadmap strategy.

The National Communications Regulations of 2003 provide the principal regulator's foundational legal framework, the National Communications Authority (NCA). The NCA and other regulatory institutions are supported with several industry-specific regulations, such as the National Communications Authority Act (Act 769), Electronic Communications Act (Act 775), Electronic Communications Amendment Act (Act 786), Electronic Transactions Act (Act 772), DTT Broadcasting Policy, 2016, The National Information Technology Act, Ghana Investment Funds for Electronic Communications (GIFEC) Act, Data Protection Act, and National Broadband Policy and Implementation Strategy. While the NCA is the sector's primary regulator, GIFEC exists to provide universal service and access to underserved rural communities.

The National Information Technology Authority (NITA) is mandated to create an enabling environment for the effective deployment and use of ICT by all public sector institutions and organisations. Improved international connectivity has resulted in a fall in wholesale bandwidth prices and relatively lower retail prices for end-users. The digital government development in Ghana is led by the Ministry of Communication, which spearheads several key initiatives such as the National Identification System (NIS), ICT Infrastructure Development Program, Public Key Infrastructure, Open Data Initiative, and other digital government initiatives. The government of Ghana has undertaken several other digitisation projects, such as the National Digital Property Addressing System and the land records digitisation agenda. The NITA is the ICT policy implementing arm of the Ministry of Communications.

A public service institution established by Act 771 in 2008 (the NITA Act), NITA is responsible for implementing Ghana's ICT policies. In addition to digital infrastructure, its mandate includes 'identifying, promoting and developing innovative technologies, standards, guidelines and practices among government agencies and local governments'. It is also responsible for 'ensuring the sustainable growth of ICT via R&D, planning and technology acquisition strategies to facilitate Ghana's prospect of becoming a technology-driven, knowledge-and values-based economy'. NITA has implemented the e-Government Infrastructure Platform Project to connect all Ministries, Departments and Agencies (MDAs) and Metropolitan, Municipal, and District Assemblies (MMDAs) across Ghana. NITA has also built a Tier 3 data centre to host all government applications and has decided to commercialise its excess capacity to generate more revenue to support developmental work. Currently, NITA is also pursuing a public key infrastructure and developing a compliance policy for all the government institutions for third-party software licensing and usage. Indeed, Ghana has numerous entrepreneurship support policies and programs, but they suffer from overlap lack of coordination, hindering their effectiveness. ICT regulations have several gaps and grey areas, which constrain private-sector investment and market creation. Ghana also has a generally poor environment for doing business. The government has created multiple agencies and programs that support SMEs, entrepreneurs, and enterprise development, many of which provide overlapping support without clear coordination. For example, the two lead ministries for SME and entrepreneurship development, the Ministry of Trade and Industry and the Ministry of Business Development, are currently formulating

national policies that appear to have significant overlap. Without transparent rationalisation of mandates, these programs' impact on SMEs and entrepreneurship will remain limited. The lack of consolidation and streamlined structure for existing government support programs reduces their likelihood of sustainability.

Rationale for Digital Economy in Ghana

A digital economy has the potential to enhance productivity and gains in multiple ways. It can change the way economies of scale are achieved, particularly with online service delivery, as the incremental cost of offering an additional product or service may become negligible. It may provide better matching of buyers and sellers in a competitive marketplace, a feature that is key to the digital trade envisaged under the AfCFTA. It may address specific concerns with asymmetric information, solving some principal-agent problems where buyers and sellers are separated by intermediaries or even multiple levels of intermediaries. It may strengthen people's trust in firms or governments by enabling decentralised forms of trust (such as blockchain) where centralised authorities are not trusted. It may allow products and services to be customised and targeted, enabling better inclusion and easier ways to exclude some.

Main Pillars of the Digital Economy in Ghana

As shown in the figure below, the digital economy in Ghana can be aligned to the digital economy foundation pillars.

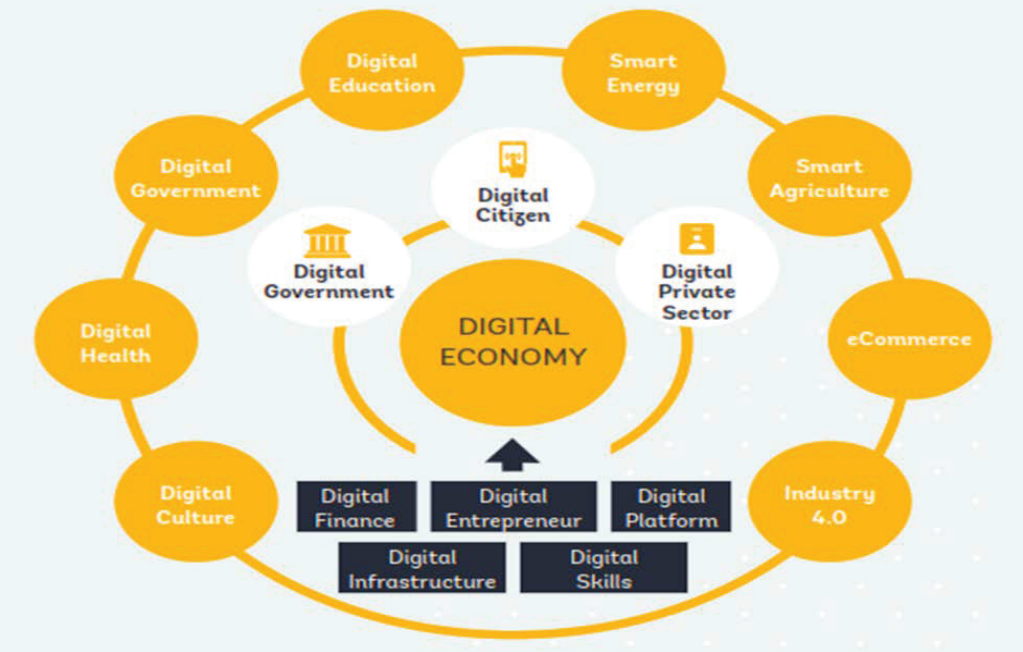

Figure 1 Digital Foundation Pillars (source: The World Bank's 2019 Stocktaking Report on the Digital Economy of Ghana)

In 2017	Capacity Available to Operator (Gbps)	Capacity Available in use
National Network Statistics	Total National Coverage in Km (fiber)	14,322.03
	Total lighted fibres in Gbps	1,797.66
	Total Fibre capacity in use Gbps	876.61 (48.8%)
Number of Operators	9	

Figure 2 Terrestrial Fibre Network (Source: National Communication Authority)

Digital Infrastructure

Ghana's telecommunications sector has experienced impressive growth thanks to early liberalisation and deregulation of the market since the late 1990s. Intense competition has resulted in near-ubiquitous mobile coverage and a high mobile penetration rate of 131 SIM cards per 100 inhabitants, compared to an average of 80 in the rest of Africa. The country's mobile Internet penetration of about 68 per cent is notable, albeit only slightly above the African regional average (GSMA 2018a).

The World Bank's 2016 World Development Report provides a valuable framework for analysing the broadband supply chain: starting from the first mile (the point where the Internet enters a country – international Internet access, including submarine cable landing stations and satellite international connectivity) through the middle mile (national backbone and intercity network, including fibre backbone, IXPs) to the last mile (reaching the end-user through local access network). The framework also highlights an invisible mile (the intangible parts of the network such as spectrum, licensing, cybersecurity, and so on) which could constrain or promote broadband access. A challenge on any of these miles may result in disparate networks and poor delivery of services. In Ghana, there are five submarine cable landings providing over 340 Gbps in an available capacity as of 2017. Three MNOs (MTN, Vodafone, Airtel/Tigo) invest significantly in terrestrial backbone and last-mile infrastructure at the national level.

The GIFEC is leading efforts to close rural connectivity gaps through several initiatives, including a recent partnership with MTN and Ericsson for a USD 12 million Rural Telephony Project to extend mobile telephone coverage to about 40 rural communities in the country. At the end of December 2018, there were 40.94 million mobile subscribers (138 per cent penetration rate) in Ghana, with annual growth of 11.5 per cent (Fitch Solutions 2019). The rapid growth of 3G/4G services are supported by value-added mobile solutions and applications provided by mobile operators. Mobile operators successfully launched 3G service in Ghana in 2013. Currently, four operators offer 3G services and, as of December 2018, there were about 14 million 3G subscribers. Presently, only one provider (MTN) has provided 4G services beginning from 2016. As of December 2018, there were about a million 4G mobile services subscribers (TeleGeography 2019).

Digital Platforms

Digital platforms span every aspect of life and are used by both the government and private firms. In considering the state of digital platforms, it is vital to consider digital IDs, back-off and shared systems, interoperability, and digital service delivery both for government and private-sector firms. These ground pillars are tightly interconnected, and the growing desire to achieve greater efficiency, transparency, and accountability has led to the government's continued investment in public sector digital platforms. The automation of tax and business registration systems has significantly broadened the tax base and streamlined business processes by reducing the number of days for registering businesses and filing taxes.

According to the 2018 UN EGDI survey, Ghana is the only African country that transitioned from a middle to high level. Based on the technical features of national websites and e-government policies and strategies applied in general and by specific sectors

in delivering services, the number of African countries in the High-EGDI-level group remains relatively modest at 6, with only one country, Ghana, joining the group since 2016. The EGDI is a weighted average of normalised scores on the three most important dimensions of e-government: the scope and quality of online services as indicated by the OSI; the status of the development of telecommunication infrastructure rated through the Telecommunication Infrastructure Index; and the inherent human capital scored through the Human Capital Index. Each of these indices is by itself a composite measure that can be extracted and analysed independently. Ghana's EGDI encapsulates the various fronts on which progress has been achieved, including steps towards streamlining its institutional and policy frameworks to capitalise on ICT innovations. Since 2017, the country has also been investing in improving online services delivery. It has so far made significant contributions towards the development of ICTs under the e-Ghana and e-Transform projects.

The government recognised the need for a national ID platform to form the underlying infrastructure for other digital ID platforms. The national ID card program led by the National Identification Authority ensures that every citizen has a national ID card known as the Ghana Card. The process of registration and issuances of the national ID began in May 2018. The Ghana Card will be the primary ID card that Ghanaians will use to access all services in the country. It will serve as a valid ID to open a bank account, apply for a passport, telephone account, driver's licence, and many other services. The Ghana Card is intended to augment the consolidation of ID information of nationals and non-nationals, currently held in nine separate databases across various government and public entities.

The digitisation of back-office systems also started in Ghana in the 1990s with the digitisation of payroll. Initially, the Integrated Personnel Payroll System handled both the payroll and human resource aspects. However, with the introduction of the Human Resource Management Information System (HRMIS) in 2014, the HR functionality is handled separately. The payroll system is running on an Oracle platform and includes over 600,000 public employees. Ghana Integrated Financial Management Information System (GIFMIS) began its rollout in 2011 and is used by MDAs across Ghana, resulting in the timely preparation of monthly financial reports, annual financial statements, the effectiveness of expenditure commitment and payroll controls, reduction of audit observations, and regularity of account reconciliation. The HRMIS is currently being rolled out and is managed by the Public Service Commission. The Ministry of Finance runs a budget preparation and reporting system, Hyperion. Hyperion is connected to GIFMIS, pushing budget data for budget implementation. It is also interfaced with HRMIS, providing the compensation budget, and connected to the Commonwealth Secretariat Debt Recording and Management System. There are plans to connect it further to the procurement planning system and to a high-level public investment management planning to link with capital budgeting.

The interoperability between payroll, GIFMIS, HRMIS, and Hyperion systems is now mostly functional. As long as they have connectivity, MDAs and local governments can access payroll, invoices, budget information, and other key information online in real-time. More centrally, the Ghana Government Enterprise Architecture (GGEA) is designed for increased interoperability through the principles of shared infrastructure services, service-oriented architecture, and event-driven architecture. These principles are essential ingredients for interoperability. The GGEA's purpose is to ensure that there is available information for government services anytime, anywhere, to anyone authorised to access it from many channels. The GGEA enables Ghana's e-Government Interoperability Framework (eGIF). The eGIF is a set of policies, technical standards, and guidelines covering ways to achieve interoperability of public sector data and information resources, ICT, and electronic business processes. It creates the ability for any MDA to join its information, ICT, or processes with others using a predetermined framework based on open (i.e. non-proprietary) international standards.

The NITA has developed the e-government portal (www.eservices.gov.gh) designed to serve as a single service point – a one-stop-shop – for the public for government digital services. The services available

include forms to obtain a driver's license, passport, online registration of taxpayer-identification numbers, and others. Other services outside this one-stop-shop, such as registration of births and death, company registration, criminal background check, fingerprint analysis, background check for job and visa applications, and marriage licenses, have digital applications. Several private players have also entered the market as intermediaries for the citizens to government (C2G) and government to citizen (G2C) payments using mobile money platforms, such as ITConsortium and Wirecard.

The Ghana Single Window, launched in 2002, is a secure trade platform that facilitates the exchange of information between the Government of Ghana (GoG)and the logistics and trading community, thus allowing wide usage of the government's digital government initiatives. The platform reduces the need for data to be entered multiple times. It allows data to be exchanged and reused electronically, achieving faster and more accurate results and improving the ease of compliance with government of Ghana requirements. The Window has been progressively updated and extended in line with international best practices. Until recently, the project had the support of the Ghana Community Network Systems, a public-private partnership in which the government of Ghana holds a 38 per cent shareholding.

Ghana has a digital business registry which makes the registration process less cumbersome. The digital portal used for registration is a public-private partnership supported by NITA and the Ministry of Finance. The digital business registry improves the efficiency of processing registration applications, and the Registrar General's Department (RGD) aims to complete processing applications within 48 hours if the applicant meets all requirements. It makes business registration accessible to all firms irrespective of their location. It eliminates the activities of intermediaries who add friction to the business registration process while increasing the cost of doing business. The RGD has opened fully automated offices in various locations across Ghana to decentralise business registration and save time and resources for the many businesses who throng the department for registration. The digital portal is integrated with the Ghana Revenue Authority (GRA) e-tax portal, and the Tax Identification Number (TIN) is used as the linking identifier. In addition, a recent 2019 initiative by the RGD has established a requirement for all businesses to link a digital address code for their business to complete its registration process. This automation has led to substantial improvements for both companies and the government. GRA's automation led to a significant increase in automated business registrations (87,900 in 2015) and TIN registrations (425,305 in 2015). In addition, for the government, it meant an increase in tax revenue from 12 per cent in 2009 to 16.9 per cent in 2015 and enhanced efficiency in tax collection.

TradeNet Services	eTax Services	eRegistrar Services
TradeNet permits the logistics community to exchange trade-related documentation electronically with all agencies involved in trade-related processes.	eTax allows taxpayers to register for a Tax Identification Number (TIN), manage their profile, submit tax returns online and make electronic payments to settle liabilities. A TIN is required for all importers wishing to bring goods into Ghana.	eRegistrar allows investors to register their businesses online and pay associated fees electronically. During business registration, the new company is automatically issued with a TIN – a requirement for all importers wishing to bring goods into Ghana.

Figure 3 A sample of Ghana's Digital Service (source: The World Bank's 2019 Stocktaking Report on the Digital Economy of Ghana)

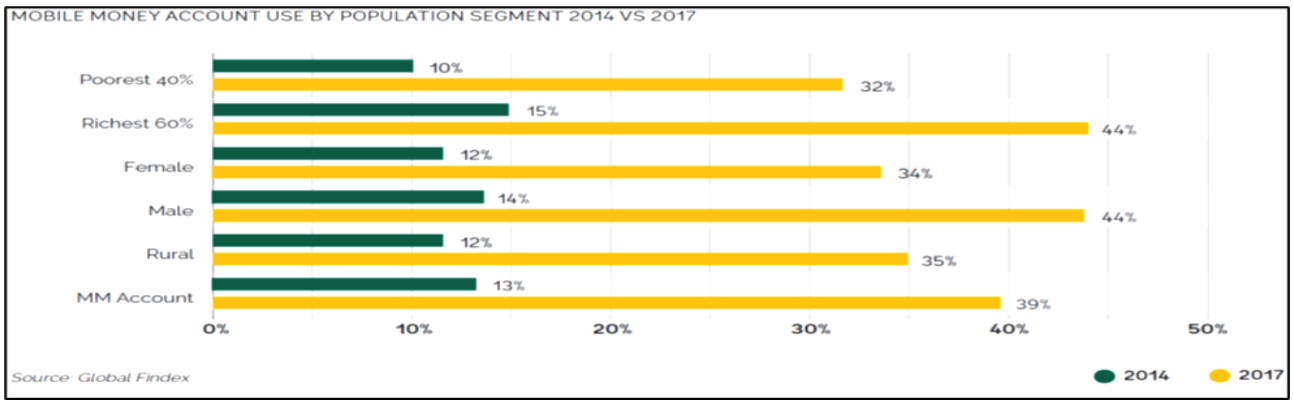

Figure 4 Mobile Money Account Use by Population Segment

Digital Financial Services

Recognising the importance of catalysing more significant innovation in and adoption of DFS, the government of Ghana has adopted a National Financial Inclusion and Development Strategy 2017–2023. Co-created with the World Bank, this new strategy outlines a series of reforms to increase financial inclusion from 58 per cent in 2015 to 75 per cent in 2023. Since adopting the guidelines, the government of Ghana has taken further steps to foster an inclusive digital financial system through the passage of the Payment Systems and Services Act in 2019 (PSSA), Crowd Funding Policy in 2020, and Sandbox Platform/Guidelines for Digital Financial Innovations.

This PSSA, which is currently in force, sets the stage for further competition and innovation by formalising the licensing process for and opening the nation's financial infrastructure to fintechs, which have increased in recent years and are driving the development of new use cases and enhanced user experiences. This represents an unprecedented opportunity to expand the adoption and use of DFS.

In addition to an enabling regulatory environment, Ghana has already deployed the necessary infrastructure to promote digital payments. Ghana Interbank Payment and Settlement Systems (GhIPSS), a wholly-owned subsidiary of the Bank of Ghana, provides the backbone of the country's digital payments infrastructure. GhIPSS facilitates interbank transfers, ATM networks, domestic card payments, automated clearing house, and mobile money interoperability. With support from the World Bank's e-Ghana Project, Ghana has also rolled out a new Ghana E-Payment Portal, designed to facilitate electronic payment for government services by citizens, businesses, and other entities conducting business with the GoG. The e-Payment Portal accepts a range of payment options, including card payments, mobile money, and bank transfer. Available services include payment of fixed fees, tangible goods, and service payments. Payments for taxes are also supported.

Ghana has made substantial progress on financial inclusion, due mainly to growth in DFS. With mobile account ownership on the rise, mobile money has become the preferred payment alternative to cash when measured in transaction volumes. Notably, the increasing popularity of mobile accounts has also facilitated a rise in DFS beyond payments. Mobile money increasingly serves as the rails for a range of bank and fintech products and services, including savings accounts, pensions, credit, remittances, and even investment products such as treasury bills. In some cases, these services are offered in direct partnership with mobile money providers. They can be accessed directly on the provider's USSD menu. In contrast, they are offered as over-the-top (OTT) services that leverage mobile money as a payments channel in other cases.

Moving forward, the government of Ghana has embarked on an ambitious digitisation agenda that bodes well for ongoing innovation in and adoption of DFS. The rollout of a new biometric national identity card (the Ghana Card) and digital addressing system (Ghana Post GPS) will offer additional pieces of market-level infrastructure that can support a more robust DFS ecosystem. Examples of how this new digital infrastructure can

be leveraged to support greater financial inclusion include digital know-your-customer (KYC) utilities (CGAP, 2018c), data sharing utilities, and a more inclusive digital payments ecosystem that allows for greater competition between providers and drives more excellent value for customers. Several private-sector digital platforms result from the growing competition in Ghana's financial technology (fintech) space. Payment aggregators, such as Interpay, Slydepay, expressPay, Korba and others, have invested in developing services that support card, mobile, and web (Internet banking) payments.

The recent passage of the PSSA will further drive innovation in the fintech space. Fintechs are presently excluded from receiving licenses from the Bank of Ghana to connect to the national switch, implying that they are equally excluded from the interoperability scheme and are forced to forge bilateral connections with providers. But as the PSSA has made its way through the legislative process, the Bank of Ghana has recently been proactive in involving fintechs in regulatory dialogue. Once the PSSA is signed into law (enacted in September 2019), the Act will address many of the impediments to fintech innovation by formalising a licensing process for fintechs and benefiting from the country's robust payments infrastructure, including through inclusion in the interoperability scheme.

Digital Entrepreneurship

Digital entrepreneurship is defined as the commencement of new ventures and transforming existing businesses through novel digital technologies. Helping create the ecosystem for entrepreneurship may further grow the digital economy. While the number of entrepreneurship support policies, programs, and actors in Ghana is snowballing, the country still lags behind many of its regional peers in terms of ecosystem maturity. Like many Sub-Saharan African countries, Ghana has a young and increasingly urban population ready to tap into entrepreneurial opportunities. In 2017, nearly 60 per cent of the population was under 25 years old (Index Mundi, 2019), and 55 per cent lived in urban areas, with the urban population growing at a rate of 3.5 per cent from 2013–2017 (World Bank, 2016b). The country is primarily English speaking, making it easier for Ghanaians to conduct business in international markets. Additionally, Ghana's diaspora is large (nearly 250,000 people in 2006) and concentrated in the United States and the United Kingdom, connecting key international consumer and financial markets (OECD 2019).

Ghana's digital ecosystem is growing rapidly. The 24 active entrepreneurship hubs (business incubators, accelerators, and similar spaces for entrepreneurs) now in Ghana represent an increase of 50 per cent since 2016 (GSMA 2018). Although start-up activity and the number of formal SMEs are unclear, USD 266 million in private capital was deployed in 15 venture capital deals in 2016–17 compared to USD 63 million in 16 deals in 2014–15, illustrating some growth in venture financing (World Bank 2018). However, government support for entrepreneurship is uncoordinated, consisting of multiple agencies and programs that provide overlapping support without a clear overall vision. A poor business environment, lack of access to credit and finance, and mixed quality of entrepreneurial support are other key challenges that must be addressed within the ecosystem.

GHANA INNOVATION/ENTREPRENEURSHIP RANKINGS

	Country Ranking					
	Ghana	Kenya	Morocco	Mauritius	Nigeria	South Africa
Global Entrepreneurship Index, 2018	93	109	65	NA	101	57
Global Innovation Index, 2018	107	78	76	75	118	48
Global Competitiveness Report: Innovation Ecosystem Component, 2018	87	66	88	50	92	46
StartupBlink Ecosystem Report, 2019	75	52	65	NA	56	51

Sources: Cornell University, INSEAD, and WIPO 2018; WEF 2018; Acs and others 2018; and StartupBlink 2019.

Figure 5 Ghana Innovation/Entrepreneurship Rankings

The figure above shows Ghana's global ranking in some well-known innovation and entrepreneurship indices. Ghana is an average performer compared to its regional peers in these indices, ranking between 75 and 107 globally.

Digital Skills

Intimately linked to the overall digital economy are the skills and know-how of the workforce to innovate and implement digital technology. The drive to develop a digital economy would be of little use without human capital that possesses the digital skills to operate and reap its benefits. Digital skills are not only the backbone of a digital economy, but are critical to creating a level playing field that facilitates innovation. A transformation of the global economy that will disrupt the landscape for jobs and work is underway. The Fourth Industrial Revolution is shaping the future where technological advancement promises disruption across sectors, requiring more complex skills and retraining the existing workforce. About 65 per cent of children entering primary school, according to one estimate, will end up working in a job that does not yet exist (WEF, 2018a). Online platforms are enabling entirely new industries and redefining interactions with customers and employees. Automation is changing the demand for labour, as technological advancement makes it possible for machines to do the jobs performed by people. Owing to the pace of innovation, a significant gap in supply and demand exists across all levels of digital skills in the region, especially on intermediate and advanced skills. Nearly 50 per cent of subject knowledge acquired during the first year of a four-year technical degree will be outdated by the time students graduate (WEF, 2018). The supply of digitally skilled labour in Sub-Saharan Africa and Ghana must increase to meet anticipated labour market needs, or Africa's economies will falter. Digital skills are critical for spurring the digital economy in Ghana and enabling the country to become the IT hub for the West African sub-region.

Enablers and Key Players of the Digital Economy in Ghana

Ghana has a very vibrant digital economy ecosystem with enablers and key players cutting across various sectors, including the government and private sectors. It has proven to be an ecosystem that has lowered barriers to entry, especially to the MSMEs. Key amongst these have been the policy makers, technology companies, foreign investors, donors, and employers. The technology ecosystem also boasts of interventions on fintech and blockchain, education, logistics, e-commerce, agriculture, health, and so on. The stakeholders in the digital economy ecosystem of Ghana are shown in the figure below.

	PROVIDE TRAINING	DEVELOP ECOSYSTEM
POLICYMAKERS	1. Partner with training or curriculum providers to roll out digital skill training in schools, colleges and communities 2. Develop digital skills courses with public institutions (for example, technical and vocational education and training, primary, secondary)	1. Create frameworks for public education institutions to leverage up-to-date digital skills trainging content 2. Continue to expand infrastructure 3. Create frameworks for public private partnerships
PRIVATE EDUCATION OPERATORS/ SERVICE PROVIDERS	1. Provide trainging directly to learners 2. Partner with government to provide curriculum or direct training (for example, in schools) 3. Partner with corporates to provide curriculum or direct training	1. Support operators and public sector to upgrade content 2. Improve access to infrastructure (for example, devices, internet access) 3. Develop tools/platforms to support unskilled people to get online
TECH COMPANIES	1. Provide curriculum and content potentially in partnership with government or private providers 2. Directly provide training to develop talent pool	1. Set standards in terms of certifications required for digital training 2. Advise government on policy 3. Provide teacher training and support government infrastructure initiatives
DONORS	1. Fund basic skills training 2. Fund programs enabling skilling for marginalized and underrepresented groups 3. Support the early expansion of innovative or untested models, including student financing	1. Fund the development of improved digital skills content 2. Support development and access to low cost devices
INVESTORS	1. Help scale and import effective training models 2. Consider investment in student financing models that enable expansion of access	1. Invest in infrastucture and telecommunication
LARGE EMPLOYERS	1. Directly provide training to develop talent pool 2. Invest in digital skill programs as a part of corporate social responsibity	1. Actively seek to partner with government or private operators to align curriculum to latest industry standards 2. Invest in infrastructure development as a part of CSR

Figure 6 *Opportunity Framework for Stakeholders.* Source: IFC, 2019b Digital Skills in Sub-Saharan Africa Spotlight on Ghana

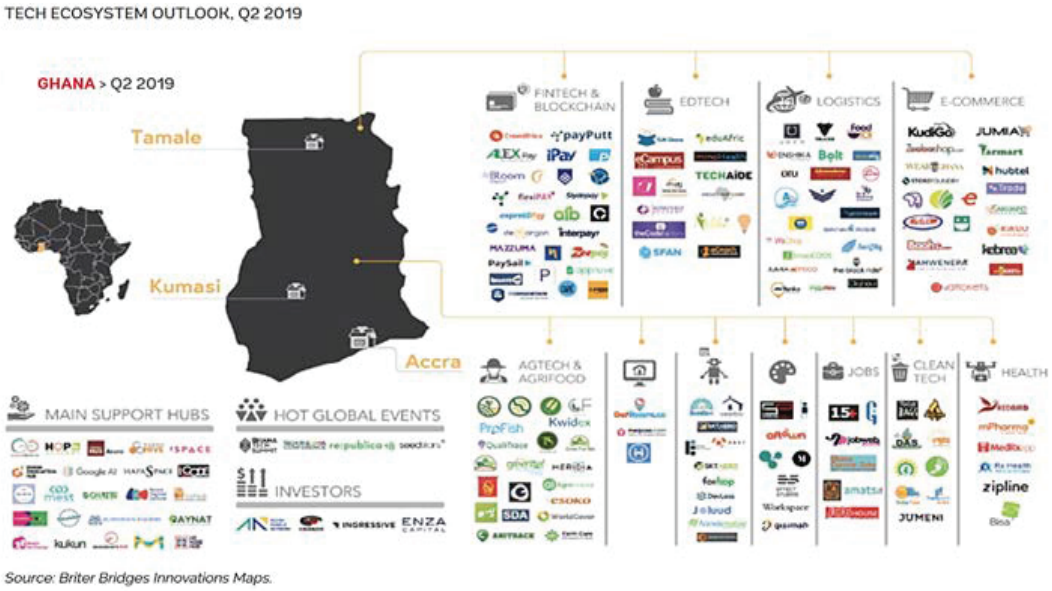

Figure 7 Tech Ecosystem Outlook, Q2 2019. Source: Briter Bridges Innovations Maps (https://briterbridges.com/maps)

The Link between Ghana's Digital Economy and the AfCFTA

ICTs amplify economic growth and social cohesion, with ICT targets underpinning several UN 2030 Sustainable Development Goals. Despite this, many African countries have not yet reached the critical mass of Internet connections of around 20% required to enjoy the network effects of investments in ICT infrastructure. However, cost, infrastructure, and access to devices inhibit the use of digital trade tools and the growth of the digital economy by extension.

Under the AfCFTA, the participating states committed to expanding intra-African trade through the harmonisation and coordination of trade liberalisation and implementation of trade facilitation instruments across Africa, and cooperation in quality infrastructure, science and technology, and the development and implementation of trade-related measures. The AfCFTA can encourage and facilitate digital trade by providing digital instruments to support trade within the Africa sub-region through e-regulations, e-logistics, and e-trade like the model under the COMESA Digital Free Trade Area Agreement.

And this can be enhanced with a Single Digital Market strategy in line with the World Bank publication report on the Single Digital Market in East Africa 2019, which made proposals for a single connectivity market, single data market, and single online market, as summarised in the table below.

Single Connectivity Market	Single Data Market	Single Online Market
Remove barriers to regional telecom and services deployment. Encourage investment, improve performance, eliminate pricing and quality differentials between coastal and land-locked countries. Expand access to connectivity to all.	Enable secure exchange, storage, and processing of data across borders. Support regional deployment of data infrastructure. Drive supply and demand for data-driven services and innovation across the region.	Allow firms, governments, and citizens to: - Access and deliver both public and private services online - Undertake e-commerce transactions - Access digital content and information seamlessly from anywhere in the region.

Opportunities Presented by the AfCFTA

While services can be 'offshored', production can be modularised into cross-border value chains established on evolving patterns of comparative advantage and invite participation by industrialising and emerging economies. The AfCFTA will critically look at the financial technologies and cybersecurity/ data protection, apart from infrastructure readiness, harmonising these three core components under the trade agreement, as it will form the bedrock for successful digital trading.

Financial technology: Fintech generally describes businesses using technology for financial services. This can mean new financial services (such as mobile money), but typically means new ways of delivering existing financial services. The technology might provide a new or better user interface, such as an app. It might enable a greater reach (more people have mobile phones than local bank branches) or lower costs (for example, 'Robo-advisors' use algorithms rather than humans to give investment advice, typically making the advice cheaper). Fintech solutions facilitate international trade in several ways, helping increase access to finance, especially for MSMEs, who will play a critical role in the AfCFTA process; fintech is also an enabler of cross-border payment mechanisms and trade finance solutions. The AfCFTA can also contribute to the expansion of fintech through opening markets to financial service imports, commitments to regulatory recognition or harmonisation, and supporting general digital infrastructure.

Trust: Cybersecurity and data protection are not just about personal privacy. By creating trust in the digital environment, data protection serves as the foundation for a thriving data-driven economy. Similarly, cybersecurity and the prevention of cybercrime are essential in this digital era. AU members have attempted to address these issues and electronic transactions through the African Union Convention on Cyber Security and Personal Data Protection, adopted in June 2014. However, progress on ratification and eventual implementation has been slow, and the adoption of the AfCFTA should spur more intergovernmental commitment to cybersecurity and data protection.

Concerns Presented by the AfCFTA

Currently, Ghana's legal/regulatory environment for private equity and venture capital is still being developed. The Securities and Exchange Commission (SEC) was recently authorised to register, license, authorise, or regulate private equity funds and venture capital funds. However, regulatory guidelines for private equity and venture capital are yet to be drafted. This is not necessarily problematic in a nascent ecosystem because these funds target sophisticated investors. The private sector has developed in the absence of a legal/regulatory framework for digital activities. The legislators/regulators are now catching up, creating tensions and grey areas subject to remediation through stakeholder engagement. Some essential parts of the legal framework are missing alongside grey areas (related to data storage, consumer protection, data ownership,

privacy, and cybersecurity, and so on) that could affect the growth of digital industries (World Bank 2017). Implementing new ICT regulations is also an issue. While Ghana has adopted no less than 11 laws related to ICT in recent years, inadequate resources have been allocated to implementing them. Ghana improved its ranking to 114 out of 190 economies in 2019, up to six places from its 2017 ranking. Yet, significant regulatory challenges exist relative to starting a business, enforcing contracts, and trading across borders.

Ghana's laws recognise various forms of intellectual property (IP) protections. However, decisions around IP protection are usually complex and require expert intervention and resources, which are not readily available, especially for SMEs. This lack of adequate intervention has therefore been noted to limit digital innovations in the country. When it comes to the digital economy ecosystem in Ghana, registration IPs have therefore not been a key component as a result of the challenging and complex nature of the IP laws and processes of registration, the lack of awareness, costs of registration, and business risks associated with some disclosures relating to registration.

Additionally, the development of the digital economy has resulted in many challenges regarding public policies and administration for governments worldwide. Among these is how an international taxation system designed for goods trade and physically present companies can work in a world where value crosses borders at lightning speed, and colocation is entirely unnecessary for a business-to-consumer relationship. The two critical issues in the tax debate consideration will include customs duties on electronic transmissions (including what amounts to an electronic transmission) and the corporate tax on companies that provide consumer services in a country but have no physical presence there. The first is currently under consideration at the World Trade Organisation. The second is under the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting, which consists of 135 members, including more than half of all African countries.

Overall, digital development requires an intersecting set of policy interventions, international cooperation, and support from governments across the continent to create an environment in which the digital economy can thrive. The foundation of this is connectivity – devices, electricity, and Internet access. Without these fundamentals, engagement with the digital economy will still occur, but it will be piecemeal and uneven. Those already advantaged will reap the benefits: incumbent business and privileged individuals will have access to the digital economy, but start-ups and micro-businesses and those disadvantaged by poverty, geographical location, gender, race, or other factors will be shut out. The operation of an intra-continental digital trade will require a functional African digital economy that allows interoperability and harmonisation between various countries and regional specific digital economies to ensure digital trade facilitation is seamless, progressive, and rewarding.

Conclusion

To conclude, we provide recommendations pointing out what is required for the Ghana government to fulfil its commitments to developing national, regional, and continental approaches and frameworks to support digital trade in Africa. For practical purposes, the recommendations are structured under four thematic categories: digital infrastructure, regulation and governance, education and skills, and trade and development cooperation.

Digital Infrastructure

Digitalisation in Africa requires a two-pronged approach: (a) investing in digitalisation and (b) building up local industrial capabilities.

- Improving access to digital technologies requires more significant investment than is presently the case.
- Efforts are needed to develop comprehensive and targeted science and technology innovation policies to ensure that African countries enhance their capacity beyond usage to produce new technologies suitable to their development needs.
- Data costs must facilitate broad access to and use of digital technologies and

infrastructure to encourage economic activity concerning the digital divide. Competition in infrastructure is a necessary step for fair pricing.

- A broad appreciation of the digital divide should also ensure that policy intervention considers all socio-political and economic aspects that impede access to digital technologies, digital infrastructure, and digital literacy.
- The establishment of digital entrepreneurial ecosystems, underpinned by national innovation systems that support the integration of digital technologies into enterprises, should be key elements of the digital entrepreneurship strategies of African countries. Forums on digital-based entrepreneurship could be set up in which public-private dialogue and collaboration, in addition to e-business networks and support groups, are fostered.
- Research on digital technology and its applications should be supported in African countries and could involve establishing regional and national digital research and learning centres.

Regulation and Governance

There must be space within the domestic policy for evolving data-governance frameworks for the digital economy, the regulation of digital transnational corporations and emerging e-commerce marketplaces, and digital industry protection measures, which are still in their infancy.

- An African regional framework to ensure convergence is needed to regulate more efficient technology giants. The AfCFTA offers a platform for establishing a single digital market akin to the European Union, incorporating a continental regulatory framework with equal standards for all platforms, regardless of their size.
- The effects of e-commerce on domestic resource mobilisation in Africa must be accounted for and considered in the international governance framework to facilitate the taxation of international e-commerce transactions.
- All member countries of the AU must take stock of their specific geo-economic advantages and disadvantages to determine their national digital and data strategies.
- Operating licences should only be issued to those platforms that respect regulatory frameworks.
- There is a need for mandatory language for technology transfer-related provisions under a global digital trade regime.

Education and Skills

Instead of focusing only on skills, policies must encourage lifelong education, learning, and civic skills.

- Non-routine cognitive tasks in the digital economy will require job-specific digital skills (for example, computer programming) and job-neutral digital skills (for example, data analysis), as well as 'soft skills' such as managerial collaboration communication, and analytical skills. Formal education and national skill development and training strategies should reflect that.
- Business and entrepreneurial skills, including financial planning, marketing, strategic planning, and website design skills, must complement opportunities for digital skills development.
- Targeted skill-development programmes should be designed to increase the ability of the workforce in African countries to acquire, utilise, and implement new digital technologies.
- Governments must forge collaborative partnerships with a broad range of stakeholders, including the private sector, to ensure the longevity of e-commerce skill development initiatives.
- It will be essential to define the digital skills, entrepreneurial skills, and competencies that meet the needs of African women entrepreneurs and support their equal participation in e-commerce.
- Efforts are needed to actively engage in and ensure meaningful dialogue on designing gender-responsive digital skills and digital entrepreneurship strategies.

Trade and Development Cooperation

Cooperation and development assistance arrangements between Africa and its development partners should integrate capacity-building assistance into digital technology; digital manufacturing; and science, technology, engineering, and mathematics.

- There is a need for a collaborative and consensus-based approach at the multilateral level to arrive at improved technology transfer-related provisions that cater to the unique situation of the least technologically advanced countries, which are latecomers to the use of digital technology.
- There is a need for a comprehensive aid-for-digital-technology programme to facilitate digital technology transfer and enhance the absorptive and adaptation capacities of the least technologically advanced countries.
- There is a need for positions on digital trade to evolve to enable African countries to make the most of the opportunities for industrial leapfrogging.
- Open access to government data should be encouraged and facilitated as a necessary component for a sound trade environment.
- As an active step towards combating online discrimination that could negatively impact the trade environment, transparency must be encouraged in policy, including at the level of algorithms.

Chapter 6: **Cross-cutting Concerns, Opportunities, and Recommendations**

This study aimed to understand the nature of the digital economy in five African countries and how they are likely to interact with the AfCFTA. The five case studies have shown the existence of vibrant digital economies in Ghana, Kenya, Nigeria, Rwanda, and South Africa and the opportunity for further growth aided by the introduction of the AfCFTA. The vibrancy of the digital economies is particularly tied to the growth of telecommunications in Africa in the last three decades, private-sector ingenuity, and governments' openness to digitising various aspects of their services and provisions to citizens. It is essential to indicate that the five countries discussed in this report may be more assertive in adopting digital systems than many other African countries. Yet, the dynamics of the digital economies in the five countries point to laudable growth that signals a positive potential for the African continent at large.

Our authors have attempted to define digital economies from the perspective of their various countries. Generally, they present the digital economy as a mix of digital infrastructure, platforms, laws, and policies that permit online and non-physical interaction and transactions between the state, citizens, and the private entities across multiple sectors and spheres of life. What remains unclear is a peculiar local and even regional conceptualising of the digital economy concept. There is the need to conceptualise what the digital economy means across various African countries beyond its accessible universal definitions. Is there such a particular conception, and is it is helpful at all? Readers are invited to ponder this question as it has the utility of highlighting the agency in local adaptations and manifestations of the digital facets of the economy in African countries.

From this report, attributes such as the dominance of the state and government in the digital economy, primarily through the provision of laws, policies, financing, and infrastructure in the digital economy of Ghana, Kenya, Nigeria, Rwanda, and South Africa, should, for example, suggest a certain peculiarity that may not be found in Global North countries. Add to the preceding attribute, other factors such as the explicit adoption, promotion, and implementation of digital systems by governments in the name of national development; the innovations and strides of the private sector despite the limited access to venture capital and other support systems; and the growing digital literacy.

Overall, our authors assert blossoming digital economies in their countries of interest and collectively signal opportunities for further growth. Our authors unanimously recognise the AfCFTA as a critical tool and arrangement for deepening digital economies in the five selected African countries and beyond. In the case studies, various opportunities provided by the AfCFTA have been provided. In sum, the effective implementation of the AfCFTA is going to foster a broader digital economy across the African continent and provide private-sector innovators and service providers with a broader market. Yet, these opportunities co-exist with concerns that must be mitigated if African countries can better exploit the AfCFTA. In what follows, key identified opportunities and concerns with the AfCFTA are highlighted, followed by a set of recommendations and a conclusion emphasising the need for an equitable and inclusive African

digital economy.

Identified Opportunities with the AfCFTA

- The AfCFTA's primary goal is the removal of trade barriers such as nationalist and protectionist trade policies across the continent, which could lead to an integrated digital economy in Africa that can create economies of scale for market participants.
- Consequently, SMEs will have a broader market and an alternative route to market their goods and services. An integrated market naturally means enhanced opportunities for networking, marketing, and sales. Countries can reach African markets that have been impossible or difficult to reach before now.
- There is thus the potential for the loss of import duty and tariff revenues to be adequately replaced by taxes on increased jobs, sales, and profits.
- Such an expanded market also spurs job creation across the continent in the digital economy. A broader market could increase demand for products that will create opportunities for persons with the necessary digital skills, as employees, consultants, contractors, or entrepreneurs.
- The high potential for capital accumulation with the AfCFTA provides various governments with an incentive to support and institutionalise dispute prevention, control, and settlement mechanisms for stopping hostile and discriminatory practices against corporate actors from other African countries.
- Similarly, there is the incentive to pursue integrated trade, finance, and taxation systems.
- Thus, the AfCFTA can boost the operations of financial technology firms as the latter can play a crucial role in facilitating easier cross-border and trans-border transactions, for example, through context-relevant banking systems and payment systems, trade financing, remote and collaborative work, as well as synchronous and asynchronous communication.
- Notably, African countries will now have a stronger incentive to protect African markets from unfair international trade practices and actors.

Notwithstanding the aforesaid opportunities, there are also concerns that our authors have raised about the introduction of the AfCFTA. Generally, these concerns are not necessarily about the AfCFTA itself but relate to prevailing dynamics that shape the digital economies of various African countries.

Cross-cutting Concerns Related to the AfCFTA

- Generally, there is a digital divide that still needs to be bridged in many African countries. This divide is deepened by lower levels of digital literacy and the shortfalls in digital infrastructure. These challenges are particularly prevalent in non-urban areas and endanger the possibility of dwellers in such communities benefiting from the digital economy.
- The shortfall in digital infrastructure means reliance on traditional or legacy systems, which may further add to the cost of running the digital economy. Moreover, the capital needed to resolve said shortfall and adequately improve affiliate utilities such as electricity providers may not be accessible to many African governments that must allocate resources to several other development challenges.
- Digital products still need massive adoption and use across African countries. This quest for adoption can be hindered by concerns about cybersecurity and data protection and more basic issues such as how accessible, handy, and intuitive digital tools and platforms are.
- Conversely, data protection institutions are still budding in African countries. They may extend the challenge of building the necessary trust needed for citizens and foreigners to participate in the digital economy fully.
- Additionally, it remains to be seen how effective tax regimes will be in regulating companies that provide consumer services

in a country but have no physical presence there.

- While an expanded market is favourable for digital economy entrepreneurship, the general barriers to starting and running a business remain high in many African countries. Moreover, there is relatively poor access to venture capital and low-interest credit.
- Across African countries, there remain significant regulatory challenges to starting a business, enforcing contracts, and conducting cross-border trading. Moreover, even within countries, regulations on the digital economy are scattered in different statutes and policy documents. As such, there could be a lack of legal clarity that can undermine performance.
- Additionally, protocols for the AfCFTA are not standardised across countries and could limit the implementation of the agreement.

Based on the concerns above and opportunities, our authors provide various recommendations to allow the digital economies across African countries to better benefit from the AfCFTA.

Recommendations

- It is helpful to have a national and regional review and harmonise the laws regulating the digital economy across Africa. This way, market participants can better structure their operations and structures and leverage them efficiently across the continent.
- Any efforts by governments to make, review and revise policies that shape the digital economy in African countries should be participatory and centre on the lived experiences of digital entrepreneurs and market participants.
- There is a need for timely and comprehensive investments in digital infrastructure across the continent. Internet and telecommunication systems, in general, must be more accessible in terms of reach, cost, and reliability. Such an investment can heavily reduce transactional costs for digital businesses.
- Education across African countries must be tailored to suit the demands of the digital economy. Where citizens become more digitally adept, the chances of increased participation in the digital economy become higher, thus increasing market and demand size, in addition to providing a boost in digital entrepreneurship and employment. Moreover, a more digitally adept population promises better capacity in negotiating the dangers of the digital economy, including surveillance, privacy breaches, dis/misinformation, online abuse, and scams.
- As the possibility of criminal activities and breaches in the digital realm cannot be discounted, any investment in digital infrastructure must be met with similar efforts to strengthen state institutions responsible for promoting security and boosting privacy. In this sense, the role of Data Protection and other human rights ombudspersons have become increasingly critical and must be provided the needed resources and legitimacy to perform their functions objectively.
- African governments must invest in more robust ecosystems for digital entrepreneurship and innovation. It is critical that national and even regional innovation systems and policies are set up so that digital innovators and entrepreneurs can better access grants and credit facilities and the necessary technical support to help them scale to other African markets. Building the capacity of digital innovators and entrepreneurs is an unnegotiable requirement if individual African countries can take better advantage of cross-border trade. Moreover, better-supported digital entrepreneurs have a more substantial chance of expanding their businesses and using their creativity to enhance society's problem-solving and savings potential as a whole.
- All policies and regulations that relate to the digital economy are designed to centre genuine inclusiveness by considering language, gender, literacy and (dis)ability

differentials that may impede equitable participation in the digital economy within and between countries.

- Member countries must ensure that non-African countries and businesses do not exploit the FTA by abusing the origin of goods dynamics. Here, each member country must play its role as an effective and reliable watchdog. It is only by protecting the interest of other member states that a country's trade interests can be protected.

Conclusion

Overall, there is a general sense of optimism about the potential of the AfCFTA. What is automatically lost in trade tariffs is expected to be mitigated by increased revenues and taxes. In effect, broader and integrated markets are expected to increase sales, revenues, and profits. Such enhanced capital accumulation is also expected to lead to more jobs and increased tax revenues across African countries. A virtuous cycle of personal, national, and regional growth is expected if the trade agreement is effectively implemented. However, it is essential to centralise the question of who benefits from an enhanced economy. Is it just going to be already large corporations and their owners and enablers, or will there be a fair and equitable distribution across African countries? Thus, what is as important as having the FTA in place is a conscious effort to design and implement policies and regulations that ensure that every citizen has a viable chance of effectively benefiting from the gains of a digital economy spurred by continental free trade.

One dimension of such an equity-seeking approach is to provide accessible contact points for acquiring the necessary digital skills to participate at the earning end of the digital economy. Yet, those who do not acquire such skills must still protected through policies and not lose their livelihoods. Another critical dimension of such equitable distribution of benefits is ensuring that citizens' human rights and freedoms are protected across the digital economy in terms of personal and group privacy, safety, and reputation. It is not arguable that the digital landscape is filled with many real-time landmines. Governments can protect their citizens and hold actors responsible for their conduct breaches through a consistently engaged watchdog and governance structure.

In sum, African governments have an opportunity through the AfCFTA to improve the livelihoods of their citizens, but it is not a given that said end will be achieved. African governments must be ready to play what is effectively the role of a midwife as they lead and guide their citizens into a continental digital economy that must be shaped to be fair, equitable, trustworthy, and safe.

Annexe 1: **Kenya**

Legal and Regulatory Policy Overview

POLICIES		
Policy	**About**	**Prospects for change**
National Information, ICT Policy		
Ministry of Information, Communications, and Technology, Kenya (2019)	It captures the ICT ambitions of our citizens and corporations and creates a framework for their timely realisation.	The policy may be updated to accommodate changes in the digital space. The last update in 2019 was made to align the policy with the Constitution of Kenya 2010, which may change if the Building Bridges Initiatives is passed, as it seeks to amend the current constitution.
Republic of Kenya, Digital Economy Blueprint 2019	The Blueprint provides a conceptual framework adopted by Kenya in its quest to realise a successful and sustainable digital economy.	The blueprint is not likely to change soon as it is still in the early stages of implementation.
Huduma Kenya Integrated Service Delivery Model	The Huduma Kenya programme aims at providing a multi-channel, 'single window' citizen access to transactional Government services using a variety of channels.	The programme is not likely to change soon.
National Kenya Computer Incident Response Team Coordination Centre (National KE-CIRT/CC)	The Kenya Information and Communications Act, 1998, mandates the Communications Authority of Kenya (CAK) to develop a national cyber security management framework by establishing a national Computer Incident Response Team (CIRT). Their mandate is to coordinate response and manage cyber security incidents nationally and collaborate with relevant actors locally, regionally, and internationally.	This is not likely to change soon.

ACTS OF PARLIAMENT		
Data Protection Act, 2019	The Act's objective is to give effect to Article 31(c) and (d) of the Constitution, establish the Office of the Data Protection Commissioner, and regulate personal data processing.	The Act is not likely to change soon.
The Kenya Information and Communications (Amendment) Act, 2013	The Act governs e-commerce transactions in Kenya, allowing and recognising electronic contracts for digital transactions. The Act creates an electronic signature and provides for CAK to regulate e-commerce and protect consumers.	The Act is not likely to change soon.
The Consumer Protection Act, 2012	The Act provides for the protection of consumers and the prevention of unfair trade practices in consumer transactions.	The Act is not likely to change soon.
The Access to Information Act, 2016	The Act protects personal data and the right to privacy.	The Act is also not likely to change soon.
The Computer Misuse and Cybercrimes Act, 2018	The Act governs offences relating to computer systems and facilitates international cooperation in dealing with computer and cybercrime issues important for digital trade.	This Act is also not likely to change soon.
The National Electronic Single Window System Draft Bill, 2016	The bill aims to establish the National Electronic Single Window System, to facilitate international trade and provide for electronic transactions.	The bill will only affect the trade industry once it is passed into law.

The table above gives an overview of the laws and policies that affect digital trade in Kenya. It has been divided into three sections as follows:

Policy – This section provides the name of the policy or Act of parliament.
About – This section explains the objective of the policy and its effect on digital trade.
Prospects for change –This section explains whether the law or policy is likely to change in the near future. The likelihood for change has been assessed based on the current regulatory environment in Kenya.

Government Influence map and decision-making process

Actor	Agenda/Mandate/Mission, Strategic Objectives	Role
Government Ministries and Institutions		
1. Ministry of Industrialisation, Trade, and Enterprise Development **Department: International Trade**	**Mandate:** The Department is responsible for managing Kenya's international trade relations and promoting and protecting its interests overseas to contribute to its development plans, including Vision 2030. **Strategic Objectives:** 1. To promote Bilateral, Regional and International Trade 2. To enhance Kenya's role and participation in Multilateral rule-based Trading System 3. To promote Exports of Kenyan goods and services 4. To protect Kenyan producers from unfair international trade practices 5. To promote investments	The relevant roles include: a. Coordinating trade and related negotiations b. Promotion of bilateral, regional and multilateral trade relations c. Formulation, implementation, monitoring and reviewing of international trade policies; d. Undertaking policy analysis and research on economic and international trade issues; e. Promoting inflow of investments; f. Coordination of regional trade matters: EAC, COMESA, EAC-EU, AGOA, ACP-EU, IOR-ARC and IGAD, among others; g. Promotion of public and private sector and civil society organisations' participation in international trade matters; h. Analysing global trade and economic trends and emerging socioeconomic issues; i. Coordinating trade matters concerning WTO, UNCTAD, ITC, and other International Trade Organisations (ITOs), including negotiations and implementation of the relevant trade-related decisions emanating from ITOs.
a.		
b.		
i.		

2. Ministry of Foreign Affairs **Directorate: Economic and Commercial diplomacy.**	**Mission:** To project, promote, and protect Kenya's interests and image globally through innovative diplomacy and contribute towards a just, peaceful, and equitable world.	a. The functions of Economic and Commercial Diplomacy that are relevant for the negotiation of the AfCFTA include: b. Undertaking research and policy analysis focusing on the promotion of economic diplomacy; c. Seeking external development support including financial, technical assistance, and capacity building in collaboration with the National Treasury and other relevant government institutions; d. Coordinating bilateral and multilateral development cooperation frameworks such as TICAD, FOCAC, among others; e. Coordinating Kenya's participation in economic, financial, and sustainable development processes at national, regional, and global levels; f. Protecting and promoting Kenya's socioeconomic and environmental interests at the global level in liaison with relevant MDA's; g. Maintaining inventory of and promoting the implementation of all economic and technical agreements; monitoring and evaluating economic policies and collaborations with development partners.

3. Office of the Attorney General and Department of Justice **Department: International Law**	The International Law Division is one among the nine divisions in the Office of the Attorney General and Department of Justice. It is further designated as the Registry of Treaties under the Treaty Making and Ratification Act.	The roles the Department has that were necessary for the facilitation of the AfCFTA: a. To Advise Government ministries, departments, agencies, commissions, and state corporations on international law; b. To negotiate, draft, vet, and provide legal advice on local and international agreements and treaties for and or on behalf of the government departments, state corporations, and commissions originating from regional and international organisations; c. To provide legal advice to the government on the activities of bodies, commissions and other international organisations that require submission of a country position.
4. Office of the President Kenya		The primary role of the Presidency is the organisation and coordination of government business. The effectiveness and efficiency of this office, given its technical leadership role and mandate in policy formulation, review and decision-making, impacts decisively on the performance of all other public sector entities.

Individuals	
Name and Position	**Government Ministry/Department/Agency**
His Excellency Uhuru Muigai Kenyatta – **President**	Office of the President, Kenya
Betty Maina – **Cabinet Secretary**	Ministry of Industrialisation, Trade, and Enterprise Development
Ambassador Johnson Weru – **Principal Secretary**	Ministry of Industrialisation, Trade, and Enterprise Development
Ambassador Raychelle Omamo – **Cabinet Secretary**	Ministry of Foreign Affairs

Ambassador Kamau Macharia – **Principal Secretary**	Ministry of Foreign Affairs
Joseph Kinyua – **Head of Public Office**	Acting for the Office of the President, Kenya
Dr Ruth Kagia – **Deputy Head of Public Service**	Acting for the Office of the President, Kenya

The tables above highlight government ministries, offices, and individuals who could influence the negotiations of AfCFTA. Given the confidentiality of the negotiation process, it was difficult to ascertain the specific individuals and their exact roles during the AfCFTA Agreement negotiations. However, this list was compiled based on online information from the negotiations undertaken by Kenya with the United States of America and the United Kingdom for their respective trade agreements.[439]

Private Sector and Civil Society Stakeholder Influence Map

Actor	**Agenda Mandate/ mission, Strategic Objectives**	**Arena Field of Action, Outreach**	**Prospects for Stakeholder Engagement**
I. Trade Institutions			
a. Regional			
1. East African Business Council (EABC)	This is a regional apex body of Private Sector associations and corporates in East Africa, whose objective is to drive the East African Community integration process through trade and investment.	EABC works with the private sector, East African Community institutions, academia, and the business community to unlock economic potential through increased physical access to markets, enhanced trade environment and improved business competitiveness.	**HIGH** – EABC aims at increasing national, regional, and global engagement with East African governments, people, and businesses.

[439] See https://www.industrialization.go.ke/index.php/kenya-usa-free-trade-area-agreement/578-press-release-on-the-launch-of-the-kenya-usa-free-trade-area-agreement-negotiations on 2 March 2021 for the Kenya- USA free trade agreement Negotiations; See https://www.industrialization.go.ke/index.php/kenya-uk-trade-and-economic-partnership-agreement/593-press-release-by-hon-betty-maina-cbs-cs-for-industrialization-trade-and-enterprise-development-on-the-ke-uk-trade-negotiations on 2 March 2021 for the Kenya- UK trade negotiations.

2. East African Chamber of Commerce, Industry, and Agriculture (EACCIA)	This is a regional body whose objective is to offer a credible partner for governments to create a business environment conducive to developing a strong private sector throughout the East African Community.	Trade Promotion and Facilitation, to ensure that the regional integration of East Africa is realised; Improvement of the Business Environment in favour of the Private Sector; Strengthening and developing SMEs and other informal sectors; Undertaking capacity-building interventions for the various national chambers of commerce in the region, to ensure that they can respond to the needs of their members.	**HIGH** – EACCIA aims to strengthen the private sector in East Africa through influencing policy at the national and community level, supporting national chambers, and enhancing cooperation and partnership between the public and private sectors across the East African Community.
b. National			
3. Kenya National Chamber of Commerce and Industry (KNCCI)	The KNCCI is a membership-based trade support institution working to protect the commercial and industrial interests of the Kenyan business community. KNCCI advocates for the creation of a favourable commercial, trade, and investment environment that supports enterprise expansion.	Promote trade within and outside Kenya; provide facilities for the study of and enquiry and research into commercial and industrial matters; and publish material and journals, among others, for the benefit of its members. It also collects and disseminates statistical data and other materials to its members. It is also responsible for promoting and coordinating the commercial and industrial interests of its members and Kenya in general.	HIGH – KNCCI aims at strengthening the Kenyan economy by advancing members' interests and equipping members with relevant information, resources, and opportunities.
4. Kenya Export Promotion and Branding Agency (BrandKE)	BrandKE is a state corporation whose mandate is to implement export promotion and nation branding initiatives and policies to promote Kenya's export of goods and services.	Advocacy and trade policy facilitation; export trade information services; market research and surveys; international market development and promotion; enterprise and product development.	HIGH – BrandKE provides information on the benefits and challenges of international trade and considerations to undertake before exporting, and on Kenya's trade policy, export incentives and trade agreements and how they can affect export activities.

5. KenInvest	KenInvest has the objective of promoting investments in Kenya. It is responsible for facilitating new investment projects, providing After Care services for new and existing investments, and organising investment promotion activities locally and internationally.	Undertaking research, reviewing and analysing policies and engaging in policy advocacy geared towards improving the business environment; providing information to investors on the business climate, operating rules, investment opportunities, and sources of capital; ensuring expeditious and quality facilitation of projects for prompt implementation.	MEDIUM – KenInvest mainly targets investors and provides information based on national laws and procedures.
6. Kenya Private Sector Alliance (KEPSA)	KEPSA is the private-sector apex and umbrella body that brings together the business community in a single voice to engage and influence public policy for an enabling business environment.	Public-private Dialogues for business reforms (policy, legislative and institutional reforms); participation in Economic Recovery Strategy development; engagement in the constitution implementation process.	**HIGH** – provides tailored trade and investment-related information to members.
7. Kenya Association of Manufacturers (KAM)	KAM represents manufacturing and value-add industries in Kenya that aims to promote competitive and sustainable local manufacturing.	Advocating for a competitive environment for businesses to operate creates better industries, grows the economy, creates jobs, and improves Kenyans' living standards.	**MEDIUM** – KAM's focus is very industry-specific.
II. Tech Firms			
8. Microsoft	Microsoft enables digital transformation for the era of an intelligent cloud and an intelligent edge. Its mission is to empower every person and every organisation on the planet to achieve more.	Engaging policymakers, leaders, entrepreneurs, and technologists through a series of conversations that will aid in deciphering misconceptions and questions that exist around technology policy; implementation of digitisation programs in Kenya, etc.	**HIGH** – Microsoft partners with local institutions to achieve its technology advancement and literacy objectives.

9. Access Partnership	A public policy consultancy focused on technology that aims to shape the impact of policy and regulation and their effects on businesses.	Create policy, regulatory, and legal routes to market that are adopted worldwide; establish and nurture long-term relationships with clients, including the world's largest technology companies, start-ups, and public sector organisations; focus on the policy as it affects technology, and deploy effective, proprietary, and stress-tested processes that ensure clients' or government's affairs goals are met every time.	**HIGH** – Access Partnership works to ensure that stakeholders align with the policies necessary for technology to improve lives and citizen welfare. They identify regulations that do not support innovation and ways to reform such regulations.
III. International Development Agencies			
9. Trademark East Africa (TMEA)	TMEA is funded by a range of development agencies to promote prosperity in East Africa through trade to ensure economic growth, reduced poverty, and increased prosperity.	TMEA works closely with the East African Community institutions, national governments, the private sector, and civil society organisations to increase trade by unlocking economic potential through reducing barriers to trade and increasing business competitiveness.	**HIGH** – Through its programs and publications, TMEA seeks to promote collaboration, inclusivity, and prosperity in the business community.
10. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	GIZ is a service provider in international cooperation for sustainable development and international education work; the company is dedicated to shaping a future worth living worldwide.	Supports people in acquiring specialist knowledge, skills, and management expertise; Helps organisations, public authorities, and private businesses to optimise their organisational, managerial and production processes; advises governments on achieving objectives and implementing nationwide change processes by incorporating them into legislation and strategies.	HIGH – At GIZ, capacity development is the key to sustainable development.
IV. Think Tanks			
11. Centre for Intellectual Property and Information Technology Law (CIPIT)	CIPIT aims to study, create, and share knowledge on the development of IP and IT significantly to contribute to African Law and Human Rights.	CIPIT undertakes and publishes research through podcasts, training, publications, blogs, etc.	**HIGH –** CIPIT is a leading source of IP and IT training, research, and guidance on the African continent.

12. Lawyers Hub	The Lawyers Hub is a Legal-Technology Policy organisation that provides innovative and technology-driven solutions to policy, legal practice, and access to justice, focusing on technology-driven enterprises and policy alternatives.	Lawyers Hub undertakes and publishes research through podcasts, training, publications, blogs, etc.	**HIGH** – The Lawyers Hub provides an assortment of avenues to get information on law and technology.
13. The Institute of Economic Affairs (IEA Kenya)	IEA Kenya is a think-tank that provides a platform for informed discussions to influence public policy in Kenya.	IEA Kenya undertakes research and public education on key economic and topical issues in Kenya and the region's public affairs and utilises the research outcomes for policy dialogue and to influence policymaking, achieved through a unique combination of approaches, including futuristic planning, policy analysis, research, advocacy, capacity building, and public education.	**HIGH** – IEA Kenya looks to influence the formulation of development-oriented trade policies in Kenya. It is focused on knowledge dissemination, advocacy networking activities, etc.
14. The Kenya Institute for Public Policy Research and Analysis (KIPPRA)	KIPPRA is an independent think-tank providing quality public policy advice to the Government of Kenya by conducting objective research and analysis and contributing to national development goals through capacity building.	Develop capacities in public policy research and analysis and assist the government in the process of policy formulation and implementation; provide advisory and technical services on public policy issues to the government and other agencies of the government to also serve as a point of communication and encourage the exchange of views between the government, the private sector and other bodies or agencies on public policy research and analysis.	HIGH – KIPPRA advises the Kenyan government on various policy matters based on research and stakeholder engagement.

15. The African Economic Research Consortium (AERC)	AERC is a capacity-building institution to inform economic policies in Sub-Saharan Africa. It integrates economic policy research, postgraduate training, and policy outreach within a network of researchers, universities, and policymakers in Africa and worldwide.	Capacity building through training and policy outreach; private sector engagement; outreach and policy engagement; and research.	HIGH – AERC has three primary components: research, training, and policy outreach.
16. The Institute for Development Studies (IDS)	IDS is a multi-disciplinary and multi-purpose development research institute in the Eastern and Southern Africa region that carries out full-time research on high priority areas of social-economic development in Kenya, Africa, and the world.	Generate development knowledge; promote debate; encourage the utilisation of research findings in postgraduate teaching and training; shape development thinking, theory, and practice with a particular focus on Africa.	**LOW** – The IDS is primarily focused on research in development.
V. Media			
17. Various print and electronic media outlets and pages		Dissemination of news, updates, expert analysis, etc.	**MEDIUM**

The table above lays out all the stakeholders in the private, public, and civil sectors currently engaged in or well placed to engage in and shape domestic conversations on AfCFTA issues related to digital trade. The table, which is a visual representation of all these players, shows the influence and connection between the stakeholders. In developing the table, the stakeholders were divided as follows: **I.** Trade Institutions (a) Regional and (b) National; **II.** Tech Firms; **III.** International Development Agencies; **IV.** Think Tanks; **V.** Media. This listing does not follow any hierarchy.

Each stakeholder was assessed based on:

i.) **Their agenda** – This was derived based on the specific stakeholder's mandate, mission, or strategic objectives as defined in law or their company profile;

ii.) **Their arena** – This was based on each stakeholder's field of action or outreach based on observed practice, publications, and projects.

iii.) **Prospects for (digital trade) stakeholder engagement** – This was based on a stakeholder's ability to influence or educate the national digital trade industry players. Several factors were considered, such as a stakeholder's ability to identify the relevant audience and their needs; a stakeholder's ability to identify and outline the current market and predict market trends; a stakeholder's ability to attract specific types of audience, e.g., suppliers, investors, etc.; a stakeholder's resources, etc. Consequently, the influence map categorised the various stakeholders' influence as follows:

a) **HIGH** – These stakeholders wield a lot of power and interest in the sector. They have a large audience, influence trends, have the resources to conduct research and impact the market, or combine all these things. They are key actors in the market.

b) **MEDIUM** – These stakeholders may either wield a lot of power or have an interest in the sector. They may start, shape, or drive conversations towards a specific plan or pique their audience's interest on various issues. They are not key actors in the market but ignoring their output could be detrimental.

c) **LOW** – These stakeholders neither wield considerable power nor have an interest in the sector. Their input or output may be of assistance but is negligible.

Annexe 2: **Nigeria**

Laws Governing the Digital Economy of Nigeria

POLICIES		
Policy	**Objectives/Mission**	**Prospects for Change**
Nigeria Broadcasting Code 2020 (6th edition)	The NBC amendment restricts monopolistic behaviour in the broadcast industry, provides for local content in the broadcast industry, and increases advertising revenue for broadcast stations and content producers. The NBC Code also establishes codes of practice relating to content acquisition, sharing of content rights for rebroadcasting and technical standards for media services; and for the regulation standards of fair market.	There are no imminent changes.
Nigeria Data Protection Regulation, 2020	This is the Nigeria Data Protection Regulation, tailored after the European Union General Data Protection Regulation 2016. It embodies the fair information privacy principles. It is established by the Nigeria Information Technology Development Agency according to its Act. It governs privacy and data protection. There is no legislation by the parliament on this.	There are no imminent changes.
The Nigerian National Broadband Plan 2020–2025	To provide broadband access across the country with the aid of enabling policies and relevant developmental measures. Additionally, this policy plans to conduct 4G LTE licensing, move for the rollout of fibre infrastructure, extend international cable landing points to other coastal states, and propel the rollout of last-mile cable connections to homes. The plan also seeks to set up public Internet access points, educate more women on the benefits and use of ICT, encourage the reduction of smartphone prices, and connect all universities, colleges, and hospitals.	

	The plan envisages more than a fivefold increase in Internet and broadband penetration, from 6% in 2013 to 30% in 2018. In addition, metro fibre infrastructure must be installed in all state capitals and urban cities. In contrast, other estates and business districts within major cities would have fibre to the home or premises.	
Guidelines for Online Hailing Business Operation of Taxis in Lagos State 2020	To ensure free flow of traffic on Lagos roads and to prevent loss of lives. Moreover, to obtain an accurate and distinct database of all taxi operators and drivers in the State and to sanitise the Taxi Business and App Deployment.	There are no imminent changes.
The Smart Nigeria Digital Economy Project	This digital-led strategy initiative of the government centres around the establishment of an ICT ecosystem in Nigeria. The project's objective is to increase the contribution of ICT and ICT-enabled activities to GDP by an estimated 10% and create 2.5 million new jobs between 2017 and 2020.	There are no imminent changes.
Consumer Protection Framework (CPF)	Deals with the overall legal and supervisory framework, disclosure and transparency, fair treatment and business conduct, data protection and privacy, alternative dispute resolution mechanisms, and the commitment to strengthening consumer education and boosting financial literacy. However, this has not been accompanied by the enactment of specific and legally binding regulations covering issues.	There are no imminent changes.
CBN Guidelines for Licensing and Regulation of Payment Service Banks (PSBs) in Nigeria	This guideline is a game-changer for financial inclusion. A PSB license is the new type of license, permitting the operation of a 'narrow bank' – an institution that can accept deposits but cannot lend. Unlike Mobile Money Operators, PSBs could be operated as subsidiaries of telecommunication companies.	There are no imminent changes.
National Payment Systems Vision 2020 (PSV 2020)	PSV 2020 is a digital and cashless policy implemented by the government that has been a catalyst for the growth in e-payment transactions. The data show that overall, e-payment channels (ATM, POS, Mobile, Web, NIP, and E-Bills) have continued recording a positive trend in the value and volume of transactions.	There are no imminent changes.

The Universal Service Provision Fund (USPF)	The USPF was established in 2006 to support the rollout of telecommunications infrastructure into rural and underserved areas in Nigeria. The Fund aims to 'facilitate the widest possible access to affordable telecommunications services for greater social equity and inclusion for the people of Nigeria' (USPF, 2015c). The USPF consists of several projects aimed at achieving universal access	There are no imminent changes.
The Rural Broadband Initiative (RUBI)	The RUBI, funded by the USPF, provides subsidies to operators for deploying a network to support the establishment of core delivery mechanisms for broadband services in the rural/semi-urban areas of Nigeria. Currently, the pilot wireless mobile broadband hot spots are being constructed across the country. This project provides both wired and wireless Internet at high speeds in the rural areas wholesale, and at the same time catalyses the uptake of other broadband-dependent projects in those locations, such as e-library, e-health, and e-government.	There are no imminent changes.
Nigeria ICT Innovation and Entrepreneurship Vision (NIIEV) 2018	The NIIEV goals were set up to be achieved by 2025: (i) 95% of the population to access broadband Internet; (ii) reach 75% digital literacy rates; and (iii) ICT to contribute 25% of GDP.	There are no imminent changes.
E-Accessibility Project	The project provides ICT tools and Assistive Technologies (ATs) to the blind, deaf, mute, crippled, cognitively impaired, and other categories of people living with disabilities. The project is designed to assist in improving the quality of life of people living with disabilities.	There are no imminent changes.
Economic and Recovery Growth Plan for 2017–2020	Economic Recovery and Growth Plan for 2017–2020 envisioned one of its 'broad objectives' as promoting 'digital-led' growth. To that end, it includes a commitment to expand access to finance and strengthen financial inclusion.	There are no imminent changes.
The Integrated Tax Administration System (ITAS)	The Federal Internal Revenue Service introduced the ITAS to automate its processes and allow tax returns to be filed online. While ITAS has been deployed, it is not yet used to support collection and audit functions. It is also not fully utilising tax debt management functions, according to the 2018 IMF report.	There are no imminent changes.

ACTS OF PARLIAMENT		
The Constitution of the Federal Republic of Nigeria (as amended) 1999	Section 37 Constitution guarantees privacy protection to every Nigerian citizen; however, this is a blanket provision and does not directly affect data protection.	There are no imminent changes.
The Personal Information and Data Protection Bill	The Personal Information and Data Protection Bill provides the principles governing the collection, use and disclosure of personal information of individuals in a manner that recognises the right of privacy, though this Bill has not yet been passed into law.	The Bill is yet to be assented by the President of Nigeria and will affect only privacy and data protection.
Federal Competition and Consumer Protection Act 2018	Promote economic efficiency, promote, and maintain competitive markets in Nigeria, protect and promote the interest of consumers by providing them with a wider variety of quality products at competitive prices, contribute to sustainable development in the Nigerian economy, and prohibit unfair and restrictive business practices that restrict, prevent, or distort competition or constitute an abuse of a dominant position of market power in Nigeria.	Amendments to this Act are unlikely any time soon,
The Cybercrimes Prevention Act 2015	The Cybercrimes Prevention Act 2015 was enacted in response to an upsurge of cybercrime in Nigeria. The cybercrimes law aims to promote cybersecurity and protect computer systems and networks, electronic communications, data, computer programs, IP, and privacy rights. The Cybercrimes Act stipulates punishments for the various offences and makes enforcement easier once an offence has been committed.	The World Bank has advised that separate provisions be made for Cybercrime and Cybersecurity as the Act mentions only Cybercrimes and not Cybersecurity. However, no move has been made on this.
The Freedom of Information Act of 2011	The Freedom of Information Act of 2011 only addresses public information and does not guide data protection. This Act also does not reflect the core principles of data protection around the world.	This Act is also not likely to change soon.

The Wireless Telegraphy Act (WTA) 1961	The WTA, having preceded all other extant laws in the sector, nevertheless continues to provide clarity concerning the nature of the regulatory management of communications in Nigeria. Essentially, the Act seeks to regulate the licensing, location, and operation of wireless telegraphy services in Nigeria. Under the Act, it is an offence for a person to establish or use any station for wireless telegraphy or install or use apparatus for wireless telegraphy except following a licence issued by the Nigeria Communications Commission (NCC).	This Act is also not likely to change soon.
Nigerian Communications Commission Act 2003	The Act was enacted in 2003 to create a regulatory framework for the Nigerian communications industry. The Act established the NCC as an independent National Regulatory Authority for the telecommunications industry in Nigeria. The Act further created provisions for the licensing and operations of telecommunications service providers and other related matters.	This Act is also not likely to change soon.
National Broadcasting Commission Act 1992	The Act was first promulgated as a Decree on 24 August 1992. However, the Decree and its amendments have been adopted as an Act of the National Assembly. The National Broadcasting Commission Act therefore regulates radio broadcasting activities in Nigeria, as well as the licensing of cable, DTH, and all terrestrial radio and television services. It aims to implement the National Mass Communication Policy of the Federal Republic of Nigeria and sets standards regarding the contents and quality of materials being broadcast over its radio waves. Though a critical component in convergence, neither the law nor the institution appears interested in regulatory convergence in how technology has made it possible for broadcasting, Internet, and phone calls to occur using one piece of equipment, such as a computer or a mobile phone.	This Act is also not likely to change soon.

Government Influence Map and Decision-making Process in Nigeria

Actor	Agenda/Mandate/Mission, Strategic Objectives	Role
Government ministry(s) and Institution(s)		
1. Nigeria Office for Trade Negotiation (NOTN)	**Mandate** The NOTN is the institutional framework and foundation for Nigeria's trade policy infrastructure. It will prepare and update Nigeria's trade policy in a rapidly changing global economic landscape to maximise Nigeria's gains from trade. It will align domestic trade policy priorities to changing global reality. It will stop and reverse the failures and costs from the awkward positions from MDAs in trade-related negotiations. The NOTN shall have government-wide responsibility for conducting and managing Nigeria's trade policy and leading Nigeria's trade negotiations. NOTN shall coordinate negotiations, including through the issuance of negotiating instructions to negotiators.	The relevant roles include: a. National Coordination of CFTA negotiations; b. Leadership of the CFTA; c. Managing all trade negotiations with Nigeria; d. Preparing and updating all Nigeria trade policy; e. Coordinating and leading all trade negotiation; f. Aligning domestic trade policy priority to changing global reality.

	Strategic objectives 1. Correct and reverse the failures that have resulted from Nigeria's trade negotiations in several current Agreements; 2. Resolve the existing coordination deficit in Nigeria's trade policy and stop the associated costs to economic growth and impediments in implementing the economic and trade policy priorities of government; 3. Achieve coherence in trade, fiscal, monetary, and foreign policies and, therefore, use trade policy and negotiations (as an instrument) to drive growth and provide policy space for Nigeria's priorities for structural transformation to industrialise, diversify, and modernise; 4. Enlarge Nigeria's market beyond the domestic to regional and global markets, by connection to value supply chains, through negotiated FTAs; 5. Re-frame Nigeria's strategic economic relations to regions of growth and new centres of economic activity; and, 6. Modernise Nigeria's infrastructure for trade policy and negotiations in line with global best practices and, in so doing, re-position Nigeria as a coordinated economy in its negotiation.	

The table below represents prominent private sectors and civil society stakeholders in Nigeria engaged in domestic conversation and positions on AfCFTA issues concerning digital trade.

Private Sector and Civil Society Stakeholder Influence Map

Actor	Agenda/Mandate/ Mission, Strategic Objectives	Arena Field of Action, Outreach	Prospects for Stakeholder Engagement
I. Trade Institutions *a. Regional*			
18.Economic Community of West African States (ECOWAS)	The Vision of the ECOWAS is to create a borderless region where the population has access to its abundant resources and can exploit the same through the creation of opportunities under a sustainable environment. ECOWAS has created an integrated region where the population enjoys free movement, has access to efficient education and health systems, and engages in economic and commercial activities while living in dignity in an atmosphere of peace and security. ECOWAS is meant to be a region governed by democracy, the rule of law and good governance.	It is considered as one of the pillars of the African Economic Community, set up to foster the ideal of collective self-sufficiency for its member states. As a trading union, it is also meant to create a single, large trading bloc through economic cooperation. Additionally, fostering the integration of economic activities as envisaged in the area revolves around the industry, transport, telecommunications, energy, agriculture, natural resources, commerce, finance, and social as well as cultural matters	**HIGH** – engagement in the AfCFTA is typified by its dedication and success in fostering and integrating free trade and economic activities not limited to industry, transport, telecommunications, energy, agriculture, natural resources, and commerce across the area.
b. National			
19.Nigerian Association of Small and Medium Enterprises (NASME)	To promote the empowerment of Nigeria's MSMEs to achieve sustainable employment generation, economic growth, and development.	It is a private-sector-led business membership organisation that coordinates and fosters the promotion of MSMEs.	**MEDIUM** – intends to create more job employment and foster economic growth and dependency in Nigeria
20.Nigerian Exchange Group (NSE)	To provide investors and businesses with a reliable, efficient, and adaptable exchange hub in Africa, to save and access capital.		

	A leading integrated market infrastructure in Africa, NSE services the largest economy in Africa and is strengthening the competitiveness of African economies to achieve global prosperity.	**HIGH** – being one of the leaders in integrated market infrastructure and exchange hub, and leading currently on all major securities exchange indicators, the AfCFTA will not only position NSE in the global capital market but also make it the preferred exchange hub in Africa, and this will enable NSE to attract more foreign investors	
21.Nigerian Agribusiness Group (NABG)	To be the association for the development and growth of inclusive and sustainable agribusiness across Nigeria and beyond.	A private-sector platform working together to grow Nigeria's agricultural economy, creating jobs, and lifting millions out of poverty. Its investments cut across the entire value chain from input to output markets, export markets, equipment, and consumer foods manufacturing.	**HIGH** – NABG, is an industry-specific sector that deals with the export market, not limited to consumer foods and manufacturing, so the AfCTFA will enable it to conduct or carry out its business more effectively and efficiently freely across Africa.
22.Manufacturers Association of Nigeria (MAN)	To promote, in close cooperation with its members, other organs of the organised private sectors, the government, and other stakeholders in the economy, an enabling environment for industrial development, growth, and prosperity of society at large.	Advocating for an enabling and competitive environment for businesses to function, thereby creating better industries, growing the economy, creating jobs, and thus leading to better standards of living in Nigeria.	**MEDIUM** – this is highly industry-specific.

23.Lagos Chambers of Commerce and Industry (LCCI)	LCCI is an international alternative dispute resolution centre focusing on fair and efficient alternative dispute resolution in Africa. The Centre is part of the 'Arbitration in Lagos Project', which, together with the Lagos Court of Arbitration, aims to put Lagos on the map as a reliable, efficient, and transparent hub for international arbitration.	LCCI was established as a user-friendly centre for managing as well as resolving disputes, assisting local and international businesses by offering a cost-effective and reliable forum, alleviating as far as possible the unnecessary burdens of dispute management and resolution.	**MEDIUM-** though this may be industry-specific, it looks at resolving not just domestic disputes but international disputes across Arica and the World
II. Tech Firms			
24.ECART	The use of technology and the power of the Internet to connect people and enable them to have access to buy products online.	ECART is an e-commerce company trading under the name and style Jumia. They offer e-commerce services to the public, including but not limited to retail, logistics, travel booking, and food delivery.	**MEDIUM** – as a result of its involvement in trading and delivery of diversified goods, including foreign goods, the signing of the AfCFTA by Nigeria will come as a welcome development, as it will have free movement of business, travellers, and investment and with the unified custom union associated with the AfCFTA, business is bound to flourish.

25.Konga	Established in July 2012, Konga is one of the most rapidly emerging e-commerce companies in Nigeria by market popularity and by far the largest Internet retailer.Its mission statement is to be the engine of commerce and trade in Africa. Its three-pronged vision is to be a powerful force for Africa's economic growth; to connect Africans and the rest of the world through technology and commerce; and to be a company whose employees customers and society are proud of.	The company operates in the private sector, providing a third-party marketplace and first-party direct retail spanning various categories of goods.	**HIGH** – Given its involvement in the trade of various goods, including foreign goods, with Nigeria signing the AfCFTA, it stands to enjoy free movement of business, travellers, and investment. With the unified custom union associated with the AfCFTA, business is bound to thrive.
26.Interswitch	It is Nigeria's leading technology-driven digital payment company, helping shape the payment ecosystem across the growing e-commerce sector in Africa. The company's mission is to create transaction solutions that enable individuals and communities to prosper across Africa. Its vision is to make payments a seamless part of everyday life in Africa.	The company operates in the technological sector, offering mainly technological services to solve the problem of delays in financial transactions.	**HIGH** – in its capacity as a technology firm, the company interacts with both public and private sectors and smart money movement. It offers training that is relevant to this day and age.

27.Irokotv	It is a web platform that provides paid-for Nigerian films on demand. It is one of Africa's mainstream online movie streaming website, giving instant access to over 5000 Nollywood film titles. The vision is to bring Nigerian entertainment to a global audience via the Internet.	The company operates in the entertainment sector, offering mainly entertaining and educative content.	**MEDIUM** – in its capacity as an entertainment company, it communicates to the public.
III. Think Tanks			
28.Nigerian Institute of Advanced Legal Studies (NIALS)	To be a world-class institution that is the primary source of information, training, and advice at the highest level of policy formulation on legal matters, effectively impacting local and international institutions in the development of law.	NIALS was established as the centre for advanced legal research for all the Nigerian universities with Faculties of Law. All postgraduate work could be undertaken there under the joint auspices of the most experienced and learned academic lawyers available in the country, whether indigenous or foreign.	**MEDIUM** – given its world-class status as a primary source of information and a base for the highest level of policy formulation, it has played a significant role in Nigeria alongside NOTN by spearheading the first sensitisation workshop on AfCFTA. Hence its need to train lawyers locally and internationally would not only provide a hub of world-class learning among African lawyers but also foster positive interdependency and interactions among African nations.

29.Nigerian Economic Summit Group (NESG)	To promote and champion the reform of the Nigerian economy into an open, inclusive, sustainable, and globally competitive economy and to become Africa's leading private-sector think-tank committed to the development of a modern, globally competitive, and inclusive Nigerian economy.	The Nigerian Economic Summit Group is a non-profit, non-partisan private-sector-led think-tank with a mandate to promote and champion the reform of the Nigerian economy into an open, globally competitive economy.	**HIGH** – as a private-sector-led think-tank in an economy driven by technology, it has the responsibility of ensuring that Nigeria's economy is reformed and developed to meet the current global trends.
IV. Media			
30.Various print and electronic media outlets and pages.		Dissemination of news, updates, expert analysis, etc.	**MEDIUM**

The table above highlights all the key stakeholders in the private, public, and civil society sectors that are presently engaged in, or are well positioned to engage in and shape domestic discussion on the AfCFTA as it relates to digital trade. The table provides a visual demonstration of all these key players and establishes the influence and link between the stakeholders. In organising the table, the stakeholders were divided as follows: I. Trade Institutions (a) Regional and (b) National; II. Tech Firms; III. Think Tanks; IV. Media. This listing does not follow any specific order or hierarchy.

Annexe 3: **Ghana**

Laws and Policies Supporting the Digital Economy of Ghana

Year	Policy or Legislation
2003	ICT for Accelerated Development (ICT4AD) Policy
2004	National Telecom Policy
2008	The National Communications Act
2008	Electronic Communications Act
2008	National Information Technology Act
2008	Electronic Transactions Act
2009	Electronic Communications Amendment Act
2011	Electronic Communications Regulations
2011	Mobile Number Portability Regulations
2011	Subscriber Identity Module (SIM) Registration Regulations
2012	Electronic Transactions Amendment Act
2012	Data Protection Act
2012	National Broadband Policy
2015	National Cyber Security Policy & Strategy
2016	Electronic Communications (Rules of Procedure of the Electronic Communications Tribunal) Regulations
2019	Payment Systems and Services Act
2020	Cyber Security Act
2020	Bank of Ghana Crowdfunding Policy
2020	Fintech Innovation Sandbox Guidelines

Legal and Regulatory Policy Overview

Policy	About	Prospects for Change
The Ghana ICT for Accelerated Development (ICT4AD) Policy (2003)	A policy for the realisation of the vision to transform Ghana into an information-rich, knowledge-based society and economy through the development, deployment, and exploitation of ICTs within the economy and society.	The policy runs full term at the end of 2022.
National Financial Inclusion and Development Strategy	The National Financial Inclusion and Development Strategy, developed in collaboration with the World Bank, aims at increasing financial inclusion from currently 58 per cent to 85 per cent by 2023, helping create economic opportunities and reducing poverty.	This is unlikely to change very soon.
Digital Financial Services Policy	The Digital Financial Services Policy, developed in partnership with the Consultative Group to Assist the Poor (CGAP), builds on existing technological gains to create a resilient, inclusive, and innovative digital ecosystem that contributes to social development, a robust economy, and a thriving private sector.	This is unlikely to change very soon.
Cash-Lite Roadmap	The Cash-Lite Roadmap, designed in collaboration with the United Nations-based Better Than Cash Alliance, puts forward concrete steps to build an inclusive digital payments ecosystem, including better access to financial services, enabling regulation and oversight, and promoting consumer protection.	This is unlikely to change very soon.
National Cyber Security Policy (NCSP)	The NCSP seeks to address the risks to the Critical National Information Infrastructure, which comprises the networked information systems of ten critical sectors.	The policy may be updated to accommodate changes in the digital space.

National Broadband Policy	The National Broadband Strategy seeks to achieve broadband penetration of 10 per cent annually over the period between 2010 and 2015.	The policy will change over time.
Health Sector ICT Policy	This Health Sector ICT Policy and Strategy charts a roadmap for the exploitation, development, and deployment of ICT to accelerate the service delivery. It is guided by the Ghana ICT4AD Policy.	The policy runs full term at the end of 2022.

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