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DIGITAL ECOSYSTEM COUNTRY ASSESSMENT (DECA)

GHANA JANUARY 2024



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GHANA

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ACRONYMS

AI	Artificial Intelligence
AfCFTA	African Continental Free Trade Area
ATC	American Towers Corporation Ghana
B2B	Business-to-Business
BPO	Business Process Outsourcing
BWA	Broadband Wireless Access
ECOWAS	Economic Community of West African States
CBDC	Central Bank Digital Currency
CBO	Community-Based Organization
CDCS	Country Development Cooperation Strategy
CERT-GH	Ghana's National Computer Emergency Response Team
CII	Critical Information Infrastructure
CSO	Civil Society Organizations
DECA	Digital Ecosystem Country Assessment
DFS	Digital Financial Services
DR	Disaster Recovery
DRG	Department of Registrar General
DVLA	Driver and Vehicle Licensing Authority
EGDI	e-Government Development Index
eGIF	e-Government Interoperability Framework
FICSOC	Financial Industry Command Security Operations Centre
FIO	FinTech and Innovation Office
FSP	Financial Service Provider
GB	Gigabyte
GDB	Global Data Barometer
GGEA	Ghana Government Enterprise Architecture
GEA	Government Enterprise Architecture
GhIPSS	Ghana Interbank Payment and Settlement Systems
GHN	Ghana Hubs Network
GIFEC	Ghana Investment Fund for Electronic Communications
GII	Global Innovation Index
GIPC	Ghana Investment Promotion Center
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GLMIS	Ghana Labor Market Information System

GRA	Ghana Revenue Authority
GRIDCO	Ghana Grid Companies
GSMA	Global System for Mobile Communications Association
GTCI	The Global Talent Competitiveness Index
GWAN	Government Wide Area Network
ICT	Information and Communications Technology
ICUMS	Integrated Customs Management System
IPR	Intellectual Property Rights
ISP	Internet Service Provider
ITU	International Telecommunications Union (UN)
IT	Information Technology
JCC	Joint Cybersecurity Committee
KII	Key Informant Interviewee
LGBTQI+	Lesbian, Gay, Bisexual, Transgender, Queer, and Intersex
MCD	Ministry of Communications and Digitalization
MCI	Mobile Connectivity Index
MDA	Ministries, Departments, and Agencies
MESTI	Ministry of Environment, Science, Technology, and Innovation
MEST	Meltwater Entrepreneurial School of Technology
MFI	Microfinance Institution
MFWA	Media Foundation for West Africa
MMDA	Metropolitan, Municipal, and District Assemblies
MNO	Mobile Network Operator
MF	Ministry of Finance
NCA	National Communications Authority
NCPS	National Cybersecurity Protection System
NDTC	National Digital Transformation Committee
NFIDS	National Financial Inclusion and Development Strategy
NGO	Nongovernmental Organization
NIA	National Identification Authority
NITA	National Information Technology Agency
PAPSS	Pan-African Payment and Settlement System
PKI	National Public Key Infrastructure
PSP	Payment Service Provider
PWD	Persons with Disabilities

RCC	Regional Coordinating Councils
SSO	Single Sign-On
STEM	Science, Technology, Engineering, and Mathematics
TFGBV	Technology-Facilitated Gender-Based Violence
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization

Executive Summary

BACKGROUND

The U.S. Agency for International Development (USAID) launched its [Digital Strategy](#) in April 2020 to achieve and sustain open, secure, and inclusive digital ecosystems that contribute to broad-based, measurable development and humanitarian assistance outcomes through the responsible use of digital technology.

The Digital Ecosystem Country Assessment (DECA), a flagship initiative of the Digital Strategy, informs the development, design, and implementation of USAID's strategies, projects, and activities. The DECA looks at three pillars of a nation's digital ecosystem: (1) digital infrastructure and adoption; (2) digital society, rights, and governance; and (3) the digital economy. The DECA aims to inform how USAID/Ghana can understand, work with, and strengthen the country's digital ecosystem. This summary section outlines how DECA findings and recommendations can directly support USAID/Ghana's development objectives. To maximize utility and impact, the section outlines how DECA findings and each resulting recommendation can directly support USAID/Ghana's development objectives. The DECA does not evaluate existing programs but rather assesses Ghana's digital ecosystem and identifies how USAID/Ghana's current or future programming can build upon or strengthen that ecosystem. DECA findings and recommendations are mapped to USAID/Ghana's Results Framework.

The USAID/Ghana 2020–2025 Country Development Cooperation Strategy (CDCS) includes three strategic priorities:

1. Broad-based economic growth accelerated and sustained
2. Quality service delivered with increased accountability
3. Sustainable development accelerated in Northern Ghana

KEY FINDINGS

Ghana is among Sub-Saharan Africa's leaders in digital transformation. Over the past decade, the government has put the key institutions, legislative frameworks, strategies, and policies in place that are necessary to drive change. The Ministry of Communications and Digitalization leads and coordinates development and implementation of a core set of policies and strategies that are digitally transforming the government, economy, and society. The ICT for Accelerated Development (ICT4AD) Policy has guided this journey for more than a decade. A new Digital Economy Policy is drafted and under review to drive the next stage of Ghana's digital development. The National Financial Inclusion and Development Strategy and the National Cyber Security Policy and Strategy have also been key. Ghana adopted an inclusive approach to developing its cybersecurity strategy, which contributed to improved cybersecurity capacity and considered citizens' online safety and freedoms. However, a clear strategy for protecting critical national infrastructure is missing.

Ghana has been a pioneer and champion of digital government transformation in West Africa over the past decade, with funding and support from the World Bank. Important whole-of-government platforms and services have been put in place, including the Government Wide Area Network (GWAN), which provides internet connection to more than 1,000 district assemblies, hospitals, police stations, and post offices across the country; a National Data Center; the Smart workplace suite, which includes email and productivity tools for government employees; and Ghana.gov portal, a one-stop-shop for citizen services.

Still, digital government transformation is incomplete. Easy, efficient, online government services are in demand, but the Ghana.gov portal options are limited, and most major government service providers have their own separate online services portals. The national identity Ghana Card could enhance digital service delivery by providing a universally recognized, secure, and easy-to-use means of digital identification and authentication for citizens when accessing both public and private digital services, but the current identification system is not integrated with other government-

operated databases, significantly reducing its many potential applications. The Regional Coordinating Councils, and metropolitan, municipal, and district assemblies (MMDAs) are just now embarking on the digital transformation journey. The Ministry of Local Government and Rural Development coordinates their efforts.

Challenges for Ghana's remaining efforts at digital government transformation include adequate funding to manage and maintain its connectivity and data center infrastructure, affordable internet for regional governments, inadequate digital literacy and skills among mid-level and regional staff, or related national training programs. A big skill gap exists in cybersecurity; Ghana faces a deficit of skilled cybersecurity professionals. The government also needs to improve efforts at stakeholder engagement and awareness-raising when developing new policy proposals.

Ghana's private and public sectors have made significant investments over the past decade to bring near- universal broadband (3G and 4G) coverage to the country. However, the affordability, quality, and reliability of this connectivity need significant improvement. Dropped calls and service disruptions are frequent, which adversely affects the productivity of businesses and organizations that depend on the internet for their operations. Critically, data costs too much. civil society organizations in and outside Accra report that they must buy data bundle packages for their beneficiaries when providing them with training programs. MTN Group dominates the telecommunication market with more than 75 percent of mobile internet subscribers. Regulatory efforts to curb MTN's near-monopoly have been unsuccessful. The telecommunications regulator's ineffective stakeholder consultation and communication with the industry and public at large has led to a lack of buy-in and understanding of policies, thus undermining their efficacy. Preparing the market for rollout of next-generation technologies such as 5G will require careful policy planning.

Ghana has seen astonishing growth in the number of internet users over the past decade. As of 2021, approximately 68 percent of Ghanaians used the internet, up from nearly 8 percent a decade earlier. However, deep digital divides along urban-rural and north-south regional geographic lines persist, overlaid by factors such as gender and disabilities. High device and data costs are a primary barrier. The cost of digital literacy and skills trainings can also be a barrier, and knowledge of the value of such courses may be limited. Basic illiteracy is also a challenge, although voice notes on messenger apps such as WhatsApp and Telegram are proving to be a great tool for sharing information. Gender and disabilities divides exist in social media use, digital financial services, obtaining online news, ICT education, and digital startup development.

Ghana's media and information landscape is experiencing significant challenges. In 2022, Ghana dropped 30 positions from the prior year in the Reporters Without Borders's World Press Index. Some observers say that the government is "actively bringing back a culture of silence" that dominated the public square during the 1990s and early 2000s. Laws that criminalize the publication of statements that can cause "fear and alarm to the public or to disturb the public peace" have been applied to online speech used to persecute political opponents. Ghana also is witnessing an increase in arrests and assaults on both investigative journalists and those who are affiliated with specific media outlets that openly discuss the corruption of influential individuals in the government. Most DECA key informant interviewees believe that the government has the technical ability and resources to track online posts, monitor the private traffic and activity of internet users, and target any critics of local or national government. Independent voices report feeling less confident about expressing themselves freely online; they have started "toning down" their social media posts, effectively self-censoring.

Online news consumption has been increasing gradually. Fewer than half of Ghanaians regularly obtain news from internet or social media sources. Competition for attention online is strong, including among the local bloggers. The big aggregators and competition are forcing traditional media into the click-bait business model, which hurts quality and trust. Recognizing the power of the online space to influence opinions and spread ideas, the government and political parties are using online media to try to sway public opinion. Political parties use social media to market party candidates, identify policy priorities, and drive voter turnout during elections. Surveys find that political parties and politicians are perceived as the primary purveyors of misinformation and disinformation online. Some domestic fact-checking initiatives have emerged in response to increased misinformation, but organizations is limited by a lack of capacity, low funding, and generally sluggish public demand.

A range of online crimes and violence are on the rise, including financial frauds, social engineering schemes, sexual exploitation, stalking, cyberbullying, and harassment. Poor cyber hygiene and cyber literacy leave people unequipped to recognize and deal effectively with these crimes. Schools do not have online safety and security lessons as part of the information and communications technology (ICT) curriculum, and parents and teachers also lack the necessary

knowledge and skills to protect their children online. Victims of online harassment or data leaks who are exposed to scammers and hackers are often unaware of their rights and mechanisms to protect and defend their digital interests. Poor enforcement of the existing laws is one of the key challenges. The Cyber Crime Unit of the Ghana Police Service, which is responsible for investigating online crimes, lacks the funding and expertise to deal with the pace of the cybercrime threat.

Ghana has a vibrant FinTech startup sector. Mobile money (which Ghanaians call MoMo) has been a critical factor in growing Ghana's financial inclusion over the past decade. The number of active MoMo accounts reached more than 20 million in 2023. Still, MoMo uses are limited largely to peer-to-peer domestic remittances or payments to informal businesses using individual (rather than business) MoMo accounts. MoMo vendors across the country serve as "human-ATMs" who receive remittances and do cash-outs for users. Most MoMo users are unaware or suspicious of broader uses of the service, for example, to pay bills or make online purchases. This reluctance affects the growth of e-commerce adversely. Although the pandemic years pushed many more people online to buy and sell, the e-commerce users on formal platforms are often specific consumers who are digital savvy and active users of online payments. Social e-commerce on social media platforms and messenger apps is thriving, driven primarily by informal businesses. High levels of online fraud hinder the larger-scale development of e-commerce. Ghana lacks a comprehensive consumer protection law, and existing regulations are little-known and poorly enforced. The government has not developed a comprehensive vision for developing the e-commerce sector's potential.

Ghana is emerging as one of the fast-developing startup ecosystems on the African continent, with more than 40 active hubs across the country's 16 regions. Most hubs focus mainly on training and capacity-building for

individuals and startups. However, they often fall short in providing comprehensive incubation and acceleration programs, adequate access to funding, or ample support in investor outreach. A common shortfall is the lack of business experience among hub founders in establishing and managing startups. Regional- or sector-specialized tech innovation hubs are few or nonexistent. Private sector adoption of technologies and innovation is low. Startups have reported that large companies are not interested in forming partnerships, posing a significant challenge to scalability. Universities in Ghana have yet to significantly engage in incubation and acceleration programs.

Developing Ghana's advanced, professional ICT sector workforce and leaders will be essential to the country's next stage of digital economy development. The most fundamental challenge is insufficient mathematics, programming, logic, and problem-solving abilities among students who have completed secondary school. This means that students entering university are unprepared for the kinds of advanced skills programs offered. Having enough qualified computer science teaching staff is a significant concern for universities in Ghana. Universities lack resources and capabilities to improve the skill set, conduct industry research, and build partnerships with the private sector, so even recent graduates look for alternative ICT education at hubs and information technology (IT) centers to obtain knowledge in emerging technologies or advanced skills.

ROADMAP FOR THE REPORT

Section 1 provides background on the DECA framework and goals. It includes a summary of USAID/Ghana's priorities, connecting them with digital solutions.

Section 2 presents the key findings about Ghana's digital ecosystem. This section is organized into three subsections by DECA pillar: digital infrastructure and adoption; digital society, rights, and governance; and digital economy.



Navigation tip: The navigation bar in the footer throughout this report helps you move between sections. Dark blue text will indicate the current section you are in.

About this Assessment

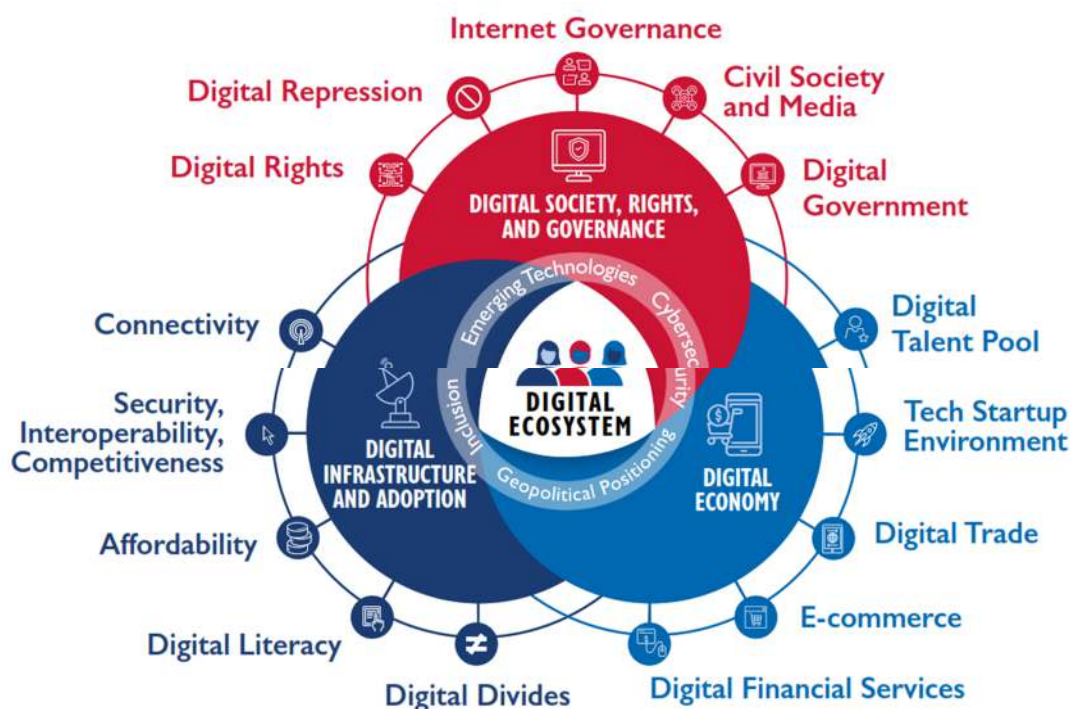
USAID's [Digital Strategy](#) aims to improve USAID development and humanitarian assistance outcomes through the responsible use of digital technology and strengthen the openness, inclusiveness, and security of country digital ecosystems. The Digital Strategy and the DECA are part of USAID's holistic approach to helping achieve the [Sustainable Development Goals](#).

As part of the digital strategy implementation, the DECA examines three broad areas to understand the opportunities and challenges in a country's digital ecosystem:

1. Digital infrastructure and adoption
2. Digital society, rights, and governance
3. Digital economy

The Ghana DECA took place between March and July 2023. It included desk research, consultations with USAID/Ghana, three weeks of in-country interviews, and numerous virtual interviews ahead of and following the country visit. The research involved a total of 79 interviews, both online and in-person in Accra, Aburi, Bolgatanga, and Tamale, and included stakeholders from civil society, academia, the private and public sectors, international development organizations, USAID implementing partners, and USAID/Ghana technical offices.

Rather than serve as an authoritative source on the country's digital ecosystem, the DECA is intended to be a rapid assessment of opportunities and challenges tailored to USAID's programmatic priorities and thus may not cover all USAID/Ghana program offices and projects in depth.



DECA Findings

INTRODUCTION: OVERVIEW OF GHANA'S INSTITUTIONAL AND REGULATORY FRAMEWORKS AFFECTING AND DRIVING DIGITAL TRANSFORMATION

Several government entities, most importantly the Ministry of Communications and Digitalization (MCD), play key roles in Ghana's digital transformation. These entities have implemented strategic initiatives such as the Ghana Card, a biometric ID card system, to streamline and enhance the efficiency of public service delivery. The MCD is at the forefront, driving the nation's digital agenda by crafting and executing policies and strategies aimed at revolutionizing the ICT sector. The MCD aims to promote government services through the strategic application of ICT, fostering a seamless interoperability across different mobile money networks and safeguarding Ghana's digital infrastructure with cybersecurity measures. With a broad understanding of the digital space, this Ministry is responsible for making and enforcing policy as it relates to the telecommunications and broadcasting sectors.

Supporting the MCD in its digital ventures are subordinate agencies such as the National Information Technology Agency (NITA), playing the role of the Ministry's implementation arm and ensuring a consistent and standardized application of ICT across various sectors. Alongside NITA, the National Communications Authority (NCA) ensures compliance and high service quality standards in communication services, while the Ghana Investment Fund for Electronic Communications (GIFEC) strives to expand ICT accessibility to remote and underserved communities. The Cyber Security Authority (CSA) and the Data Protection Commission (DPC) collectively work to secure the nation's cyber ecosystem and protect individual privacy. Additionally, the Kofi Annan Center of Excellence in ICT (GI-KACE) contributes by fortifying the nation's ICT capabilities through training, research, and advisory services.

The Ministry of Trade and Industries has made progress in fostering a conducive environment for digital transformation within the business sector, especially in manufacturing. By incentivizing the adoption of digital technologies and establishing regulations to safeguard digital businesses, the Ministry is catalyzing the growth of the digital economy. Its responsibilities extend to the protection of intellectual property in the digital domain, regulating trade practices to protect consumers and ensuring fair competition. By promoting international trade and creating a level playing field for businesses in the global digital economy, the Ministry of Trade and Industries is playing a crucial role in ensuring that Ghana's digital transformation is inclusive, secure, and beneficial for all.

One of the key institutional players in digital ecosystem regulation is Bank of Ghana, which oversees the major payment system infrastructure, comprising mobile money regulations, payments interoperability systems, the National Switching and Processing System and more. Ghana Interbank Payment and Settlement Systems company (GhIPSS) serves as a subsidiary of the national bank and is an operator of interoperable payment system infrastructure for banks and other financial institutions deploying and managing numerous payment products and services such as Ghana universal QR code.

Ghana's digital transformation journey has been significantly bolstered by a supportive policy environment, with the ICT for Accelerated Development (ICT4AD) policy standing out as a central piece. Initiated in 2003, the ICT4AD policy sets forth a national vision for utilizing ICT strategically in development processes, detailing a plan for using ICT as a catalyst in public service delivery and a facilitator of rapid socioeconomic development. The policy was implemented through five four-year rolling plans, which concluded in 2022 and showcased Ghana's long-term commitment to digital progress. It was innovative for its time, outlining broad objectives such as developing Ghana's information society and economy, fostering multisectoral ICT-led socioeconomic development, and boosting the ICT sector. With 14 pillars defining priority areas such as education, health care, and government administration, the policy ensured a holistic approach. Additionally, it mandated that the government develop seven sectoral strategies to cover crucial areas such as e-government, ICT and gender, and national cybersecurity.

Ghana fortified its digital governance through laws and institutional frameworks, providing necessary governance structures and legal support. The Electronic Transactions Act, enacted in 2008 (Act 772), laid the groundwork for electronic communications and transactions, fostering e-commerce and digital-services growth. It covered a wide array of issues, including the regulation of electronic records and signatures, e-government services, and electronic transactions. It also regulates broadcasting, criminalizing false communications and empowering security agencies to act proactively against potential cyber offenses. The National Information Technology Agency Act (Act 771) of 2008 established NITA to ensure ICT applications' security and consistency.

The Cybersecurity Act (Act 1038) of 2020 provides a legal framework for cyber protection, outlining measures for combating cybercrime and protecting children on the internet. It established the National Cyber Security Authority (NCSA) as the main body coordinating cybersecurity activities nationwide. The act underscores the importance of stakeholder collaboration in securing the cyber ecosystem, requiring mandatory reporting of cybersecurity incidents and licensing of cybersecurity service providers. The Data Protection Act (Act 843) of 2012 adds another layer of security, focusing on personal data protection and enhancing trust in digital transactions. It mandates breach notifications, data processor obligations, and data controller registrations, establishing the Data Protection Commission (DPC) as the regulatory authority.

Some notable laws carry important implications for the development of the Digital Society in Ghana. The National Media Commission Act of 1993 establishes a National Media Commission to promote and ensure the freedom and independence of the media for mass communication and information. Media are free to operate as they choose under the regulations of the act. In 2001, Ghana repealed its criminal libel and seditious laws that were often used against journalists. The Criminal Offences Act of 1966 regulates online speech and criminalizes the publication or reproduction of “false statements.” The Information Access Law of 2019 (or Right to Information Bill) regulates access to information on central and local governments held by a public institution. The law authorizes journalists to acquire information of national interest. The Electronic Communications Act also contains sections with digital society implications. It criminalizes false communications and can impose potential jail time for online offenders.

This report and accompanying Annexes A, B, and C offer a comprehensive, detailed examination of Ghana's regulatory and institutional framework

2.1 PILLAR 1: DIGITAL INFRASTRUCTURE AND ADOPTION

Digital Infrastructure and Adoption refers to the resources that make digital systems possible and how individuals and organizations access and use these resources. Digital infrastructure includes geographic network coverage, network performance, internet bandwidth, and spectrum allocation, and telecom market dynamics regarding security, interoperability, and competitiveness. This pillar also examines behavioral, social, and physical barriers and opportunities for equitable adoption (digital divides, affordability, and digital literacy)—in other words, who uses and who does not use digital technologies and why.

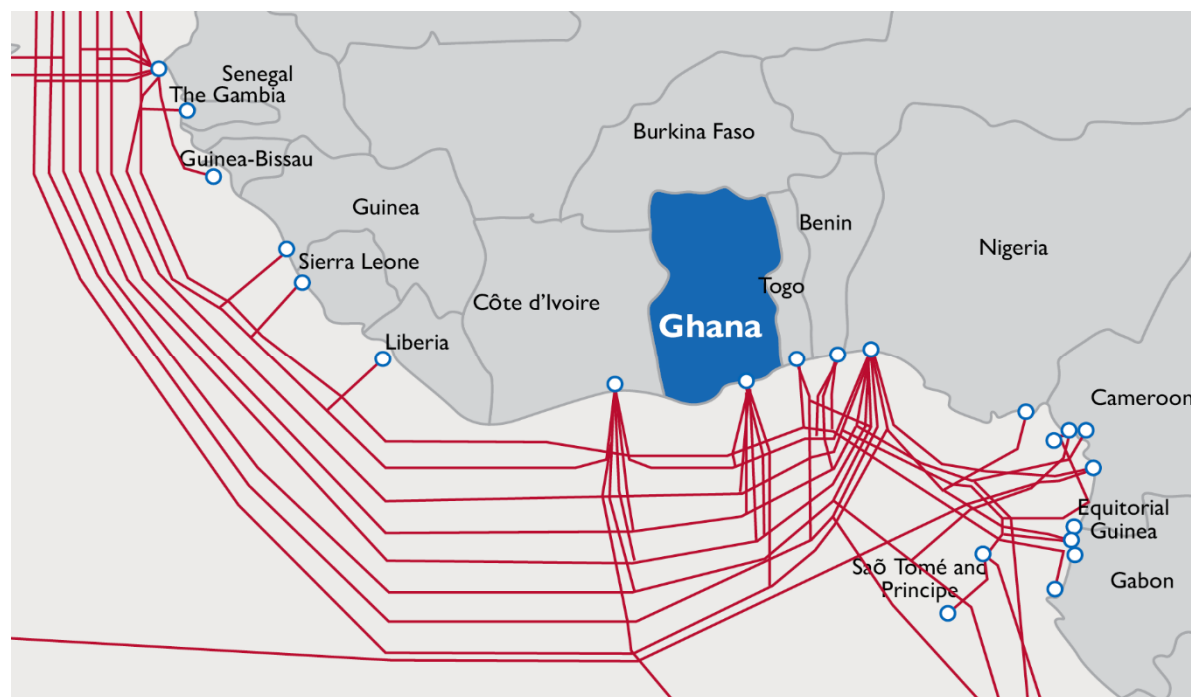
KEY TAKEAWAYS: DIGITAL INFRASTRUCTURE AND ADOPTION

- **Ghana's existing digital infrastructure provides a good foundation in the near term for the country's economic and social development.**
- **Lack of meaningful internet access prevents broader adoption and constrains Ghana's digital development potential.**
- **Low digital literacy and limited content in local languages are barriers to digital adoption, especially outside major urban centers and in poorer regions.**
- **Geographic disparities in education and income underlie the deepest digital divides across gender and for persons with disabilities.**
- **Ghana needs to address numerous challenges in the telecommunications sector regulatory environment to position the country for its next digital leap.**

GHANA'S EXISTING DIGITAL INFRASTRUCTURE PROVIDES A GOOD FOUNDATION IN THE NEAR TERM FOR THE COUNTRY'S ECONOMIC AND SOCIAL DEVELOPMENT

First Mile. Ghana is among West Africa's leading countries in digital infrastructure, in terms of both coverage and capacity. At first mile (international connectivity), according to Ghana's National Communications Authority (NCA), the country has five submarine cable landings, with a total available capacity of 2,905 gigabits per second, of which reportedly only about 40 percent was in use as of 2021¹. TeleGeography reports that Ghana has six cables ready for use as of June 2023 (Figure 1). More recent data on the total capacity and usage of Ghana's submarine cables is not publicly available.

Figure 1: International Submarine Cable Infrastructure, West Africa



Source: TeleGeography²

Ghana's international connectivity is important both nationally and regionally, given the exponentially growing rates of global interregional data traffic (Figure 2). Total data traffic for Africa is expected to reach more than 200 terabits per second by 2024. This compares with approximately 1.2 terabits per second for the continent in 2015.³ Mobile data demand across Africa is growing at nearly double the global average, according to multiple industry sources.⁴

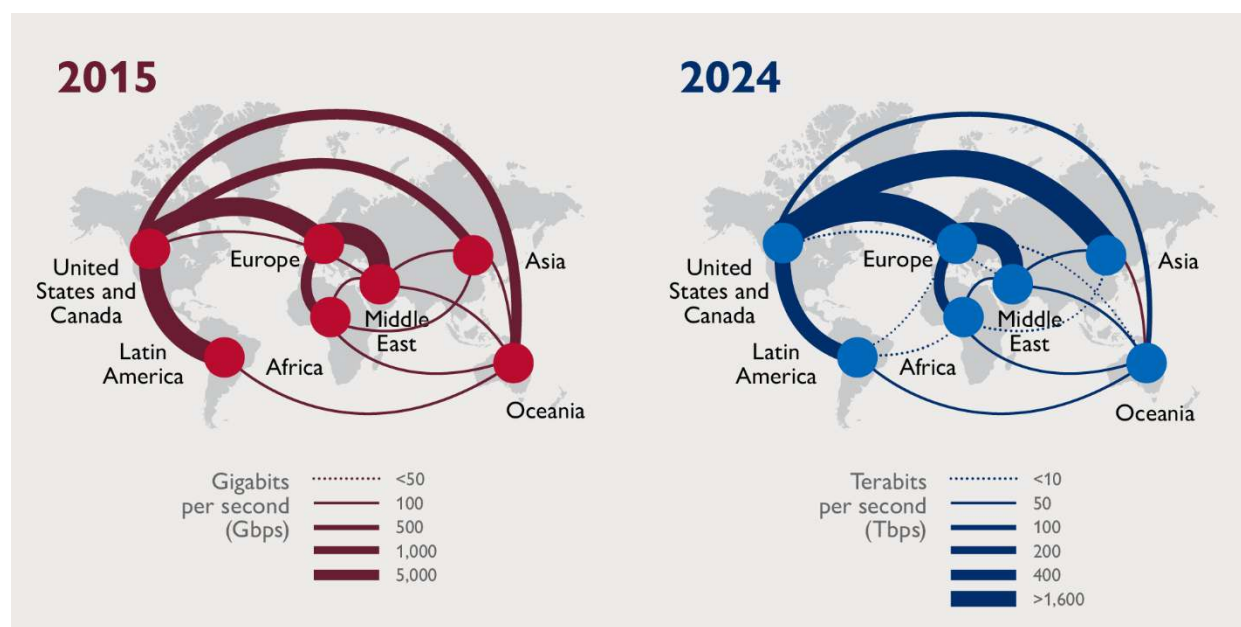
¹ "Submarine Cable Landing – National Communications Authority." Accessed November 9, 2023. <https://nca.org.gh/submarine-cable-landing/>. (Technical Information Section).

² "Submarine Cable Landing – National Communications Authority." Accessed November 7, 2023. <https://nca.org.gh/submarine-cable-landing/>.

³ "GB to TB Conversion Gigabytes to Terabytes Calculator." Accessed November 9, 2023. <https://www.gbmb.org/gb-to-tb>.

⁴ "Africa's Data Centre Growth Opportunity | News+ | IJGlobal." Accessed November 9, 2023. <https://www.ijglobal.com/articles/170785/africas-data-centre-growth-opportunity>.

Figure 2: Global Interregional Data Traffic



Source: United Nations Conference on Trade and Development and TeleGeography

According to the NCA, Ghana's total annual volume of mobile data traffic reached 957 million gigabytes in 2021.⁵ This boom in data demand reflects growth both in the number of businesses and people who are connecting to the internet and in the smart devices and digital services they use to do so. Increased data usage requires more Africa-based data storage capacity, which will help reduce data supply-chain costs, improve internet user experience, and help companies and organizations comply with data security requirements.⁶

Once again, Ghana is one of the regional leaders for digital infrastructure, home to the only Tier IV data center currently online in West Africa (see Box I for explanation of data center tiers).⁷ Several Tier III data centers also are based in the country, including one owned by the government that is among the largest data centers in West Africa.⁸ DECA Key Informant Interviewees (KII) revealed that these data centers' tenancy rates are well below capacity. This, in part, may reflect an inadequate understanding among local companies and industries of the costs and risks of setting up, running, and maintaining secure data storage facilities. Trust in providers may also be lacking. However, if data demand in Africa continues its exponential growth (as anticipated), demand for Ghana's data centers in the future could grow and create an opportunity for the country to position itself as a regional data industry hub.⁹

⁵ "National Communications Authority. "Communications Industry Report." National Communications Authority, June 30, 2021. Accessed November 9, 2023. <https://nca.org.gh/wp-content/uploads/2022/10/CIR-2021.pdf>

⁶ Africa's Data Centre Growth Opportunity | News+ | IJGlobal." Accessed November 9, 2023. <https://www.ijglobal.com/articles/170785/africas-data-centre-growth-opportunity>.

⁷ "Onix Data Centre – Connecting Africa to the Globe." Accessed November 9, 2023. <https://onixdc.com/A-second-Tier-IV-data-center-is-expected-to-go-online-in-Senegal-in-the-fourth-quarter-of-2023>.

⁸ Largest Tier 3 National Data Center in West Africa to Be Open by NITA – National Information Technology Agency." Accessed November 9, 2023. <https://nita.gov.gh/national-data-center/>.

⁹ See Daniels, Robert. "Meeting Africa's Data Demand," April 21, 2022. <https://www.africanreview.com/ict/information-security/meeting-africa-s-data-demand>. and say, Dan Swinhoe Have your. "Report: Africa Needs 1,000 MW and 700 Data Center Facilities to Meet Demand," February 10, 2021. <https://www.datacenterdynamics.com/en/news/report-africa-needs-1000mw-700-data-center-facilities-meet-demand/>.

Box 1: What Are Data Center Tiers?

Data center tiers are a standardized ranking system that indicates the reliability of data center infrastructure. A data center receives this international ranking from the [Uptime Institute](#), an independent organization that determines a facility's level, primarily based on uptime guarantees, fault tolerance (the ability to handle both planned and unplanned disruptions), and service cost. The four data center tiers are:

- Tier 1: A data center with a single path for power and cooling and no backup components. This tier has an expected uptime of 99.7 percent per year.
- Tier 2: A data center with a single path for power and cooling and some redundant and backup components. This tier offers an expected uptime of 99.7 percent per year.
- Tier 3: A data center with multiple paths for power and cooling and redundant systems that allow staff to work on the setup without taking it offline. This tier has an expected uptime of 99.982 percent per year.
- Tier 4: A fault-tolerant data center with redundancy for every component. This tier's expected uptime is 99.995 percent per year.

In practice, Tier 4 data centers are uncommon because of their high cost. Many organizations, however, prefer to use two or more Tier 2 or Tier 3 data centers to create convergent infrastructure equivalent to a Tier 4 data center.

In light of its international connectivity infrastructure, Ghana appears well-positioned as an important player in West Africa's continued digital transformation. This should increase job opportunities for a higher-skilled digital workforce to manage and maintain the infrastructure and provide technical expertise on artificial intelligence (AI), cybersecurity, cloud, and data analytical services (see Pillar 3, Digital Talent for more discussion).¹⁰

Middle Mile. Ghana's terrestrial fiber infrastructure is well-developed, despite its relatively few connections with neighboring countries (Figure 3). At the middle mile (backhaul or national backbone), Ghana has 7,519 kilometers of terrestrial fiber, according to International Telecommunications Union (ITU) data from 2019,¹¹ though interviews with DECA KIs indicate that this number could be much more than 10,000 kilometers today. Spectrum Fiber Limited, a public-private partnership, has built more than 4,000 kilometers of fiber optic infrastructure across the country, according to its website.¹² The power transmission company Ghana Grid Company (GRIDCO) owns and operates a 3,000 kilometers circuit of interconnected optical ground wire,¹³ on which mobile network operators (MNOs) rely for domestic interregional backhaul.¹⁴ In 2021, Smart Infracore entered into a revenue-sharing arrangement with the Government of Ghana to maintain, operate, and commercialize the National Information Technology Agency's (NITA) digital infrastructure across the country, including the 800 kilometers of fiber-optic cables along the eastern corridor.

¹⁰ RationalStat. "What Is the Demand for Data Centers in Africa?," June 29, 2023. <https://rationalstat.com/what-demand-data-centers-africa/>.

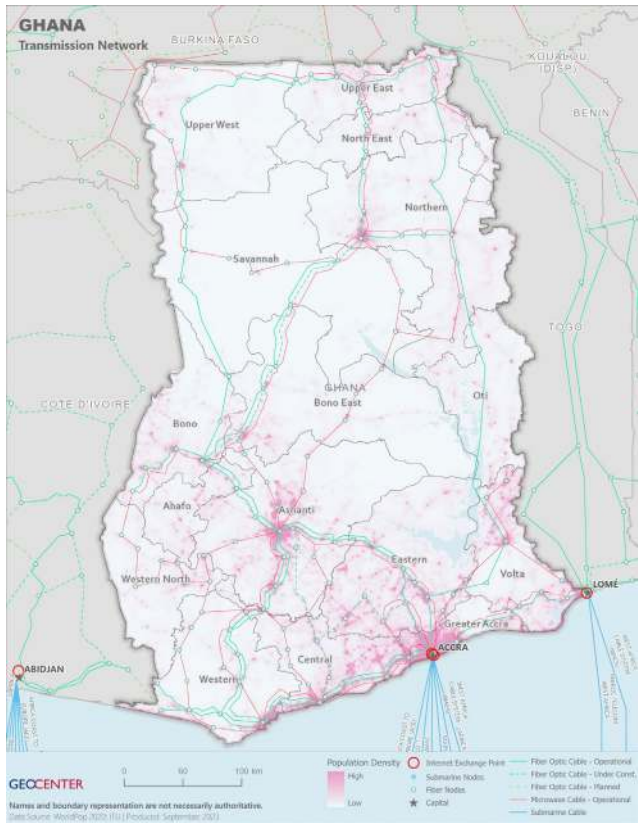
¹¹ "ITU - Infrastructure Connectivity Map." Accessed November 9, 2023. <https://bbmaps.itu.int/bbmaps/>.

¹² "BSL Websites | About." Accessed October 26, 2023. <https://sfl.com.gh/about>.

¹³ Admin. "GRIDTel." Ghana Grid Company Ltd (blog). Accessed November 9, 2023. <https://gridcog.com/gridtel/>.

¹⁴ MNOs provide voice and data services primarily via wireless terrestrial networks. MNOs typically use licensed spectrum bands, which tend to deliver a higher quality, more reliable (and more cost-intensive) service because they are not shared.

Figure 3: FIGURE 3: Terrestrial Fiber-Optic Network Infrastructure in Ghana



Source: ResearchGate, 2018 and ITU, 2023¹⁵

Historically, telecom operators have built their own fiber networks, but they are increasingly purchasing capacity from carrier-neutral wholesale companies Vorbiss Solutions and CSquared, which are building networks between cities. Vorbiss reports having deployed more than 3,000 kilometers of aerial-fiber network and another

2,000 kilometers with partners MTN and CSquared. MNOs also build and operate their own fiber networks within regional capitals.

Ghana has one internet exchange point, which is operated by the Ghana Internet eXchange Association.¹⁶

One challenge for Ghana’s backbone network is the high cost of operation and maintenance. The unreliability of the electrical power grid means, for example, that tower infrastructure must rely on diesel-run backup generators to maintain mobile connectivity during frequent power outages. According to the telecommunications sector operators that the DECA research team interviewed, maintenance costs in Ghana are higher compared with those in other African countries where they operate.¹⁷ This is largely due to frequent fiber cuts which result from other infrastructure construction projects such as roads, water supply lines, and electrical grids; and from housing construction. Higher costs also result from fiber theft and the burning of fiber through bushfires.¹⁸ Industry actors report that they spend millions of U.S. dollars annually on addressing infrastructure damage.

¹⁵ “3 FIBRE-OPTIC NETWORKS FOR ICT IN GHANA | DOWNLOAD SCIENTIFIC DIAGRAM.” ACCESSED NOVEMBER 9, 2023. https://www.researchgate.net/figure/FIBRE-OPTIC-NETWORKS-FOR-ICT-IN-GHANA_fig2_328492546. AND “ITU - INFRASTRUCTURE CONNECTIVITY MAP.” ACCESSED NOVEMBER 9, 2023. <https://bbmaps.itu.int/bbmaps/>, RESPECTIVELY.

¹⁶ “HOME - GIXA.” ACCESSED NOVEMBER 9, 2023. <http://www.gixa.org.gh/>.

¹⁷ THE DECA RESEARCH TEAM WAS UNABLE TO VERIFY THIS CLAIM INDEPENDENTLY.

¹⁸ ANKILLU, MASAHUDU. “FIBRE CUTS AND ITS IMPACT ON TELECOM SERVICES IN GHANA.” AFRICAN EYE REPORT (BLOG), NOVEMBER 2, 2021. <https://africaneyereport.com/fibre-cuts-and-its-impact-on-telecom-services-in-ghana/>.

Last mile.¹⁹ Both the private and public sectors have made significant investments over the past decade to bring near-universal broadband coverage to Ghana. Two tower companies, American Towers Corporation Ghana (ATC) and Helios Towers Ghana (Helios), manage a total of 5,133 towers across the country, which all the MNOs use. In addition, the Ghana Investment Fund for Electronic Communications (GIFEC) is implementing the Ghana Rural Telephony and Digital Inclusion Project (see Box 2), which is designed to supply rural communities with populations of less than 1,000 (up to 3.4 million residents) with 2G and 3G coverage.

Today, 99 percent of Ghanaians have 2G, 3G, and 4G coverage, according to the Global System for Mobile Communications Association's (GSMA) 2022 Mobile Connectivity Index (Figures 4, 5, and 6, respectively).²⁰

Figure 4: 2G Coverage



Figure 5: 3G Coverage



Figure 6: 4G Coverage



Source: GSMA, 2023²¹.

¹⁹ Last mile connectivity is where the end users access the internet using devices (mobile phones, laptops, tablets, computers) through local access networks.

²⁰ 2023 – GSMA Mobile Connectivity Index. “2023 – GSMA Mobile Connectivity Index.” Accessed November 9, 2023. <https://www.mobileconnectivityindex.com/>.

²¹ Arderne, Christopher, Claire Nicolas, Conrad Zorn, and Elco E. Koks. “Data from: Predictive Mapping of the Global Power System Using Open Data.” Zenodo, January 16, 2020. <https://doi.org/10.5281/ZENODO.3628142>.

Box 2. GIFEC's Role in Advancing Digital Inclusion

The Ghana Investment Fund for Electronic Communications (GIFEC) is a government agency established in 2004 with the mandate to facilitate and ensure the provision of internet access and services to underserved and unserved areas of Ghana. GIFEC is responsible for managing the Universal Access Fund (UAF), which is financed through a levy on the revenues of telecommunications service providers in Ghana. The UAF is intended to help finance deployment of telecommunications infrastructure where there is little or no commercial incentive for private sector investment. Notably, connecting schools, hospitals and health clinics have not been part of GIFEC's work.

The Ghana Rural Telephony and Digital Inclusion Project was financed by GIFEC with a €155 million loan secured from the China Exim Bank to extend basic telephone voice and data connectivity to 2,016 unserved communities identified across the country. The project reportedly was about half complete by early 2023.

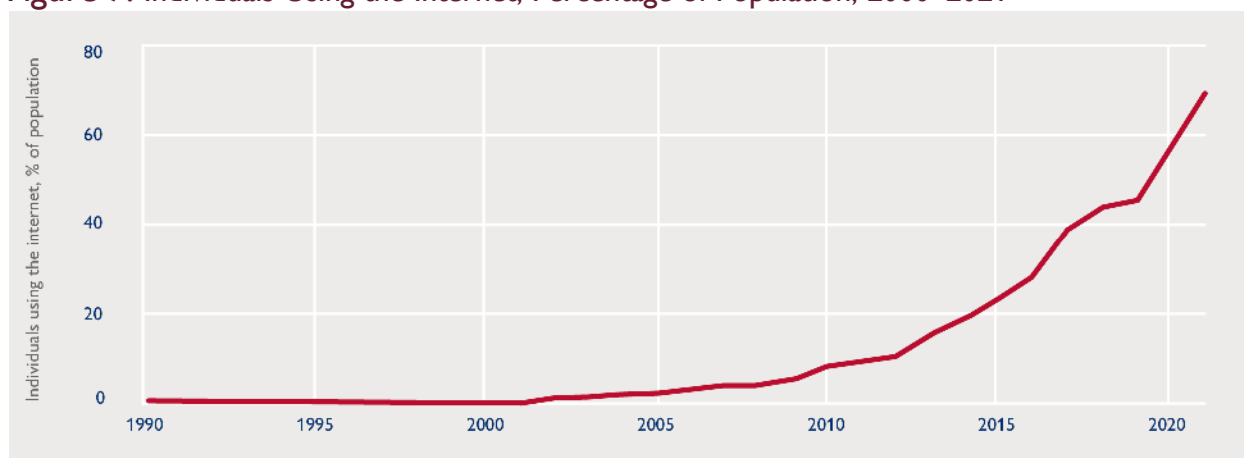
In addition to connectivity, GIFEC promotes digital literacy and digital entrepreneurship in underserved communities through a range of training and capacity-building initiatives. Girls-In-ICT is a standing program; other initiatives include Kids Coding Clubs (23 total to date), training teachers on using ICT in the classroom, and general literacy and skills training for the public. The agency conducts many of these trainings at its network of more than 270 Community ICT Centers (CIC) that it has built across the country over the past decade with support from donors. The CICs provide access to resources such as internet connectivity, computing equipment, software tools, and training programs.

Some DECA KIs criticized the CICs, claiming that they are underfunded, lack stable internet connectivity and modern equipment, and that managers lack digital skills themselves. They also noted that successful CICs rely on strong collaboration with local private sector and civil society organization (CSO) stakeholders, but unfortunately this has been lacking in many locations.

Sources: <https://www.commsupdate.com/articles/2023/02/16/rural-telephony-project-50-complete/>; <https://gifec.gov.gh/project/codingforkids/>; <https://gna.org.gh/2023/08/digital-transformation-gifec-partners-move-to-train-more-teachers-in-coding/>; <https://www.ghanabusinessnews.com/2023/04/18/gifec-provides-digital-skills-training-for-4335-ghanaians/>

With increased internet availability, Ghana has seen astonishing growth over the past decade in the number of users, accompanied by equally impressive growth in data demand. As of 2021, approximately 68 percent of Ghanaians used the internet, up from just 8 percent a decade earlier (Figure 7).

Figure 7: Individuals Using the Internet, Percentage of Population, 2000–2021

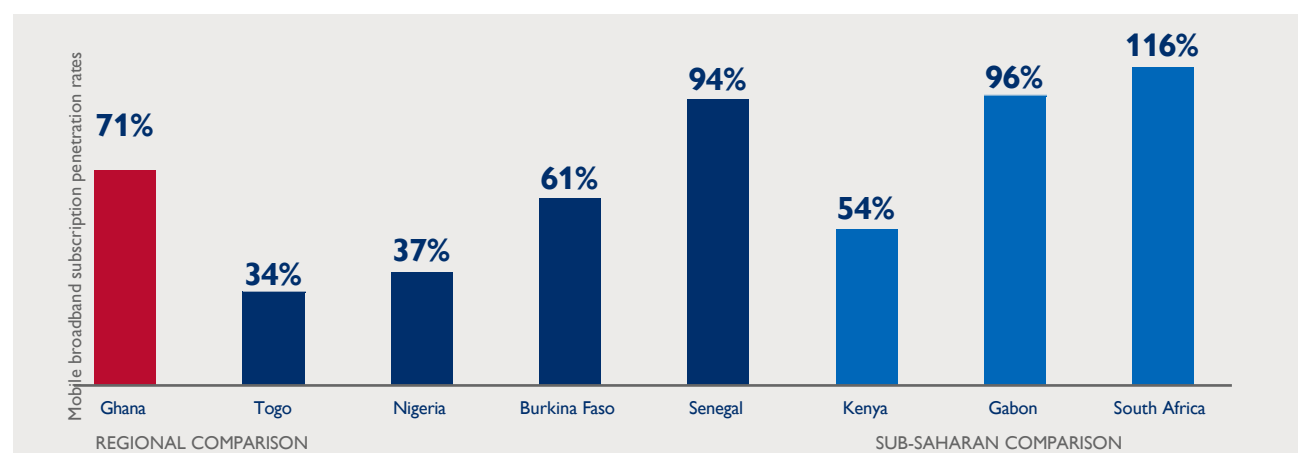


Source: World Bank, using ITU data²²

²² World Bank Open Data. "World Bank Open Data." Accessed November 9, 2023. <https://data.worldbank.org>.

Mobile internet is the primary means by which Ghanaians access the internet. As of January 2023, approximately 22.7 million Ghanaians were mobile broadband subscribers—a 71 percent²³ penetration rate. This puts Ghana near the top in West Africa and a leader among Sub-Saharan African countries (Figure 8).

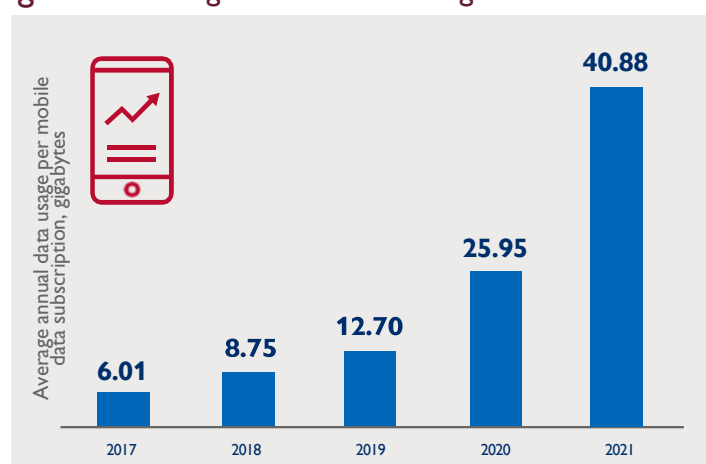
Figure 8: Mobile Broadband Subscription Penetration Rates in Africa, Percentage



Source: ITU²⁴

Average data traffic annually per mobile data subscription reached almost 41 gigabytes (GB) in 2021, up from just 6 GB in 2017, totaling about 3.4 GB usage per month.²⁵ The greatest growth in annual traffic occurred during the COVID-19 period, more than doubling from 2019 to 2020 and increasing another 50 percent from 2020 to 2021 (Figure 9).

Figure 9: Average Annual Data Usage Per Mobile Data Subscription, Gigabytes



Source: National Communications Authority, 2021²⁶

Notably, DECA KIIs reported that nearly three-quarters of all data consumption in Ghana occurs in and around three cities in the Triangle Corridor: Accra, Kumasi, and Takoradi. This is stark evidence of the deep urban- rural and regional digital divides in Ghana.

²³ National Communications Authority. "Mobile Data Year ended 2022-Jan 2023." National Communications Authority, April 2023. Accessed November 9, 2023. <https://nca.org.gh/wp-content/uploads/2023/04/Mobile-Data-Year-ended-2022-Jan-2023.pdf>.

²⁴ ITU. "Digital Development." Accessed November 9, 2023. <https://www.itu.int:443/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx>.

²⁵ National Communications Authority of Ghana. Communications Industry Report (CIR) 2021. Accessed October 23, 2023. <https://nca.org.gh/wp-content/uploads/2022/10/CIR-2021.pdf>.

²⁶ National Communications Authority of Ghana. Communications Industry Report (CIR) 2021. Accessed October 23, 2023. <https://nca.org.gh/wp-content/uploads/2022/10/CIR-2021.pdf>.

LACK OF MEANINGFUL INTERNET ACCESS PREVENTS BROADER ADOPTION AND CONSTRAINS GHANA'S DIGITAL DEVELOPMENT POTENTIAL

While Ghana's internet coverage is good, meaningful access is more limited. Internet access can be deemed meaningful only if connections are reliable and high-quality and internet data packages and smart devices are affordable.²⁷ Larger data packages (more than 1 GB per month) and the smart devices needed to use it effectively must both be affordable. Even more fundamentally, access to reliable power sources are necessary to sustain internet connectivity and charge devices (Box 3).

At the foundation of a high-quality, reliable internet is a reliable energy source. When a digital device is “dead” then the internet is effectively down for the user. Both the electrical grid and internet are forms of “network infrastructure.” Ghana has made enormous progress over the past two decades in bringing electricity to more of its population. However, challenges for electrification mirror many of the challenges for bringing internet access. Like Ghana's digital divides, divides in access to energy have a strong regional dimension. In 2022, 90 percent of Ghanaians nationally report having access to electricity, but access was higher in urban localities (95 percent) than in rural ones (84 percent); in the Upper East regions, national grid connection is less than 70 percent. Rural communities with lower population densities are quite far from major medium-voltage lines. Many of these communities are difficult to access because of poor road infrastructure and difficult terrain. The commercial case for electrification in these locations also may be missing; consumer costs are generally high, which lead to theft and disincentivized investment.

Improving access to alternative, renewable energy sources in Ghana, particularly for underserved communities, could have the dual benefit of improving internet use and adoption. The World Bank Group \$220 million Ghana Energy and Development Access Project was among the first World Bank-financed programs to focus on inclusive access to renewable energy through off-grid solar services and products. The project included five pilot mini-grids that converted solar energy to electricity for isolated communities in islands in the Volta Lake and the Volta River. These five pilot mini-grids provide electricity round the clock, seven days a week to about 10,000 beneficiaries for the first time. Such mini-grid systems, where several homes are connected (often with pay as you go systems) are emerging as a key player for cost-effective and reliable electrification of rural areas.

Examples of innovative, off-grid projects and solutions available in Ghana include:

- **Atmosfair.** The company distributes solar home systems in rural Ghana through solar kiosks. The kiosks are equipped with solar panels and lockable compartments for customers to charge their phones and solar lamps. Customers can also purchase their own solar home system, one component at a time, through the kiosks.
- **Azuri PayGo Energy | Africa.** Azuri technologies partnered with Oasis African Resources in 2015 to bring affordable pay-as-you-go solar power to 100,000 off grid homes in Ghana. The project was supported by the Ministry of Power and aligned with the government's efforts to bring reliable, renewable power to Ghana at scale.
- **PEG Africa.** PEG Africa provides solar home systems on credit to households in West Africa. Using a unique financing approach, called pay-as-you-go financing, they enable customers to replace their perpetual spending on poor-quality polluting fuels, such as kerosene, with solar energy that quickly becomes an asset the customer owns.

Sources: https://copenhagenconsensus.com/sites/default/files/gp_a4_rural_electric_sm.pdf
<https://www.businesswire.com/news/home/20150420006455/en/Azuri-Oasis-Africa-Resources-and-Ministry-of-Power-Lead-the-Charge-to-Provide-Off-Grid-Home-Solar-in-Ghana>

²⁷ Creative, Cornershop. “What Is Meaningful Internet Access? Conceptualising a Holistic ICT4D Policy Framework.” Alliance for Affordable Internet, April 8, 2022. <https://a4ai.org/news/what-is-meaningful-internet-access-conceptualising-a-holistic-ict4d-policy-framework/>.

Lack of affordable data and devices, especially for poorer populations. Ghana scores comparatively well overall for affordability (41)²⁸ among West African countries on GSMA's most recent Mobile Connectivity Index (MCI), although it is still in the bottom quintile of countries globally.²⁹ Affordability is Ghana's weakest indicator in the MCI, scoring just 41 out of a possible 100. The affordability indicator is composed of three subindicators measuring mobile data affordability, device affordability, and the impact of taxes on consumers.

Data affordability. While a mobile data entry package of 1 GB per month is on average relatively affordable for many Ghanaians, US\$8.69 per month average for 2 GB exceeds the ITU's target of less than 2 percent of average annual household income,³⁰ and US\$23.52/month average for 5 GB is beyond reach for many. For the poorest two quintiles of Ghanaian households, a 1 GB per month package is a financial stretch, and 5 GB per month is unattainable for most.³¹ These ITU and MCI findings are borne out by DECA research; KIs uniformly complained that data simply costs too much. Data from the National Communications Authority of Ghana shows a decline in the number of mobile data subscribers over the past few years from 26.5 million in 2020 to 22.7 million in 2022.³² Numerous factors contribute to this decline,³³ including price-sensitivity. This decline in mobile data subscribers is particularly notable because it indicates that even during the pandemic—which drove much of the economic and social activity online—some Ghanaians did not value internet access enough to prioritize it over other household expenses.

Ghanaians' price sensitivity is evidenced in numerous ways. "Lite" versions of social media applications (Instagram Lite, TikTok lite) top the list of app downloads Ghana, revealing concerns about data usage and device storage capacity (which is generally lower in less-expensive devices).³⁴ DECA KIs report that some Ghanaians have multiple SIM cards, which they use alternatively to avoid paying e-levy fees that users encounter once they pass daily data usage caps. Individuals also turn off data to avoid overuse. CSOs buy data bundle packages for their beneficiaries to use when participating in training programs. Even local governments find data packages expensive: IT staff in local government reported buying their own internet data bundles because government budgets were not consistently supplying it.

Device affordability. Ghanaians overwhelmingly access the internet through their mobile devices. Yet in the Mobile Connectivity Index, Ghana ranks low for device affordability, scoring 27.5 out of 100 overall and just 18 when accounting for the 40 percent of Ghanaian households with the lowest incomes.³⁵ A 2020 survey conducted by the NCA found that among those Ghanaians who did not own a mobile device, price was overwhelmingly indicated as the reason.³⁶ The most recent national census data from 2021 found that 73 percent of Ghanaians at least 12 years of age own a smartphone.³⁷ However, this number masks deep urban-rural and regional divides. While 83 percent of urban residents reported owning a smartphone, only 59 percent of rural residents did.³⁸ Disparities among regions are even more striking, with a nearly 50-point spread between the regions with the highest (Greater Accra at 89 percent) and the lowest (Savannah at 41 percent) percentage of smartphone owners (Figure 10). This largely mirrors the overall north-south income and wealth gaps in Ghana.

²⁸ Some comparative scores: Togo (21), Mali (28.2), Sierra Leone (28.2), Guinea (31.1), Benin (35), Cote d'Ivoire (42.8), Senegal (43.7), and Nigeria (55.2).

²⁹ 2023 – GSMA Mobile Connectivity Index. "2023 – GSMA Mobile Connectivity Index." Accessed October 26, 2023. <https://www.mobileconnectivityindex.com/>.

³⁰ ITU. "IPB." Accessed October 26, 2023. <https://www.itu.int:443/en/ITU-D/Statistics/Dashboards/Pages/IPB.aspx>.

³¹ 2023 – GSMA Mobile Connectivity Index. "2023 – GSMA Mobile Connectivity Index." Accessed October 26, 2023. <https://www.mobileconnectivityindex.com/>.

³² "Mobile Data – National Communications Authority." Accessed October 26, 2023. <https://nca.org.gh/mobile-data/>.

³³ A significant part of this decline is likely due to reduced numbers of SIM cards per user and efforts by network operators to clean up their databases of individual users to align with SIM registration requirements.

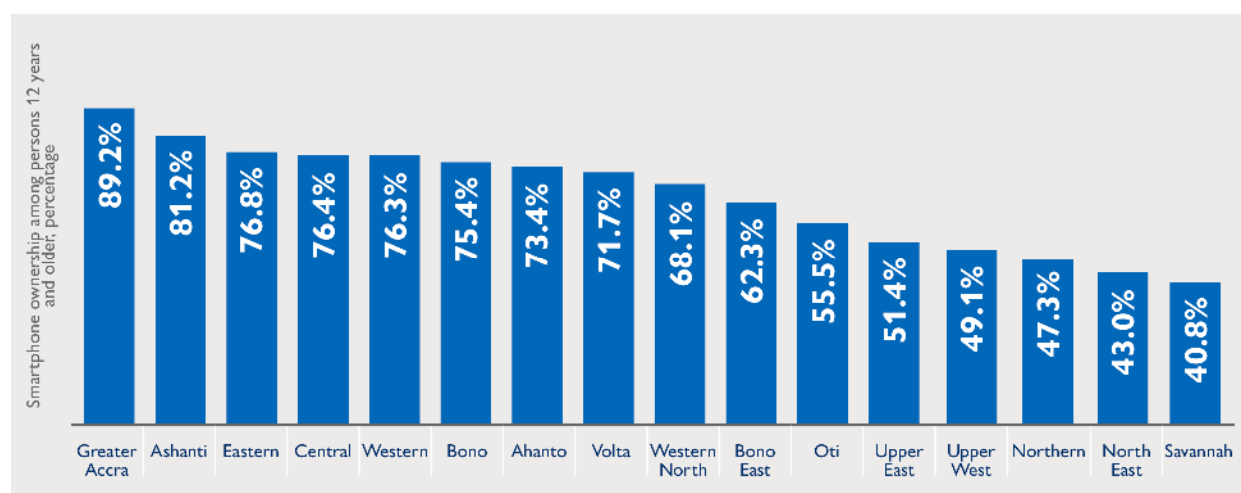
³⁴ Similarweb. "Top Social Apps Ranking - Most Popular Apps in Ghana." Accessed October 26, 2023. <https://www.similarweb.com/apps/top/google/store-rank/gh/social/top-free/>.

³⁵ 2023 – GSMA Mobile Connectivity Index. "2023 – GSMA Mobile Connectivity Index." Accessed November 9, 2023. <https://www.mobileconnectivityindex.com/>.

³⁶ National Communications Authority of Ghana. Household Survey on ICT in Ghana Abridged Report. Accessed October 23, 2023. <https://nca.org.gh/wp-content/uploads/2021/02/Household-Survey-on-ICT-in-Ghana-Abridged-NRF.pdf>.

³⁷ Ghana Statistical Service. Information and Communication Technology (ICT) in Households and Businesses Report, Volume 3G. Accessed October 23, 2023.

³⁸ Ibid.

Figure 10: Smartphone Ownership among Persons 12 Years and Older, Percentage

Source: Ghana 2021 Population and Housing Census General Report, Volume 3G³⁹

One company reportedly is embarking on a plan to establish a smartphone manufacturing and assembly plant in Ghana, which could result in lower prices.⁴⁰

Poor internet quality and reliability. Ghana's internet quality is generally poor, especially outside major urban centers. This poor quality is reflected in Ghana's ranking on the Speedtest Global Index. As of September 2023, for example, Ghana ranked 137 out of 145 countries on mobile broadband download speeds.⁴¹ Ghana also receives low marks on the GSMA Mobile Connectivity Index for the network performance and spectrum subindicators, ranking 36 and 40 out of 100, respectively.⁴² This poor mobile internet performance results from restrictive licensing policies and insufficient spectrum assignments, which lead to congestion (see enabling environment discussion).⁴³ The problem is well-known by the government and operators. At the onset of COVID-19, the government released additional spectrum (See Key Terms for an explanation of "spectrum")

to network operators free of charge to counter the explosive demand for data and related reductions in quality of service, but this was only temporary.⁴⁴

DECA KIs complained about poor quality of voice and data services, in both urban and rural areas. They specifically mentioned dropped calls, internet traffic congestion, slow internet speed, and intermittent loss of connectivity. Regular service disruption especially affects businesses and organizations adversely because they are on the internet for their operations.

High costs of doing business in Ghana's telecommunications sector may discourage the capital investments required to properly maintain and upgrade telecommunications infrastructure (see enabling environment discussion). Fueling those high costs are frequent fiber cuts from construction projects such as roads, water supply lines, electrical grids, and housing; theft—towers are at risk of vandalism or galamsey (illegal mining)—and destruction from bushfires. For the

³⁹ Ghana Statistical Service. "Volume 3: Information and Communication Technology." Ghana Living Standards Survey Round 7 (GLSS 7) Report. February 2022. Accessed October 26, 2023. https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/Volume%203G_Information%20and%20Communication%20Technology_240222a.pdf.

⁴⁰ "Vilacesti Enclave – Vilacesti." Accessed October 26, 2023. <https://vilacesti.com/enclave/>.

⁴¹ Speedtest Global Index. "Ghana's Mobile and Broadband Internet Speeds." Accessed October 26, 2023.

<https://www.speedtest.net/global-index/ghana#mobile>.

⁴² 2023 – GSMA Mobile Connectivity Index. "2023 – GSMA Mobile Connectivity Index." Accessed October 26, 2023.

<https://www.mobileconnectivityindex.com/>.

⁴³ Alliance for Affordable Internet. "Releasing Extra Spectrum for Better Service Quality," October 26, 2021.

<https://a4ai.org/research/good-practices/releasing-extra-spectrum-for-better-service-quality/>.

⁴⁴ Laryoh, Magdalene Teiko. "Ghanaian Government Gives Spectrum to MTN and Vodafone for Three Months." Pulse Ghana, 13:09 200AD. <https://www.pulse.com.gh/bi/tech/ghanaian-government-gives-spectrum-to-mtn-and-vodafone-for-three-months/nh8lfg8>

infrastructure that is in place, a skilled workforce outside metropolitan areas is needed to service and maintain it, to say nothing of a reliable power source, which is critically important for any level of connectivity at tower sites. When power grids fail, tower sites must rely on expensive diesel generators.

LOW DIGITAL LITERACY AND LIMITED CONTENT IN LOCAL LANGUAGES ARE BARRIERS TO DIGITAL ADOPTION, ESPECIALLY OUTSIDE MAJOR URBAN CENTERS AND IN POORER REGIONS.

Digital literacy—sometimes called the fourth literacy in addition to reading, writing, and math—generally refers to the basic set of computer, phone, and information competencies necessary to effectively and securely use digital technologies and the internet in social and economic life. It includes skills such as browsing, searching and filtering data, information, and digital content; managing digital identity; protecting personal data and privacy; and solving basic technical problems. Software coding, for example, is a more advanced digital skill. Digital literacy that includes basic skills such as email communication, web research, and online transactions are increasingly necessary for most employment⁴⁵ (see also discussion in Pillar 3, Digital Talents).

Ghana does not have an up-to-date national Digital Competencies Framework⁴⁶ or curricula for teaching ICT in schools, although this may be part of the new draft ICT in Education Policy under development by the Ministry of Education. Drafts of the new Policy, which will replace the ICT in Education Policy of 2015, are not public. Little information is publicly available on progress of the Ministry’s ICT in Education reform initiative, as well.⁴⁷ DECA KIs were generally critical both of the implementation of the 2015 Policy and of the stakeholder engagement process for developing the updated version.

Teaching digital literacy and basic skills through Ghana’s public school system faces many challenges. These include poor infrastructure, a shortfall of knowledgeable teachers and administrators, and a lack of teaching curricula and materials. In addition, data on digital literacy and basic skills attainment in schools is collected.

The UNICEF “Project Connect” data shows that of the 34,704 schools and educational institutions in Ghana, about 68 percent have good or moderate internet coverage while nearly 28 percent have no coverage (Figure 11).

Initiatives such as the Bluetown-Microsoft Airband partnership are working to fill these coverage gaps.⁴⁸ The number of schools that are actually connected to the internet, however, is just a fraction of the total number of schools nationally. The government has prioritized connecting senior high schools. According to available reports, approximately 80 percent of senior high schools had been provided free Wi-Fi by 2022.⁴⁹ While no information is publicly available to indicate why schools might not connect to the internet, the primary reason is likely to be budgetary. Costs are simply too high.

Computer laboratories are also expensive to set up, maintain, and secure. Additionally, concerns from parents about children’s device usage for entertainment purposes rather than educational purposes have led to restrictions on mobile phone use in schools.

⁴⁵ IFC. 2019. Digital Skills in Sub-Saharan Africa: Sportlight on Ghana. Accessed October 23, 2023. <https://www.ifc.org/content/dam/ifc/doc/mgrt/digital-skills-final-web-5-7-19.pdf>.

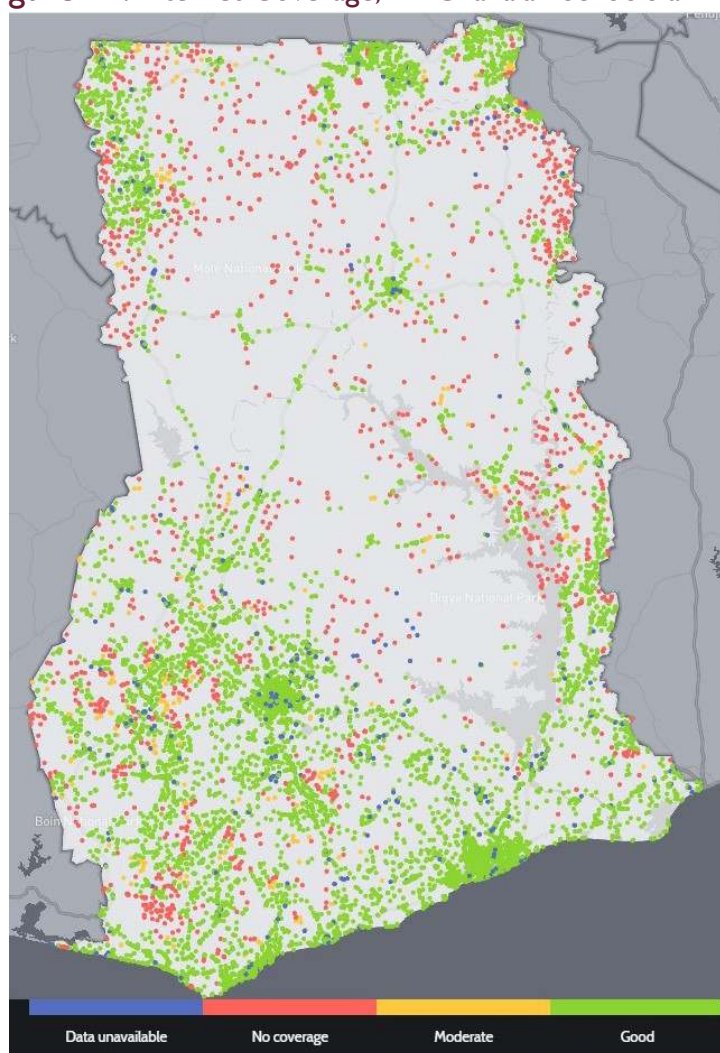
⁴⁶ “DigComp Framework.” Accessed November 9, 2023. https://joint-research-centre.ec.europa.eu/digcomp/digcomp-framework_en.

⁴⁷ “ICT IN EDUCATION REFORM - Ministry of Education Ghana,” January 16, 2021. <https://moe.gov.gh/index.php/ict-in-education-reform-2/>.

⁴⁸ Kirsten. “THE GHANAIAAN MINISTRY OF EDUCATION SUPPORTS CONNECTING SCHOOLS.” Accessed November 9, 2023. <https://bluetown.com/2021/11/02/the-ghanaian-ministry-of-education-supports-connecting-schools/>.

⁴⁹ “FACT-CHECK: Has Gov’t Provided Free Wi-Fi for over 700 SHSs?,” April 21, 2022. <https://thefourthstategh.com/2022/04/21/fact-check-has-govt-provided-free-wifi-for-over-700-shss/>.

Figure 11: Internet Coverage, All Ghanaian Schools and Educational Institutions



Source: UNICEF, Project Connect.⁵⁰

Note: green = good; red = no coverage or connectivity; blue = no data.

Teachers and administrators themselves also do not always have computers or adequate digital skills. According to DECA KIIs, efforts to address this through the One-Teacher-One-Laptop program have had moderate success; complaints included poor device quality and a lack of training to use it.⁵¹ The Education Strategic Plan (ESP 2018–2030)⁵² includes objectives on improving the digital skills of teachers. However, funding does not appear to have been adequate. DECA team visits to digital skills training hubs and institutes revealed that teachers are among their most common students.

Multistakeholder efforts have been made to improve digital literacy training. The COVID-19 pandemic brought into sharp relief the need to develop online resources for training teachers and for providing curricula and materials with which to teach students. Donors and civil society organizations also have launched a range of initiatives in recent years, though many have focused more on intermediate digital skills attainment such as basic coding than on digital literacy.

⁵⁰ “Project Connect.” Accessed November 9, 2023. <https://projectconnect.unicef.org/map/country/gh>

⁵¹ Segbefia, Sedem. “Concerned Teachers Urge GNAT to Absorb 30 Percent Laptop Fee for Members.” The Business and Financial Times (blog), February 24, 2021. <https://thebftonline.com/2021/02/24/concerned-teachers-urge-gnat-to-absorb-30-laptop-fee-for-members/>.

⁵² “EDUCATION REFORM - Ministry of Education Ghana,” November 2, 2020. <https://moe.gov.gh/index.php/education-reform/>.

Box 4: An E-Sports Opportunity in Ghana to Improve Digital Literacy and Provide New Jobs?

The global e-Sports industry has experienced tremendous growth in recent years, with an increasing number of countries recognizing its economic potential. As of 2021, Ghana had the second highest per-capita gaming population in Africa, fueled by the increasing availability of high-speed internet. The private sector is driving the growth of e-Sports in Ghana, building out business networks, gaming centers and related infrastructure (e.g., state-of-the-art gaming equipment, high-speed internet connectivity, streaming capabilities), and conducive environments for training and competition. Approximately 60–70 e-Sports centers exist in Accra, Kumasi and Tamale with many more scattered across the country. However, many are not officially registered business entities.

The growth of e-Sports in Ghana presents numerous skills' development and employment opportunities for youth. Ghana can tap into this burgeoning market and position itself as a Sub-Saharan Africa regional hub for e-Sports tournaments, training, and talent development. E-sports offers various career opportunities, including professional players, coaches, event organizers, content creators, and more. Among tertiary level students in Ghana, more than 90 percent knew about e-Sports or gaming and expressed interest in playing e-Sports competitively.

E-sports hubs also have the potential to engage and empower Ghanaian youth more broadly. They are by nature community-based and community-building hubs. As business ventures, the e-Sports centers seek out partnerships and collaboration with the global e-Sports networks and organizations, and local businesses. They bring in industry experts who can provide access mentorship, sponsorships, and networking opportunities, creating and enriching the learning experience and fostering long-term sustainability. Some centers have rolled out programs targeted at engaging and empowering females.

DECA KIs report that in some localities, the government's Community ICT Centers (CIC) have effectively transitioned into e-Sports hubs. Leveraging the youth "foot traffic" interest in e-Sports, they can introduce broader digital literacy activities; these are ad hoc initiatives, driven by the particular CIC manager.

The Internet Society (Ghana Chapter) administers an ongoing project aimed at improving these fundamental digital skills.⁵³ Private sector organizations such as the e-Sports Association also have provided support (Box 4).

Content in local languages is limited. There is limited local content that is relevant to users in Ghana, even less so for underserved groups such as people with a disability and special needs. Consequently, all internet users consume generic online content which often undermines broader internet adoption. Less than 2 percent of internet users in Ghana are content creators. One example of local content in Ghanaian languages is a voice assistant app known as "Abena AI,"⁵⁴ which was developed to work in the local, Twi Language. This assists with conveying information to users who cannot read or write (see further discussion in Pillar 2, Digital Society).

GEOGRAPHIC DISPARITIES IN EDUCATION AND INCOME UNDERLIE THE DEEPEST DIGITAL DIVIDES ACROSS GENDER AND FOR PERSONS WITH DISABILITIES.

Ghana's gender digital divide. While internet access and usage have grown tremendously among both males and females in Ghana over the past 12 years, a gender digital divide persists. The gap between female and male mobile device ownership rates has narrowed, but the gap in internet usage rates has widened (Table 1)

Table 1: Changes in Gender Digital Divides among Persons 15 Years and Older, Percentages

	2010			2021			2010-2021
	M	F	GAP	M	F	GAP	PERCENTAGE POINTS CHANGE
OWNS A MOBILE DEVICE*	58.5	46.7	11.8	89.9	83.5	6.4	↓ 5.4
USED INTERNET IN PAST THREE MONTHS	11.1	5.7	5.4	80.2	69.7	10.5	↑ 5.1

⁵³ "Digital Literacy Project – Internet Society Ghana Chapter." Accessed November 9, 2023. <https://isoc.gh/digital-literacy-project/>.

⁵⁴ "Abena AI - Twi Voice Assistant - Apps on Google Play." Accessed November 9, 2023.

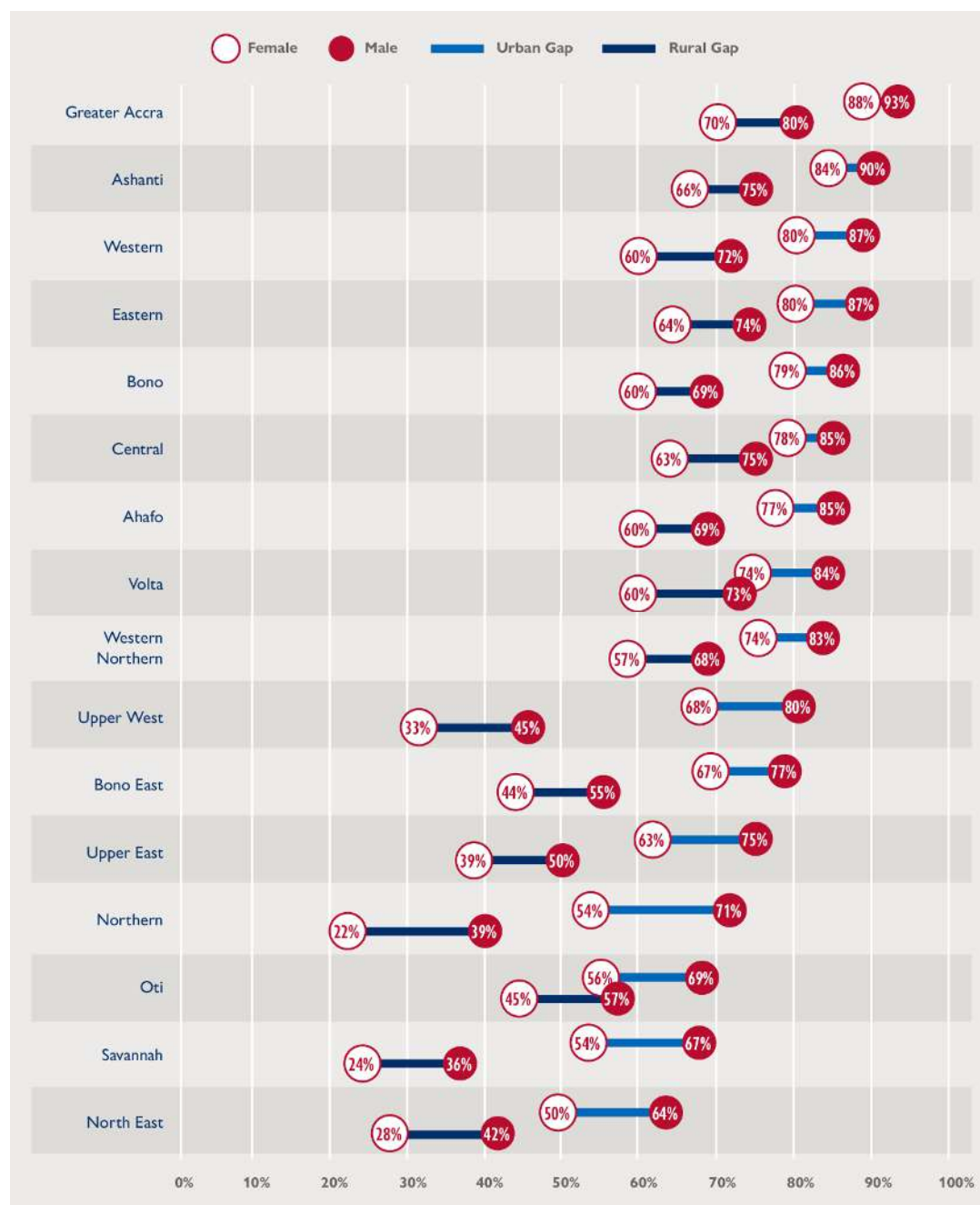
Source: 2021 Population Housing Census Thematic Brief on Digital Exclusion⁵⁵

* Mobile device includes both smartphones and basic handsets; disaggregated data by mobile device type is unavailable for 2010.

While significant gaps between females and males in internet usage rates exist in every region of the country, they increase when measuring usage from urban to rural localities. Greater Accra region has the narrowest urban gender gap (5 percentage points); Ashanti, Ahafo, and Bono regions have the narrowest rural gender gaps (9 percentage points). The widest gender digital divide in internet usage is in the Northern region: 17 percent points in both urban and rural localities (Figure 12).

⁵⁵ Data, 2021 Population and Housing Census-Ghana Statistical Service importance of. “2021 Population and Housing Census.” Accessed

Figure 12: Gender Divides in Internet Usage Rates among Persons 12 Years and Older, by Region and Locality



Source: Ghana 2021 Population and Housing Census General Report, Volume 3G⁵⁶

The growing gap in internet usage shows the corresponding gender divide in ownership of devices capable of accessing the internet, especially smartphones. For smartphones, the gap is 7 percentage points in urban localities and 12 in rural ones. One bright point is that the gap in non-smartphone ownership in rural localities is relatively small, and in urban

⁵⁶ Ghana Statistical Service. "Volume 3G: Information and Communication Technology." 2010 Population and Housing Census. March 2013. Accessed November 9, 2023.

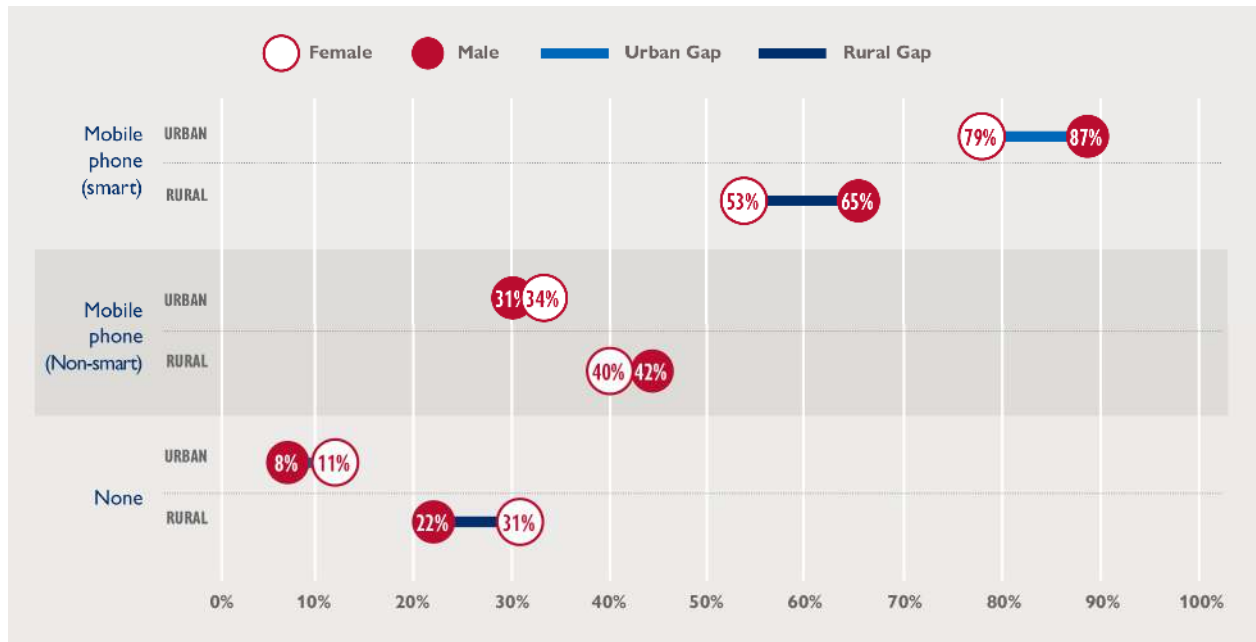
https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/Volume%203G_Information%20and%20Communication%20Technology_240222a.pdf.

localities, female ownership of non-smartphones *exceeds* that of male’s (4 percentage point gap; Figure 13). While these data on non-smartphone ownership rates is encouraging, such handsets offer far less internet access than smartphones.

Figure 13: Gender Divides in Ownership of ICT Devices among Persons 12 Years and Older, by Locality, Percentages

Source: Ghana 2021 Population and Housing Census General Report, Volume 3G⁵⁷

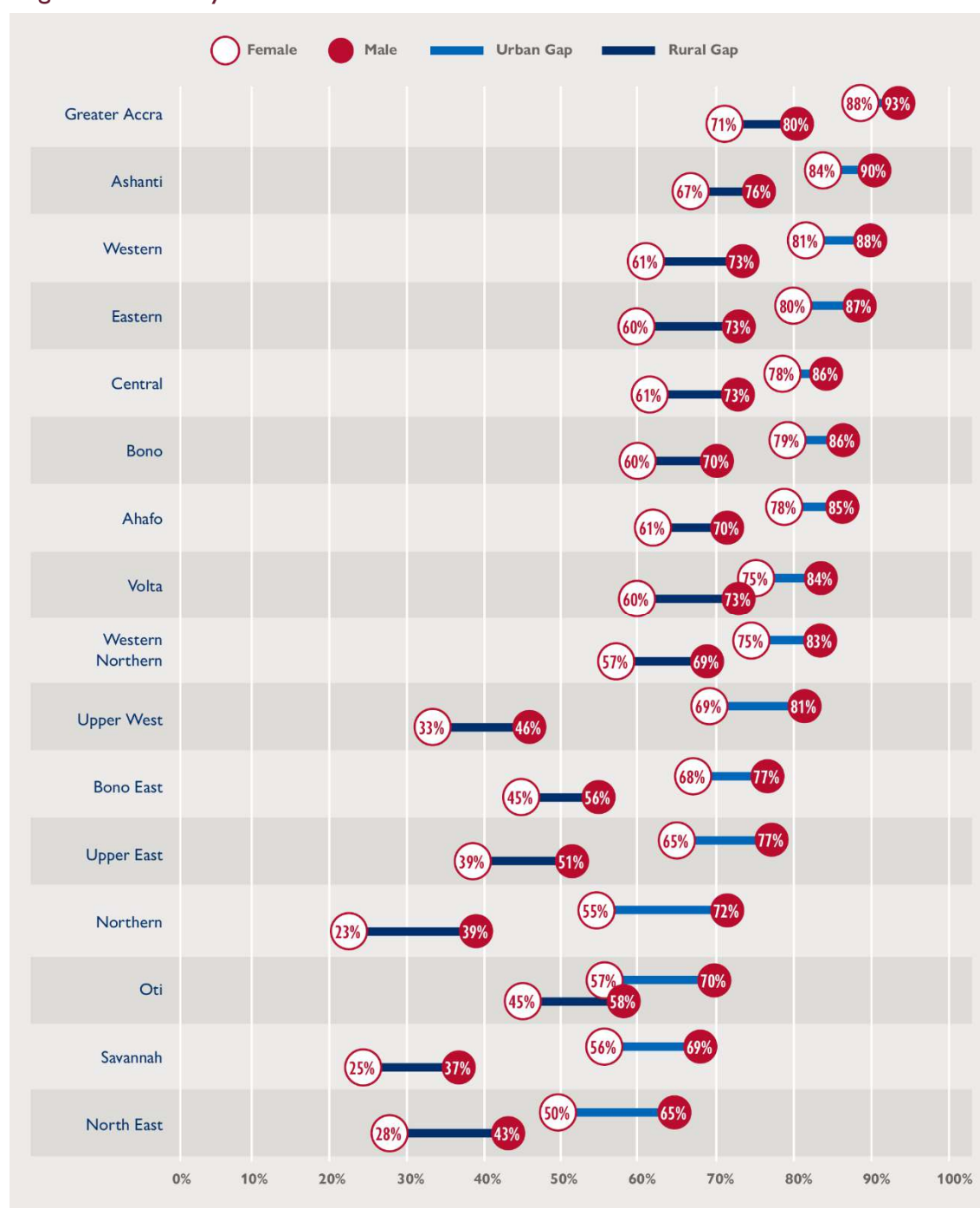
When smartphone ownership rates are disaggregated by region, the gap between males and females varies. Notably,



the gap is widest in the four regions with the lowest overall smartphone ownership rates and largely overlaps with the gaps in internet usage (Figure 14).

⁵⁷ Ghana Statistical Service. “Volume 3G: Information and Communication Technology.” 2010 Population and Housing Census. March 2013. Accessed November 9, 2023. https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/Volume%203G_Information%20and%20Communication%20Technology_240222a.pdf

Figure 14: Gender Divides in Smartphone Ownership Rates among Persons 12 Years and Older, by Region and Locality



Source: Ghana 2021 Population and Housing Census General Report, Volume 3G⁵⁸

The regional differences in smartphone ownership and internet usage rates indicate that lower average income and education levels are contributing factors to gender digital divides in Ghana. The poorer northern regions and rural localities (in any region) have greater male-female gaps in internet-enabled digital device ownership (smartphones and laptops). Where household income levels limit the purchase of smartphones, social norms tend to prioritize males over

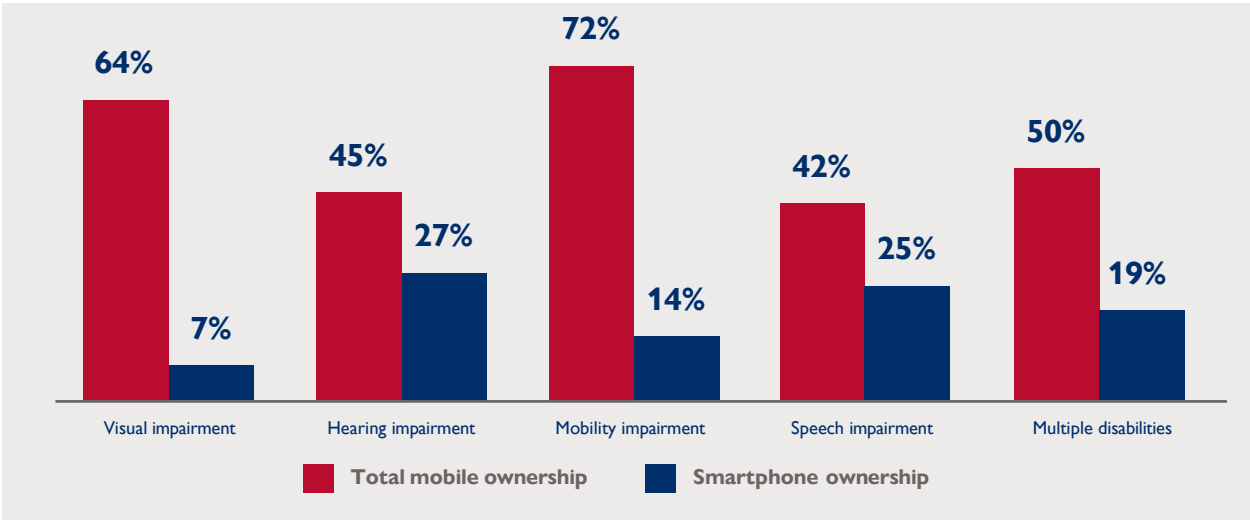
⁵⁸ Ibid

females. The cost of data also poses a significant barrier, as some women find it challenging to afford data for accessing digital services and participating in training programs. All the civil society DECA KIIs working with women reported purchasing and providing data bundles to their beneficiaries to facilitate engagement and participation in programs.

Women’s educational attainment is also on average lower in these same northern and western regions and rural localities. Illiteracy rates among women are higher overall;⁵⁹ some centers such as Songtaba-Tamale have integrated literacy facilitators and developed content in local languages to support the digital inclusion of illiterate women. General literacy rates influence digital literacy and basic skills attainment. Because of their lower overall education levels, women may have had less exposure to digital technologies and consequently lower confidence in using them. DECA KIIs reported seeing this in their programs with women. Encouragingly, DECA KIIs also noted that since the COVID-19 pandemic, as the perceptions of digital technologies role shifted from a luxury to a necessity, demand among women for expanded access to internet and devices and digital skills has grown.

Digital divides for persons with disabilities. Persons with disabilities (PWD) in Ghana—those who lack abilities or have limitations on vision, hearing, speech, self-care, physical performance (e.g., walking or climbing stairs), or intellect (e.g., remembering or concentrating)—are more likely to report not using ICT devices than those without such difficulties.⁶⁰ When asked if there are problems with online bullying of persons with disabilities in Ghana, DECA KIIs reported that it is not an issue simply because so few are online. PWD are 34 percent less likely than nondisabled persons to own a mobile phone, 42 percent less likely to be aware of the internet, and 74 percent less likely to have used mobile internet in the past three months.⁶¹ The cost of data and internet-enabled devices are the highest barriers to internet adoption.⁶² Among those who do own a mobile phone, smartphones are far less common (Figure 15). Difficulties with reading and writing, limitations from their conditions, digital illiteracy, and cost of devices are the most common barriers to mobile phone ownership for PWD.

Figure 15: Mobile and Smartphone Ownership by Disability Type, as Percentage of Total Population with Disabilities



Source: GSMA.⁶³

⁵⁹ Ghana Statistical Service, “2021 Population and Housing Census General Report Volume 3D: Literacy and Education,” Ghana Statistical Service, November 2021, https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/2021%20PHC%20General%20Report%20Vol%203D_Literacy%20and%20Education.pdf.

⁶⁰ Ghana Statistical Service, “Thematic Brief on Digital Exclusion,” Ghana Statistical Service, April 2023, 4, https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/Thematic%20Brief%20on%20Digital%20Exclusion_260423a.pdf.

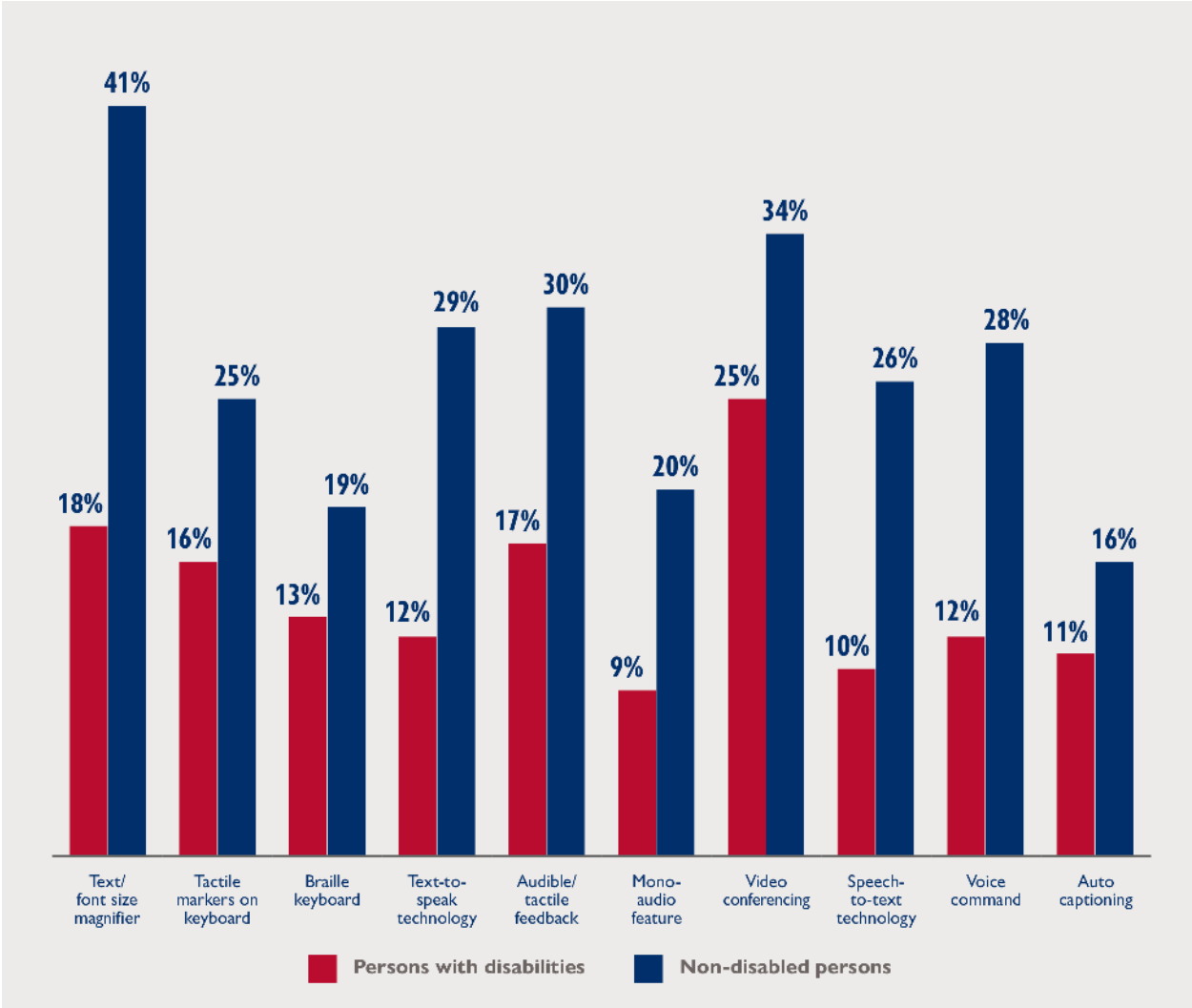
⁶¹ GSMA, “Closing the Mobile Disability Gap in Ghana,” GSMA, April 2022, 6, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/04/Closing-the-mobile-disability-gap-in-Ghana.pdf>.

⁶² Ibid.

⁶³ GSMA, “Closing the Mobile Disability Gap in Ghana,” GSMA, April 2022, 6, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/04/Closing-the-mobile-disability-gap-in-Ghana.pdf>.

Many PWD are much less aware of accessibility features such as text magnification, braille keyboards, text-to-speak/speech-to-text, and video conferencing that mobile devices offer (Figure 16). Notably, females with disabilities are much more likely than their male counterparts to report not using ICT devices. For example, blind females are nearly twice as likely as blind males to be digitally excluded —48 percent as compared with 25 percent.⁶⁴

Figure 16: Awareness of Mobile Accessibility Features among Mobile Users, as Percentage of Mobile Users



Source: GSMA.⁶⁵

The government does not have a strategy or road map specifically targeting digital inclusion of PWD.⁶⁶ DECA KIIs who work with PWD or who are themselves disabled complained that collection and analysis of disability- disaggregated data on digital inclusion are lacking.⁶⁷ They noted that such data could be used in developing digital products and

content/uploads/2022/04/Closing-the-mobile-disability-gap-in-Ghana.pdf.

⁶⁴ Data, 2021 Population and Housing Census-Ghana Statistical Service importance of. “2021 Population and Housing Census.” Accessed November 9, 2023. <https://census2021.statsghana.gov.gh/newspage.php?readmorenews=MjUwNzE4NDkzNS43Njc1&Release-of-the-2021-PHC-Thematic-Brief-on-Digital-Exclusion-in-Ghana>.

⁶⁵ GSMA, “Closing the Mobile Disability Gap in Ghana,” GSMA, April 2022, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/04/Closing-the-mobile-disability-gap-in-Ghana.pdf>.

⁶⁶ BusinessGhana. “Provide a Roadmap to Boost Digital Inclusion in Ghana – ITG’s Executive Director.” Accessed November 9, 2023. <https://www.businessghana.com/>.

⁶⁷ Awal, Mohammed. “Develop National Database on Persons with Disabilities from 2021 Census and GDHS 2022.” The Business and

solutions designed to meet the needs of PWD. The CSO Inclusive Tech Group, for example, runs an annual disability inclusion hackathon that invites PWD to compete in developing digital solutions for their communities.⁶⁸ Others, such as TechEra, focus on providing digital skills training to PWD to improve employability and capacity for independent living.⁶⁹

GHANA NEEDS TO ADDRESS NUMEROUS CHALLENGES IN THE TELECOMMUNICATIONS SECTOR REGULATORY ENVIRONMENT TO POSITION THE COUNTRY FOR ITS NEXT DIGITAL LEAP.

The affordability, quality, and reliability of Ghana's internet need to be addressed for the country to take full advantage of the development potential using its existing digital infrastructure. Ghana also needs to prepare for the rollout of the next generation of digital infrastructure. This will require significant investments from the private sector. The current enabling environment may be discouraging such investment and contributing to an inefficient market and reduced competition.

High sector taxation and fees discourage investment and deter new market entrants. The tension at the center of Ghana's telecommunications regulatory environment comprises both the government's need for revenue sources (including regulatory agencies such as NCA, NITA, and CSA) and the private sector's need for a reasonable return on investment.

None of Ghana's major telecom players is a domestic company, perhaps making them especially attractive as revenue sources for the government. The telecom sector accounted for about 4 percent of gross domestic product (GDP), including 6,100 direct and more than 1.2 million indirect jobs in the mobile phone space and nearly US \$168 million in investment, which accounts for almost 8 percent of government revenues.⁷⁰ The telecommunications sector is subject to certain sector-specific taxes (Table 2). When combined with the heavy burden of other government-imposed taxes, fees, and levies, the telecommunications sector total came to 47.4 percent of the industry's total revenue in 2021, up from 46.8 percent in 2020.⁷¹ The average general and sector-specific taxes and fees for the telecom sector in Sub-Saharan Africa has been estimated at 26 percent.⁷² These sector costs raise prices for end-users and disincentivize investment in network maintenance, upgrades and new technologies such as 5G.

Financial Times (blog), July 12, 2021. <https://thebftonline.com/2021/07/12/develop-national-database-on-persons-with-disabilities-from-2021-census-gdhs-2022/>.

⁶⁸ "Inclusive Tech Group (ITG) holds a three-day Disability Inclusive Hackathon." Accessed October 23, 2023.

<https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Inclusive-Tech-Group-ITG-holds-a-three-day-Disability-Inclusive-Hackathon-1677749>.

⁶⁹ "Impact Initiatives – Tech Era." Accessed November 9, 2023. <https://techera-gh.org/impact-initiatives/>.

⁷⁰ GSMA, "The E-levy in Ghana: Economic Impact Assessment," GSMA, February 2023, <https://www.gsma.com/publicpolicy/wp-content/uploads/2023/03/E-Levy-Ghana-Economic-Impact-Assessment.pdf>.

⁷¹ "Total Tax Contribution of Telecoms Industry Rises by 19 Percent to Hit GH¢ 4.3 Bn in 2021 - Ghana Telecoms Chamber." Accessed November 9, 2023. <https://telecomschamber.com/news-media/industry-news/total-tax-contribution-of-telecoms-industry-rises-by-19-to-hit-gh-4-3-bn-in-2021>.

⁷² GSMA, "The E-levy in Ghana: Economic Impact Assessment," GSMA, February 2023, <https://www.gsma.com/publicpolicy/wp-content/uploads/2023/03/E-Levy-Ghana-Economic-Impact-Assessment.pdf>.

Table 2: Telecommunications Sector–Specific Taxes in Ghana’s Telecommunications Sector, 2023

TAX	PERCENTAGE/QUANTUM
Withholding Tax	15 percent of payments received by an entity that carries on a business of transmitting or receiving messages by cable, radio, optical fiber, or satellite, or electronic communication from an apparatus located in Ghana, whether or not the messages originate, terminate, or are used in Ghana
Communications Service Tax	5 percent of the value of the electronic communications service (ECS) and recharges made by ECS providers. Charges for ECS include those made for monetary and nonmonetary consideration (e.g., promotions and bonuses). CST is also applicable to interconnection services.
Surtax on Inbound International Traffic	US\$0.0608 per minute of inbound international voice traffic

Source: WinDT Consulting.

The number of major companies operating in Ghana’s telecommunications sector has declined in recent years to just three core players. As of the beginning of 2023, MTN held the largest market share of mobile subscriptions—approximately 75 percent—followed by Vodafone with 13 percent and AirtelTigo with about 12 percent.⁷³ The Government of Ghana holds a 30 percent stake in Vodafone⁷⁴ and acquired 100 percent ownership of AirtelTigo in 2021.⁷⁵ The government recently announced it had entered into a joint-venture between AirtelTigo (re-branded as AT) and a UK company to bring more investment into Ghana’s telecommunications sector.⁷⁶ DECA KIIIs did not express concerns about government stakes in either Vodafone or AirtelTigo but rather noted that MTN’s overwhelming, longstanding market dominance has discouraged competition (see Box 5).

Ineffective consultation of the private sector and a lack of confidence in regulators undermine regulatory efficacy. According to the Ghana Chamber of Telecommunications, government revenue from the telecommunications sector has fallen more than 80 percent over the past decade, because of the shift of voice traffic onto over-the-top applications such as WhatsApp, Facebook, Zoom, and Teams. Regulatory efforts to fill this revenue gap have been met with stiff resistance. However, regulators’ poor communication and engagement with the industry (and the public at large) has led to a lack of buy-in and understanding of regulatory policies that has subsequently undermined the efficacy of those very policies. The e-levy, for example, aimed to impose a 1.75 percent levy on electronic transactions. The public consultation process was widely criticized by MNOs, FinTech sector, and CSOs for not adequately engaging interested stakeholders or the broader public early in the review process or for addressing concerns that stemmed from that process. Some noted that the e-levy was counterproductive to achieving other strategic goals, such as a cash-light society for Ghana.⁷⁷ After a protracted legal tussle and stakeholder agitations, the levy was rolled out, though it has not achieved projected revenue.

⁷³ National Communications Authority, “Mobile Data Year Ended 2022 January 2023,” National Communications Authority, April 2023, <https://nca.org.gh/wp-content/uploads/2023/04/Mobile-Data-Year-ended-2022-Jan-2023.pdf>.

⁷⁴ Bloomberg.com. “Ghana Approves Sale of Vodafone Unit to French Tycoon’s Telecel.” January 16, 2023. <https://www.bloomberg.com/news/articles/2023-01-16/ghana-approves-sale-of-vodafone-unit-to-french-tycoon-s-telecel>.

⁷⁵ GhanaWeb. “Government of Ghana to Acquire 100 Percent Stake in AirtelTigo,” April 19, 2021. <https://www.ghanaweb.com/GhanaHomePage/business/Government-of-Ghana-to-acquire-100-stake-in-AirtelTigo-1236370>.

⁷⁶ GNA. “AT, Formerly AirtelTigo, Signs Joint Venture Agreement with Hannam Investments.” Ghana News Agency (blog), November 1, 2023. <https://gna.org.gh/2023/11/at-formerly-airteltigo-signs-joint-venture-agreement-with-hannam-investments/>.

⁷⁷ Admin. “Civil Society Organisation Asks Gvt to Withdraw E-Levy.” Ghanaian Times, December 10, 2021. <https://www.ghanaiantimes.com.gh/civil-society-organisation-asks-gvt-to-withdraw-e-levy/>.

A lack of communication has also contributed to the industry’s lack of trust and confidence in regulators. Although regulators have focused efforts on collecting revenue, they have been less effective at implementing policies and initiatives that might have improved efficient investment. Also, poor management of government- owned connectivity assets (such as the Eastern Corridor fiber optic backbone) has caused the private sector’s reluctance to use public infrastructure. Operators have been building out their own ducts and laying their own fiber, leading to what some DECA KIs referred to as “six highways going to the same village.”

Recent efforts by NCA have led to changes. Updates to the passive infrastructure-sharing guidelines have increased likelihood that MNOs will use carrier-neutral middle-mile providers. In addition, NCA has entered into a profit-sharing arrangement with the company SmartInfraco to manage its digital infrastructure, and the result has been positive, according to DECA KIs. SmartInfraco has invested in infrastructure upgrades and improved operations and services.



KEY TERMS

National roaming is a measure that allows customers to automatically extend coverage outside the geographical area covered by their mobile internet service provider. It can be agreed between and among mobile network operators or imposed by governments to improve competition.

Radio spectrum refers to the range of frequencies of electromagnetic radiation that are used to deliver radio transmissions. A critical function of telecommunications sector regulatory authorities is to designate specific frequency ranges (or bands) for different purposes, including telecommunications (but also for applications such as radio astronomy or other industrial uses). Some bands (e.g., Wi-Fi) are *unlicensed*, meaning that anyone can use them without seeking explicit prior permission. ⁷⁸[Licensed](#) spectrum requires users (e.g., commercial cellular networks or FM radio broadcasters) to secure a regulator’s approval prior to use. Licenses are typically assigned through spectrum auctions, which seek to establish the economic value of spectrum, a finite natural resource.

Spectrum refarming refers to the repurposing of spectrum bands to more efficient technologies and new services. For instance, a service provider may use 900 MHz to provide 2G services. However, with the ever-growing demand for data services, it may want to free some of this 900 MHz spectrum for (4G) LTE services. <https://www.subex.com/blog/ everything-you-need-to-know-about-spectrum-refarming/>

Spectrum sharing is a way to optimize the use of the airwaves, or wireless communications channels, by enabling multiple categories of users to safely share the same frequency bands. Spectrum sharing is necessary because growing demand is [crowding the airwaves](#). Smartphones, the Internet of Things, military and public safety radios, wearable devices, smart vehicles, and countless other devices all depend on the same wireless bands of the electromagnetic spectrum to share data, voice, and images. <https://www.nist.gov/advanced-communications/spectrum-sharing>

Spectrum trading is a broad concept encompassing various means of introducing a “secondary market” where licensed operators are allowed to trade their exclusively assigned spectrum usage rights to unlicensed parties with the objective of enhancing efficient use of spectrum. <https://www.igi-global.com/dictionary/advanced-cognitive-radio-enabled-spectrum-management/>

Spectrum licensing regime and policy gaps create market inefficiencies. Ghana has a technology-specific licensing regime instead of technology-neutrality, which means that operators need a separate license for each technology they deploy. MTN and Vodafone have licenses with radio frequency assigned for 2G, 3G and 4G services. AirtelTigo and Glo do not have a license for 4G; as a result, they cannot offer 4G services even if the spectrum assigned on their 2G and 3G licenses might be used for this purpose. BHH, Blu, Busy, Goldkey, Surfine, and Telesol were given limited 4G licenses called Broadband Wireless Access (BWA) that restrict them to providing data services only (no voice) until they succeed in covering a certain number of district capitals throughout the country (Table 3).

⁷⁸ While permissions are not required for unlicensed spectrum use, users are typically limited to technical parameters (such as transmission power or antenna specifications).

Table 3: Spectrum Licensees

National 4G	BWA 4G	3G	2G
MTN Vodafone	BBH (MTN-acquired) Blu (MTN-acquired) Busy (suspended) Goldkey (MTN-acquired) Surflin (suspended) Telesol	MTN Vodafone Airtel Glo	MTN Vodafone Airtel Glo

Source: WinDT Consulting.

MTN has acquired nearly all the BWA operators, some of which have suspended operations because they were unable to settle their debt obligations with their tower providers. Ghana lacks the policy and regulatory frameworks needed for any spectrum refarming, sharing, or trading (See Key Terms for an explanation of spectrum) that might allow operators to reallocate spectrum among themselves more efficiently. As a result, big operators such as MTN do not have enough spectrum to meet consumer demand, causing network congestion that negatively affects quality of service. Smaller operators hold underutilized spectrum, creating excess capacity even in densely populated localities.

National roaming has not been broadly implemented, although it is being piloted through the SMP remedies applied to MTN. A national roaming regulation has been drafted but has not progressed.

Currently, no 5G network has been deployed in Ghana, even as a pilot. The government has yet to develop a policy on 5G rollout. Consequently, it stymies service providers' ability to plan for investment. Under current market conditions, 5G rollout risks a repeat of the 4G rollout experience, entrenching MTN's dominance on the market further (Box 5).

Box 5: MTN's Market Dominance and the Impact of its Significant Market Power Designation

While MTN has been among the leading players on Ghana's telecommunications market for many years, in December 2016 it became the sole operator to bid on and win a 4G spectrum license. Vodafone took another four years before it was awarded a 4G license. MTN used its first mover advantage to effectively corner the mobile data market. Most high-end data users moved to MTN. MTN states that it has invested more than US\$1 billion into its operations over the past five years. The company reportedly is the only one on the market paying its bills promptly on shared infrastructure (such as towers), giving it essentially unfettered bargaining power.

In an effort to address MTN's market dominance, the NCA has identified the company as holding Significant Market Power (SMP). The resulting SMP remedy prohibits MTN from charging the lowest tariff in the market for data; the intention is to prevent MTN from setting predatory pricing so low that their competition cannot match it. As a result, in April 2023 MTN suspended the "zone bundle," a popular low-cost data package.⁷⁹ According to the DECA interview with the company, the SMP directive has had the perverse effect of keeping data costs higher than necessary for consumers and driving the company's rapid revenue growth in recent years. MTN's year-over-year growth amounted to approximately 28 percent for the 2020–2022 timeframe.

Cross-sectoral network infrastructure-sharing and coordination needs improvement. There are no regulations or resources available with or for the NCA to help bring more infrastructure-sharing efficiency to the market. A "dig once" policy to coordinate construction of electrical grids, water ducts, and roads networks, for example, is missing.

⁷⁹ Ogbodu, Michael Overflow. "MTN Explains Why It Suspended Its Data Zone Bundle." Citi Business News (blog), April 12, 2023. <https://citibusinessnews.com/2023/04/mtn-explains-why-it-suspended-its-data-zone-bundle/>.

2.2 PILLAR 2: DIGITAL SOCIETY, RIGHTS, AND GOVERNANCE

Digital Society, Rights, and Governance focuses on how digital technology intersects with government, civil society, and the media. This pillar is divided into three sub-pillars: internet freedom; civil society and media; and digital government. Internet freedom explores factors that enable or constrain users’ human rights and fundamental freedoms online. This includes individual rights to freedom of speech, privacy, and free assembly, and the abuse of these rights through digital repression. Civil society and media identifies key institutions and how they report on, advocate for, and influence online freedoms. Digital government looks at the government’s efforts to manage internal information technology (IT) processes and systems, deliver citizen- and business- facing e-services, and engage the public through digital channels.

KEY TAKEAWAYS: DIGITAL SOCIETY, RIGHTS, AND GOVERNANCE

- Internet use is growing and diversifying for Ghanaians who can afford meaningful internet access, but online bloggers, activists, and influencers who are critical of the current government are increasingly persecuted.
- The spread of misinformation and disinformation expands as the space for online free speech seems to be shrinking. Efforts to address misinformation with fact-checking initiatives have limited success.
- Online safety and security risks seem to be growing along with the rise of misinformation and disinformation. General knowledge of them is low, but Ghana’s robust internet governance ecosystem is well-positioned to raise awareness.
- The lack of an interagency digital governance framework leaves MDAs to operate in silos,
- NITA is properly positioned institutionally but lacks the support and capacity to drive the digital transformation agenda. Localization of the agenda is slower, facing multiple barriers.
- Existing data protection and cybersecurity frameworks require resources for more effective implementation and could benefit from improved coordination and concerted awareness-raising efforts.
- Awareness and adoption of digital government services are low. Ghana Card has huge untapped potential for digital service delivery.

INTERNET USE IS GROWING AND DIVERSIFYING FOR GHANAIS WHO CAN AFFORD MEANINGFUL INTERNET ACCESS.

According to DECA KIs, Ghanaians use the internet most often for communication and entertainment. This includes telephoning, messaging, social media, and watching videos. Only about 10 percent of Ghanaians regularly shop online (see e-commerce discussion, Pillar 3). Ghana has relatively few registered domains, about 43,000 (0.0013 domains per capita).⁸⁰ Most internet usage likely happens on messaging apps and social media platforms, which are well-adapted for mobile access. The majority of internet users have accounts with WhatsApp (84 percent), Facebook (63 percent), and Instagram (52 percent). Telegram (42 percent),⁸¹ Twitter (now known as X; 42 percent), and TikTok (40 percent) also are popular (Figure 17). Notably, most social media users are men. The gender gap in social media platform use rises to 60 percentage points, depending on the platform. For example, in 2023, 21 percent of X’s audience in Ghana was women, while 79 percent was men.⁸² A gender gap in Facebook and Instagram users also exists, though significantly lower: the percentage point difference between women and men is 19.6 for Facebook and 17 for Instagram. Unsurprisingly, the 18 to 34 age demographic is the most common social media user.⁸³

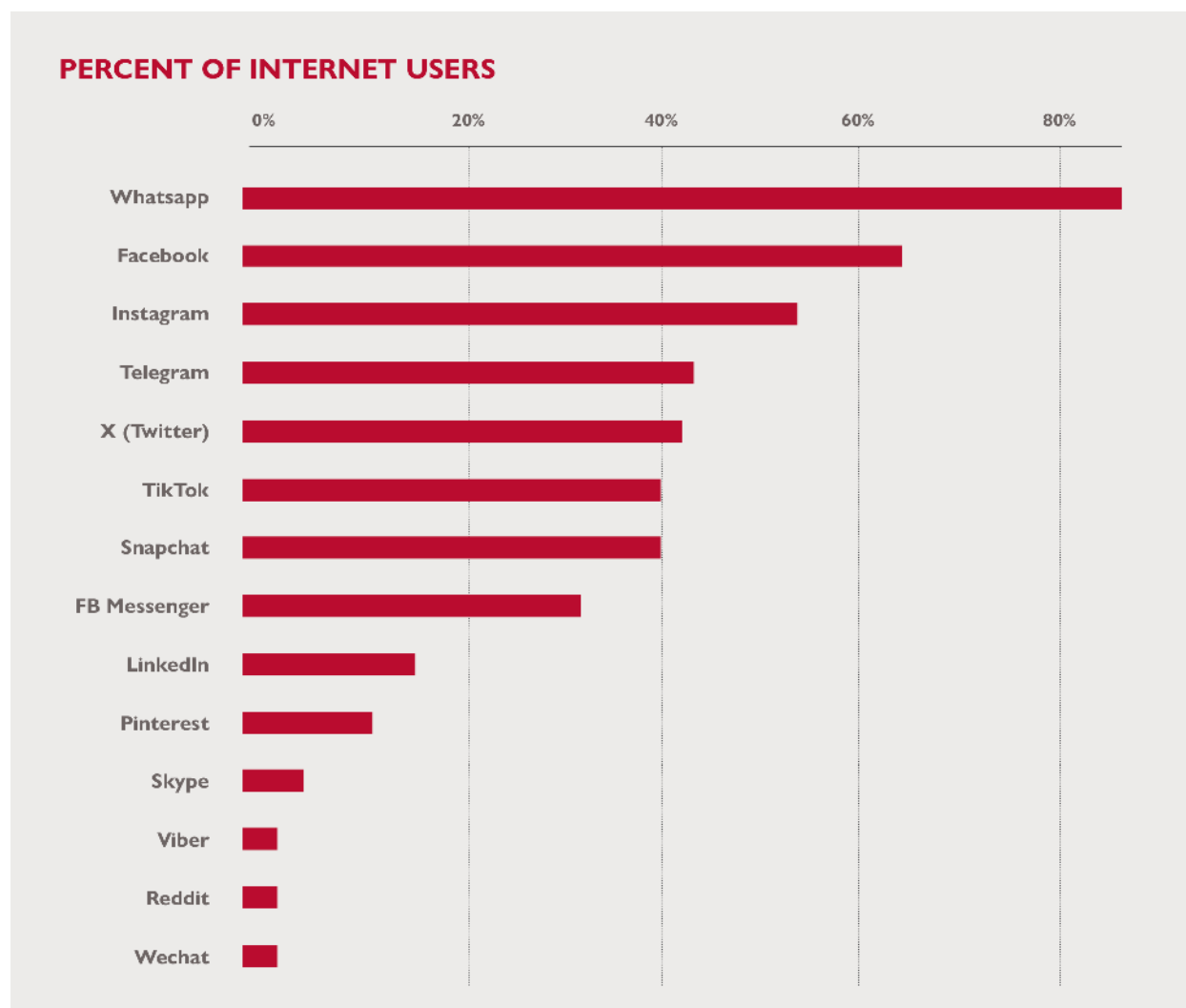
⁸⁰ “Country Domain Name Registrations - Domain Name Stat.” Accessed November 9, 2023. <https://domainnamestat.com/statistics/country/others>. By comparison, South Africa has approximately 1.43 million registered domains (0.024 per capita), Nigeria has almost 391,000 (.0018 per capita), and Kenya has more than 160,000 (0.0028 per capita).

⁸¹ DataReportal – Global Digital Insights. “Digital 2023: Ghana,” February 13, 2023. <https://datareportal.com/reports/digital-2023-ghana>.

⁸² Ibid.

⁸³ Ibid.

Figure 17: Share of Social Media Users as a Percentage of Internet Users, 2023



Source: Based on DataReportal.⁸⁴

An Afrobarometer poll conducted in 2022 found that radio and television are the dominant sources of news and information for the overwhelming majority of Ghanaians. Among urban residents, 79 percent reported listening to the radio, and 81 percent watched television for news “every day” or “a few times a week”; for rural residents, 80 percent reported listening to the radio, and 57 percent watched television for news regularly. This includes both women and men.⁸⁵ Relatively few Ghanaians obtain their news from printed newspapers.

Seven percent said they regularly use newspapers to obtain news in urban areas and six percent in rural areas. Women are less likely than men to consume news at all.⁸⁶

Slightly more than 40 percent of Ghanaians regularly obtain news from internet sources or social media —42 percent and 43 percent, respectively —⁸⁷ double the percentage from 2017.⁸⁸ This overall growth in use masks deep and

⁸⁴ DataReportal – Global Digital Insights. “Digital 2023: Ghana,” February 13, 2023. <https://datareportal.com/reports/digital-2023-ghana>

⁸⁵ Maame Akua Amoah Twum and Albert Adjei Mensah, “Ghanaians support media’s watchdog role but are skeptical of news sources,” Afrobarometer, June 2023, <https://www.afrobarometer.org/wp-content/uploads/2023/06/AD661-Ghanaians-support-media-watchdog-role-but-distrust-news-sources-Afrobarometer-30june23.pdf>.

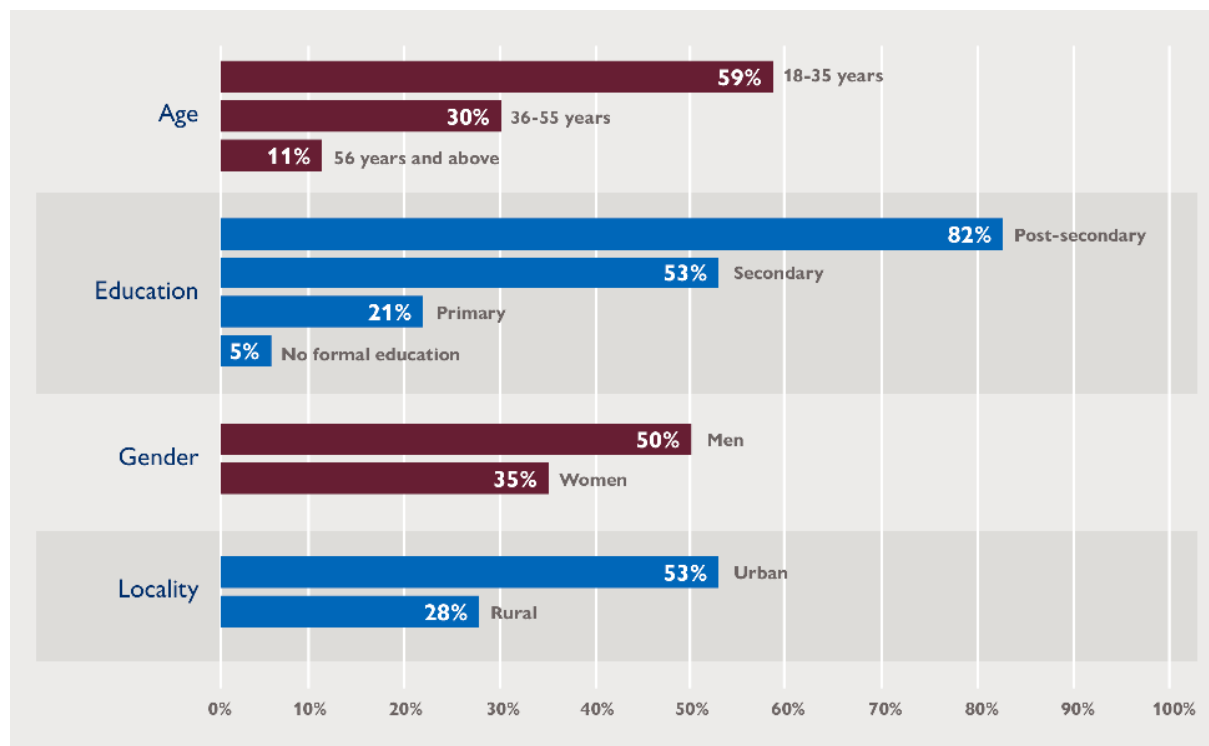
⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ Kakra Adu Duayeden and Daniel Armah-Attah, “Summary of Results Afrobarometer Round 7 Survey in Ghana, 2017,” Afrobarometer,

persistent divides across multiple factors: age, education, gender, and geography. In 2017, 35 percent of urban residents and 11 percent of rural residents regularly used social media for news, while 29 percent of men and 18 percent of women did the same. The 2022 poll found that a little more than half of urban residents regularly use social media for news compared with just 28 percent of rural residents; 50 percent of men and 35 percent of women indicated as. The most common online news consumer in Ghana is a young, well-educated, urban man (Figure 18).⁸⁹

Figure 18: News Media Consumption via Social Media, Demographic Divides, Percentage, 2022



Source: Afrobarometer⁹⁰

The impact of Ghanaians' growing use of internet and social media is well-evidenced. National and local civil society and community-based organizations operate well-developed websites and social media pages that they use for organizing, awareness-raising, and advocacy work. For example, after SEND Ghana released a report on primary health-care delivery during the pandemic—with emphasis on the government's role in doing so—the president declared the government's commitment to investing in infrastructure for e-health and telehealth service.⁹¹ STAR Ghana is piloting efforts to fundraise online. Even organizations based outside urban centers or in more remote regions have started to adopt digital technologies and platforms for operations and outreach. Songtaba, an organization based in Tamale, reports that WhatsApp has become an important tool for connecting with their targeted beneficiaries.

Realizing the power of the online space to influence opinions and spread ideas, the government and political parties are using online media in their attempts to sway public opinion. Various government agencies pushed a positive image of the e-levy through the media, when in fact the levy raised tremendous criticism from independent observers and DFS players (see Pillar 3). The Ghana Center for Democratic Development reports that political parties use social media to market party candidates, identify policy priorities, and drive voter turnout during elections. Politicians recruit social media commentators to drive conversations online, particularly since the 2016 elections.

April 2019, https://www.afrobarometer.org/wp-content/uploads/2022/02/gha_r7_sor_10042019.pdf.

⁸⁹ The Afrobarometer poll found nearly identical usage percentages (and divides) in news media consumption via the internet.

⁹⁰ Kakra Adu Duayeden and Daniel Armah-Attah, "Summary of Results Afrobarometer Round 7 Survey in Ghana, 2017," Afrobarometer, April 2019, https://www.afrobarometer.org/wp-content/uploads/2022/02/gha_r7_sor_10042019.pdf.

⁹¹ FHI 360, "2021 Civil Society Organization Sustainability Index for Sub-Saharan Africa," FHI 360, December 2020, <https://www.fhi360.org/sites/default/files/media/documents/csosi-africa-2021-report.pdf>.

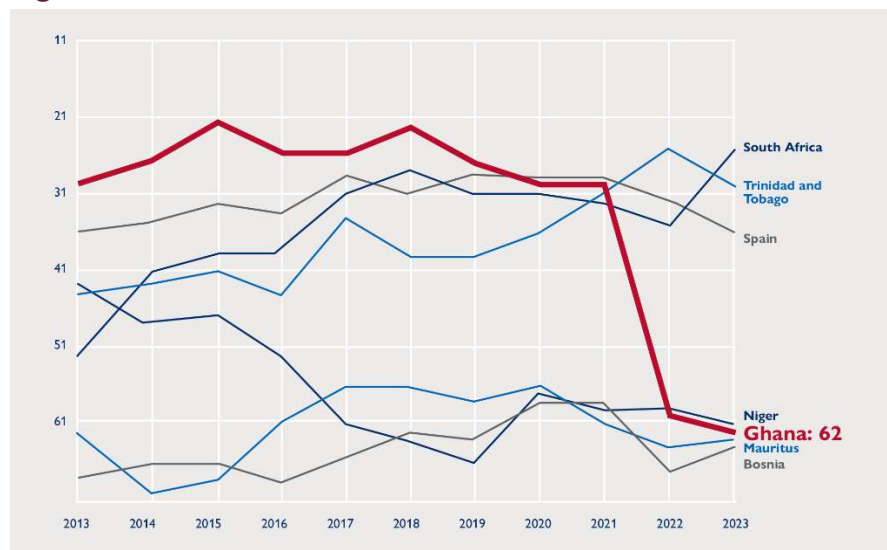
Perhaps most importantly, individuals have been able to start major movements online that have achieved notable power and influence. In 2021, the hashtag #FixTheCountry⁹² became the first big social movement initiated and driven through online platforms.⁹³ It was launched by young people frustrated with unemployment, declining living standards, and the perceived failure of government leaders to keep their campaign promises. Other citizen-led watchdog groups such as Occupy Ghana and Let My Vote Count have also developed a significant online presence that translates into offline influence. Their respective Facebook pages comprise up to 100,000 subscribers compared with many other CSOs whose number of subscribers on average does not exceed 30,000. Ghanaians generally do not engage in protest, but online social movements such as #FixTheCountry are nevertheless fostering in-person gatherings that have captured the government's attention. Ghanaians perceive online influencers as a powerful voice that can influence government policies and decision-making and affect real change across the country.

THE GOVERNMENT INCREASINGLY PRESSURES AND SILENCES POLITICAL OPPONENTS AND INDEPENDENT CRITICS.

The growth of online movements outside older, established systems of influence and power has drawn attention. For example, laws that criminalize public statements causing “fear and alarm to the public or to disturb the public peace”⁹⁴ have been applied to online speech as part of efforts to censor and silence critics. Oliver Barker- Vormawor, who leads the #FixTheCountry movement, has been charged with treason⁹⁵ for allegedly calling for the overthrow of the government. He spent two months in prison in 2022, and at the time of the DECA research team field visit in 2023, his case was still pending before the court. If convicted, he could face up to life in prison. Ibrahim Mohammed, another activist of #FixTheCountry, was murdered in 2021 by “unknown assailants.”⁹⁶

In 2022, Ghana dropped 30 positions from the prior year in the Reporters Without Borders (RSF)'s World Press Index, which measures media freedom, and has fallen further in 2023 to rank 62nd globally (Figure 19). This indicates a backward slide in media freedom, pushing Ghana to its RSF rankings of the early 2000s.

Figure 19: Ghana in World Press Freedom Index, 2013–2023*



Source: Based on RSF's World Press Index⁹⁷

⁹² FixTheCountry. “Welcome.” Accessed November 9, 2023. <https://fixthecountrygh.com/>.

⁹³ Yuki. “5 Facts about Ghana’s #FixTheCountry Protests.” The Borgen Project (blog), October 4, 2021. <https://borgenproject.org/ghanas-fixthecountry-protests/>.

⁹⁴ The Criminal Offences Act of 1960.

⁹⁵ Akinwotu, Emmanuel. “Ghana ‘Fix the Country’ Activist Says He Was Assaulted and Illegally Detained.” The Guardian, July 14, 2022, sec. World news. <https://www.theguardian.com/world/2022/jul/14/ghana-activist-oliver-barker-vormawor-lawsuit-arrest-detention>.

⁹⁶ Emmanuel, Kojo. “Police Arrest 2 over the Murder of #FixTheCountry Activist.” Pulse Ghana, 59:41 200AD. <https://www.pulse.com.gh/news/local/2-arrested-over-the-killing-of-fixthecountry-activist/gg323s6>.

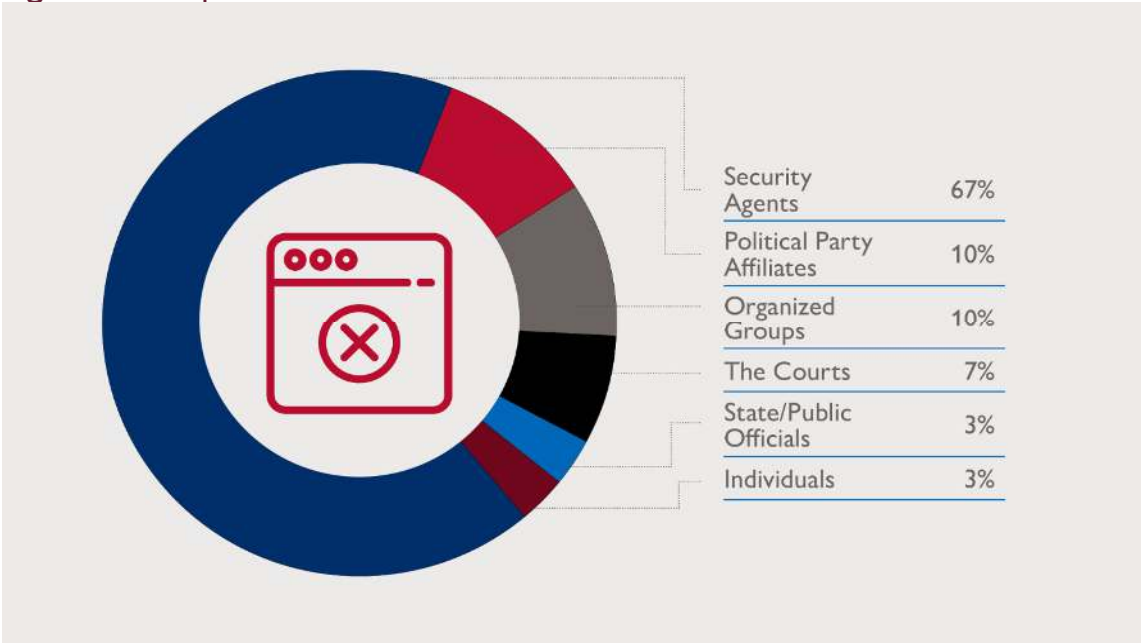
⁹⁷ “Index | RSF.” Accessed November 9, 2023. <https://rsf.org/en/index>.

**NOTE: One (1) is the highest rank, 180 is the lowest*

The RSF notes that “the creation of media outlets by politicians has given rise to politicized and biased media content,”⁹⁸ which has affected Ghana’s standing. According to DECA KIs, most influential media outlets in Ghana today directly or indirectly link with individuals in (or seeking) power or who depend on government funding and government advertising revenues. Research by the Media Foundation of West Africa found a lack of transparency and access to information regarding media ownership in Ghana,⁹⁹ and that at least one-third of media outlets have political ties.¹⁰⁰ These relationships and dependencies can influence reporting.

For the independent media, the pressure is real. In 2019, the investigative journalist Ahmed Hussein-Suale was murdered while uncovering corruption schemes of influential businessmen affiliated with the government.¹⁰¹ The case remains unsolved. Since then, the number of arrests and assaults to both investigative journalists and those who are affiliated with media outlets that openly discuss government corruption has grown. The Media Foundation of West Africa reports 30 violations of press freedom during the January 2021 to September 2022 timeframe, overwhelmingly perpetrated by security agencies (Figure 20). Spanning a few months in 2022, men in police uniform¹⁰² attacked,¹⁰³ arrested, and detained several prominent journalists after they published social media posts or broadcasted reports on officials’ corruption.¹⁰⁴

Figure 20: Perpetrators of Press Freedom Violations



Source: Media Foundation West Africa.¹⁰⁵

⁹⁸ Ibid.
⁹⁹ Media Ownership Monitor. “Who Owns the Media in Ghana ?” Accessed November 9, 2023. <https://ghana.mom-gmr.org/en/>.
¹⁰⁰ Ibid.
¹⁰¹ IPI-Admin. “Ghana Fails to Secure Justice for Murdered Journalist.” International Press Institute (blog), January 15, 2022. <https://ipi.media/ghana-fails-to-secure-justice-for-murdered-journalist/>.
¹⁰² Citinewsroom - Comprehensive News in Ghana. “Accra FM’s Bobbie Ansah Reportedly Arrested after His Late Night Show,” February 10, 2022. <https://citinewsroom.com/2022/02/accra-fms-bobbie-ansah-reportedly-arrested-after-his-late-night-show/>.
¹⁰³ “Disturbing Press Freedom Violations Continue in Ghana | RSF,” May 20, 2022. <https://rsf.org/en/disturbing-press-freedom-violations-continue-ghana>.
¹⁰⁴ “Ghanaian Journalists Face a Crackdown on Free Speech | D+C - Development + Cooperation,” April 12, 2022. <https://www.dandc.eu/en/article/press-freedom-ghana-taking-step-backwards-journalists-are-being-prosecuted-under-criminal>.
¹⁰⁵ Media Foundation for West Africa, “The Media and Press Freedom in Ghana: From repression, redemption to depression,” Media Foundation for West Africa, February 2023, <https://www.mfwa.org/wp-content/uploads/2023/02/Press-Freedom-in-Ghana-Online-Version.pdf>.

In response to outcry from several well-respected civil society organizations about the increasingly dangerous working environment for media and journalists,¹⁰⁶ the Ministry of Information and National Media Commission established an Office for Coordinated Mechanism in mid-2021 to help monitor and track attacks and provide redress.¹⁰⁷ However, it is unclear how effective the Office has been.

According to DECA KIs, the government is “actively bringing back a culture of silence,”¹⁰⁸ recollecting the 1990s, when the criminal libel law was weaponized to oppress free speech and criticism of the government and corruption.¹⁰⁹ Today, it uses sections of the Electronic Communications Act and the criminal code, which together make it a crime to “disseminate false or misleading” information online when a person “did not take reasonable steps to find out whether the communication was false, misleading, reckless, or fraudulent.”¹¹⁰

Maximum penalties include up to five years in prison. Journalists in larger media organizations reported that, while they do not fear making posts that criticize the government (such posts often probe the limits of what can and cannot be said without raising government attention), they do so knowing that harassment, arrest, and jail time are possible, even as they know organizations will back them when confronting ensuing legal battles. However, independent bloggers, activists, and other public leaders and voices active online but lacking the resources to defend themselves in a potential legal battle report feeling much less confident about expressing themselves freely online. They have started “toning down” their social media posts or engage anonymously to avoid unwanted attention. As one of the DECA KIs said: “With this government, I don’t want to post anything.”

Most DECA KIs believe the government has the technical ability and resources to track online posts, monitor the private traffic and activity of internet users, and target critics of local or national government. Their fears are grounded in the fact that the National Communication Authority purchased the Pegasus cellphone surveillance system ahead of the 2017 election.¹¹¹ This software allows administrators to take control of a phone, surreptitiously controlling its cameras and microphones from remote servers and gathering personal data and geolocations.¹¹² Despite widely publicized prosecutions of senior government officials being sentenced to jail for purchasing spyware products, online voices suspect that the government continues using the software today.¹¹³

Still, the general public does not appear to be fully aware of the impact this attention and pressure has on established media outlets, much less on independent voices. At least 71 percent of Ghanaians believe that news media are largely free “to report and comment on the news without censorship or interference by the government.”¹¹⁴ Yet self-censorship on political topics appears to be widespread. While 63 percent of Ghanaians said that they feel “completely free” to say what they think, when asked specifically about politics, 67 percent said that they “often” or “always” have to be careful of what they say.¹¹⁵ Nonpublic figures such as business owners reported that they are extremely careful about any

¹⁰⁶ Ibid.

¹⁰⁷ Ghananewsonline.com.gh. “Ghana Government Establishes Office to Receive Complaints on Attacks on Journalists,” May 6, 2021. <https://ghananewsonline.com.gh/ceive-complaints-on-attacks-on-journalists/>.

¹⁰⁸ Boakye, Edna Agnes, and Edna Agnes Boakye. “Bobbie Ansah Was Arrested for Publication of False News, Offensive Conduct – Police.” Citinewsroom - Comprehensive News in Ghana (blog), February 11, 2022. <https://citinewsroom.com/2022/02/bobbie-ansah-was-arrested-for-publication-of-false-news-offensive-conduct-police/>.

¹⁰⁹ Media Foundation for West Africa, “The Media and Press Freedom in Ghana: From repression, redemption to depression,” Media Foundation for West Africa, February 2023, <https://www.mfwa.org/wp-content/uploads/2023/02/Press-Freedom-in-Ghana-Online-Version.pdf>.

¹¹⁰ Republic of Ghana, “Electronic Communications Act, 2008,” Ministry of Communications and Digitalisation, December 2008, <https://www.moc.gov.gh/sites/default/files/downloads/Electronic%20Communications%20Act-775.pdf>.

¹¹¹ Republic of Ghana, “Electronic Communications Act, 2008,” Ministry of Communications and Digitalisation, December 2008, <https://www.moc.gov.gh/sites/default/files/downloads/Electronic%20Communications%20Act-775.pdf>.

¹¹² Ibid.

¹¹³ Kulkarni, Pavan. “Israeli Academics and Activists Demand Criminal Probe into Sale of Pegasus to Ghana.” Peoples Dispatch (blog), May 23, 2022. <https://peoplesdispatch.org/2022/05/23/israeli-academics-and-activists-demand-criminal-probe-into-sale-of-pegasus-to-ghana/>.

¹¹⁴ Maame Akua Amoah Twum and Albert Adjei Mensah, “Ghanaians support media’s watchdog role but are skeptical of news sources,” Afrobarometer, June 2023, <https://www.afrobarometer.org/wp-content/uploads/2023/06/AD661-Ghanaians-support-media-watchdog-role-but-distrust-news-sources-Afrobarometer-30june23.pdf>.

Ghanaians are very supportive of media’s traditional watchdog role. Support for the statement that “media should have the right to publish any views and ideas without government control” has more than doubled since 2017 to 74 percent. Ibid.

¹¹⁵ Kakra Adu Duayeden and Daniel Armah-Atttoh, “Summary of Results Afrobarometer Round 9 Survey in Ghana, 2022,” Afrobarometer, October 2022, <https://www.afrobarometer.org/wp-content/uploads/2022/10/Summary-of-results-Ghana-Afrobarometer->

online expression regarding potentially political topics. DECA KIs note that if there is a perception that a businessperson is favoring one political party over another, it may lead to unannounced inspection or even the closing of businesses.

TRUST IN MEDIA AND ONLINE SOURCES DECLINES, WHILE THE SPREAD OF MISINFORMATION AND DISINFORMATION SEEMS TO BE GROWING.

A recent Afrobarometer survey found that fewer than half of respondents say they trust information from privately owned media outlets (48 percent), state-owned media outlets (44 percent), government sources (40 percent), or social media (38 percent). In addition, almost every third citizen of Ghana considers media (private or public) representatives to be corrupt.¹¹⁶ These figures are lower than they were five years ago. In 2019 60 percent reported that they trusted information from public media, 58 percent from government sources, and 43 percent from social media.¹¹⁷ DECA KIs reported that many social media users have a narrow set of publications, public figures, or commentators that they trust uncritically while mistrusting everyone else. As one of the DECA KI observed, “Ghanaians live in their bubbles of social media and are not eager to go outside.”

Declining trust in media parallels rising online mis/disinformation and growing pressure on traditional media standards and ethics. A multistakeholder public forum held in March 2023 to discuss the sources of mis/ disinformation in Ghana named “political party propaganda” a major concern.¹¹⁸

Available reports¹¹⁹ and DECA KIs report that both major political parties have used a variety of untransparent approaches to artificially amplify certain online narratives, push misinformation about opponents, and sow confusion among the public. Troll farms, called “agenda boys” or “foot soldiers” in Ghana, have organized unemployed youth with small paid stipends to run smear campaigns or push discussions that fiercely criticize opposing opinions. Ghana’s ruling party reportedly contracted approximately 700 social media influencers to boost the party’s online presence ahead of the 2020 election and to spread misleading information against political opponents.¹²⁰ Fake online accounts contributed to this misinformation spread in the run-up to the 2020 general elections, while other websites impersonating state-owned news sites and trusted fact-checkers confused Ghanaians online even more.¹²¹ Unsurprisingly, Afrobarometer reports that 78 percent of Ghanaians identified politicians and political parties as the main source of misinformation and social media as an untrustworthy information source overall. (Figure 21).

R9-21oct2022-1.pdf.

¹¹⁶ Afrobarometer. Dispatch: Ghanaians support media’s watchdog role but distrust news sources. June 30, 2023. Accessed October 23, 2023. <https://www.afrobarometer.org/wp-content/uploads/2023/06/AD661-Ghanaians-support-media-watchdog-role-but-distrust-news-sources-Afrobarometer-30June23.pdf>.

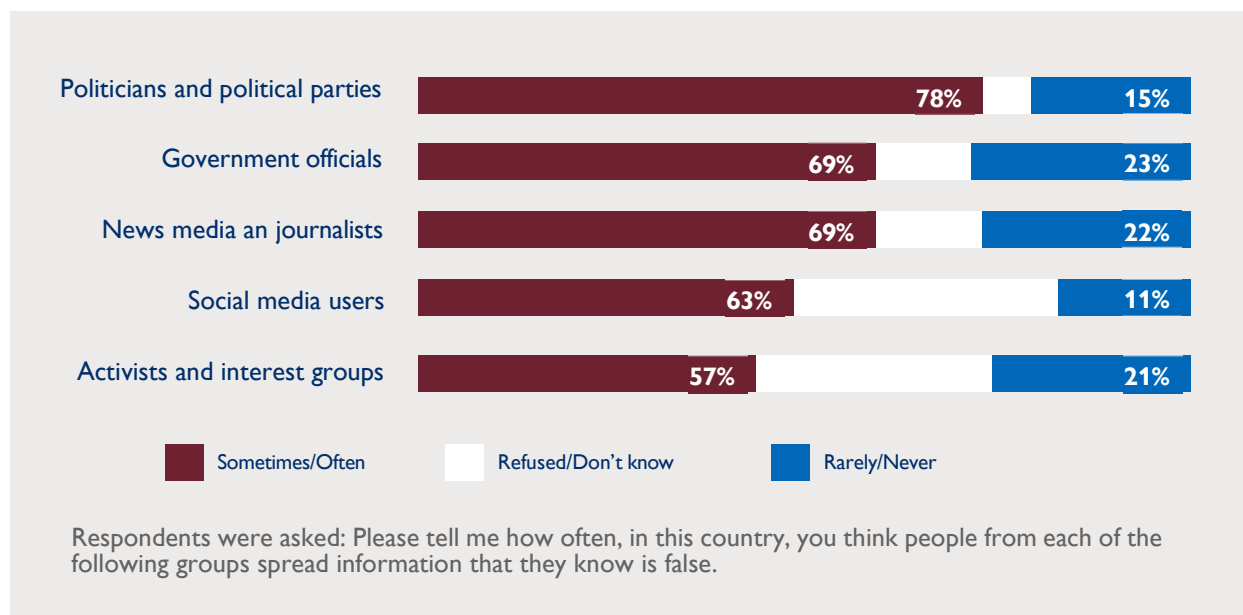
¹¹⁷ Afrobarometer. Dispatch 250: News and Media in Ghana. February 2022. Accessed October 26, 2023. https://www.afrobarometer.org/wp-content/uploads/2022/02/ab_r7_dispatch250_news_and_media_in_ghana.pdf.

¹¹⁸ Media Foundation For West Africa. “Stakeholders Identify Three Main Drivers of Mis/Disinformation in Ghana,” March 24, 2023. <https://www.mfwa.org/issues-in-focus/stakeholders-urge-tech-giants-govt-to-attend-to-mis-disinformation-situation-in-ghana/>.

¹¹⁹ Freedom House. “Ghana: Freedom on the Net 2023 Country Report.” Accessed October 26, 2023. <https://freedomhouse.org/country/ghana/freedom-net/2023>.

¹²⁰ “Opera News - Latest News In United States | Breaking News.” Accessed October 26, 2023. <https://m.dailyadvent.com/>.

¹²¹ Graphic Online. “The NPP, NDC Social Media Battalions and Election 2020,” December 19, 2019. <https://www.graphic.com.gh/features/opinion/the-npp-ndc-social-media-battalions-and-election-2020.html>.

Figure 21: Perceived Sources of Disinformation in Ghana

Source: Afrobarometer 2020.¹²²

Changing business models are hurting quality and undermining trust in traditional media outlets. While most have launched online news sites and related social media accounts over the past decade, none of the media organizations interviewed by the DECA research team has tried to adopt paywalled models. These are not considered feasible because of the plethora of free content; consumers with limited disposable income do not see the value or the need to pay for online media. Competition for online “eyeballs” is fierce. Online media are not required to register or obtain a license, freeing them to begin producing and posting online content unchecked.¹²³ Some DECA KIIs attributed this lack of regulation to the proliferation of Ghanaian bloggers, online influencers, and newer platforms shaping the misinformation space as they prioritize online traffic to their accounts and websites over ensuring the accuracy or truthfulness of the content they post. Many of the well-known Ghanaian bloggers, with as many as 1 million subscribers on various platforms, are guided mainly by profiting in this manner.¹²⁴ Other companies aggregate content from other online sources without producing much (or any) original content themselves. Competition and the large aggregators of digital content are pushing mainstream media sources closer to the “click-bait” business model. This risks incentivizing traditional media to prioritize publication of that content which most-easily drives online traffic—and therefore advertising revenue—rather than content that adheres to the more conventional definition of news-worthiness. The online medium also incentivizes speed over accuracy.¹²⁵

Maintaining journalistic ethics and integrity in the face of these pressures is challenging. The Ghana Journalists Association maintains a Code of Ethics for its members that provides a comprehensive set of guidelines for good journalistic behavior.¹²⁶ Most online content creators who have not studied in one of Ghana’s university-level journalism programs¹²⁷ are unlikely to be aware of the Code. Some donor-supported programs offer ad hoc training to recognized

¹²² Afrobarometer. Dispatch 366: Fake News and Social Media in Ghana. June 7, 2022. Accessed October 26, 2023.

https://www.afrobarometer.org/wp-content/uploads/2022/02/ad366-fake_news_and_social_media_in_ghana-7june20.pdf.

¹²³ The National Media Commission oversees state-owned media, TV and radio. However, it does not have any enforcement powers and does not have any legal means to control the content on the Internet. Yet there is a selective collaboration between Media Commission and NCA to enforce powers during election season.

¹²⁴ GhanaWeb. “My Team and I Were Negligent - Hajia Bintu Apologizes after Kayamata Ad Backlash,” April 14, 2023.

<https://www.ghanaweb.com/GhanaHomePage/entertainment/My-team-and-I-were-negligent-Hajia-Bintu-apologizes-after-kayamata-ad-backlash-1749014>.

¹²⁵ Media Foundation For West Africa. “Stakeholders Identify Three Main Drivers of Mis/Disinformation in Ghana,” March 24, 2023.

<https://www.mfwa.org/issues-in-focus/stakeholders-urge-tech-giants-govt-to-attend-to-mis-disinformation-situation-in-ghana/>.

¹²⁶ “CODE OF ETHICS.” Accessed November 9, 2023. <https://gjghana.org/index.php/code-of-ethics>.

¹²⁷ Ghana’s journalism schools are considered among the best in Sub-Saharan Africa, including the prestigious Ghana Institute of

media professionals on topics such as fact-checking, countering mis/disinformation,¹²⁸ data journalism, and financial viability.¹²⁹ The Ministry of Information, with support from the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and a coalition of local stakeholder organizations, has rolled out a Media Capacity Enhancement Program for journalists.¹³⁰ However, no established non-university digital media programs, hubs, or centers of excellence are aimed at training online content creators more broadly in quality and ethics.

ORGANIZATIONS TRYING TO ADDRESS MISINFORMATION WITH FACT-CHECKING INITIATIVES HAVE LIMITED RESOURCES.

Media literacy in Ghana is generally low; therefore, many online news consumers are unequipped to recognize mis/disinformation themselves. Some domestic fact-checking initiatives have emerged to counter the rise in

misinformation. PenPlusBytes, GhanaFact, and the Media Foundation West Africa are independent NGOs active in this space. DECA KIs revealed, however, that the work of fact-checking organizations is limited by a lack of capacity, low funding, and generally sluggish public demand. The appetite among online news consumers for fact-checking is low.

Because many internet users access news through social media platforms first, media outlets online depend on international companies such as Facebook and X (formerly Twitter) to drive users to their websites. DECA KIs report that these platforms are untransparent in their decision-making about when and why to remove content and have not provided copyrights to local content creators. Stakeholders have complained that these big tech companies do not make the same level of effort to remove false content from their platforms in Ghana as they do in the United States or Europe.¹³¹

A VARIETY OF ONLINE SAFETY AND SECURITY RISKS ARE GROWING, WHILE KNOWLEDGE OF THOSE RISKS, RELATED RIGHTS, AND ENFORCEMENT MECHANISMS IS LOW.

Hackers and social engineering schemes. Poor cyber hygiene and cyber literacy of the wider population has left people unprepared to deal with an increasing number of hackers and social engineering schemes targeting people of all ages. The scammers typically are young men, widely known as Sakawa Boys, analogous to the Yahoo Boys in Nigeria and Faymania Boys in Cameroon. These organized cybercriminal groups in Africa enlist poor youth who online scams to defraud both African and international victims.¹³² Prevalent schemes in Ghana include online romance fraud, fake gold dealers, and rent apartment scams. Others include “investment” pyramid schemes, unlawful “vehicle marked for sale,” and false support for U.S. Green Card lottery applications.

Child online protection. DECA KIs report that cyberbullying of and by school-age children is on the rise and that it is being normalized. According to their estimates, only one in five school-age children say it is wrong. In addition, during COVID-19 lockdowns, when the number of young people actively online grew, media reported increases in online grooming, sexual exploitation, and harassment, particularly of young women. These online risks are not widely known by either children or adults. School curricula do not include lessons on what is risky online behavior and what is safe, appropriate. DECA KIs noted that both teachers and parents are poorly informed on these issues and unable to model good behavior themselves. UNICEF is working with the government on updating ICT school curriculum to include “safe and responsible use” of online space as part of its Safe Schools Project.

Journalism. Ghana has numerous accredited public and private bachelors and masters programs. See Ndetei, Chris. “List of Accredited Journalism Schools in Ghana.” Yen.com.gh - Ghana news., October 12, 2018. <https://yen.com.gh/109946-list-accredited-journalism-schools-ghana.html>.

and “Journalism Schools In Ghana » Ghana Insider,” March 5, 2022. <https://ghanainsider.com/journalism-schools-in-ghana/>.

¹²⁸ Media Foundation For West Africa. “MFWA Equips 130 Journalists to Counter Mis-Disinformation in Ghana,” March 13, 2023. <https://www.mfwa.org/country-highlights/mfwa-equips-130-journalists-to-counter-mis-disinformation-in-ghana/>.

¹²⁹ Welle (www.dw.com), Deutsche. “For Ghanaian Journalists, Physical Attacks and Legal Battles Are on the Rise | DW | 29.06.2022.” DW.COM. Accessed November 9, 2023. <https://www.dw.com/en/for-ghanaian-journalists-safety-is-a-growing-concern/a-62279317>.

¹³⁰ Ghana Independent Broadcasters Association. “The Media Capacity Enhancement Programme.” Accessed November 9, 2023. <https://www.gibagh.org/the-media-capacity-enhancement-programme/>.

¹³¹ Media Foundation for West Africa. “Stakeholders Identify Three Main Drivers of Mis/Disinformation in Ghana,” March 24, 2023. <https://www.mfwa.org/issues-in-focus/stakeholders-urge-tech-giants-govt-to-attend-to-mis-disinformation-situation-in-ghana/>.

¹³² Edward Akuako, “The Sakawa Boys: A Critique of the Policing of Cybercrime in Ghana,” Brock University, 2022, https://dr.library.brocku.ca/bitstream/handle/10464/16385/Brock_Akuako_Edward_2022.pdf.pdf?sequence=1&isAllowed=y.

More efforts are needed to mainstream child online safety and engage a broader set of stakeholders, including media, telcos, and online businesses. Not many CSOs work to combat online harassment and exploitation of children in Ghana. Child Online Africa fought (and won) to include explicit protections for children in the Cybersecurity Law; it has lobbied for amendments to the Data Protection Act and Sexual Exploitation and Abuse Act to do the same. Enforcement of existing provisions, however, is difficult (see further discussion in “Protecting and enforcing online human rights” section). DECA KIs report that the general public has little knowledge of the Cybercrimes Unit (CU) in the Police Services or its dedicated team focused on child online safety.

Technology-facilitated gender-based violence (TFGBV). Online harassment is common in Ghana for women, journalists, and LGBTQI+ community. A 2018 survey by the Media Foundation for West Africa (MFWA) found that 39 percent of female respondents had regularly experienced some type of online harassment ranging from nonconsensual distribution of their pictures or sex-tapes to cyberstalking, hate or offensive comments.¹³³ As part of their program to promote knowledge of online human rights, MFWA has worked to raise awareness of TFGBV in the general public and also train women journalists specifically on safe online practices. Women’s rights organizations are just beginning to consider the online dimensions of gender-based violence and how to ensure that offline rights extend to online spaces. Victims of online harassment or data leaks who are exposed to scammers and hackers are often unaware of their online rights and mechanisms to protect and defend them (Box 6).

DECA KIs report that the LGBTQI+ community experiences harassment and intimidation both online and offline. In July 2023, Ghana’s parliament passed a bill that will make it difficult or impossible for LGBTQI+ rights organizations to have any online presence. The bill appears poised to pass into law; it will impose a prison sentence of up to ten years on people who speak for the rights of LGBTQI+ community online or offline. Internet service providers (ISPs) and websites will be obliged to proactively remove LGBTQI+ content to avoid being held liable for supporting LGBTQI+ activities.¹³⁴ DECA KIs reported that since the bill was first proposed in 2021, instances of violence against Ghana’s LGBTQI+ community have increased drastically, including seemingly organized crime and cyberbullying.¹³⁵

Protecting and enforcing online human rights. The CU of the Ghana Police Service is responsible for securing the national cyberspace. Its mandate is to monitor, detect, investigate and track cybercrimes. The Data Protection Commission is also responsible for protecting Ghanaians online rates that relate to data protection. However, observers note that both bodies lack sufficient financial, technical, and human resources to effectively and fully enforce their respective mandates.

The pace of growth in online criminal activity affecting Ghana’s cyberspace has outstripped the CU’s capacity to address it. More and better-trained enforcement agents are needed. In addition, data collection and reporting of TFGBV by the CU is not regularized, for example; unlike child online protection, the CU does not have dedicated resources for TFGBV. Institutional resistance to needed organizational structures and practices has also hampered effective implementation.¹³⁶ The CU has recently undergone a reorganization to strengthen its capacity to conduct online investigations and place trained personnel in 25 police regions to help victims across the country.¹³⁷

According to the United Nations Conference on Trade and Development, Ghana also struggles with enforcement of its Data Protection Law.¹³⁸ Like the CU, the Data Protection Commission needs more and better-trained staff; staff turnover is a challenge.¹³⁹ Reportedly, most private and government institutions have failed to register with the

¹³³ Media Foundation for West Africa, “Baseline Report on Women’s Rights Online Issues in Ghana,” Media Foundation for West Africa, December 2017, <http://www.mfw.org/wp-content/uploads/2018/02/Baseline-Report-WRO-Issues-in-Ghana.pdf>.

¹³⁴ Freedom House. “Ghana: Freedom on the Net 2022 Country Report.” Accessed November 9, 2023. <https://freedomhouse.org/country/ghana/freedom-net/2022>.

¹³⁵ Gaestel, Allyn. “LGBTQ Ghanaians Face Attacks Following Anti-Gay Bill.” Inkstick, January 27, 2023. <https://inkstickmedia.com/lgbtq-ghanaians-face-attacks-following-anti-gay-bill/>.

¹³⁶ “Cybercrime in Ghana and Victims Accounts | Mediterranean Journal of Social Sciences,” May 5, 2022. <https://www.richtmann.org/journal/index.php/mjss/article/view/12958>.

¹³⁷ “Ghana Police Reorganises Cybercrime Unit at CID Headquarters to Support Contemporary Online Investigations,” September 20, 2023. <https://www.gbcghanaonline.com/general/police-cybercrime/2023/>.

¹³⁸ United Nations Conference on Trade and Development, “Data Protection Regulations and International Data Flows: Implications for Trade and Development,” United Nations, 2016, https://unctad.org/system/files/official-document/dtlstict2016d1_en.pdf. (pg. 67)

¹³⁹ Awal, Mohammed. “ICT Insights with ICT Professionals: A Decade of Ghana’s Act 843 –The Good, The Bad and The Ugly.” The Business and Financial Times (blog), February 21, 2022. <https://thebftonline.com/2022/02/21/ict-insights-with-ict-professionals-a-decade-of->

commission: fewer than 10 percent required organizations in Ghana are registered.¹⁴⁰ In addition, the relatively few enforcement actions in court to protect personal data means that some core concepts are not well understood or interpreted for organizations trying to comply.

Knowledge and awareness across the general public of their online rights is limited (Box 6). Without reporting, enforcement agents cannot provide victims with the protections to which they are entitled. Underreporting also makes any effort to collect accurate, comprehensive data on the extent of online violations difficult.

Box 6: Overview of Ghanaians' Online Human Rights

Ghana has put in place important legal frameworks to protect citizens' data rights online and fight cybercrime. These include Cybersecurity Act, Ghana National Cyber Security Policy and Strategy, and the Data Protection Act. Key enforcement agencies are the Cybercrime Unit (CU) of the Ghana Police Services and the Data Protection Commission (see also Annex #).

The Cybersecurity Act criminalizes sexual abuse, cyberstalking, and sexual extortion of children and also protects them against exposure to indecent images. It also makes nonconsensual sharing by adults of intimate images and threats to distribute sexual images or videos illegal. Violations can carry lengthy jail sentences. Notably, the Cybersecurity Act does not contain provisions covering the evolving definitions of TFGBV (which usually targets young women) such as online harassment and abuse, target hacking, and the use of technology for surveillance and stalking.

Cybercrimes defined in other laws and regulations include hacking, phishing, internet extortion, internet fraud, and identity theft. The CU has responsibility for investigating these crimes.

Ghana was in the vanguard globally when it adopted its Data Protection Act in 2012. The DPA applies to state and public authorities and bodies.¹⁴¹ Violations can result in up to five years of imprisonment. It has not had any major updates since its introduction. As a result, the DPA is somewhat outdated. For instance, the current definition of personal data is relatively narrow and excludes some types of data such as biometric data (e.g., fingerprints and facial scans). The law also lacks provisions for data protection assessments, appointments of data protection officers, and the penetration and impact of emerging technologies. The provisions of DPA are not specifically about the transfer of data outside of national borders, yet selling the personal data of another person anywhere constitutes an offense punishable.¹⁴²

GHANA HAS A ROBUST INTERNET GOVERNANCE ECOSYSTEM THAT IS WELL-POSITIONED TO HELP RAISE MORE AWARENESS OF ONLINE HUMAN RIGHTS.

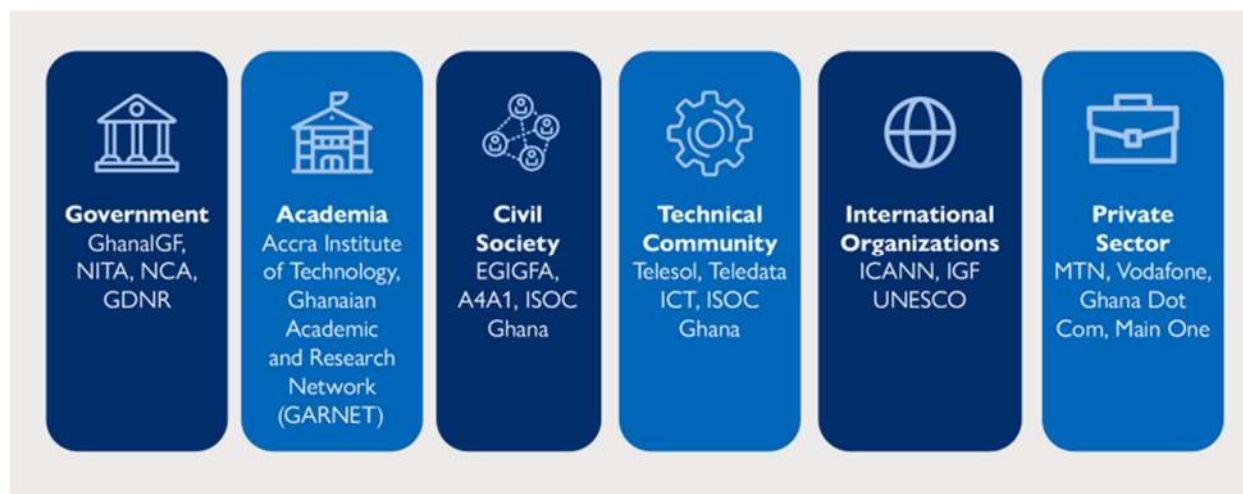
Ghana has a well-developed ecosystem of internet governance actors, across public and private sectors, that also engage and lead on regional and international levels (Figure 22).

ghanas-act-843-the-good-the-bad-and-the-ugly/.

¹⁴⁰ Awal, Mohammed. "ICT Insights with ICT Professionals: A Decade of Ghana's Act 843 –The Good, The Bad and The Ugly." The Business and Financial Times (blog), February 21, 2022. <https://thebftonline.com/2022/02/21/ict-insights-with-ict-professionals-a-decade-of-ghanas-act-843-the-good-the-bad-and-the-ugly/>.

¹⁴¹ DataGuidance. "Ghana - Data Protection Overview," January 27, 2021. <https://www.dataguidance.com/notes/ghana-data-protection-overview>.

¹⁴² CIPESA. Which Way for Data Localisation in Africa?. Brief. March 2023. Accessed October 26, 2023. https://cipesa.org/wp-content/files/briefs/Which_Way_for_Data_Localisation_in_Africa___Brief.pdf.

Figure 22: Ghana's Internet Governance Ecosystem

Source: IIPGH.¹⁴³

These organizations work on a broad range of issues of digital development, including access, divides; cybersecurity training and Cyber Security Awareness Month; and conduct advocacy campaigns and support. The E-Governance and Internet Governance Foundation for Africa (EGIGFA) advocates for enhancing e-governance, internet governance, digital rights, and inclusion. It hosts the Ghana School on Internet Governance, an annual capacity- building fellowship program that helps develop cross-sectoral interest and capacity of leaders and decision- makers on topics of internet governance. Online Child Africa focuses on advocacy campaigns for child safety and well-being online. Despite a concentrated landscape of advocacy work, interviewees note that there is still a lack of awareness-building campaigns, especially targeting women and persons with disabilities. It also is not clear how far their reach is outside of Accra or how well-known they are outside the internet governance community.

There is also a general lack of communication between dedicated internet governance organizations and the government. Ghana Internet Governance Forum (IGF) is a key player in Ghana, coordinating the dialogue about the entire IG agenda, yet its efforts to raise the importance of certain IG topics is limited. The Internet Society (ISOC) Ghana Chapter made several attempts to bring the government to discuss potential shutdowns of the internet in Ghana or flag issues of poor capabilities of enforcement agencies to implement data protection policies or related. DECA KIIs reveal that there is little progress on this front.

DIGITAL GOVERNMENT

Over the past decade, Ghana has made significant strides in embracing digital technologies to enhance government operations and improve the services for its citizens and businesses. Ghana is in UN's E- Government Development Index (EGDI) group of countries, ranking 106th of 193 countries, according to the latest E-Government Survey.¹⁴⁴ These efforts were guided by the ICT for Accelerated Development Policy (ICT4AD) and its five rolling plans and stimulated by strong first-line connectivity, excellent data-center facilities,¹⁴⁵ a competitive private sector, and consistent financial support from international development partners.

That progress has stalled of late, however, and is reflected in the international rankings: Ghana dropped five positions in the 2022 EGDI compared with its corresponding 2021 ranking. This section delves into key factors for Ghana's progress and the underlying causes that may keep Ghana from advancing on its digital transformation journey.

¹⁴³ "Internet Governance in Perspective – IIPGH," July 4, 2021. <https://iipgh.org/internet-governance-in-perspective/>.

¹⁴⁴ "UN E-Government Survey 2022." Accessed October 26, 2023. <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2022>.

¹⁴⁵ Ghana is home to the only Tier IV facility in the region (Onix Data Center), and it hosts one of the largest data centers in West Africa, owned by the National IT Authority (NITA), with more than 600 rack spaces.



KEY TERMS: DIGITAL GOVERNMENT

Digital identity represents a collection of electronically stored data that uniquely describes a person or a thing and can be used in a digital context. Digital identity plays a crucial role in ensuring secure access to digital services and to verifying identity online. A person's digital identity is often linked to their civil or national identity, and many countries have instituted systems to provide digital identities to their citizens.

Government enterprise architecture (GEA) is an ICT policy or framework that guides government's ICT initiatives and investments to improve the compatibility and cost-effectiveness of ICT across the government and to support the development of better digital services.

Government Wide Area Network (GWAN) is a telecommunications network that extends over a large geographical area, enabling government agencies to share information and collaborate more effectively. A GWAN is typically designed with high levels of security and redundancy to ensure the safe and consistent flow of government data.

Interoperability framework is a set of standards or guidelines that allow different IT systems, software applications and networks to work together seamlessly and to exchange data. It can involve technical aspects, such as data formats and protocols; semantic aspects, i.e., ensuring that meaning is preserved and understood across systems; and organizational aspects, such as policies and procedures.

Remote identity verification is the process of verifying a person's identity remotely, often using digital tools and systems such as biometrics or data matching with trusted source documents.

Single sign-on (SSO) is an authentication mechanism that allows a user to access multiple applications or websites by signing in only once. SSO minimizes the need to manage multiple usernames and passwords, making the process more convenient for users without compromising security.

Source: Adapted from various sources.

KEY INGREDIENTS FOR GHANA'S EARLY SUCCESS IN DIGITAL TRANSFORMATION.

Over the past decade, Ghana has firmly established itself as a pioneer and champion of digital governance in West Africa by successfully integrating digital technologies into the public sector. This transformation can be attributed to a range of key factors, including a supportive policy environment, proper legal and institutional frameworks, and investments in digital infrastructure.

Supportive Policy Environment. An essential element of Ghana's digital transformation journey has been its supportive policy environment, the centerpiece of which is the ICT for Accelerated Development (ICT4AD) policy, which articulates the national vision for the strategic application of ICTs for development. The ICT4AD

policy was launched in 2003 and implemented through five four-year rolling plans through 2022. The ICT4AD was a comprehensive plan detailing how ICT will be used as a catalyst for the delivery of public services and as an enabler for rapid socioeconomic development.

The ICT4AD policy was forward-looking and innovative when introduced. The policy outlined three broad objectives: to develop Ghana's information society and economy; to pursue multisectoral ICT-led socioeconomic development; and to develop Ghana's ICT sector. It identified 14 pillars constituting the priority areas and focus, including human resource development, education, health care, agriculture, government administration, and private sector development. The policy mandated the government to develop seven sectoral strategies, including e-government, ICT and gender, and national cybersecurity strategy, most of which were implemented.

Enabling Legal and Institutional Frameworks. The success of Ghana's digital governance was not only rooted in its forward-thinking policies but also in its robust legal and institutional frameworks, which provided the necessary governance structure and legal backing. Some of the most important laws regarding building the digital government include (1) Electronic Transactions Act providing the legal platform for electronic communications and transactions, facilitating the growth of e-commerce and digital services; (2) National Information Technology Agency Act, establishing NITA as the main body responsible for digitalizing, securing, standardizing, and streamlining ICT applications to ensure consistency and interoperability; (3) Cybersecurity Act offering a legal basis for protecting the country's cyber ecosystem and combating cybercrime; and (4) Data Protection Act, supporting the protection of personal data and thereby enhancing trust in digital transactions.

The institutional framework was built around the broad mandate of the MCD. It plays a pivotal role in steering the digital transformation agenda, formulating and implementing policies and strategies for the ICT sector, and comprises several subordinated agencies:

National Information Technology Agency (NITA) acting as MCD’s implementation arm, responsible for overall digitalization initiatives, standardizing and streamlining ICT applications, and driving the digital transformation agenda.

National Communications Authority (NCA), the regulatory authority overseeing and licensing the provision of communication services, ensuring compliance with service quality standards.

Ghana Investment Fund for Electronic Communications (GIFEC), promoting universal access to ICT in unserved and underserved communities, broadening digital inclusion and allowing more citizens to participate in and benefit from the digital economy.

Cyber Security Authority (CSA), responsible for coordinating a cybersecurity agenda and protecting the nation’s cyber ecosystem.

Data Protection Commission (DPC), tasked with protecting personal data and privacy, in line with the Data Protection Act.

Kofi Annan Center of Excellence in ICT (GI-KACE), coordinating the ICT capacity-building efforts, providing training, research, and advisory services in ICT.

Figure 23: Key Institutions for Ghana’s Digital Government Transformation



Source: WinDT Consulting.

This institutional framework was instrumental for Ghana’s early digital transformation success. Presently, however, a lack of coordination, mandate overlaps, and institutional independence have emerged as areas for improvement if Ghana is to continue planning for and executing on its digital transformation.

Building a shared digital infrastructure: Ghana’s digital transformation success is closely tied to the investments in building a digital infrastructure that can benefit all society, including the government itself. This includes diversifying first-mile connectivity, developing high-speed fiber-optic backbone across the country, bringing internet connectivity to all regions and districts, and providing the bandwidth required to provide digital government services. In addition, the country has advanced its digital infrastructure through significant investments in data centers, which offer necessary computing power and storage to support e-governance.

The development of robust information systems and platforms to deliver digital services has also boosted Ghana’s digital transformation. The Ghana.gov¹⁴⁶ platform has been instrumental in consolidating digital services, offering a single point of access to all government services and simplifying the interaction between citizens and public institutions. New mobile money and digital payment systems have increased the efficiency and transparency of financial transactions, improved the delivery of e-services, and promoted digital financial inclusion. The rollout of the Ghana Card, a biometric national identity card, has enormous potential to facilitate digital transactions in that it provides secure and authoritative identity information for all Ghanaians. This will enhance the security and privacy of personal data, while fostering inclusion and participation and allowing more people to access public and private services that may otherwise be inaccessible or

¹⁴⁶ Note that this is the name of the platform; the URL to access the platform is <https://www.ghana.gov.gh>.

costly, such as health care, education, banking, and voting. (See further discussion of Ghana Card in “Ghana Card has huge untapped potential for digital service delivery” section.)

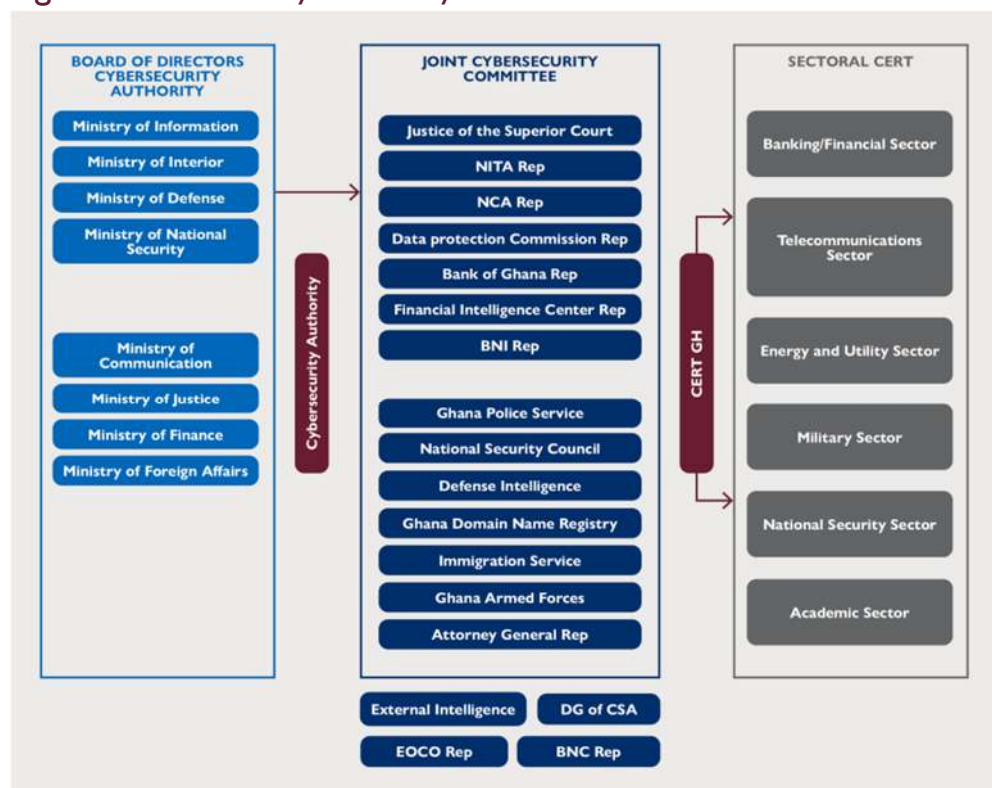
A ROBUST CYBERSECURITY FRAMEWORK SHOWS EARLY SUCCESS BUT COULD BENEFIT FROM IMPROVED COORDINATION AND MORE CONCERTED AWARENESS EFFORTS.

Ghana is one of only four African countries to have ratified both the Budapest and Malabo Conventions, two major treaties to address the international dimensions of cyber-related threats. It ranked 43rd globally on the 2020 ITU Global Cybersecurity Index and is the highest-ranked country in Sub-Saharan Africa. The ITU Global Cybersecurity Index ranks each country’s level of development on its legal, technical, and organizational measures, including its capacity development and cooperation. Ghana moved from a score of 32 in 2016 to 87 in 2020 because of the development and implementation of the National Cybersecurity Strategy and the operationalization of the Cybersecurity Act, which also yielded the Cyber Security Authority (CSA) in October 2021. What is lacking in the case of Ghana, according to interviewees, are capacity development and cooperation.

Ghana adopted an inclusive approach—comprising both public and private sector actors—to developing its cybersecurity strategy. That strategy has helped improve cybersecurity capacity by accounting for citizens’ online safety and freedom.

Ghana established a three-tiered governance structure with key government and nongovernmental stakeholders (Figure 24). A ministerial-level National Cybersecurity Council chaired by the Minister for Communications was established to make high-level cybersecurity decisions. The council includes private sector industry players. The National Cybersecurity Council is supported by a Joint Cybersecurity Committee (JCC) that oversees the day-to-day implementation of Ghana’s national cybersecurity strategy. The JCC is composed of sub-ministerial-level government departments and agencies, each authorized to enforce the implementation of the National Cybersecurity Protection System (NCPS) in their respective agencies; it also is advised by nongovernmental actors. The last tier is the CSA. It houses Ghana’s National Computer Emergency Response Team (CERT-GH) and coordinates activities of all other sectorial CERT. The CSA serves as the country’s cyber threat intelligence nerve center and helps coordinate the response to major cybersecurity incidents.

Figure 24: Ghana’s Cybersecurity Governance Structure



Source: Based on the Cybersecurity Act (Act 1038).

The CSA is also mandated to protect Ghana's Critical Information Infrastructure (CII). Thirteen sectors, including national security and intelligence, ICT, banking and finance, energy, water, transportation, health, emergency services, government, food and agriculture, manufacturing, mining, and education, have been designated as Critical Information Infrastructure (CII) sectors. CII owners are subject to mandatory audit and compliance checks in terms of compliance with the Directive for the Protection of Critical Information Infrastructures.¹⁴⁷

At the same time, a few areas in Ghana's cybersecurity landscape can be improved. The Cybersecurity Act, for instance, empowers the Cybersecurity Authority to designate telecoms facilities as critical national infrastructure, but this law is yet to be fully operationalized. A clear strategy is needed for protecting critical national infrastructure. The Cybersecurity Fund, which the Cybersecurity Act mandates to strengthen the cybersecurity space, does not have a sustainable funding source.

The CSA should be retooled to deliver steadily on its mandate to safeguard the industry from significant financial losses resulting from fiber cuts (see discussion in Pillar I). Innovative solutions have been introduced to the market, including overhead fiber cables that use existing electricity poles instead of laying underground fiber cables.

In the financial sector, the Bank of Ghana has established the Financial Industry Command Security Operations Centre (FICSOC) to prevent and respond to cyber threats targeting the financial services sector. According to the bank, as of April 2023, all commercial banks had been connected to the FICSOC. Reporting of cyber threat intelligence in the form of FICSOC alerts and FICSOC advisories is being communicated to these banks.¹⁴⁸

Inferences from the interviews show a significant skills gap in cybersecurity. The country faces a deficit of skilled cybersecurity professionals. While some tertiary institutions in Ghana, such as Kumasi Institute of Science and Technology and Dominion University College, offer courses in cybersecurity, enrollment is insufficient to produce the required number of cybersecurity professionals. Some notable private sector-led specialized cybersecurity courses include a six-month AppSec JOB Challenge program by Security Innovation¹⁴⁹ and a five-day intensive course by Innovare.

Interviewees also highlighted the lack of cybersecurity public awareness and the communications materials needed to raise that awareness. CSA and other stakeholders, such as the Ghana Institute of ICT Professionals, financial institutions, and mobile network operators, are trying to raise awareness of the importance of cybersecurity, but the efforts have not been coordinated to make a lasting impact. As a result, mobile money fraud, identity theft, and botnet attacks are common across the board, despite a lack of official government statistics to back this up.

In conclusion, although more cybersecurity awareness and skills are needed in Ghana, a robust, effective institutional framework exists to help close that gap. However, a lack of collaboration between players operating in different sectors of the economy compromises its governance structure.

GHANA IS RETHINKING ITS DIGITAL TRANSFORMATION STRATEGY AS ICT4AD IS REACHING ITS END OF LIFE, AND THE NEW DIGITAL ECONOMY POLICY IS STILL UNDER DEVELOPMENT.

Despite being a regional digital leader in digital government transformation, Ghana is currently facing a policy and strategy gap in relation to digital transformation. The ICT for Accelerated Development (ICT4AD) Policy marked the beginning of the country's strategic shift toward technology and knowledge-based economic models, a journey that continued until 2022, when the fifth (and last) rolling plan under the policy was completed with no follow-up or replacement.

As a result, the current efforts are uncoordinated and disparate, lacking a clear strategic direction, action plans, and targets. This also affects sectoral digital transformation because everyone follows their own agendas and fails to find common ground.

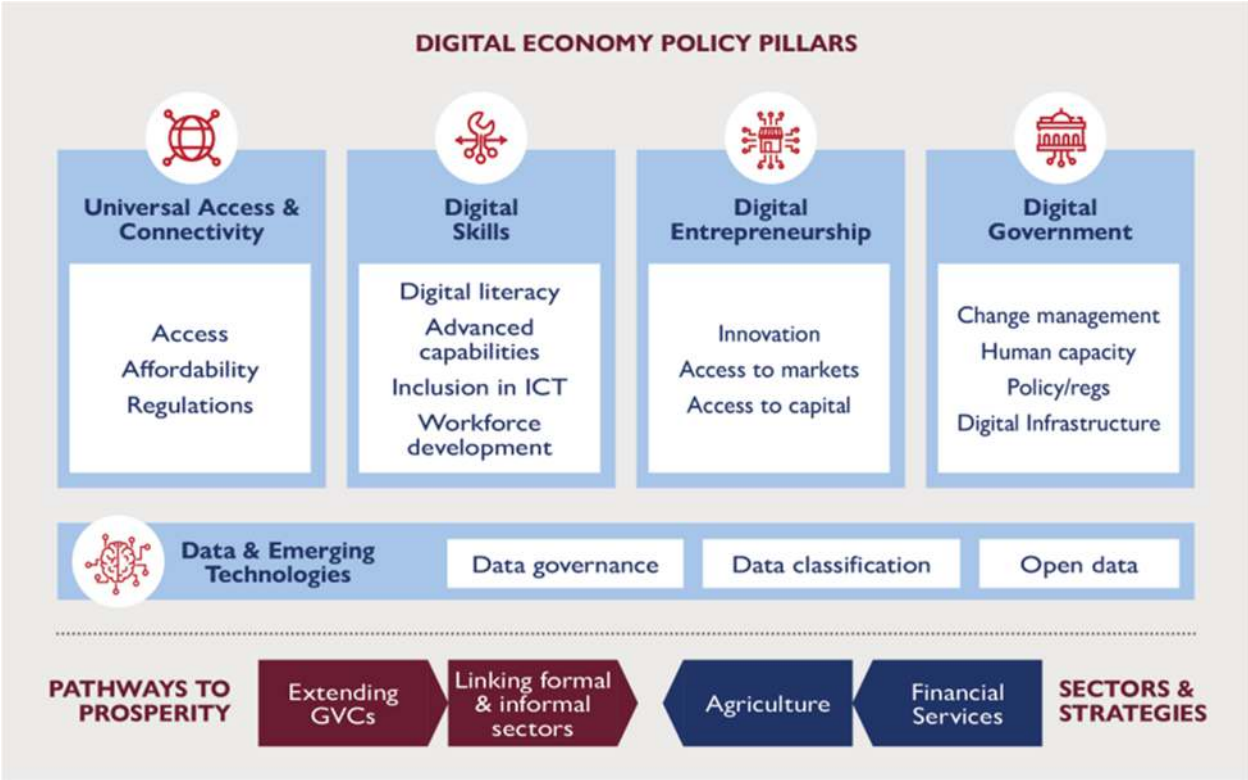
¹⁴⁷ Ghana Cyber Security Authority. Directive for the Protection of Critical Information Infrastructure. October 1, 2021. Accessed October 26, 2023. https://csa.gov.gh/resources/Directive_CII.pdf.

¹⁴⁸ "Vice President Commissions Bank Of Ghana's State-of the Art Cybersecurity Infrastructure for the Financial Industry," May 28, 2023. <https://www.classfmonline.com/business/Vice-President-commissions-Bank-Of-Ghana-s-state-of-the-art-cybersecurity-infrastructure-for-the-financial-industry-42431>.

¹⁴⁹ Yahoo Finance. "Security Innovation Kicks-Off Unique Cyber Security Training Program in Ghana to Help Fill Global Industry Talent Gap," July 14, 2022. <https://finance.yahoo.com/news/security-innovation-kicks-off-unique-144500370.html>.

To address the existing gap, Ghana’s MCD has drafted a Digital Economy Policy (Figure 25), intended to supersede the old ICT4AD policy and reflect current trends, challenges, and demands of the global digital economy. The proposed policy is not yet approved and is reported to be in the stakeholder-consultative phase. However, many of the KIs from both the public and private sectors recognized that they have been excluded from the consultation process. This seems to be a systemic issue. As indicated by KIs, this process is selective, engaging only a limited number of stakeholders (typically among subordinate government agencies), rather than appealing to a broader ecosystem. This narrow approach will likely fail to capture diverse perspectives, thereby potentially compromising the comprehensiveness and inclusivity of this crucial policy, and others. The lack of a digital platform for consultation makes it hard to track the reach and depth of stakeholders’ input.

Figure 25: The Five Pillars of Ghana’s Draft Digital Economy Policy



Source: Digital Economy Policy draft, June 2023, MCD.

Based on findings from existing studies and diagnostics, the policy does fairly accurately diagnose the current challenges of Ghana’s digital economy and makes relevant policy considerations and recommendations.

However, the draft Digital Economy Policy fails to identify the “who” and the “how,” making it rather general and difficult to implement. Except for brief policy recommendations, the pillars lack strategic directions of intervention or specific macro activities. The document does not appoint implementing institutions responsible to each of the pillars, which may ultimately jeopardize the implementation of specific action plans.

The policy acknowledges that “Ghana does not have an interministerial digital governance framework with a clear definition of the roles and responsibilities of each institution.” Yet it fails to articulate a potential governance structure that could allow effective collaboration between various stakeholders. Given the importance of the document for Ghana’s economic growth and development, the governance structure should be broad and include major stakeholder groups such as the private sector, CSOs, academia, and international partners. GIZ reported to the DECA research team that it partnered with the MCD in March 2023 to launch a Donor Coordination Council for Digital Transformation, with funding from the World Bank. This Council aims to provide a formal mechanism for regular donor meetings and to coordinate the execution of digital transformation projects and activities.

The policy does not identify the target indicators for development of the digital economy and does not provide for an effective monitoring and evaluation framework. It also does not account for funding required to administer activities associated with the Digital Economy Policy, significantly jeopardizing key activities as they relate to policy implementation.

In conclusion, while the Digital Economy Policy correctly identifies priority pillars and major bottlenecks, some DECA KIs involved in its development suggest that it fails to offer strategic direction, establish an efficient governance structure and a monitoring and evaluation framework, or identify funding required for implementation.

WITHOUT AN INTERAGENCY DIGITAL GOVERNANCE FRAMEWORK, MINISTRIES, DEPARTMENTS, AND AGENCIES (MDAS) OPERATE IN SILOS.

Besides the Ministry of Communications and Digitalization and its subordinate agencies, several other strong institutional players include as the Ministry of Environment, Science, Technology, and Innovation (MESTI), responsible for formulating and implementing related policies and strategies that drive economic growth and competitiveness; Bank of Ghana; Ghana Revenue Authority (GRA); Department of Registrar General (DRG), and the National Identification Authority (NIA).

These government agencies must coordinate their efforts to avoid duplicating efforts, to ensure efficient use of resources, and to provide a consistent, high-quality user experience. This requires a digital governance framework that clearly defines the roles and responsibilities of each institution involved, helps build a shared vision, and fosters collaboration and interoperability. However, the present landscape of digital governance in Ghana suffers from a noticeable lack of interagency collaboration, confirmed almost unanimously during a field visit by the KIs from both the public and private sectors. The few attempts at collaboration, according to the KIs, involved occasional stakeholder consultations and capacity-building activities.

This leads to various Ministries, Departments, and Agencies operating in silos, each independently pursuing its own digital initiatives. One such example, with significant overlap, is MESTI's initiative to develop a draft National Science, Technology, and Innovation Policy¹⁵⁰ in parallel with MCD's Digital Economy Policy. In some cases, regulations from MCD's subordinate institutions are developed separately, yet they affect other subordinate institutions. For instance, NCA's efforts to excessively license the telecommunications sector (see Pillar I for more details) affect GIFEC and NITA's efforts to enhance connectivity in remote areas and among regional and local government institutions.

Even though the Government of Ghana, through NITA, has deployed one of the largest national data centers in West Africa,¹⁵¹ most of the major MDAs own and operate their own data centers and hosting facilities, even though the national data center has sufficient excess capacity to cover their needs. A few of the MDAs use it as a Disaster Recovery (DR) site. However, many others cite concerns about trust in the safety of data as key barriers to migrating to the government data center—specifically NITA's ability to provide quality data center services and technical support—and the high cost of services.

Acknowledging the need for a whole-of-government approach to digital transformation, NITA has published the Ghana Government Enterprise Architecture (GGEA) Framework¹⁵² in 2009 and then updated it in 2021.¹⁵³ The document recognizes that MDAs operate in silo-based environments, with little data sharing between them, no attention to interoperability standards, and little or no awareness. The GGEA aims to reduce costs through the elimination of redundant/duplicate investments in business and technology solutions within MDAs and across government. The document stipulates that NITA will work with MDA leadership to identify and convene an Architecture Review Board,

¹⁵⁰ MESTI, Ghana Ministry of Environment, Science, Technology and Innovation. Draft-National Science, Technology and Innovation Policy Document. July 10, 2017. Accessed October 26, 2023. <https://mesti.gov.gh/wp-content/uploads/2017/07/Draft-National-STI-Policy-Document-10-July-2017.pdf>.

¹⁵¹ Data Center Map, "National Data Centre (NITA)." Accessed October 26, 2023. <https://www.datacentermap.com/ghana/accra/national-dc-nita/>.

¹⁵² National Information Technology Agency Ghana. Ghana Government Enterprise Architecture. December 2017. Accessed October 26, 2023. <https://nita.gov.gh/theevooc/2017/12/Ghana-Government-Enterprise-Architecture.pdf>.

¹⁵³ National Information Technology Agency Ghana. Ghana Government Enterprise Architecture Framework (GGEA) Version 2.0 Draft for Stakeholder Review. February 2022. Accessed October 26, 2023. https://nita.gov.gh/theevooc/2022/02/Ghana-Government-Enterprise-Architecture-Framework-GGEA-Version-2.0_v.Draft-for-Stakeholder-Review-1.pdf.

which will be responsible for the continued development and upkeep of the GGEA and will help MDAs comply with the requirements. However, NITA recognizes that the technical working group does not convene and that little is being done to control government ICT systems under development, or to make MDAs aware of the GGEA and train IT managers to apply it properly.

Another promising initiative at risk because of a lack of proper digital governance is Ghana e-Government Interoperability Framework (eGIF).¹⁵⁴ It defines how different IT systems should exchange data with one other. The document expressly recognizes that the “governance model to support the eGIF [...] requires ownership and processes to be effective.” In practice, however, there is no common data exchange platform (more on this in the next section). Most KIs recognized that they either do not exchange data with other MDAs or do so based on bilateral arrangements.

Therefore, improving interagency coordination is a key area of focus for strengthening Ghana’s institutional framework for digital transformation. As the digital landscape continues to evolve, the need for a well-coordinated, whole-of-government approach becomes increasingly critical.

NITA IS PROPERLY POSITIONED INSTITUTIONALLY BUT LACKS THE SUPPORT AND CAPACITY TO DRIVE THE DIGITAL TRANSFORMATION AGENDA.

Established by the NITA Act 771 of 2008, the National Information Technology Authority is the ICT policy implementation arm of Ghana’s MCD. NITA has a cross-institutional mandate to develop and maintain government-wide ICT standards and guidelines¹⁵⁵ for Local and Wide Area Networks, data centers, ICT equipment, system and application development, electronic records and others. It also owns and drives the GEAF and IF.

NITA has implemented multiple whole-of-government platforms and services, such as:

- The Eastern Corridor Fiber Optic Backbone, which aims to provide connectivity for settlements and government offices along the eastern corridor.
- The Government Wide Area Network, which leverages existing fiber and infrastructure and aims to connect 261 districts and 951 organizations, including district assemblies, hospitals, police stations,¹⁵⁶ and post offices.
- National Data Center, the largest facility of this kind in Ghana whose aim is to host all government applications such as Smart Workplace suite, which offers email and productivity tools for government employees, and the Ghana.gov portal, an online one-stop-shop for the public.

Despite these achievements, NITA and other government stakeholders see much room for improvement in terms of the practical application of standards and guidelines and the quality of shared infrastructure and services.

In terms of implementing ICT standards and guidelines, NITA does not have the capacity to train ICT staff in the government to monitor compliance. This leads to many systems being developed without accounting for the overall enterprise architecture, unable to exchange data, ineffective, and expensive to maintain. As there is no registry or inventory of information systems in the country, NITA frequently is not even aware that certain systems are being developed. In an attempt to improve the situation, NITA used to conduct quarterly workshops, which convened ICT managers from the public sector. These workshops intended to build awareness of existing standards but no longer occur because of a lack of funding stemming from Ghana’s precarious financial footing.¹⁵⁷ Many of the government KIs recognize that such a format would be useful in gaining a wider perspective on the government’s digital transformation efforts.

The availability, reliability, and quality of infrastructure and platforms, according to KIs, are insufficient for mission-critical government systems such as an Integrated Financial Management Information System, an ID database and e-

¹⁵⁴ National Information Technology Agency Ghana. Ghana eGovernment Interoperability Framework. December 2017. Accessed October 26, 2023. <https://nita.gov.gh/theevooc/2017/12/Ghana-eGovernment-Interoperability-Framework.pdf>.

¹⁵⁵ “Downloads - NITA Regulatory Portal.” Accessed October 26, 2023. <https://regulatory.nita.gov.gh/downloads>.

¹⁵⁶ This should bring connectivity to the majority of public sector buildings and refocus efforts from connectivity to wider adoption and use of the SmartWorkplace platform among government employees.

¹⁵⁷ Okafor, Chinedu. “Despite \$3 Billion Bailout, Ghana Has Essentially Gone Bankrupt.” Business Insider Africa, 35:34 200AD. <https://africa.businessinsider.com/local/markets/despite-dollar3-billion-bailout-ghana-has-essentially-gone-bankrupt/e1sktpn>.

payment capability. This is mainly due to a lack of human capital and necessary funding and results infrequent network disruptions, poor performance of data center services, and poor customer support. Many MDAs end up entering parallel contracts for better connectivity or building their own data centers to hosting their respective systems.

At the same time, another NITA flagship initiative, the eGovernment Interoperability Framework (eGIF), is stalling. Since its publication in 2009, little has been done to establish data exchange standards, procedures, and mechanisms. NITA has been unable to develop the technology platform—the Government Service Bus—to facilitate the data exchange. This leaves MDAs to solve their own data needs, resulting in a lower quality of service and excluding potential users. Most of the databases do not operate with unique identifiers that would link the same entities across databases. For example, most state information systems do not use a Ghana Card number to identify citizens, resulting in multiple duplicate or erroneous entries. In a recent move to using Ghana Card numbers instead of Taxpayer Identification Numbers for identification purposes, GRA discovered¹⁵⁸ that more than 10 million Ghana Card holders are not registered as taxpayers after citizen identity data failed to migrate from the NIA database to the GRA database.

The poor infrastructure performance opened opportunities for the private sector to step in. Starting in 2021, NITA has partnered with SmartInfraco, a subsidiary of Ascend Digital Solutions, to maintain, operate, and commercialize NITA's infrastructure based on a revenue sharing model. KIs indicated that private sector investment and capacity significantly improved the quality of services.¹⁵⁹

On the downside, however, some KIs suggested this collaboration has led to an increase in the cost of services, making them inaccessible, especially for local governments. As a result, 70 percent of the National Data Center customers are from the private sector, according to SmartInfraco. Therefore, infrastructure reuse, i.e., its utilization by multiple government agencies, and its financing are more important than ever. The funds now spent on siloed implementation could be used to invest in the development and operation of shared infrastructure and to cover—at least partially—MDAs/MMDAs' usage fees.

It seems, however, that more dialogue must happen among MCD, the Ministry of Finance (MF) and NITA before NITA is prepared to advance the infrastructure reuse agenda. Policy dialogue and awareness-raising among other MDAs about stimulating infrastructure reuse also needs to happen because many of the public sector KIs admitted they are not ready to move their digital assets to NITA's infrastructure, citing trust and reliability as primary concerns.

Partly because of this lack of support, it appears that NITA's efforts are now leaning toward ICT sector regulation rather than digital transformation. The agency plans to register IT professionals and certify IT suppliers who provide services and equipment to MDAs/MMDAs (Metropolitan, Municipal, District Assemblies), seeking to create a secure, robust, and interoperable e-government¹⁶⁰ infrastructure. In reality, this will add unwanted complexity and administrative burden to the overregulated ICT field (see details under Pillar 1).

The Ghana Integrated Digital Transformation Blueprint (2021–2030)¹⁶¹—a draft document that has yet to be approved—proposes repositioning NITA as the National Digital Transformation Agency to ensure a robust digital government service infrastructure and coordinate the digital ecosystem. This will require institutional support from the MCD and M, that NITA may then advance digital government and provide more and higher-quality digital services, even as the agency increases ICT competence in the public sector, streamlines government IT operations, and makes those operations more cost-efficient. For example, rather than expanding IT sector regulation, NITA could develop and institute an IT governance framework in collaboration with MCD that stimulates reuse, avoids duplication, and encourages partnerships with the private sector. In addition, together with the Ministry of Finance, NITA could establish a mechanism for screening MDAs' IT budgets to ensure they are aligned with the provisions of the Government

¹⁵⁸ Ghana Web, GhanaWeb. "More than 10 Million Ghana Cards Holders Not Registered as Taxpayers – GRA," June 14, 2023. <https://www.ghanaweb.com/GhanaHomePage/business/More-than-10-million-Ghana-Cards-holders-not-registered-as-taxpayers-GRA-1785884>.

¹⁵⁹ According to SmartInfraco, the availability of data center services increased from 88–90 percent to 99.995 percent for Accra Data Center.

¹⁶⁰ "NITA Regulatory | Home." Accessed October 26, 2023. <https://regulatory.nita.gov.gh/>.

¹⁶¹ The draft Ghana Integrated Digital Transformation Blueprint was developed by the Office of the Vice-President. It is a multisectoral document based on extensive national and international consultations, which establishes underlying pillars, drivers, and guiding principles over a ten-year horizon (2021–30).

Enterprise Architecture Framework and do not duplicate existing infrastructure elements, such as data centers, data exchange mechanisms, and e-payment systems.

LOCALIZATION OF THE DIGITAL TRANSFORMATION AGENDA IS SLOWER AND FACES MULTIPLE BARRIERS.

Unlike Ghana's central government, local authorities, namely the Regional Coordinating Councils (RCCs), and MMDAs, have embarked on the digital transformation journey. The Ministry of Local Government and Rural Development coordinates these efforts. Local authorities, however, face several challenges: poor connectivity, a shortage of digital skills, limited access to existing digital platforms, and no access to administrative data sources.

Although most regional and district centers are connected to the internet, the offices of RCCs and MMDAs grapple with poor internet connectivity. Once connected as part of a Government Wide Area Network initiative, most local government offices—given insufficient NITA funding to cover connectivity costs—are either connected using mobile networks or not connected at all. Because most modern digital solutions and platforms rely on strong connectivity to operate properly, this issue poses a significant challenge to digital transformation. Moreover, connectivity is not only about connecting local government but also includes affordability and access to digital devices for local populations. This is a major issue in some of the most vulnerable regions where citizens especially stand to benefit from digital government services.

In nearly all regional meetings, KIIs flagged a lack of digital skills as another major challenge. Digital literacy among government officials and the general population is an area requiring substantial attention. The low level of digital competencies among the staff in local authorities slows the digital transformation process and, therefore, renders it inefficient. National training programs in this area are scarce and mostly limited to training users how to use a certain system rather than focusing on equipping civil servants with general digital competencies. As a result, many people in the civil service are unable to use even basic tools such as email, internet browsers, and office programs. Cybersecurity skills are equally important for staff working in RCCs and MMDAs, as several KIIs referenced incidents of computer malware exposure or of losing devices that contained sensitive information. To compensate for the lack of government-organized training, many prefer to pay for digital training out of their own pockets.

Many of the processes within Ghana's local government authorities remain manual because of a lack of suitable digital platforms. Local offices use either fully paper-based processes or occasionally spreadsheets and similar tools to collect, analyze, and share data with the central authorities. This process is difficult, and the resulting data are delayed and unreliable. With its Smart Workplace initiative, NITA aims to fill this gap by providing MDAs and MMDAs with an enterprise solution with approximately 20 features such as enterprise email, calendars, video conferencing and document management. Smart Workplace can also automate manual business processes such as leave schedules and payment requests. According to NITA, more than 300 government agencies are already using the platform, even as NITA onboards the next cohorts of agencies. This should provide central and local government staff with an efficient virtual work environment with a single access point to all resources, and foster collaboration within institutions and between them.

Another obstacle to better governance at local level lies in a lack of access to core administrative data sources, such as identity, tax, and registration data, thereby compromising informed decision-making and work efficiency. However, access to digital data also has major privacy implications and requires robust cybersecurity measures to be in place, adding another layer of complexity to the digital transformation process.

AWARENESS AND ADOPTION OF DIGITAL SERVICES ARE LOW.

In July 2021 and in collaboration with a consortium of three private IT companies (IT Consortium, Hubtel, and Expresspay) launched Ghana.gov. Initially envisioned as a service revenue collection platform, it is now a one-stop-shop government services portal (web-only with plans for a mobile app), publishing information about more than 1,500 service providers and services. The users can apply online and pay the fee for a specific government service, other may be purely informational. This puts Ghana somewhere between Stages II and III on the UN's e-Services Maturity Framework (Box 7). The end goal of Ghana.gov is to include all the public services. While new services are onboarded continuously, the private partners admit that the interactions with MDAs are generally slow and bureaucratic, delaying progress.

Box 7: United Nations' e-Services Maturity Framework

Stage I: Emerging presence defines a limited and basic online presence. The e-government online presence comprises a web page and /or an official website. Specific links to ministries and departments of education, health, social welfare, labor, and finance may or may not exist. Links to regional and local government may or may not exist. Some archived information such as the head of states' message or a document such as the constitution may be available online. Generally at Stage I, most information remains static, offering users few opportunities to engage with helpful content.

Stage II: Enhanced presence describes an online presence in which the government provides a more robust array of information, including active and archived content, such as policies, laws and regulation, reports, newsletters, and downloadable databases. In this phase, the user can search for documents and access a help feature and site map. Users can also explore a larger selection of public policy documents such as a particular e-government strategy and policy briefs on specific topics such as education and health. Though more sophisticated, the interface is still primarily unidirectional, with information flowing from the government to the user, and thus the users do not have opportunities to interact with the content.

Stage III: Transactional presence allows two-way interaction between users and the government. It includes options for paying taxes; applying for ID cards, birth certificates and passports, license renewals, and other similar C2G interactions by allowing users to submit these payments at their convenience, any time day or night.. Users in this phase can make public services transactions such as paying motor vehicle citations, taxes or postal fees with their credit, bank or debit card. Providers of goods and services can access secure links to submit bids for public contacts.

Stage IV: Connected presence represents the most sophisticated level in the online e-government initiatives. It can be characterized by an integration of G2G, G2C and C2G (and reverse) interactions. The government encourages participatory deliberative decision-making and is willing and able to engage users interactively. Through features such as a web comment form, and innovative online consultation mechanisms, the government actively solicits users' views on public policy, law-making, and democratic participatory decision-making.

Source: UN E-Government Knowledgebase, [Web Measure](#).

The portal administers a single sign-on mechanism to simplify users' interaction with their government by means of a single user account. Unfortunately, the SSO is not interoperable with the National Identification Authority or the SIM registration database. Such a compatibility would allow validation of user data while minimizing erroneous records and identity theft. At the same time, the SSO does not use particularly strong security measures such as two-factor authentication or digital certificates. The portal is prone to brute-force attacks as it does not use captcha or other elements to prevent multiple erroneous login attempts.

In parallel, most major service providers offer their own online services portals, where users can apply and pay for services. These include [Ghana Revenue Authority's Taxpayers' Portal](#), which is also integrated with Ghana.gov SSO mechanism, [Driver and Vehicle Licensing Authority Online Services Portal](#), [Registrar General's Department Portal](#), [National Identification Authority's Registration Portal](#) to name a few. These multiple portals constitute a duplication of effort and reflect the government's silo approach to its IT operations. This creates barriers for users wanting to identify and apply for needed services.

When asked about what digital services they use most, Klls admitted that they either use only the passport renewal service or do not use digital government services at all. They cited several reasons for that:

Awareness. The lack of communication campaigns to promote the availability and advantages of digital government services leave many would-be users simply unaware of them.

Lack of transactional services. There are few end-to-end government services, in which the entire process— from application to completion—can be done digitally. Most services employ a hybrid approach whereby users can complete certain steps online while the others require users' physical presence in the respective service provider's office. When renewing their passport, for example, users can complete the application and pay the fee online, but they must go into a physical office to verify their identity and sit for an official photograph for identification purposes. This discourages many potential service users who would prefer fully digital interactions. One of the biggest problems for delivery of transactional services online is the lack of interoperability and high-assurance digital identification mechanisms.

Service quality. Users complain that interfaces frequently contain technical errors and that there is no reliable customer support mechanism to resolve them. Also, for a population that generally possesses basic digital skills, a complex or ineffective interface creates a significant deterrent. With little confidence in the online service, users fear their applications and online interactions never reach the intended destination.

Lack of trust. Trust is a complex concept. In terms of digital service usage, it can be viewed as the level of confidence citizens, businesses, and other entities have in the ability of government digital platforms to deliver services efficiently, securely, and reliably. Factors such as digital literacy gaps, poor service experiences caused by technical glitches, complex user interfaces, or a lack of customer support—in addition to concerns about data privacy and cybersecurity—constitute key deterrents for Ghanaians wanting to use digital platforms.

When asked about the demand and interest in service digitalization, most of the interviewees agreed that they would prefer using fully digital services, especially unavoidable services such as business and civil registrations and driver's license renewals. At the same time, the criteria for selecting which services to digitalize are not transparent, and there are no mechanisms to engage citizens in the prioritization process. There are also no mechanisms to track service quality and customer satisfaction on Ghana.gov and other portals. This makes it difficult for NITA and other service providers to meet the public's online needs.

Digital public services play an important role in ensuring broader digital inclusion, as they directly affect the accessibility, usability, and effectiveness of services for all citizens. A well-designed and inclusive service delivery system enables individuals, particularly underserved populations, to access and benefit from digital platforms, thus bridging the digital divide.

For instance, a robust and user-friendly government services portal, such as Ghana.gov, serves as a centralized platform for accessing a wide range of public services. At the same time, in its current form, the portal is more of an aggregator of resources from third-party government agencies, and does not offer a unified, human-centered, and easy-to-use user experience. Although most service beneficiaries do not have desktop or laptop computers and rely on mobile devices for their digital tasks, the portal does not offer mobile-native versions of services essential to driving meaningful adoption. Both NITA and the Driver and Vehicle Licensing Authority (DVLA) have stated their intention to launch mobile versions of their online portals, but currently there are no mobile applications for service delivery. NITA and other service providers should think in terms of providing mobile-first and mobile-by-default services. Ukraine's concept of Diia, or "government-in-a-smartphone" perfectly illustrates how adapting service delivery to user needs results in increased adoption, although doing so depends on the existence of shared digital platforms.¹⁶² USAID aims to replicate this model in other locations.¹⁶³

Besides the government services portal, Ghana also has a fairly large [open data repository](#), comprising more than 300 datasets from various agencies and ministries. Private sector entities can use that data to build value-added services as can users—including—researchers, civil society organizations, and citizens—wanting to access the data for a variety of reasons. Ghana is a leading African nation in the availability and usage of open data. In the 2021 Global Data Barometer (GDB), which measures the availability, quality, and use of open data across 116 countries, Ghana ranked third in the Sub-Saharan Africa region and 59th globally,¹⁶⁴ improving its score from the previous edition by 11 positions. Ghana performs well in areas such as land ownership data, procurement data, and environmental data, but poorly in health, education, and company data. Kenya, which ranked 35th globally and leads the region in this regard, and South Africa, which ranked 46th, globally offer more open datasets, better data quality and standards, and stronger legal and institutional frameworks than Ghana.

GHANA CARD HAS HUGE UNTAPPED POTENTIAL FOR DIGITAL SERVICE DELIVERY.

¹⁶² O'Carroll, Lisa. "Meet Diia: The Ukrainian App Used to Do Taxes ... and Report Russian Soldiers." The Guardian, May 26, 2023, sec. World news. <https://www.theguardian.com/world/2023/may/26/meet-diia-the-ukrainian-app-used-to-do-taxes-and-report-russian-soldiers>.

¹⁶³ U.S. Agency for International Development. "Administrator Samantha Power at Diia in DC | Washington, D.C. | May 23, 2023," May 23, 2023. <https://www.usaid.gov/news-information/speeches/may-23-2023-administrator-samantha-power-diia-dc>.

¹⁶⁴ "Sub Saharan Africa - Open Data Barometer," June 26, 2017. <https://opendatabarometer.org/4thedition/regional-snapshot/sub-saharan-africa/>.

The Ghana Card, also known as Economic Community of West African States (ECOWAS) Identity Card, is an official national identity card the National Identification Authority (NIA) issues to Ghanaians who are age 15 and older. It verifies the cardholder's identity, citizenship, and residence. It also serves as a travel document in the ECOWAS region. Launched in 2018, the Ghana Card is a biometric card containing advanced security features, essential personal information, and unique identifiers such as fingerprints and facial images. Each cardholder is assigned a unique identifier called the Ghana Card Number, which identifies the holder in the National Identification System. As of March 2023, NIA had registered approximately 17.4 million Ghanaians out of a total population of 19.9 million ages 15 and above.¹⁶⁵ The Ghana Card plays an important role in cardholders' ability to access public and private services, such as voter registration, banking, and passport acquisition.

The Ghana Card holds huge untapped potential to enhance digital service delivery. It could be a significant enabler of digital transformation by facilitating secure and reliable identification for citizens when accessing various digital services, both public and private. From e-government services to online banking, the Ghana Card could provide a universally recognized, secure, and easy-to-use means of digital identification and authentication.

One of the major issues identified by several KIIs during the field visit is the lack of remote identity verification mechanisms by various service providers such as MNOs. The operators do not have access to the NIA database and therefore are unable to verify the identity information embedded in the Ghana Card. This shortcoming has led to a spike in SIM swap attacks (Figure 26), whereby attackers present forged Ghana Cards to solicit SIM replacements. After fraudulently gaining access to the victim's SIM card, they reset the PIN code of mobile money wallets and gain access to the victim's funds.

Figure 26: The Anatomy of a SIM Swap Attack



Source: Adapted from tweaklibrary.com.

¹⁶⁵ GhanaWeb. "Over 17m People Captured so Far on Ghana Card Roll – NIA," June 1, 2023.

<https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Over-17m-people-captured-so-far-on-Ghana-Card-roll-NIA-1777637>

Another drawback of the current identification system in Ghana lies in its lack of integration with other government-operated databases. Thus it is vital to consolidate the identification system, ensuring its usage across all sectors. Some MDAs, such as DVLA, have begun using Ghana Card numbers in their system, but matching identities across the databases is difficult. Multiple other data sources, such as National Health Insurance Scheme and education registries, are not yet linked with the NIA database.

Currently, Ghanaian citizens are issued unique identification numbers no earlier than age of 15. This makes identification of younger children difficult, potentially limiting their access to basic services, such as health care, education, and social protection. In a recent statement,¹⁶⁶ Vice President, Mahamudu Bawumia announced that, in a pilot launching in targeted hospitals, newborns will be issued Ghana Cards. The move follows the integration of the National Identification Authority (NIA), Ghana Health Service, and Births and Deaths Registry databases. According to the vice president, this will solve the problem of fake birth certificates, bureaucratic inefficiency, and corruption at the Birth and Deaths Registry.

The lack of a unique digital identification and authentication system linked to the Ghana Card is another major gap in the country's digital ecosystem. As explained in the previous section, currently most online service portals use unsecured username and password identification. Fixing this gap in digital identification will also improve the security of DFS. As financial institutions increasingly rely on digital authentication for online banking and other services, the lack of a robust and universally recognized digital ID system leaves these services exposed and more vulnerable.

Another missing element in Ghana's digital trust framework is the National Public Key Infrastructure (PKI), which has not yet launched.¹⁶⁷ In the wider digital transformation context, the PKI ensures trust in online transactions by securing government communication, data exchange, digital payments, and other critical elements. In the context of the Ghana Card, a PKI would allow cardholders to securely transact online and remotely sign forms, agreements, and contracts. Therefore, implementing a PKI should be a key part of efforts to realize the full potential of the Ghana Card for digital service delivery.

Box 8: The Potential of Digital ID to Improve Lives: Some Global Examples

India: Aadhaar is India's biometric ID system, which covers more than 1.3 billion people. It was launched in 2009 as a voluntary program to help tackle social benefits fraud, but later it was made mandatory for access to various welfare programs, bank accounts, and mobile phone numbers. It acts as a valid ID and residence proof for most activities across India. These activities include opening a new bank account, filing online tax returns, procuring and renewing a passport, getting a loan, and enrolling under an insurance policy, among others. To use the various programs and benefits provided by the government, people need to provide their physical or electronic Aadhaar card.

Rwanda: The electronic national population register (NPR) and ID project was first launched in 2008 and has since achieved impressive coverage of approximately 98 percent of the population. It is commonly considered to be one of the strongest foundational national identification systems in Africa. According to NIDA, the digital ID system has increased the number of people enrolled in health insurance from 7 percent to 91 percent, reduced the cost of issuing ID cards by 80 percent, and improved the accuracy of voter registration by 99 percent.

Singapore: The National Digital Identity (NDI) is a foundational digital infrastructure that enables citizens to use their Singpass app to access about 2,000 services from both public and private sector, enabling users to access transactional services seamlessly in a secure manner. Deloitte projected that the Singpass suite of products is generating an economic impact of about \$385 million and can potentially deliver an annual economic impact of more than \$1 billion when fully adopted. The NDI also allows for facial verification, which enhances security and convenience.

Sources: [RwandaID4DDiagnosticWeb040318.pdf \(worldbank.org\)](#)

[A Decade of Aadhaar: Lessons in implementing a foundational ID system / ORF \(orfonline.org\)](#) [Singapore's National Digital Identity—Singpass—Observatory of Public Sector Innovation \(oecd-opsi.org\)](#)

¹⁶⁶ GhanaWeb. "Babies to Be Issued with Their Ghana Cards from July - Bawumia," June 11, 2023.

<https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Babies-to-be-issued-with-their-Ghana-cards-from-July-Bawumia-1784075>.

¹⁶⁷ A PKI is a set of policies, hardware, software, and procedures needed to create, manage, distribute, use, and revoke digital certificates and public keys. Source: Thales Group.

2.3 PILLAR 3: DIGITAL ECONOMY

Digital economy explores the role digital technology plays in increasing economic opportunity and efficiency, trade and competitiveness, and global economic integration. Areas of inquiry include DFS (credit or debit cards, payment apps, mobile money, and digital savings and loan products), financial inclusion, regulation of digital finance, digital trade, e-commerce, and the financial technology (FinTech) enabling environment. This pillar also assesses strengths and weaknesses in the local digital talent pool and the tech startup environment; a healthy digital economy requires a supply of ICT skills that matches the demand and an ecosystem that promotes technological innovation.

KEY TAKEAWAYS: DIGITAL ECONOMY

- **DFS is mobile money (MoMo) for most Ghanaians, but MoMo is far from dislodging “King Cash” as the dominant payment form. The growth of online frauds and scams discourage expanded usage of MoMo beyond domestic remittances.**
- **E-commerce is emerging but is hampered primarily by the large informal economy and poor levels of trust between buyers and sellers.**
- **Unreformed bureaucratic processes and continued corruption at the borders stymie digital trade initiatives.**
- **The startup ecosystem is developing rapidly but needs more focused support to become more inclusive and to reach its full potential.**

Developing Ghana’s IT sector and digital talent potential could be a total game changer for current and future economic development and job creation.

GHANA’S REGULATORY ENVIRONMENT FOR THE DEVELOPMENT OF DFS IS AMONG THE BEST IN AFRICA.

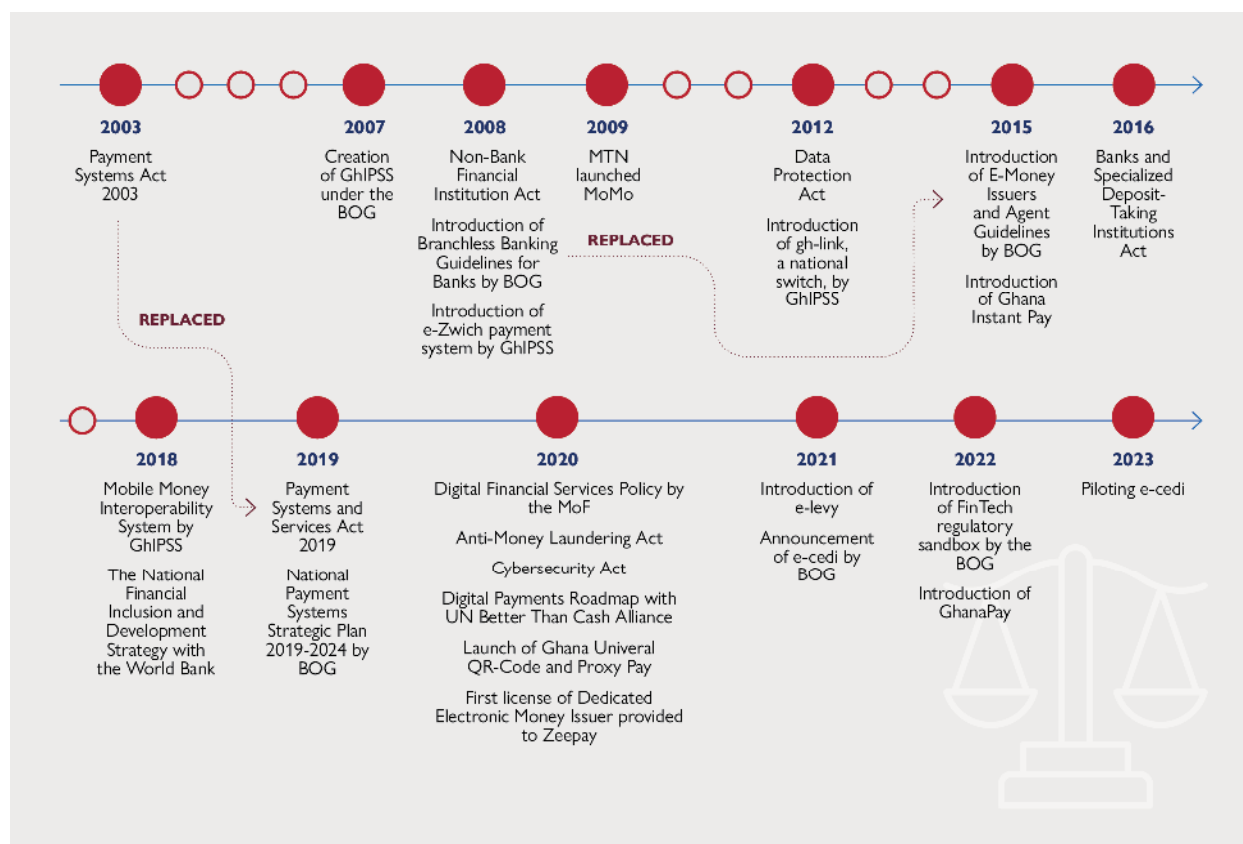
Led by the Bank of Ghana and the MF, several government entities share the responsibility for regulating Ghana’s DFS. The Bank of Ghana oversees the major payment system infrastructure, which comprises mobile money regulations, payments interoperability systems, the National Switching and Processing System, and more.¹⁶⁸ The MF oversees implementation of national DFS laws, policies, and strategies.

Ghana’s DFS enabling environment was seeded 20 years ago (Figure 27), when adoption of the Payment Systems Act in 2003 authorized the Bank of Ghana to establish and operate payment systems.¹⁶⁹

¹⁶⁸ This includes: Ghana’s Real Time Gross Settlement system, Cheque Codeline Clearing system, Ghana Automated Clearing House system, National Biometric Smartcard Payment System, Ghana’s Paper Payment Instrument Accreditation Scheme.

¹⁶⁹ Ghana. Payment Systems Act, 2003 (Act 662). Accessed October 23, 2023.
<https://bcp.gov.gh/acc/registry/docs/PAYMENT%20SYSTEMS%20ACT,%202003%20ACT%20662.pdf>.

Figure 27: Regulatory Journey of DFS Development in Ghana



Source: WinDT Consulting.

Key to this environment is the Ghana Interbank Payment and Settlement Systems company (GhIPSS), a subsidiary of Bank of Ghana chartered in 2007 to administer an interoperable payment system infrastructure for banks and other financial institutions. Since its launch, the GhIPSS has deployed and managed numerous DFS-related innovative products and services (Box 9). Consumer uptake of products such as e-Zwich and the Universal Ghana QR code have been more limited than hoped. Because of general conservatism and a lack of incentives to test new approaches and solutions, commercial banks generally have not promoted these products to their clients and customers. Thus far, only the Association of Banks has done so. The GhIPSS itself does not have sufficient funds for either educating banks on the benefits of promoting these products or advertising them to a broader market.

Box 9: Ghana Interbank Payment and Settlement Systems (GhIPSS) products

- **(2008)** e-Zwich is a national switch and biometric card payment system.¹⁷⁰ It once connected all financial institutions in Ghana. Introduction of biometric e-Zwich simplified the process of administering bank cards to the unbanked using only biometrics. However, that required specialized ATMs and points of sale.¹⁷¹ Today, e-Zwich is no longer affiliated with Visa and Mastercard and is used only to receive students' loans.
- **(2012)** National Switching and Processing System of Ghana (gh-link) operates as a national electronic payment platform. gh-link switches, clears all interbank transactions. Notably, most Ghanaian payment processors are only allowed to process payments in cedis.¹⁷²
- **(2015)** Ghana Instant Pay (GIP) is a real time interbank account-to-account credit transfer service that allows banks to conduct transactions and to facilitate mobile banking use.
- **(2018)** Mobile Money Interoperability System allows direct transfer of money from one mobile money wallet to another across multiple mobile operator networks.¹⁷³ It was one of the first interoperable systems in Africa. Once activated, its volume of mobile money transactions soared from 132 million cedi in 2019 to 2.6 billion by the end of 2022.¹⁷⁴
- **(2020)** Universal Ghana QR code. The GhIPSS set Ghana's standard for QR codes and the Proxy Pay platform, to create a standardized format for the use of QR codes. By doing so Ghana became a pioneer of the universal QR code—across Africa and around the world.¹⁷⁵ The Proxy Pay platform, an overlay of Instant Pay, enables individuals to link their mobile number to one specific bank account and to make payments using a mobile telephone number (the proxy) instead of an account number.¹⁷⁶

The issuance of the *Guidelines for E-Money Issuers and Agents (E-Money Guidelines)* by Bank of Ghana in 2015 was a game changer for DFS, specifically mobile money.¹⁷⁷ The E-Money Guidelines replaced the strict Branchless Banking Guidelines of 2008¹⁷⁸ and established protocols for mobile money operations.¹⁷⁹ They introduced electronic money issuers, licensing companies such as telecoms and FinTechs to issue e-money along with commercial banks.

In 2018, the MF launched the *National Financial Inclusion and Development Strategy (NFIDS) 2018–2023*, which aimed to increase access to formal financial services from 58 percent to 85 percent by 2023.¹⁸⁰ Access to formal services includes

¹⁷⁰ Ghana Interbank Payment and Settlement Systems Limited (GhIPSS). 2023. "e-Zwich Biometric Card." GhIPSS. <https://ghipss.net/index.php/services/e-zwich-biometric-card>.

¹⁷¹ Ifeanyi-Ajufo, Nnenna. n.d. "Digital Financial Inclusion and Security: The Regulation of Mobile Money in Ghana." Carnegie Endowment for International Peace. Accessed October 23, 2023. <https://carnegieendowment.org/2022/09/19/digital-financial-inclusion-and-security-regulation-of-mobile-money-in-ghana-pub-87949>.

¹⁷² 25 Common Website Problems and Solutions - WopeDigital." 2019. October 25, 2019. <https://wopedigital.com/website-problems-and-solutions/>.

¹⁷³ "Ghana's First Mobile Money Interoperability System Deepens Financial Inclusion and Promotes Cashless Agenda." 2018. Ghana's First Mobile Money Interoperability System Deepens Financial Inclusion and Promotes Cashless Agenda (blog). May 16, 2018. <https://www.afiglobal.org/newsroom/news/ghanas-first-mobile-money-interoperability-system-deepens-financial-inclusion-and-promotes-cashless-agenda/>.

¹⁷⁴ "Summary of Economic and Financial Data – Bank of Ghana." n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

¹⁷⁵ "Ghana Becomes First Country in Africa to Implement Universal QR CODE Payment System." 2020. Graphic Online. November 20, 2020. <https://www.graphic.com.gh/news/general-news/ghana-news-ghana-becomes-first-country-in-africa-to-implement-universal-qr-code-payment-system.html>.

¹⁷⁶ Research, HKTDC. n.d. "GHANA: Africa's First Universal QR Code Payment System Launched." HKTDC Research. Accessed October 23, 2023. <https://research.hktdc.com/en/article/Mzk0MTIzMjUx>.

¹⁷⁷ "Ghana's First Mobile Money Interoperability System Deepens Financial Inclusion and Promotes Cashless Agenda." 2018. Ghana's First Mobile Money Interoperability System Deepens Financial Inclusion and Promotes Cashless Agenda (blog). May 16, 2018. <https://www.afiglobal.org/newsroom/news/ghanas-first-mobile-money-interoperability-system-deepens-financial-inclusion-and-promotes-cashless-agenda/>.

¹⁷⁸ "Ghana Is Now the Fastest-Growing Mobile Money Market in Africa." 2019. Quartz. July 9, 2019. <https://qz.com/africa/1662059/ghana-is-africas-fastest-growing-mobile-money-market>.

¹⁷⁹ Bank of Ghana. 2008. Notice No. BG-GOV-SEC-2008-21: Regulatory Framework for Branchless Banking. Accessed October 23, 2023. <https://dfsobservatory.com/sites/default/files/Bank%20of%20Ghana%20-%20Notice%20No.%20BG-GOV-SEC-2008-21%20-%20Regulatory%20Framework%20for%20Branchless%20Banking.pdf>.

¹⁸⁰ "Government Launches New Policies to Speed up Financial Inclusion and Digital Payments to Transform the Economy | Ministry of

traditional banks and other formal, nonbank service providers such as credit unions, mobile money accounts and services, microfinance institutions, and retirement and insurance products and services. The NFIDS emphasizes FinTech as a key driver for achieving this target. A survey to track the impact of the NFIDS found that Ghana had surpassed its target: 95 percent of adults (15 years and older) had access by 2021.¹⁸¹ This positions Ghana among the “least financially excluded” countries in Africa.¹⁸² Mobile money accounts for nearly all this improvement. A mobile money agent, for example, is less than 30 minutes away for 92 percent of urban residents and 76 percent of rural ones.¹⁸³ While formal financial services access is nearing universality, adoption appears still to be lagging, with gender and geographic divides remaining (see further discussion in “Geographic and gender divides also impede increased adoption and uses of MoMo and other DFS products and services” section).

Ghana is one of only a handful of countries in the world to have announced plans (in 2021) to develop a Central Bank Digital Currency (CBDC), the e-Cedi, with the goal of improving financial inclusion and minimizing use of cash by state agencies.¹⁸⁴ The Bank of Ghana set up the FinTech and Innovation Office (FIO) in 2020 to promote FinTech innovation and supervise licensed FinTech firms.¹⁸⁵ The FIO also manages the FinTech Regulatory Sandbox, which the Bank of Ghana established in 2022. The Sandbox helps test solutions by all licensed financial institutions and FinTech startups that do not have license.¹⁸⁶ Many DECA KIs praised the Sandbox initiative, calling it an important tool to attract more investment to the FinTech sector and to drive local DFS innovations. Both the sandbox and the e-Cedi are still in the piloting stage and require time to assess effectiveness.

While DECA KIs generally praised the Bank of Ghana for playing a leading role in developing a positive enabling environment for DFS development in Ghana, they noted that roles of other authorities engaged in DFS oversight and regulation, including the Security and Exchange Commission, Data Protection Commission, National Insurance Commission, National Pension Regulatory Authority, and Cybersecurity Authority, could sometimes be “fuzzy.” They observed that these authorities work primarily in silos and that a single platform for collaboration within the government is missing. As a result, many DECA KIs expressed that DFS policy implementation does not always appear to be coordinated across government bodies.

Even more critically from DECA KIs’ perspective was inadequate engagement with the private sector and broader stakeholder community on policy and regulatory proposals. There have been some more narrowly focused efforts in this direction, such as the MF’s Digital Payments Coordination Unit, which is tasked with driving effective stakeholder engagement on implementation of the NFIDS and related policies,¹⁸⁷ but an institutionalized, broader stakeholder engagement mechanism appears to be missing. DECA KIs reported frustration with limited open discussion of policy proposals (the controversial e-levy, for example) and little evidence that their concerns were taken seriously or even addressed at all.

Finance | Ghana.” n.d. Accessed October 23, 2023. <https://mofep.gov.gh/index.php/press-release/2020-05-18/government-launches-new-policies-to-speed-up-financial-inclusion-and-digital-payments-to-transform-the-economy>. The World Bank supported development of this strategy.

¹⁸¹ Ministry of Finance | Ghana. 2021. The Official Ghana Demand Side Survey 2021.

<https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>. Interestingly, the survey found a 4 percentage point decline since 2010 in those using traditional banks.

¹⁸² Ibid.

¹⁸³ Ibid.

¹⁸⁴ “Design Paper of the Digital Cedi (eCedi).” n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/news/design-paper-of-the-digital-cedi-ecedi/>. The Bank of Ghana originally planned to launch the CBDC in 2022. However, high inflation rates and declining currency values have delayed launch. In 2023, the bank held a CBDC hackathon to bring together teams of programmers, designers, engineers, and other financial professionals to identify the potential use cases of a CBDC.

¹⁸⁵ For instance, the FIO mandated that supervised FinTech firms submit granular data instead of traditional reports with aggregated information and it developed in-house IT tools to process the granular data.

¹⁸⁶ Bank of Ghana. 2022. Press Release: Bank of Ghana Launches Regulatory and Innovation Sandbox. August 19, 2022. Accessed October 23, 2023. <https://www.bog.gov.gh/wp-content/uploads/2022/08/PRESS-RELEASE-BANK-OF-GHANA-REGULATORY-SANDBOX-19th-August-2022.pdf>.

¹⁸⁷ “Government Launches New Policies to Speed up Financial Inclusion and Digital Payments to Transform the Economy | Ministry of Finance | Ghana.” Accessed November 9, 2023. <https://mofep.gov.gh/index.php/press-release/2020-05-18/government-launches-new-policies-to-speed-up-financial-inclusion-and-digital-payments-to-transform-the-economy>.

A few DECA KIs also complained of the number of compliance requirements, naming strict Know Your Customer requirements for banks, data protection certificates for payment service providers (PSPs), and anti– money laundering and cybersecurity policies. However, most acknowledged that these were “necessary evils.”

TELECOM COMPANIES, PARTICULARLY MTN, TOGETHER WITH A WELL-DEVELOPING LOCAL FINTECH STARTUP ECOSYSTEM, ARE DRIVING DFS DEVELOPMENT AND ROLLOUT.

All the major telecommunications companies offer mobile money accounts—MTN’s Mobile Money, Vodafone’s Cash, and AirtelTigo’s Money—as do mobile wallet companies such as ExpressPay, ZeePay, and others that provide storage for MoMo. MTN was the first to launch mobile money services in 2009. DECA KIs estimated that MTN controls about 90 percent of the mobile money market,¹⁸⁸ similar to the first-mover dominance enjoyed by mobile money M-Pesa in Kenya.¹⁸⁹ Because of MTN’s dominance in the mobile money market, and mobile money’s position as Ghana’s largest and most important DFS innovation, MTN effectively is the largest contributor to DFS development in Ghana.¹⁹⁰ One DECA KI said it bluntly: “If the MTN platform crashes, the whole FinTech of Ghana may collapse.”

Ghana has a vibrant, competitive FinTech landscape. By early 2023, the Bank of Ghana had licensed 46 FinTech companies (not counting MTN).¹⁹¹ By comparison, Nigeria has about 20 companies with the locally equivalent license.¹⁹² Ghana’s licensees include dedicated electronic money issuers and PSPs.¹⁹³ Electronic money issuers operate online platforms and are licensed to manage transactions and issue debit cards with required share capital of more than \$2 million. PSPs offer online services for making electronic payments. There are five main classifications of PSPs depending on the share capital starting from a base of US\$8,000.¹⁹⁴ Each license allows a company to carry out certain activities. These licenses include PSP Enhanced, PSP Medium, and PSP Standard.

Many startups are developing payment services. Most are PSPs that provide e-wallets. Wallets provide users with accounts linked to their phone numbers with which they can store money, transfer money, and receive payments through a variety of digital channels, such as money remittances, bank transfers, and mobile money. They are used across Ghana, including by low-income individuals, persons in rural communities, women, youth, and businesses. Ghanaians can accept transfers from abroad (e.g., from diaspora) in local currency to their MoMo wallets using local solutions such as Zeepay; it is impossible to send money from Ghanaian wallets to other countries.

The most visible national FinTech companies in Ghana are ExpressPay (an aggregator platform of different MoMo services), Zeepay (e-wallet that is used largely for inbound transfers from abroad), Slydepay (e-wallet), Hubtel (e-wallet with e-commerce), IT Consortium (enterprise systems, crowdfunding, business process solutions), eTranzact (payment processing platform), MaZuma (blockchain-based payment solution), and Nsano (payment processing platform).

¹⁸⁸ TechGH24. 2023. “MTN Ghana Named Significant Market Power to Correct Imbalance in Telecoms Market.” TechGH24, October 19. <https://www.techgh24.com/mtn-ghana-named-significant-market-power-to-correct-imbalance-in-telecoms-market/>.

¹⁸⁹ “Fresh Push Signals The Break-Up Of Kenya’s Safaricom and M-Pesa Is Near.” 2022. WeeTracker (blog). October 4, 2022. <https://weetracker.com/2022/10/04/safaricom-mpesa-split-kenya/>.

¹⁹⁰ Bank of Ghana. 2022. Payment Systems Oversight Annual Report 2021. Accra, Ghana: Bank of Ghana. Accessed October 23, 2023. <https://www.bog.gov.gh/wp-content/uploads/2022/07/Payment-Systems-Oversight-Annual-Report-2021-I.pdf>.

¹⁹¹ Not counting MTN, which is in fact an EHI but not in the approved list. See “Why Is MTN Not on Ghana’s Approved List?” 2021. Songhai Advisory. April 13, 2021. <https://www.songhaiadvisory.com/blog/2021/4/13/why-is-mtn-not-on-ghanas-approved-list>. See “List of Licensed PSPs – Bank of Ghana.” Accessed November 9, 2023. <https://www.bog.gov.gh/supervision-regulation/registered-institutions/list-of-licensed-psps/>.

for a list of licensed providers.

¹⁹² “List of Mobile Money Operators.” n.d. NDIC (blog). Accessed October 23, 2023. <https://ndic.gov.ng/list-of-insured-institutions/list-of-mobile-money-operators/>.

¹⁹³ There is also a separate license category titled Payment and Financial Technology Service Providers. They are considered to have a critical role in the various segments of financial service delivery value chain through partnerships that often requires connecting to platforms of licensed PSPs, banks and SDIs. Source: Bank of Ghana. 2020. Notice: Payment and Fintech Service Providers. Accra, Ghana: Bank of Ghana. Accessed October 23, 2023. <https://www.bog.gov.gh/wp-content/uploads/2020/11/Notice-Payment-and-Fintech-Service-Providers-Final-26th-November-2020.pdf>.

¹⁹⁴ To obtain any PSP license, the company is required to have a Joint Venture with a Ghanaian partner. This Ghanaian is supposed to hold at least 30 percent of the total shares of the company. Therefore, this means that a wholly foreign-owned company cannot apply for a PSP license in Ghana. Source: “How a FINTECH Can Obtain a Payment Service Provider License in Ghana - Firmus Advisory.” n.d. Accessed October 23, 2023. https://firmusadvisory.com/2021/06/11/how-a-fintech-can-obtain-a-payment-service-provider-license-in-ghana/?utm_source=mondaq&utm_medium=syndication&utm_content=inarticlelink&utm_campaign=article.

International payment systems such as Flutterwave, Amazon Pay, Jumia Pay are also available. Their use is limited, however, as they require bank cards to be linked. PayPal blacklisted Ghana in 2004 because of numerous instances of credit card fraud,¹⁹⁵ but many users seek a work-around by creating accounts through mediators, allowing them to receive international payments and to conduct business with foreign partners.

Other DFS products such as life insurance, mobile-based pension plans, and microcredit loans are available but not yet widely used.¹⁹⁶ Customers can access digital services from insurance companies to purchase and manage their insurance policies online in Ghana. African aYo or BIMA platforms are among good examples.¹⁹⁷ However their use is rather limited because of low incomes, lack of trust, or poor awareness of existing solutions.¹⁹⁸ Microloans are in great demand, but these services are often not digitalized and individuals borrow money primarily from private sources or from selected micro-financial institutions.

MOBILE MONEY USE HAS GROWN TREMENDOUSLY IN RECENT YEARS, BUT FORMS OF USE REMAIN LIMITED, AND IT IS FAR FROM REPLACING “KING CASH” AS THE DOMINANT PAYMENT FORM.

Ghanaians refer to their mobile money service as “MoMo.”¹⁹⁹ Various economic reports describe skyrocketing growth in the use of MoMo over the past decade. The World Bank named Ghana as one of the biggest mobile money markets in the world and the fastest-growing one in Africa.²⁰⁰ By 2023, the country had more than 55 million registered MoMo accounts, of which about 36 percent were active (i.e., used to perform at least one mobile money transaction during the last 90 days; Figure 28).²⁰¹ The discrepancy between registered and active accounts is in line with global trends.²⁰² It also is important to note that a person may have multiple active mobile money accounts.

Approximately 58 percent of Ghanaians older than age 12 report using their mobile phones for financial transactions, which overwhelmingly (more than 90 percent) are mobile money transactions.²⁰³ Critically, even though financial account ownership (mostly MoMo accounts) for both women and men in Ghana has grown over the past decade, the gap between women and men has widened from 6 percent to 11 percent.²⁰⁴ Among those who do not have a MoMo account, reported barriers include a lack of access to a mobile phone, insufficient information or education or confidence, unaffordability, and previous money losses to mobile providers.²⁰⁵

¹⁹⁵ “The Paypal Story: Why Ghana Must Be Whitelisted.” 2016. Graphic Online. March 7, 2016.

<https://www.graphic.com.gh/features/opinion/the-paypal-story-why-ghana-must-be-whitelisted.html>.

¹⁹⁶ “Ghana Is Now the Fastest-Growing Mobile Money Market in Africa.” 2019. Quartz. July 9, 2019. <https://qz.com/africa/1662059/ghana-is-africas-fastest-growing-mobile-money-market>. See also Ministry of Finance, “Ghana Demand Side Survey 2021,” Ministry of Finance, June 2021, <https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>.

¹⁹⁷ “aYo Insurance.” n.d. Accessed October 23, 2023. <https://www.alfresco.com/customers/ayo-insurance>.

¹⁹⁸ Ministry of Finance, “Ghana Demand Side Survey 2021,” Ministry of Finance, June 2021, <https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>.

¹⁹⁹ Note that “MoMo” is used in this report to refer generically to the mobile service offered by any telecommunications provider. In practice, MTN’s dominant position on the mobile money market means that when Ghanaians refer to “MoMo,” it usually means MTN’s MoMo.

²⁰⁰ “Ghana Is Now the Fastest-Growing Mobile Money Market in Africa.” 2019. Quartz. July 9, 2019. <https://qz.com/africa/1662059/ghana-is-africas-fastest-growing-mobile-money-market>.

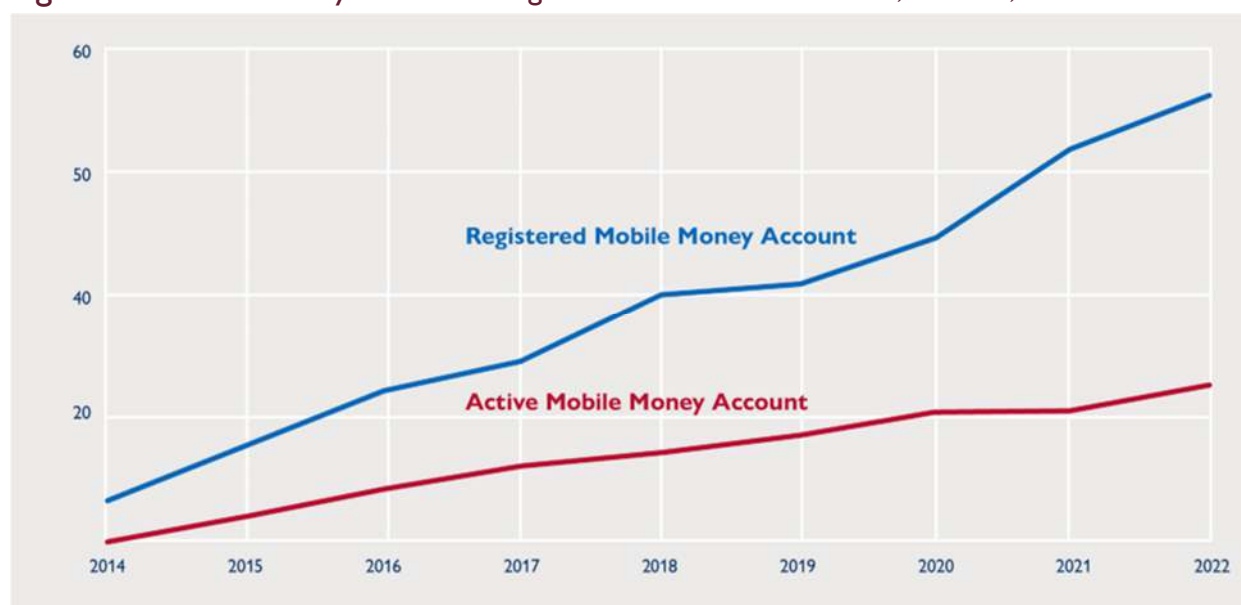
²⁰¹ Based on “Summary of Economic and Financial Data – Bank of Ghana.” n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

²⁰² GSMA. 2022. State of the Industry Report 2022 Executive Summary. London: GSMA. Accessed October 23, 2023. https://www.gsma.com/sotir/wp-content/uploads/2022/03/GSMA_State_of_the_Industry_2022_ExecSummary_English.pdf.

²⁰³ 2021 Population and Housing Census-Ghana Statistical Service importance of. n.d. “2021 Population and Housing Census.” Accessed October 23, 2023. <https://census2021.statsghana.gov.gh/>.

²⁰⁴ Alliance for Financial Inclusion. 2023. “The Role Regulators Play in Closing the Financial Inclusion Gender Gap: A Case Study of Ghana” https://www.afi-global.org/wp-content/uploads/2023/05/The-Role-Regulators-Play-in-Closing-the-Financial-Inclusion-Gender-Gap-Ghana_v2.pdf.

²⁰⁵ Ministry of Finance, “Ghana Demand Side Survey 2021,” Ministry of Finance, June 2021, <https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>.

Figure 28: Mobile Money Accounts: Registered and Active in Ghana, Millions, 2014–2022

Source: Bank of Ghana, different years²⁰⁶

The total value of transactions (or market size) also grew dramatically from 12 million cedis in 2014 to more than 122 billion cedis by 2022 (comparable to nearly 30 percent of Ghana’s GDP).²⁰⁷ In 2022, the introduction of a 1.75 percent e-levy (reduced to 1 percent in 2023) on all electronic financial transactions, including remittances, peer-to-peer transactions, bank transfers, merchant payments, and MoMo caused a precipitous drop in mobile money subscribers²⁰⁸ and about a 30 percent drop in MTN’s transactional volume. However, the market appears to have largely recovered from this shock.

Although this huge growth of MoMo is impressive, most transactions are limited to small, peer-to-peer domestic remittances (transfers and cash withdrawals) or to top up airtime on mobile phones.²⁰⁹ Only about 10 percent of MoMo transactions are for payment of goods and services; less than 5 percent are payments for public utility bills, for example. The Bank of Ghana reports that domestic remittances—small-sum money transfers to relatives within Ghana—were the number one service requested of local banks.²¹⁰ Most individual MoMo account holders tend to withdraw money received by using MoMo agents’ services and use the cash to make purchases and payments. In effect, the national network of MoMo agents serve as “human ATMs,” receiving domestic remittances and making cash payouts to recipients (Figure 29). DECA KIs reported that up to 90 percent of MoMo transactions are conducted using Unstructured Supplementary Service Data codes because of their relative affordability and of ease of use with the non-smartphone devices most used by Ghana’s large rural population. Knowledge and adoption of other uses of MoMo—such as paying for goods and services or school fees or other bills, receiving government payments or charitable contributions, transferring to or from a bank account, saving or storing in a mobile wallet, making investments purchasing insurance, or obtaining a loan or credit—are relatively limited.²¹¹

²⁰⁶ “Summary of Economic and Financial Data – Bank of Ghana.” n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

²⁰⁷ “Summary of Economic and Financial Data – Bank of Ghana.” n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

²⁰⁸ Awal, Mohammed. 2022. “Telcos Lose 300,000 Mobile Money Subscribers in April.” The Business and Financial Times (blog). June 1, 2022. <https://thebftonline.com/2022/06/01/telcos-lose-300000-mobile-money-subscribers-in-april/>.

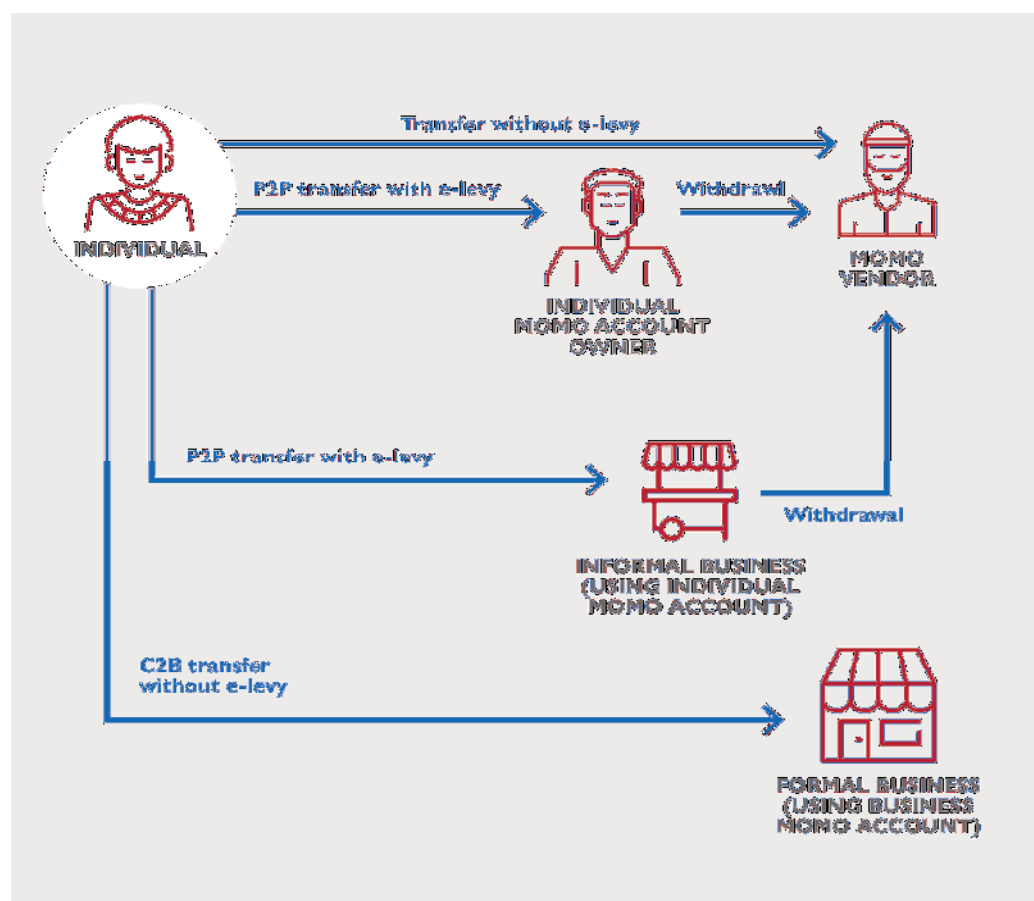
²⁰⁹ Ministry of Finance Ghana. Ghana Demand Side Survey 2021. December 2022. Accessed October 26, 2023. <https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>.

²¹⁰ Specifically, sending money from MoMo wallets to a bank account and vice-versa. Bank of Ghana. 2022. Payment Systems Oversight Annual Report 2021. Accra, Ghana: Bank of Ghana. Accessed October 23, 2023. <https://www.bog.gov.gh/wp-content/uploads/2022/07/Payment-Systems-Oversight-Annual-Report-2021-1.pdf>.

²¹¹ GSMA. “Exploring Women’s Use of Mobile Money in Ghana.” March 2022. Accessed October 26, 2023.

Thus, according to various DECA KIs estimates, most payments in Ghana are still made using cash. Those consumers who use MoMo beyond money transfers and cash withdrawals tend to be more educated and from middle- and higher-income groups. They typically understand and are more comfortable using MoMo technology.

Figure 29: How Ghanaians Use Mobile Money



Source: WinDT Consulting.

THE GROWTH OF ONLINE FRAUD, THE E-LEVY REGULATION, AND GHANA'S LARGE INFORMAL ECONOMY DISCOURAGE GREATER USE OF MOMO.

Studies show that fraud and security concerns are among the major challenges to the growth and sustainability of MoMo markets and microfinance integrations.²¹² Fraud includes social engineering, phishing, and hacks of banking accounts. Many registered cases of mobile network operator (MNO) employees—who have access to users' e-wallet information—engaged in money-stealing schemes, including SIM swaps (see Pillar 2 discussion).²¹³ According to DECA KIs, among those who regularly use MoMo, seven out of ten people have had their accounts hacked or are exposed to fraud monthly. In 2021, there were about 4,000 officially registered cases of mobile money fraud, compared with 388 cases in 2016, a 900 percent increase over five years.²¹⁴ Importantly, there is a general underreporting of fraud

https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/03/Mobile_money_Exploring_womens_use_Ghana.pdf.

²¹² Aboagye, Judith, and Sophia Anong. 2020. "Provider and Consumer Perceptions on Mobile Money and Microfinance Integrations in Ghana: A Financial Inclusion Approach." *International Journal of Business and Economics Research* 9 (4): 276. <https://doi.org/10.11648/j.ijber.20200904.24>.

²¹³ Ifeanyi-Ajufo, Nnenna. n.d. "Digital Financial Inclusion and Security: The Regulation of Mobile Money in Ghana." Carnegie Endowment for International Peace. Accessed October 23, 2023. <https://carnegieendowment.org/2022/09/19/digital-financial-inclusion-and-security-regulation-of-mobile-money-in-ghana-pub-87949>.

²¹⁴ "Fresh Push Signals The Break-Up Of Kenya's Safaricom and M-Pesa Is Near." 2022. WeeTracker (blog). October 4, 2022. <https://weetracker.com/2022/10/04/safaricom-mpesa-split-kenya/>.

incidents and a dearth of statistics because MNOs and banks are not eager to report or make open records of these data. Although important cybersecurity regulations are in place, their enforcement is lagging (see Pillar 2 for details). Consumer protection and consumer literacy need strengthening in Ghana. MNOs have targeted users with advertisements and awareness campaigns, but the impact appears to have been minimal. Unsecure, low-cost mobile and internet devices are also a cyber threat vulnerability to financial institutions, which have not taken systemic steps to prevent fraud.²¹⁵ As a result, MoMo users who have either experienced fraud themselves or heard about others being victimized tend to minimize their use of the service overall or limit transactions to sums they are comfortable losing.

The e-levy (see Pillar 1 for details) also limits growth of MoMo's use beyond small (cash) transfers. The first 100 cedi transferred per day are exempt from the e-levy fee. As a result, people seek either to limit their daily activity to less than 100 cedi or to make their transactions through registered businesses that are exempt from the e-levy. Thus, the 100 cedi limit effectively becomes a cap for many users and makes MoMo's use for online payments less attractive.

Ghana's large informal economy also affects MoMo's use (and the DFS rollout more broadly). Vendors and service providers prefer to receive MoMo transfers in their individual accounts rather than in officially registered business accounts, that they may hide their actual revenues from authorities, or they choose cash instead of online payments. DECA KIs estimate that only about 10 percent of vendors accept payments to officially registered MoMo business accounts (Figure 29). For many businesses, it is much more convenient to accept cash than to pay additional costs for managing accounts or paying fees and commissions.

GEOGRAPHIC AND GENDER DIVIDES ALSO IMPEDE INCREASED ADOPTION AND USES OF MOMO AND OTHER DFS PRODUCTS AND SERVICES.

Important barriers to would-be users' adoption of broader MoMo applications and other DFS products and services, such as mobile and online banking or usage of debit or credit cards, are the infrastructural, income, and educational inequalities among Ghana's regions and between urban and rural Ghanaians. Electricity in general and internet access in particular can be significant expenses for rural residents. One of the KIs noted: "People care more about how to survive than how to get a good data package." Rural residents may lack sustainable income channels, or the skills and knowledge to use DFS safely and confidently. They also are far less likely to have a bank account.

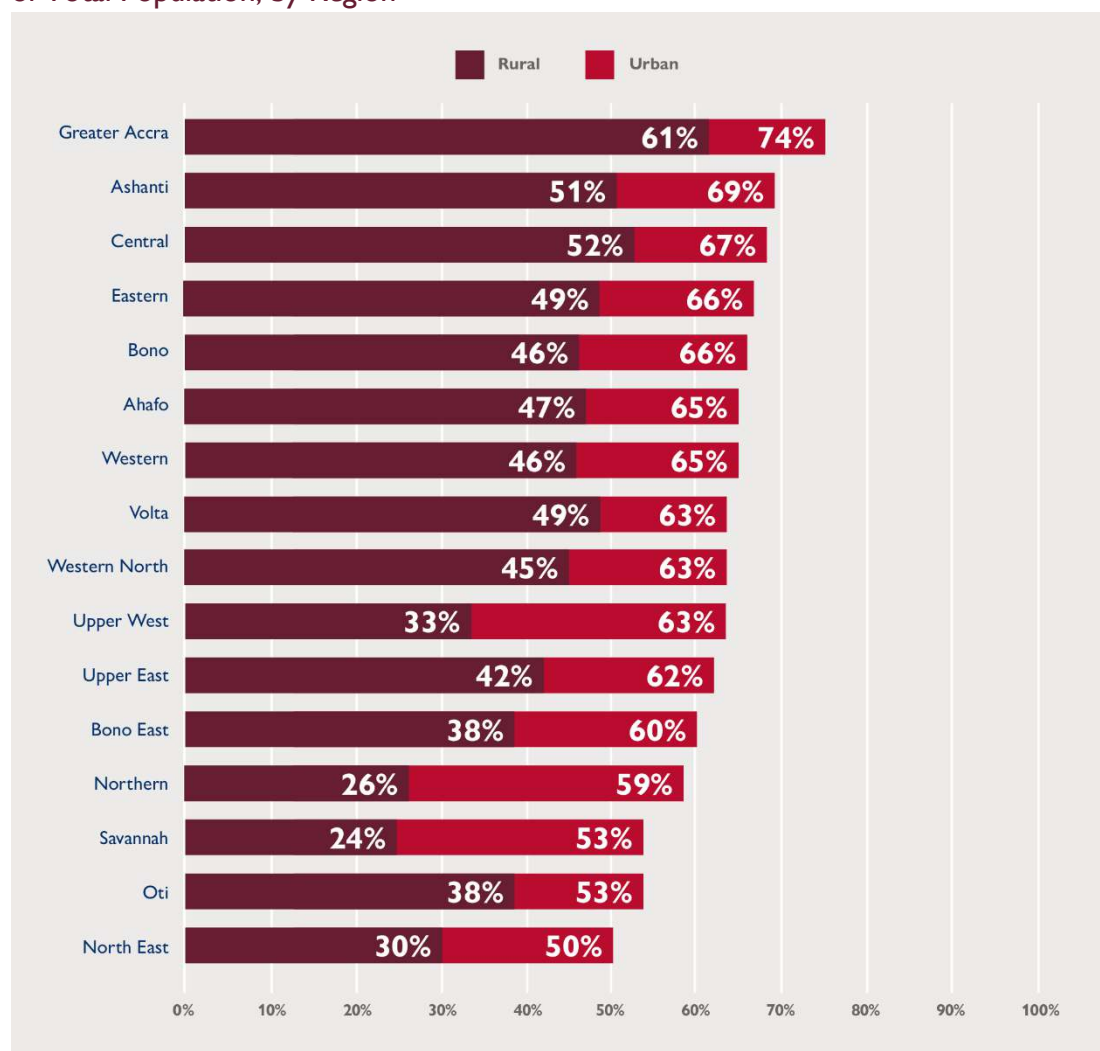
According to the most recent census data, almost 58 percent of Ghanaians use their mobile phones for financial transactions (which are overwhelmingly mobile money transactions).²¹⁶ Broken down by locality, about 44 percent of rural residents nationally use their mobile phones for financial transactions compared with about 68 percent of urban residents.²¹⁷ At approximately 30 percentage points, this urban-rural divide is especially noticeable in the Northern, Upper-West, and Savannah regions, but even the narrowest divide—13 percentage points in the Greater Accra region—is significant (Figure 30).

²¹⁵ Senyo, P. K. 2021. "Ghana's New Mobile Money Rule Could Derail Financial Inclusion. But There Are Answers." *The Conversation*. April 18, 2021. <http://theconversation.com/ghanas-new-mobile-money-rule-could-derail-financial-inclusion-but-there-are-answers-158770>.

²¹⁶ 2021 Population and Housing Census-Ghana Statistical Service importance of. n.d. "2021 Population and Housing Census." Accessed October 23, 2023. <https://census2021.statsghana.gov.gh/>.

²¹⁷ Ibid.

Figure 30: Urban-Rural Divides among Persons Using Mobile Phone for Financial Transactions, Percent of Total Population, by Region



Source: Ghana 2021 Population and Housing Census General Report, Volume 3G.²¹⁸

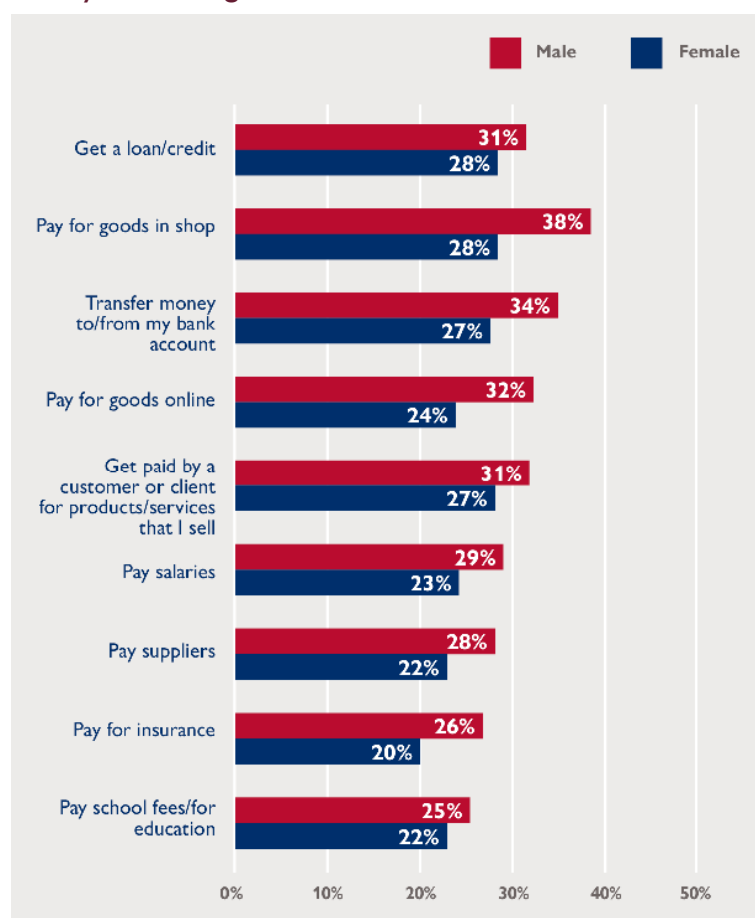
The gender divide between women and men who use their mobile phones for financial transactions, both in total and among urban residents nationally, is relatively narrow (4.9 and 4.4 percentage points, respectively).²¹⁹ The gender divide among rural residents nationally widens to 6.4 percentage points. However, once again, gaps increase significantly as data are disaggregated by region. In the Savannah, Northern, and Upper-West regions, for example, the gender divide between women and men who use their mobile phones for financial transactions is 9, 13, and 19 percentage points, respectively. These divides can be attributed to households' financial constraints that do not prioritize women's access, limiting their information, knowledge, and capacity to make digital financial transactions confidently.

As previously noted, the financial transactions for which individuals overwhelmingly use their phones are sending and receiving MoMo, which is then cashed out. Knowledge and adoption of other uses is not widespread. Notably, gender gaps persist among entrepreneurs as well, particularly in terms of awareness. Women entrepreneurs, for example, are significantly less likely than men entrepreneurs to know that MoMo can be used for paying suppliers, salaries, and bills, and for purchasing goods online or in shops (Figure 31).

²¹⁸ Ibid.

²¹⁹ Ibid.

Figure 31: Gender Divides among Entrepreneurs in Their Awareness of How They Can Use Mobile Money, Percentage



Source: *Exploring Women's Use of Mobile Money in Ghana*, GSMA.²²⁰

Looking at DFS beyond mobile money, the World Bank Global Financial Inclusion Index also reveals divides. In urban areas, people are five times more likely to have bank cards than residents of rural areas, and they are more than 13 times more likely to make purchases online (Table 4).

Table 4: Rural-Urban and Gender Divides in DFS Usage by Locality, 2021, Percentages

	MOBILE MONEY ACCOUNT	OWNS A DEBIT CARD	RECEIVED A DIGITAL PAYMENT	MADE A DIGITAL PAYMENT	USED A MOBILE PHONE OR THE INTERNET TO PAY BILLS	USED A MOBILE PHONE OR THE INTERNET TO MAKE A PURCHASE
LOCALITY						
URBAN	67.6	25.3	62.2	72.6	12.8	13.6
RURAL	47.9	5.6	39.2	50.2	6.1	1.1
GENDER						
MALE	64.6	22.5	58.5	69.0	12.3	11.8
FEMALE	55.0	12.6	47.8	58.6	8.0	5.7

Source: *World Bank Global Financial Inclusion Index 2021*.²²¹

²²⁰ Christopher Lowe et al., "Exploring women's use of mobile money in Ghana," GSMA, March 2022, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2022/03/Mobile_money_Exploring_womens_use_Ghana.pdf.

²²¹ "Global Financial Inclusion | DataBank." n.d. Accessed October 23, 2023. <https://databank.worldbank.org/source/global-financial->

LOW LEVELS OF FORMAL BANK ACCOUNT OWNERSHIP CONSTRAIN DFS ROLLOUT AND ADOPTION BEYOND MOMO.

Only about 30 percent of Ghanaians have a formal bank account, down four percentage points from a decade ago.²²² As noted earlier, mobile money has largely driven Ghana's notable gains in financial inclusion.²²³ For many consumers, particularly those with low incomes, opening and maintaining traditional bank accounts remain unattractive. Difficulties opening an account and affording monthly account maintenance charges are among the challenges. Periodic bank bankruptcies, including ten bank closures in 2017, also have made consumers leery.²²⁴ Onerous Know Your Customer requirements may disincentivize banks from reaching new consumers and markets. Historically, banks also have encountered difficulties acquiring merchant-clients because they lack required documents such as tax identification numbers.²²⁵ Furthermore, observers note that banks show little interest in facilitating large volumes of small monetary transactions from micro-users.

Most of Ghana's 23 commercial banks²²⁶ offer internet banking as a service. Banks also use WhatsApp and Chat banking to communicate with customers. Most banks have shown little interest in promoting other DFS such as mobile banking and mobile payment apps. Ecobank and Société Générale, for example, offer such services but their use is comparatively limited. Overall, internet and mobile banking in Ghana are growing slowly. In 2020, the number of people registered with mobile app exceeded 4.7 million (about three-quarters of total bank account owners), but only 16 percent of those reported making a mobile banking transaction.²²⁷ Internet banking (that is, web-based) was less than one-quarter of that amount, with a little more than 1 million registered accounts.²²⁸

The number of bank-issued payment cards in circulation in Ghana has remained relatively stable for many years (Figure 32). In 2022, less than 15 percent of Ghanaians owned debit cards; less than 1 percent owned credit cards, and about 5 percent used prepaid cards.²²⁹ High interest rates, bank commissions on online payments, and the e-levy have discouraged many bank account customers from using bank services or bank cards to make online payments. For instance, in certain cases when buying on marketplace platforms, users pay online commission to the bank in addition to an e-levy. People with bank accounts tend instead to use their bank cards to store funds, to remit to MoMo for onward mobile payments, or to buy on international online platforms such as Amazon. According to DECA KIIs, less than 10 percent of bank card owners use bank cards to make payments.

inclusion.

²²² Ministry of Finance Ghana. Ghana Demand Side Survey 2021. December 2022. Accessed October 26, 2023.

<https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>.

²²³ 2021 Population and Housing Census-Ghana Statistical Service Volume 3G, n.d. "2021 Population and Housing Census." Accessed October 23, 2023. <https://census2021.statsghana.gov.gh/>.

²²⁴ A government-initiated financial sector clean up resulted in the collapse and closure of banks because of their insolvency, capital inadequacy, related party transactions. See "50 Profitable Online Business Ideas for Beginners [2022] - The Ghanaian Standard." 2023. October 14, 2023. <https://ghstandard.com/50-profitable-online-business-ideas-for-beginners-2022/1961/> and Larnyoh, Magdalene Teiko. 200AD. "Here Are the Auditing Firms for the 7 Collapsed Banks." Pulse Ghana. 07:14 200AD.

<https://www.pulse.com.gh/news/business/collapsed-banks-here-are-the-auditing-firms-for-the-7-collapsed-banks/nmy08f5>.

²²⁵ Alliance for Financial Inclusion, "The Supervision of FinTech in the Africa Region: A Case Study of Ghana," Alliance for Financial Inclusion, May 2023, <https://www.afi-global.org/wp-content/uploads/2023/05/Supervision-of-FinTech-in-the-Africa-Region-Ghana-CaseStudy.pdf>

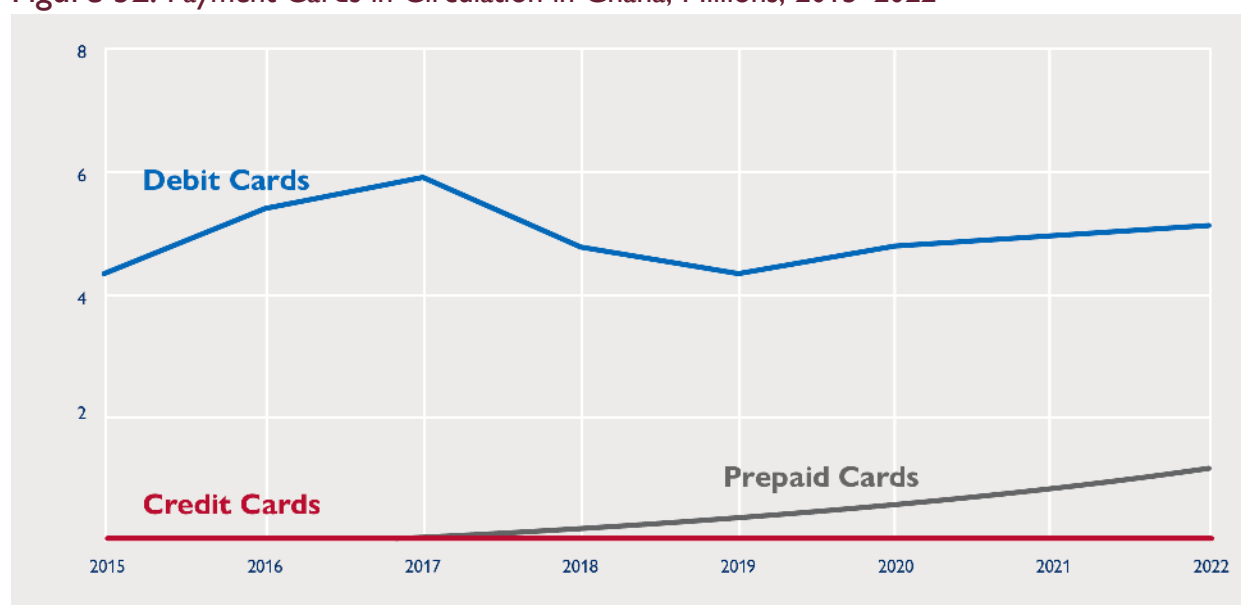
²²⁶ The most used banks are CAL Bank, Zenith bank, GCB bank, and National Investments.

²²⁷ Ministry of Finance, "Ghana Demand Side Survey 2021," Ministry of Finance, June 2021, <https://mofep.gov.gh/sites/default/files/reports/economic/Ghana-Demand-Side-Survey-2021.pdf>.

²²⁸ Bank of Ghana. 2022. Payment Systems Oversight Annual Report 2021. Accra, Ghana: Bank of Ghana. Accessed October 23, 2023. <https://www.bog.gov.gh/wp-content/uploads/2022/07/Payment-Systems-Oversight-Annual-Report-2021-1.pdf>.

²²⁹ Based on collected statistics from "Summary of Economic and Financial Data – Bank of Ghana." n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

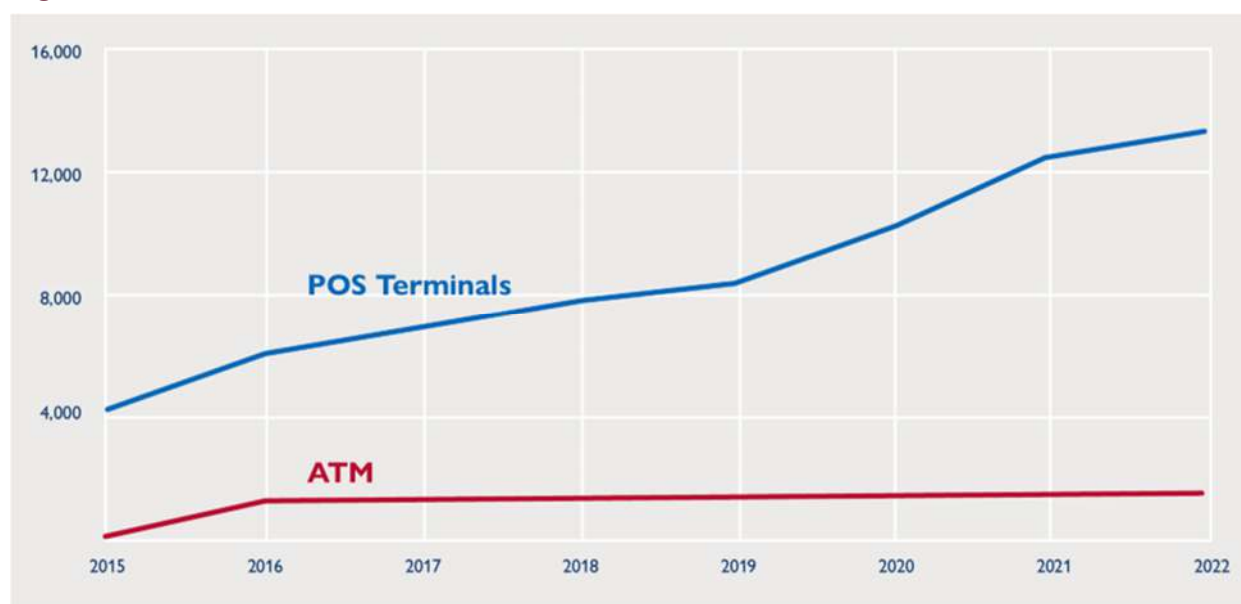
Figure 32: Payment Cards in Circulation in Ghana, Millions, 2015–2022



Source: Bank of Ghana, different years.²³⁰

The infrastructure needed to use bank cards for buying and selling goods and services exists in Ghana. Over the years, the government and banks have been installing ATMs and Point-of-Sale (POS) terminals to simplify and encourage cashless transactions. The number of POS terminals has grown approximately 60 percent since 2019 to about 13,000 nationally (Figure 33). Despite this relatively rapid growth, approximately 16 percent of merchants have a POS.

Figure 33: Installed ATMs and POS Terminals in Ghana, Number of Units, 2015–2022



Source: Bank of Ghana, different years.²³¹

²³⁰ "Summary of Economic and Financial Data – Bank of Ghana." n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

²³¹ "Summary of Economic and Financial Data – Bank of Ghana." n.d. Accessed October 23, 2023. <https://www.bog.gov.gh/monetary-policy/summary-of-economic-and-financial-data/>.

To facilitate digital payments, the Bank of Ghana introduced the Ghana QR code, a single system (based on the GhIPSS platform, which has operated since 2020) that connects all Ghanaian banks. In 2022, more than 150,000 merchants enrolled in the single QR code.²³² However, the QR code has not seen the widespread use that was anticipated. Cash preferences of sellers and buyers, a lack of smartphones to scan codes, and poor advertisement of the QR code’s features and advantages have limited its adoption and use.

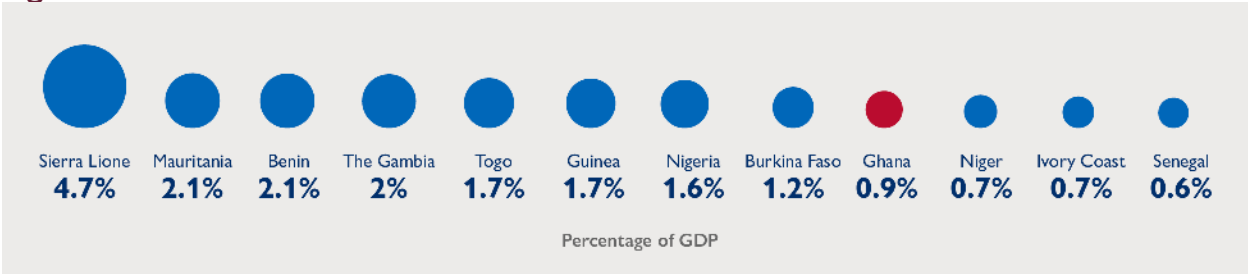
E-COMMERCE IS EMERGING BUT IS HAMPERED PRIMARILY BY THE LARGE INFORMAL ECONOMY AND POOR LEVELS OF TRUST BETWEEN BUYERS AND SELLERS.

Ghana’s large informal economy makes it challenging to accurately assess the size of the country’s e-commerce sector. Many e-commerce sellers are individuals or MSMEs that are not officially registered companies and therefore cannot legally participate on the formal national and international platforms that track market activity. For MSMEs to sell their goods on these digital platforms, they must sign a contract with the platform company and become a verified business. This requires that they be formally registered (see further discussion in “A large informal economy, online fraud, and inadequate consumer protections are the greatest challenges to growing Ghana’s formal e-commerce sector” section).

Available estimates put Ghana’s formal e-commerce market size at about US\$688 million in 2023, a bit less than 1 percent of Ghana’s GDP.²³³ By national market size, Ghana is second only to Nigeria in West Africa; West Africa’s total formal e-commerce market size is estimated to be about US\$11 billion (Figure 34). For comparison, Germany’s e-commerce market size is estimated at US\$120 billion. Absolute market sizes are an indicator of how well-developed the overall e-commerce ecosystem is in a country. When national e-commerce market sizes are measured as a percentage of GDP, however, both Ghana and Nigeria fall behind their West

African neighbors (Figure 34).²³⁴ This indicates that neighbors such as Sierra Leone or Benin may have greater overall demand for e-commerce services.

Figure 34: E-commerce Market Size as a Share of GDP, West Africa



Source: Based on <https://ecommercedb.com/markets/tg/all>.

Ghana is among the leaders of e-commerce sector growth in West Africa in recent years. The increasing adoption and use of MoMo has helped to facilitate e-commerce transactions, including between buyers and MSMEs in more remote regions. During 2017–2020, the number of online buyers in Ghana doubled, though this still represented just 8 percent of the population by early 2021 (Figure 35). The COVID-19 pandemic seems to have been the greatest driver to pushing consumers online. Since 2021, the e-commerce market is estimated to have grown more than 40 percent.²³⁵ Over the lockdown period, people routinely ordered food delivery online and made other household purchases. Notably, beauty and fashion products, clothing and fast-moving consumer goods (for example, food products, household chemicals, and smaller appliances) recorded the highest percentage of money spent overall.²³⁶ Most of Ghana’s e-commerce users—

²³² Abedu-Kennedy, Dorcas. 2022. “More than 150,000 Merchants Enrolled onto GhQR Platform.” Adomonline.Com. June 18, 2022. <https://www.adomonline.com/more-than-150000-merchants-enrolled-onto-ghqr-platform/>.

²³³ “eCommerce Market Ghana - Data and Trends | ecommerceDB.Com.” Accessed October 23, 2023. <https://ecommercedb.com/markets/gh/all>

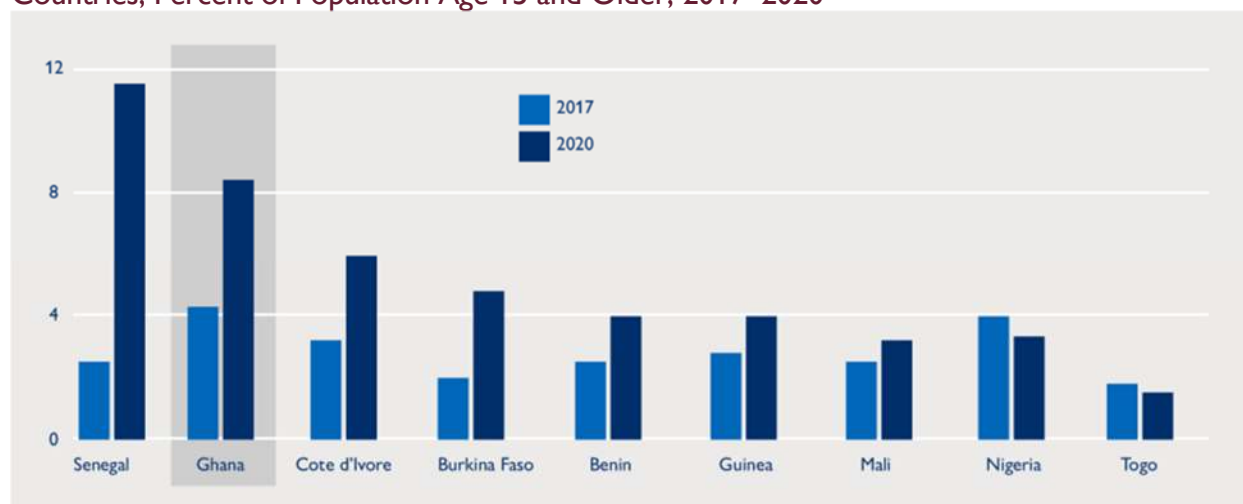
²³⁴ Provided calculations are based on the estimates from Statista resources. For better accuracy a full-fledged analysis of the e-commerce market is required.

²³⁵ “How Covid-19 Accelerated Ghana’s Shift to e-Commerce - Africa 2022 - Oxford Business Group,” March 29, 2022. <https://oxfordbusinessgroup.com/reports/ghana/2022-report/economy/the-new-normal-the-covid-19-pandemic-spurs-a-long-term-shift-to-e-commerce-and-digital-payments-in-the-local-market>.

²³⁶ “How Covid-19 Accelerated Ghana’s Shift to e-Commerce - Africa 2022 - Oxford Business Group,” March 29, 2022.

especially on formal e-commerce platforms—often reflect a relatively narrow base of consumers who are digitally savvy (ages 18–34) and active users of online payments (see discussion in DFS section).

Figure 35: Used a Mobile Phone or the Internet to Buy Something Online in Selected West Africa Countries, Percent of Population Age 15 and Older, 2017–2020



Source: World Bank Global Financial Inclusion Index 2021.

To reach its full potential, Ghana's e-commerce ecosystem requires several core elements: a variety of digital platforms; well-developed transport, logistics, and delivery systems; secure online payment options; digitally skilled consumers and MSMEs; and a conducive regulatory environment, including enforcement of adequate consumer protections. While some of these elements are developing well overall (particularly platforms and, to a lesser extent, transport and delivery services), other elements (such as digitally skilled buyers and sellers) are more challenging.

A large informal economy, online fraud, and inadequate consumer protections are the greatest challenges to growing Ghana's formal e-commerce sector. Individuals and MSMEs operating informally²³⁷ cannot register legally on formal digital platforms. Informal e-commerce sellers, mostly micro and small businesses, depend upon personal connections and word-of-mouth to attract customers. They also rely on social media platforms such as Facebook and Instagram, where they can use marketplaces and open an account that functions as a shop window. They use messenger apps such as WhatsApp and Telegram channels to advertise and communicate with customers. Most transactions and payments are made peer-to-peer between sellers and buyers.

This social e-commerce—"s-commerce"—is typical for Ghana. It is often an important first step for digital transformation of MSMEs. However, it carries risks and downsides. S-commerce affects the scalability of formal e-commerce marketplaces by offering alternative avenues to informal businesses. For consumers, formal marketplaces such as Jumia or Jiji may be used only for product screening and "window-shopping." Even more critically, s-commerce does not provide consumer/merchant protection mechanisms, a lack of which leads to greater risks for fraud. This has yielded "e-commerce of trust" networks, in which buyers recommend to their friends' trusted accounts of sellers on social media platforms or they rely on high-rated Instagram or Facebook accounts. Sellers also face fraudulent actions on the part of buyers, who may not pay for a delivered good or whose aim all along is to rob the courier.

DECA KIs also reported that some larger businesses that operate informally have found work-arounds to sell their goods on formal platforms. Not all online marketplaces verify sellers and as a result may publish nonexistent goods or

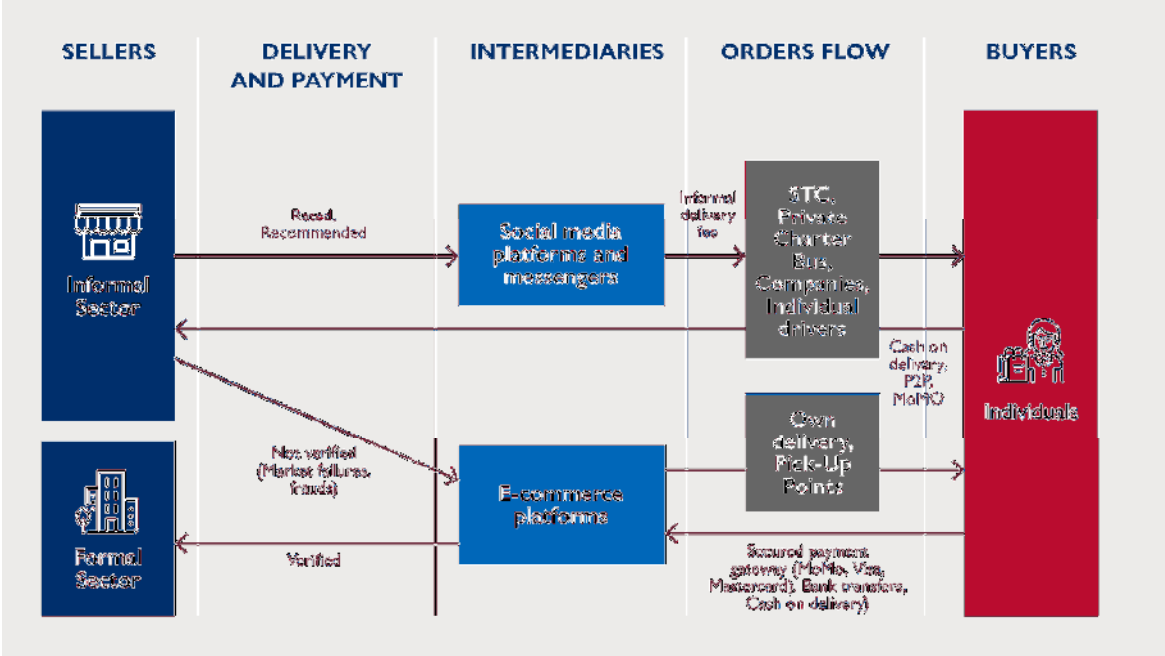
<https://oxfordbusinessgroup.com/reports/ghana/2022-report/economy/the-new-normal-the-covid-19-pandemic-spurs-a-long-term-shift-to-e-commerce-and-digital-payments-in-the-local-market>.

²³⁷ DECA KIs revealed that sellers are not eager to be transparent and register business with the government because of fears of fines (e.g., penalties for refusal of registration), official burdensome reporting (e.g., filing taxes, registration with the GRA), and additional costs (e.g., holding a bank account to accept payments). They estimated that 70 to 90 percent of the Ghanaian workforce is employed in the informal economy.

deliver fake products. Customers complain about wrong items being delivered, faulty or low-quality items, and outright fake products.²³⁸

All these factors combined undermine consumer trust in e-commerce generally, including formal e-commerce. Consumers fear making online purchases because they have encountered fraud before, are aware of it, or do not have sufficient knowledge about how to deal with fraudsters or to verify sellers. While Ghana’s Electronic Communications Act and Payment Systems and Services Act together codified responsibilities of both buyers and sellers for transactions made over the internet, including certain consumer protection provisions, these can be difficult to enforce. Ghana does not have a stand-alone comprehensive consumer protection regulatory framework.²³⁹ The rights of buyers and sellers operating in the e-commerce sector are unclear. This creates numerous uncertainties that relate to, for example, verification of digital identities, quality and reliability of last mile delivery, and procedures for consumer returns and refunds.

Figure 36: How Business-to-Consumer (B2C) e-commerce Works in Ghana



Source: WinDT Consulting.

A good range of e-commerce platforms are available in Ghana. Many national and West Africa e-commerce platforms are available in Ghana, including business-to-consumer (B2C), business-to-business (B2B) and consumer-to-consumer (C2C) platforms. These include marketplaces (e.g., Jumia, Jowato, KikUU), online stores (Telefonika, Frankotrading, Melcom), peer-to-peer classifieds platforms (Jiji, Tanaton (acquired by Jiji), Locanto), and wholesale shopping platforms (Plendify). Notable local startups include Tendo and Shopa, which provide digital B2B reselling services, and Jowato, a Tamale-based company that provides an online B2C marketplace for more than 240 MSMEs across Ghana.

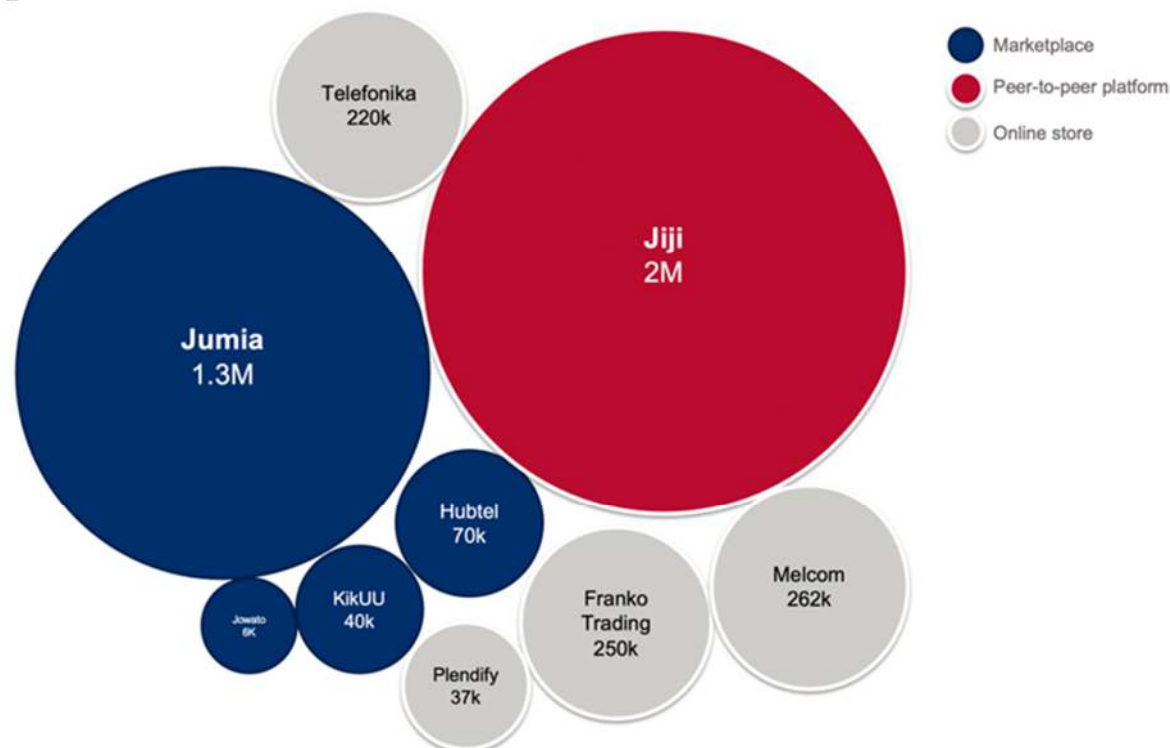
The Pan-African online platform Jumia and Ghanaian peer-to-peer Jiji platform are Ghana’s leading online shopping malls and dominate the e-commerce sector overall (Figure 37). Jumia’s website attracts approximately

²³⁸ “Ecommerce in Ghana, 2020 - An Insightful Report,” July 18, 2020. <https://wopedigital.com/ecommerce-in-ghana/>.

²³⁹ “Consumer Protection in Ghana: Oversight, Enforcement and Recommendations – CLRNN – Commercial Law Research Network Nigeria.” Accessed November 9, 2023. <https://www.clrnn.net/2021/11/18/consumer-protection-in-ghana-oversight-enforcement-and-recommendations/>.

1.4 monthly million, while Jiji reaches more than 2 million. Still, these numbers are low when compared with corresponding numbers from Google and Facebook in Ghana, 41 million and 5 million respectively.²⁴⁰ Global e-commerce giants Amazon and AliExpress are also accessible and deliver to Ghana. However, their use is limited because delivery takes longer and bank cards are required to process orders, thereby significantly limiting the consumer base.

Figure 37: Most Visited e-commerce Websites in Ghana, Number of Visits Per Month



Source: Based on Similar Web stats.

Transport and logistics are developing. DECA KIs shared that for trade within the West Africa region, sellers work successfully with private charter bus companies or logistics services such as O.A., 2MExpress, VVIP, GIG, or DHL. Domestically, many sellers use the well-developed national bus system. The State Transportation Company (a joint state and privately owned transport company) is popular among s-commerce participants for delivering products bought online across the country. In many cases, this is done informally with transport payments made directly to drivers. Some sellers also turn to trusted individuals with motorbikes to transport and deliver goods regionally.

Many last-mile (to the buyer/consumer) parcel and food delivery companies such as Glovo, Bolt, Yango, NokNok, Hubtel, and YomYom (homegrown in the Northern Region) are on the market but struggle to turn a profit. A general lack of Class A warehouses²⁴¹ offering fulfillment services in Ghana increases the cost and turnaround time for delivery. Demand from consumers is too low to justify sufficient investment in delivery fleets or courier training.²⁴² DECA KIs estimated that the digital skills of only three out of ten couriers are adequate to deliver goods using apps. Some market players conduct courier training, but these efforts are still few. As a result, issues with last-mile delivery quality and timeliness are still acute. Resolving these issues is essential for e-commerce businesses to scale.

²⁴⁰ Statista. "Ghana: Most Visited Websites by Traffic 2023." Accessed October 23, 2023. <https://www.statista.com/statistics/1323454/most-visited-websites-in-ghana-by-traffic/>.

²⁴¹ International-standard Class A warehouses are state-of-the-art properties built specifically for warehousing and logistics. They have not been converted or renovated for this purpose. They are designed and built from the ground up to benefit the supply chain.

²⁴² DECA KIs noted that Jumia Food left the Ghanaian market at the end of 2022 for these reasons.

International payment gateways and national third-party secured payment gateways are missing. Limitations on payment options undermine cross-border e-commerce development. Consumers buying Ghanaian goods and services from abroad are mostly Ghanaian diaspora located in the United States or the United

Kingdom who transfer payments using international money transfer services (e.g., MoneyGram, Sendwave, Western Union), hawala payments or local payment services such as ZeePay. As discussed in the DFS section, Ghana is still not listed in major payment gateways such as PayPal and Stripe and consequently faces challenges to attracting new international customers.

For domestic e-commerce transactions, both bank cards and MoMo are viable online payment options (see DFS discussion). However, DECA KIs reported that banks are not interested in partnering with individuals, MSMEs, or e-commerce companies to provide services such as escrow accounts. Such third-party secured payment gateways are critical for building trust between sellers and buyers. While formal e-commerce platforms theoretically could provide this service, many do not because it would require them to operate as financial institutions and subject them to related regulations.

E-commerce enabling environment needs improvement. The Government of Ghana has undertaken some initiatives that have positively affected Ghana's e-commerce sector. The Ghana Post GPS, introduced in 2017, is a digital addressing system that provides unique digital addresses and postal codes for every location in Ghana.²⁴³ This has streamlined and improved timely, accurate delivery to buyers. The SIM card sanitization efforts tied to use of the Ghana Card (see Pillars 1 and 2 for discussion) has helped improve trust by building confidence that buyers are dealing with genuine online businesses. Still, Ghana has no strategic vision or comprehensive regulatory framework to support and grow the e-commerce sector.²⁴⁴ Businesses operating on formal digital platforms are subject to the full range of national and local taxes (corporate, transfer, excise, sales, and property taxes to value-added taxes (VAT),²⁴⁵ and other costs of payment gateways and various bank fees. As discussed in the DFS section, in an effort to incentivize businesses to register, the government exempted registered businesses from paying the e-levy. However, DECA KIs indicated that this initiative has shown little success.

Insufficient digital skills among MSMEs are a barrier. To explore MSMEs engagement in the e-commerce sector, the DECA research team surveyed 38 artisans selling craftworks in a village located about 1.5 hours outside Accra. Slightly more than 40 percent of craftworkers said that they sell their products online, mostly using social media platforms (Facebook and Instagram) or messenger apps (WhatsApp). About one-third of them worked exclusively through an international third-party wholesale company selling products on its website; none had their own website. More than twice as many males (11) as females (5) used these platforms (Figure 38). Among the approximately 60 percent of craftworkers who did not engage in e-commerce, lack of digital literacy and trust were the top obstacles named, followed by lack of devices or access to the internet because of costs. CSO and donor support and trainings focusing on these issues have been effective in bringing more MSMEs into the formal e-commerce space (Box 10). For payment, 100 percent of the craftworkers said they accept MoMo, and about 40 percent accepted bank cards. Everyone, however, preferred cash.

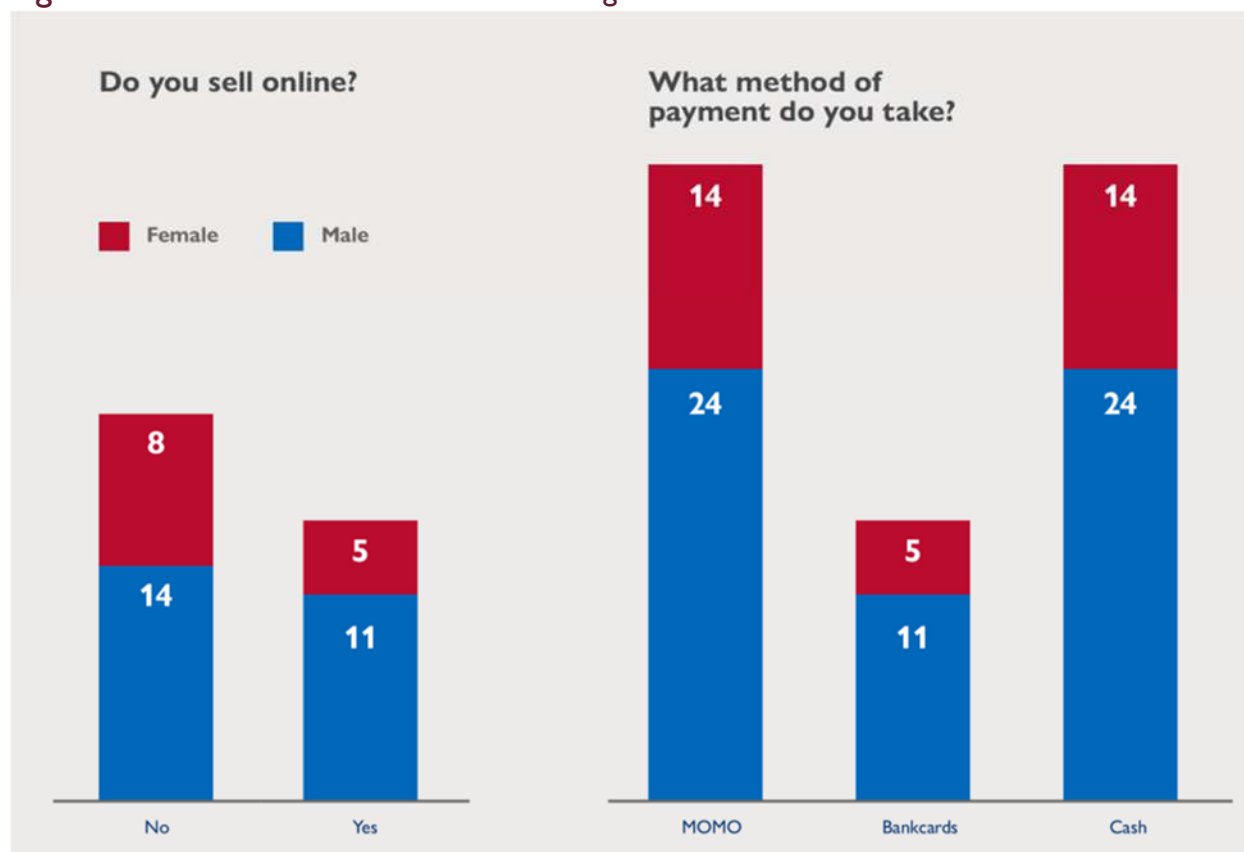
²⁴³ "GhanaPostGPS - Apps on Google Play." Accessed October 23, 2023.

<https://play.google.com/store/apps/details?id=com.ghanapostgps.ghanapost&hl=en>

²⁴⁴ Sector development relies on three separate acts. The Electronic Communications Act defines electronic transactions as those through an electronic agent such as a computer program. The Data Protection Act sets the rules for collected data processing; e-commerce platforms are large data-holders. Lastly, Payment Systems and Services Act provides safeguards for security in national payment systems, both digital and nondigital

²⁴⁵ "Ghana - Overview." Accessed October 23, 2023. <https://taxsummaries.pwc.com/ghana>.

Figure 38: Craftworkers in Aburi Crafts Village



Source: WinDT Consulting.

BOX 10: GIZ Trainings Boost e-commerce Sales in Ghana

In 2020, GIZ launched a Pan-African E-Commerce Initiative (PeCI), a multiphased project aimed at strengthening an enabling environment for cross-border digital trade in selected countries of the African Continental Free Trade Area (AfCFTA), focusing on SMEs. The key pillars covered improving regulatory framework conditions, capacity-building of MSMEs, supporting consumer protection and trust in online sales, and knowledge sharing activities. For example, in Ghana GIZ together with partners such as Mashav and DHL, has been offering tailor-made trainings and coaching for MSMEs in selected regions. Trainings covered e-commerce fundamentals, design marketing, compliance and regulation, and other fundamental skills for sellers to be engaged in online transactions. Over 2020–2022, GIZ supported more than 280 selected SMEs with in-depth intense training. After these in-depth trainings, more than 70 percent of SMEs reported an increase of at least 30 percent in the online sales. (Source: GIZ materials)

Songtaba, a CSO based in Tamale, used a recent grant from the Ghana Enterprise Agency in 2022 to train young entrepreneurs from villages outside the city on business development. The project provided the micro-business owners—mostly young women—with the knowledge and digital skills to sell their products on social media platforms and through channels on messenger apps. Songtaba reported that many applicants to the program could not participate because they did not own a smartphone. For those that did, the project had to pay for participants' data bundles. While it is too soon to assess long-term impact, participants reported increasing sales to customers in Accra. (Source: DECA interview)

UNREFORMED BUREAUCRATIC PROCESSES AND CONTINUED CORRUPTION AT THE BORDERS STYMIE DIGITAL TRADE INITIATIVES.

Ghana has made efforts in recent years to improve trade efficiency by instituting a number of digital platforms and solutions. Most important among these is the Integrated Customs Management System (ICUMS)²⁴⁶, a government-to-business (G2B) platform launched in 2020 to serve both as a centralized online information source and a document-processing portal for importers and exporters. The ICUMS aims to serve as a single window for end-to-end trade facilitation and automated customs operation and management system. For example, the container Cargo Tracking Note system (put in place by GRA in 2018) is integrated with the ICUMS. Importers must obtain and employ a Cargo Tracking Note number, which can be used to track containers as they move through processing. The ICUMS also integrates the Pre-Arrival Assessment Report System and the Ghana Customs Management System.²⁴⁷ DECA Kils report that the introduction of the system greatly simplified trading processes by digitalizing the submission of applications, procedures for paying duties, and eliminating the need to be physically present through many stages of the import/export process. However, they also noted that ICUMS has been most effective at simplifying trade through ports.

Ghana also is part of the Pan-African Payment and Settlement System (PAPSS), a platform that ensures flow of money across internal African borders. PAPSS works in collaboration with central banks across the continent to provide a payment and settlement service to which commercial banks, PSPs and DFS organizations can connect as participants.²⁴⁸ Today PAPSS comprises nine banks (including the Bank of Ghana), four switches, and 39 commercial banks.²⁴⁹

Still, many regulatory compliance processes have not been reformed or simplified to achieve intended efficiencies from digitalization. For example, the standardization and certification system is overseen by the Ghana Standards Authority (GSA) and the Ghanaian Food and Drugs Authority. GSA launched the EasyPass program to facilitate customs clearance by allowing importers to register and obtain prior approval and to receive certificates of conformity.²⁵⁰ Depending upon the product,²⁵¹ however, importers also may have to comply with separate requirements from the Ghanaian Food and Drugs Authority, GRA Customs, and Ghana Ports and Harbors Authority. In total, importers must go through nearly 14 processes,²⁵² including submitting declarations, certificates, paying fees, charges, and duties.

Another example is the compliance process for foreign-owned companies wanting to trade with Ghana. They are required to interact with at least four different government agencies, including Registrar General's Department, Ghana Investment Promotion Center, Ghana Revenue Authority (GRA), Ghana Immigration Service, and the Social Security and National Insurance Trust, which administers eight different procedures.²⁵³

According to DECA Kils and drawing from selected studies,²⁵⁴ clear information, resources and guidance online about how to navigate this process is missing. For instance, a foreign company's investment may enjoy certain tax benefits if the project is deemed critical to the country's development agenda, this information may not be obvious to business professionals, so many use services of third-party expertise to analyze the regulatory framework. Certain initiatives aim to aggregate information for importers and exporters and to facilitate cross-border trade such as Ghana Trade Portal²⁵⁵

²⁴⁶ "ICUMS." n.d. Accessed October 23, 2023. <https://external.unipassghana.com/login/login.do>. The ICUMS upgraded the National Single Window, which was put in place in 2017.

²⁴⁷ "ICUMS." n.d. Accessed October 23, 2023. <https://external.unipassghana.com/login/login.do>.

²⁴⁸ "The Pan-African Payments and Settlement System - AfCFTA," October 24, 2021. <https://au-afcfta.org/operational-instruments/papss/>.

²⁴⁹ PAPSS. "Network." Accessed October 23, 2023. <https://papss.com/network/>.

²⁵⁰ "EasyPass – Ghana Standards Authority." Accessed October 23, 2023. <https://www.gsa.gov.gh/noeasy-pass/>.

²⁵¹ For example, communication equipment requires a prior authorization from the NCA. I. "Ghana - Customs Regulations." Accessed October 23, 2023. <https://www.trade.gov/country-commercial-guides/ghana-customs-regulations>.

²⁵² I. "Ghana - Import Requirements and Documentation." Accessed October 23, 2023. <https://www.trade.gov/country-commercial-guides/ghana-import-requirements-and-documentation>.

²⁵³ World Bank. 2020. Doing Business 2020: Comparing Business Regulation in 190 Economies: Economy Profile of Ghana. Washington, D.C.: World Bank. Accessed October 23, 2023.

²⁵⁴ I. "Ghana - Business Travel." Accessed October 23, 2023. <https://www.trade.gov/country-commercial-guides/ghana-business-travel>. LexisNexis. 2020. Foreign Investment Law Guide Ghana. Hong Kong: LexisNexis. Accessed October 23, 2023.

https://www.lexisnexis.com.hk/_data/assets/pdf_file/0020/314444/Foreign-Investment-Law-Guide_Ghana.pdf?utm_source=lawguide&utm_medium=investment&utm_campaign=ghana.

²⁵⁵ "Homepage." Accessed November 9, 2023. <https://ghanatrade.com.gh/index.php/en/>.

or Ghana Online Mall. These initiatives, however, are not operational and require structural updates to make them accessible, comprehensive, and informationally thorough.

Despite digitalization, corruption remains a major issue at terrestrial borders with neighboring countries such as Togo or Côte d'Ivoire. A survey conducted by the Ghana Statistical Service with other stakeholders in the fight against corruption has ranked the Ghana Police Service, Ghana Immigration Service Officers, and GRA customs officers as the top three most corrupt institutions among 23 public entities sampled.²⁵⁶

Aligning with commitments on trade digitalization in international, Pan-African, and regional trade organizations could help drive further, more effective digitalization of trade systems and procedures. Ghana ratified the World Trade Organization Trade Facilitation Agreement in 2017. However, it has not yet submitted transparency notifications related to the operation of the single window and the use of customs brokers.²⁵⁷

Ghana is a member of the AfCFTA, which has its secretariat in Accra. The AfCFTA is developing a digital trade protocol. It is expected to create an optimal business environment for digital trade: absence of duties on cross-border digital trade, adoption of common electronic authentication and e-trust mechanisms and technologies, protection of source code, disallowance of prior authorization of foreign suppliers to operate.²⁵⁸ In 2022 Ghana launched the AfCFTA Hub,²⁵⁹ with the goal of intensifying trade of SMEs and digital startups in Africa. Ghana hopes to position itself as a hub for export of digital services: call centers, data processing, data science, and digital services for businesses on the continent.

In the West Africa region, Ghana is part of ECOWAS. In 2023, ECOWAS Commission endorsed the regional e-commerce strategy that aims to build a harmonized cross-border trade infrastructure within West Africa.²⁶⁰ It is expected that an ECOWAS will help member nations diversify their economies and leverage trade opportunities by standardizing regulatory frameworks, digital payment methods and logistics, and setting up a regional e-commerce observatory for coordination.

THE STARTUP ECOSYSTEM IS DEVELOPING RAPIDLY BUT NEEDS MORE FOCUSED SUPPORT TO BECOME MORE INCLUSIVE AND TO REACH ITS FULL POTENTIAL.

Ghana is emerging as one of the fastest-developing startup ecosystems on the African continent alongside Nigeria, Kenya, and South Africa. According to the Global Startup Ecosystem Index 2023, Ghana ranks 77th (out of 100 countries), improving five spots from the prior year, and Accra ranks 268th (out of 1,000 cities) globally and 2nd in Western Africa behind Lagos.²⁶¹ FinTech, especially mobile banking solutions with support from major companies such as MTN, Vodafone, and Tigo, have helped drive progress

(see DFS section).²⁶² Ghana's startup ecosystem is still in its developmental stage, with a promising regulatory environment and nationwide network of innovation hubs to support growth. At the same time, a lack of funding, business capacity, market data, and mentors constrain most startups' ability to grow and scale beyond a city or even Ghana's own borders to reach foreign markets.

The regulatory environment provides a solid foundation for startup ecosystem development but could be improved. Ghana enacted its Ghana Free Zones Act in 1995, which provides incentives and tax benefits to companies operating within designated free zones, including tech companies. More recently, over the past decade, the Government



KEY DEFINITION

The **startup ecosystem** includes a conducive regulatory environment; access to funding; support organizations (incubators, accelerators, co-working spaces); back-office service providers (legal, accounting); and universities and research institutions.

²⁵⁶ Citinewsroom - Comprehensive News in Ghana. "Police Service Most Corrupt Institution in Ghana – Survey," July 20, 2022.

<https://citinewsroom.com/2022/07/police-service-most-corrupt-institution-in-ghana-survey/>.

²⁵⁷ "Ghana Member Profile - Notification Portal." Accessed November 9, 2023. <https://notifications.wto.org/en/status-by-member/ghana>.

²⁵⁸ "Digital Trade in Trade Agreements: Lessons for the AfCFTA - Tralac Trade Law Centre." Accessed November 9, 2023.

https://www.tralac.org/blog/article/15739-digital-trade-in-trade-agreements-lessons-for-the-afcfta.html#_ftn3.

²⁵⁹ Abisoye, Adeyiga. "Ghana Launches Continental Free Trade For Digital Trading." African Leadership Magazine (blog), August 31, 2022.

<https://www.africanleadershipmagazine.co.uk/ghana-launches-continental-free-trade-for-digital-trading/>.

²⁶⁰ "New Strategy Set to Boost E-Commerce in West Africa | UNCTAD," July 11, 2023. <https://unctad.org/news/new-strategy-set-boost-e-commerce-west-africa>.

²⁶¹ "Global Startup Ecosystem Index 2023," October 2023. <https://www.startupblink.com/startupecosystemreport>.

²⁶² Ibid.

of Ghana has instituted policies and regulations that support innovation, entrepreneurship, and digital development. These include the ICT for Accelerated Development (ICT4AD) Policy,²⁶³ which serves as a blueprint for the country's digital development; the National Entrepreneurship and Innovation Plan (NEIP),²⁶⁴ which supports entrepreneurship and innovation; the Ghana Investment Promotion Centre Act, which encourages and supports both domestic and foreign investments in various sectors, including technology and innovation, and outlines investment procedures, investment incentives, and the rights and guarantees of investors; the Data Protection Act,²⁶⁵ which established the regulatory framework for the proper use of personal data; and the Companies Act,²⁶⁶ which guides the registration, operationalization, and management of companies. These measures collectively form a solid foundation for the growth and development of Ghana's entrepreneurship ecosystem, including tech startups.

Critically, however, the enforcement of intellectual property rights (IPR)—a cornerstone of innovation and startup ecosystems—remains weak despite the adoption of a National Intellectual Property Policy and Strategy (IPR Strategy).²⁶⁷ Progress in implementing the IPR Strategy has been slow and infringement of IPR, particularly piracy, remains an issue. Patent searches and registration are difficult for startups because of their high costs and complexity. These factors may discourage early startups from seeking necessary protective measures for their IPR.

Another critical gap is that current regulations lack classifications for tech startups that make it possible to differentiate them from other SMEs. This creates numerous issues. It creates tension between the Ministry of Trade and the Ministry of Communications and Digitalization over their mandates to regulate and support startups. It prevents the government from implementing specialized regulatory structures and policies for startups covering aspects such as financing and taxation. As a result, these startups remain subject to general business legislation, which is ill-suited to the particular challenges of tech startups. Finally, it makes it difficult to form an accurate and complete picture of Ghana's startup ecosystem participants. The lack of overall market data about startups and their development affects both the government and the network of innovation hubs' ability to market its startups to potential investors, both domestically and internationally.

To address these challenges, the Ministry of Communications and Digitalization worked with GIZ and a broad range of interested stakeholders, including the European Union, National Entrepreneurship and Innovation Program (NEIP), Ghana Startup Network, i4Policy, National Youth Authority, The African Network of Entrepreneurs (TANOE), Ghana Hubs Network, Ghana Chamber of Young Entrepreneurs, and Ghana Enterprise Agency, to develop a Ghana's Startup and Innovation Bill 2021. This bill aims to accomplish three main objectives:

(1) define the criteria for establishing startups, (2) establish a certification and registration process for startups, and (3) create a legal framework to monitor and evaluate the startup ecosystem, including annual reports and development of a startup platform. This will help fill the market data gaps and support efforts to attract more investment to Ghana's startups. Unfortunately, the bill has not yet been adopted. Parliamentary support is lacking because of lawmakers' limited understanding of and engagement with startup ecosystem development. The adoption of specialized startup regulations was successful in fostering more vibrant startup ecosystems in other countries (Box 11).

²⁶³ National Information Technology Agency (NITA). 2017. Ghana ICT4AD Policy. Accra, Ghana: NITA. Accessed October 23, 2023. <https://www.nita.gov.gh/theevooc/2017/12/Ghana-ICT4AD-Policy.pdf>.

²⁶⁴ "National Entrepreneurship and Innovation Programme – NEIP." Accessed October 23, 2023. <https://neip.gov.gh/>.

²⁶⁵ Ghana. National Information Technology Agency (NITA). 2012. Data Protection Act, 2012 (Act 843). Accra, Ghana: NITA. Accessed October 23, 2023. <https://nita.gov.gh/theevooc/2017/12/Data-Protection-Act-2012-Act-843.pdf>.

²⁶⁶ World Intellectual Property Organization (WIPO). 2021. Global Innovation Index 2021: Ghana. Geneva, Switzerland: WIPO. Accessed October 23, 2023. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021/gh.pdf.

²⁶⁷ The purpose of the IPR Policy and Strategy is to strengthen the protection, administration, and enforcement of IPR, in addition to promoting innovation and awareness. The main intellectual property laws in Ghana are the Copyright Act, 2005 (Act 690); the Patents Act, 2003 (Act 657); the Trademarks Act, 2004 (Act 664); the Industrial Designs Act, 2003 (Act 660); and the Protection Against Unfair Competition Act, 2000 (Act 589).

Box 11: Startup Acts in Kenya and Tunisia

One of the most impressive examples of tailored legislation for startups is the Tunisian Startup Act, which was adopted in 2018 and has had a significant impact on the country's startup ecosystem.²⁶⁸ Championed by Yassine Brahim, the Minister of Communication Technologies and Digital Economy, the law simplified company registration procedures, instituted tax cuts, and improved access to finance. In the first year following the law's passage, the availability of coworking spaces for startups in Tunisia surged by 61 percent. Out of 279 enterprises that sought approval under the Tunisia Startup Act, 169 were granted startup status. Collectively, these startups have attracted about US\$18.5 million in investments.²⁶⁹

Another interesting example to watch is the Kenya Startup Bill (2021).²⁷⁰ It was passed with the aim of promoting entrepreneurship and technological growth. The law makes the Kenya National Innovation Agency responsible for designing an incubation policy framework, forging links between local and international business accelerators, protecting the intellectual property of startup innovations, and giving financial and nonfinancial support to startups participating in incubation programs. It creates a loan guarantee mechanism and Startup Registrar. The Registrar is responsible for maintaining a database of registered startups and evaluating their financial needs, which allows venture capital funds to access relevant, transparent information. Since its passage, Kenya's startup investment has nearly quadrupled to more than US\$1 billion, the total number of venture capital investment deals has grown by approximately 35 percent, and the country's first Unicorn (a startup company valued at more than US\$1 billion) may be on the horizon. Nairobi improved its global rankings in the 2023 Startup Ecosystem Index, climbing 25 spots to 137th, just below Cape Town, South Africa.²⁷¹

Access to funding remains one of the key barriers to startups' development, though options are emerging. As in most countries, most commercial banks in Ghana show little interest in lending to startups. Commercial options for pre-seed funding and traditional financial loans are neither available nor affordable for startups because of their lack of collateral and high risk of failure. Extremely high interest rates, up to 30 percent, also make commercial banks unattractive options for SMEs and tech startups alike.

One of the most challenging stages for startups seeking capital remains the onset of their venture. An overwhelming majority of DECA KIIs, including representatives from many innovation hubs and startup companies, pinpointed a significant gap in accessible financing for pre-startups and startups with less than

\$50,000 in annual revenue (Table 5). One DECA KII bluntly stated, "You need to lie about businesses to get money." For these startups, funding options are mostly limited to grants, but finding information about such opportunities is challenging because of the absence of a single informational platform.

For companies that have progressed beyond the early stages, alternative options regarding commercial banks have evolved rapidly in recent years and continue to gain momentum. The government established the Ghana Venture Capital Trust Fund (a so-called "Fund of Funds")²⁷² to provide startups and venture capital funds the information, expertise, and access to finance they need. Some larger private investors are also starting to notice companies that have crossed the \$50,000 annual revenue threshold. The market at this stage is limited more by a shortage of investment-ready companies, experienced local investors, and corporate venture funds. In addition, few investors specialize in specific sectors, with few exceptions such as Wangara Green Ventures, which invests in specific sectors such as renewable energy, water management, and energy efficiency. Angel investors provide only a limited amount of investment.

Startups in the scale-up stage once again encounter financial barriers. There is a relatively limited number of investors willing to offer substantial investments for (pre) Series A and B rounds,²⁷³ and to support management teams' growth.

²⁶⁸ "About Startup Act | Startup Tunisia." Accessed October 23, 2023. https://startup.gov.tn/en/startup_act/discover.

²⁶⁹ "The Tunisian Startup Act – Participedia," April 2, 2018. <https://participedia.net/case/12213>.

²⁷⁰ Kenya. Parliament. 2021. The Startup Bill, 2021. Nairobi, Kenya: Parliament of Kenya. Accessed October 23, 2023. <http://www.parliament.go.ke/sites/default/files/2022-03/The%20Startup%20bill%202021.pdf>.

²⁷¹ "Startup Ecosystem Report 2023." Global Map of Startup Ecosystems. Accessed October 23, 2023. <https://www.startupblink.com/startupecosystemreport>.

²⁷² "Home -." Accessed October 23, 2023. <https://vctf.com.gh/>, <https://vctf.com.gh/>.

²⁷³ Series A, B, and C are funding rounds that generally follow "seed funding" and "angel investing," providing outside investors the

For such investment opportunities, startups must be prepared to seek investors at a regional or global level. A recent example is Complete Farmer. Starting with a pre-seed investment from the Meltwater Entrepreneurial School of Technology (MEST) Africa in 2018, the company raised \$10.4 million from the Acumen Resilient Agriculture Fund and Alitheia Capital in 2023.²⁷⁴

Table 5: Ghana's Startup Funding Sources²⁷⁵

	Private	NGOs, Foundations, Donors	Government
 Pre-Startups		MEST Africa Mastercard Foundation Kosmos Innovation Center GIZ Orange Corners UNCDF SNV UNDP Acceleration Lab	NEIP Ghana Enterprise Agency
 Startups	Wangara Green Ven-tures Chanzo Capital GoodSoilVC Oasis Capital Injaro Investments Limited Quick Angels Impact Investing Gha-na JCS Investment Golden Palm Invest-ments Peak Investment Cap-ital Intelligent Capital	developPPP Accra Angels Network Ghana Angels Investor Network	Ghana Enterprise Agency Venture Capital Trust Fund
 Scale-up	GoodSoilVC Impact Investing Ghana Intelligent Capital		Venture Capital Trust Fund

Source: WinDT Consulting

While the rapidly growing number of innovation hubs across Ghana try to play multiple support roles in the startup ecosystem, most fall short. GIZ, MasterCard Foundation, Ghana Innovation Hub, Accra Digital Center, and Ghana Tech Lab all have contributed to developing an extensive network of innovation hubs across Ghana. According to Ghana Hubs Network research, there are more than 60 innovation hubs today across nearly all 16 of

opportunity to invest cash in a growing company in exchange for equity or partial ownership.

<https://www.investopedia.com/articles/personal-finance/102015/series-b-c-funding-what-it-all-means-and-how-it-works.asp>

²⁷⁴ Kene-Okafor, Tage. "Ghana's Complete Farmer, Which Connects Farmers to Global Food Buyers, Raises \$10.4M." TechCrunch (blog), September 20, 2023. <https://techcrunch.com/2023/09/20/ghanas-complete-farmer-which-connects-farmers-to-global-food-buyers-raises-10-4m/>.

²⁷⁵ In a mature startup ecosystem, financing avenues include grants, angel investors, and VC funds.

Ghana's regions, and about two-thirds of them are active.²⁷⁶ The majority are concentrated in the Greater Accra and Ashanti regions, though the Northern and Western regions boast several hubs as well.²⁷⁷

Despite these impressive numbers, many of Ghana's innovation hubs struggle to become or remain viable. While they market themselves as incubators and accelerators, most lack the financial resources (including self-sustaining business models) and capacity to play these roles effectively. These kinds of resource limitations restrict the number of startups they can assist effectively at any time. A common shortfall is the lack of business experience among hub founders themselves in establishing and managing startups.²⁷⁸ The Ghana Hubs Network²⁷⁹ was established to assist hub owners, managers, and staff in building their regional or district ecosystems, but it currently lacks enough structure and resources to fulfill this mission effectively.

Some hubs offer workspace solutions, a boon for startups that cannot afford regular office spaces. Most focus on training and capacity-building for activities such as coding, data analytics, marketing, and sales. They fall short in providing the kinds of comprehensive incubation and acceleration programs the market needs to move more startups out of early stages and into more advanced business development. Full-service incubators and accelerators would provide more access to funding; support in finding and preparing for investor pitches and outreach; extensive and specialized mentorship networks; deeper training programs on a range of topics such as growing sales, scaling into new markets, and human resource management. They would also help fill informational gaps among startups regarding existing business opportunities, tax benefits, and government incentives, with guidance on how to access these resources opportunities.

Another important challenge for Ghana's startup ecosystem is a lack of operational support organizations that provide outsourced services such as accounting, legal support, IPR advice, headhunting, and market research and analysis. DECA KIs underscored startups' lack of knowledge about financial opportunities, tax breaks, market regulation and more, emphasizing, "You need to know the places."²⁸⁰ These information and capacity gaps are especially significant in regions beyond Accra. Hubs usually do not provide such services or support startups as they search for the right service providers.

Notably, DECA research did not uncover any innovation hubs that are focused on developing digital products and solutions for specialized regional or sectoral applications. Most hubs' programs are general and do not offer specialized support to startups operating in niche sectors or dealing with advanced technologies.

Box 12: Tamale's HOPin Academy: A Regional Innovation Hub Success Story

HOPin Academy was founded in 2013 with the goal to provide the practical training and skills development in entrepreneurship, software development, and coding that are relevant for careers in the business and tech industries.²⁸¹ HOPin Academy offers a range of courses and programs, including a women's entrepreneurship, full-stack web development course, a mobile application development course, and a program on entrepreneurship and innovation. In 2014, the academy launched an incubation program in cleantech, waste management, and green tech. It also provides regular networking opportunities for entrepreneurs. The academy provides some seed capital and otherwise supports business creation. One of these companies that has benefited from that support is Travellin Toll, which now provides 15 percent of annual revenue to support HOPin Academy.

HOPin Academy operates as an ecosystem enabler and is a good example of an in-person platform for collaboration and joint work of young startups, local industry players, donors, and academia. It provides mentorship and networking opportunities for its students, connecting them with industry professionals and potential employers in the tech industry. Yet without targeted support and financial capital, similar initiatives may lack scope and be limited to small-scale activities within their mandate.

²⁷⁶ Pearlowsutwumasi. "Strengthening the Capacity of Innovation Hubs in Ghana." Gh Hubs Network, March 30, 2023. <https://www.ghanahubsnetwork.com/post/strengthening-the-capacity-of-innovation-hubs-in-ghana>.

²⁷⁷ Gh Hubs Network. "HUBS." Accessed October 23, 2023. <https://www.ghanahubsnetwork.com/hubs>.

²⁷⁸ Pearlowsutwumasi. "Strengthening the Capacity of Innovation Hubs in Ghana." Gh Hubs Network, March 30, 2023. <https://www.ghanahubsnetwork.com/post/strengthening-the-capacity-of-innovation-hubs-in-ghana>.

²⁷⁹ Gh Hubs Network. "ABOUT." Accessed October 23, 2023. <https://www.ghanahubsnetwork.com/about>.

²⁸⁰ DECA team interview. Hub representative. April 2023. Offline.

²⁸¹ HOPin Academy. DECA team interview. April 2023. Offline.

True incubation and acceleration programs are few and far between, and universities largely are absent in this space. Only a few, renowned programs such as MEST and Impact Hub Accra go beyond IT training to provide full-fledged incubation and acceleration support. As one of the first tech incubators in Africa, MEST runs a highly regarded incubation program, for example, one of the only in the country. MEST hosts startups not only from Ghana but also from Nigeria, Kenya, South Africa, Cote d'Ivoire and Zimbabwe. Complete Farmer, a recent success that raised \$10.4M from the Acumen Resilient Agriculture Fund and Alitheia Capital in 2023, initially received a pre-seed investment from MEST Africa in 2018.²⁸²

While Ashesi University's Ashesi Venture Incubator (supported by USAID), the Entrepreneurship Center, and Ashesi Startup Launchpad, a student-led accelerator, all provide support to students who start businesses,²⁸³ most universities in Ghana have yet to establish full-cycle startup incubation and acceleration programs. They offer education and training without practical experience. Stronger collaboration between universities and the business sector are needed to foster innovation and entrepreneurship that meets market needs. Conventional organizational structures and bureaucratic processes make it difficult for universities to establish and maintain the private sector partnerships necessary to run innovation programs, consequently depriving students of opportunities to establish startups within university environments, close to the resources they need to succeed. This leaves them less confident and prepared to embark on entrepreneurial projects after graduation.

Where partnerships exist between universities and the private sector, they tend to focus more narrowly on supporting skills development rather than on establishing comprehensive incubator or accelerator programs. Ashesi University, for example, has partnered with IBM to provide students with training in data analytics. Among Ghana's ten technical universities in different regions across the country, DECA KIs identified only the Tamale campus as one that cooperates with ecosystem players such as innovation hubs. However, these university-private sector engagements, which may cover lectures or other information offered by university professors in a hub setting, are often limited by a lack of financial resources.

With the exception of FinTech solutions, private-sector interest in adopting domestically developed digital products is low, which limits startups' ability to scale effectively. The adoption of more locally developed digital products and solutions by Ghana's major businesses in Ghana's key economic sectors could play a pivotal role in strengthening the startup ecosystem and growing the number of successful companies. Ghana's FinTech sector exemplifies this potential (see fuller discussion of banks' role in Ghana's digital ecosystem in DFS section). Banks such as Stanbic, for example, have launched innovation challenges, offering tech startups opportunities to showcase their solutions (Box 13). This supplies a platform for startups to gain exposure and gives banks and other corporations a chance to understand the potential of these locally developed technological solutions.

BOX 13: The Stanbic Bank-GIZ NextGen Fintech Accelerator Program

The Stanbic-GIZ NextGen Fintech Accelerator Program aims to stimulate the growth of technology companies at the critical phase of market validation and customer acquisition.²⁸⁴ The NextGen program is a six-month program that offers training, mentorship, and resources to selected startups, equipping them with the necessary tools to overcome regulatory challenges, secure financing, and acquire vital skills. The Next-Gen Accelerator Program supports FinTech startups to develop and offer local FinTech innovations, illustrating how strategic partnerships can foster economic growth and technological advancement.

Startups working on solutions for other economic sectors have reported a lack of interest from large companies to support or invest in Ghanaian startups and innovations. Commercial enterprises opt instead to purchase foreign technological solutions. Without interest and support from the broader, traditional business community, Ghanaian startups will continue to face significant challenges in their efforts to scale. The primary reasons for businesses' reluctance appear to involve a poor understanding of how the startup ecosystem works or how they might integrate

²⁸² Kene-Okafor, Tade. "Ghana's Complete Farmer, Which Connects Farmers to Global Food Buyers, Raises \$10.4M." TechCrunch (blog), September 20, 2023. <https://techcrunch.com/2023/09/20/ghanas-complete-farmer-which-connects-farmers-to-global-food-buyers-raises-10-4m/>.

²⁸³ "Ashesi University Foundation." Accessed October 23, 2023. <https://www.ashesi.org/>.

²⁸⁴ "Stanbic Bank, GIZ Commence NextGen Fintech Accelerator Program." Accessed October 23, 2023. <https://www.stanbicbank.com.gh/gh/personal/about-us/news/stanbic-bank-giz-commence-nextgen-fintech-accelerator-program>.

innovative development or procurement into their strategic planning. Without a clear understanding of how to integrate and leverage innovative solutions, these companies may hesitate to engage with emerging local IT companies and their solutions. There is a need for increased awareness of and education about the benefits of partnering with startups, the potential for customized local solutions, and the strategic integration of innovation in business models.

Women face particular hurdles to engaging in Ghana's startup ecosystem.

The DECA research team could not find thorough studies or reports documenting the number of women tech startup founders in Ghana. According to DECA KIIS, most startup founders are university graduates, predominantly male, and about 24 years old. Financial considerations, coupled with social norms and expectations regarding women's education and family roles, likely prevent more young women from starting tech companies, especially those living outside major cities.

As noted in Pillar 1 Digital Divides, when household budgets are limited, women and girls are often deprioritized. The cost of IT studies or training courses may discourage families from investing in girls, whose "return on investment" may not be perceived as equivalent to boys.' Women have lower prospects of securing and staying in well-paying jobs, rendering the investment in such courses riskier. The cost of purchasing a laptop also can be prohibitively high, with prices about 4,000 cedi (about US\$350). Without a personal, dedicated laptop, women and girls are less likely to be able to complete courses. While personal laptop ownership in Ghana is low overall (only 7 percent nationally), the gender divide is wide. The rate of laptop ownership is almost double for men compared with women.²⁸⁵ Data costs also are a consideration because women are the first to "ration" their data allocation for household needs.

However, numerous programs in Ghana support women in tech and entrepreneurship. MEST Africa actively encourages women to apply for its entrepreneurial training program. The one-year, fully sponsored program provides training in software development and entrepreneurship, culminating in the opportunity to pitch ideas and plans for seed funding. Innovation hubs create tech-focused training programs, and others, such as iSpace Foundation's Unlocking Women and Technology's (UWAT)²⁸⁶ one-year program and HOPin Academy's Pa'Ba (Ladies) in Entrepreneurship,²⁸⁷ raise awareness of women in the technology sector. Although the majority of startup founders are still male, notable examples of successful startups founded by women include Blossom Academy (Edtech) and Soronko Solutions (Tech-for-Social-Change). Soronko Academy runs multiple programs, including Tech Needs Girls, where girls and women train to code and create technology (Box 15). The program also facilitates internships and mentorship opportunities. GIZ runs multiple gender-related programs, including Women Entrepreneurship for Africa (WE4A),²⁸⁸ working with the Tony Elumelu Foundation, preparing women founders to grow business and find investors, and Womenpreneur Pitch-a-thon with Access Bank's W Initiative,²⁸⁹ offering access to finance and business training. Ghana Climate Innovation Center runs Women Entrepreneurs Transformation Program to incubate women-owned climate-smart SMEs.²⁹⁰

DEVELOPING GHANA'S IT SECTOR AND DIGITAL TALENT POTENTIAL COULD BE A TOTAL GAME CHANGER FOR CURRENT AND FUTURE ECONOMIC DEVELOPMENT AND JOB CREATION.

Ghana's population is projected to reach 45 million by 2040, with 75 percent of it younger than 35 years of age.²⁹¹ These young people of today and tomorrow increasingly will need digital skills to succeed in any job. Many jobs today demand at least basic and intermediate digital skills such as word processing, email communication, and web research (see

²⁸⁵ Ghana Statistical Service. 2021. Population of Regions and Districts Report. Accra, Ghana: Ghana Statistical Service. Accessed October 23, 2023.

https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/2021%20PHC%20General%20Report%20Vol%203A_Population%20of%20Region%20and%20Districts_181121.pdf.

²⁸⁶ Unlocking Women and Technology | Accra. Accessed October 23, 2023. <https://www.facebook.com/unlockingwat>.

²⁸⁷ HOPin Academy. "Digital Skills Training." Accessed October 23, 2023. <https://www.hopinacademy.org/programmes/digital-skills/>.

²⁸⁸ The Tony Elumelu Foundation. "Women Entrepreneurship for Africa." Accessed October 23, 2023.

<https://www.tonyelumelufoundation.org/women-entrepreneurship-for-africa>.

²⁸⁹ "Access Bank (Ghana) Plc - Womenpreneur Pitch-a-Ton." Accessed October 23, 2023.

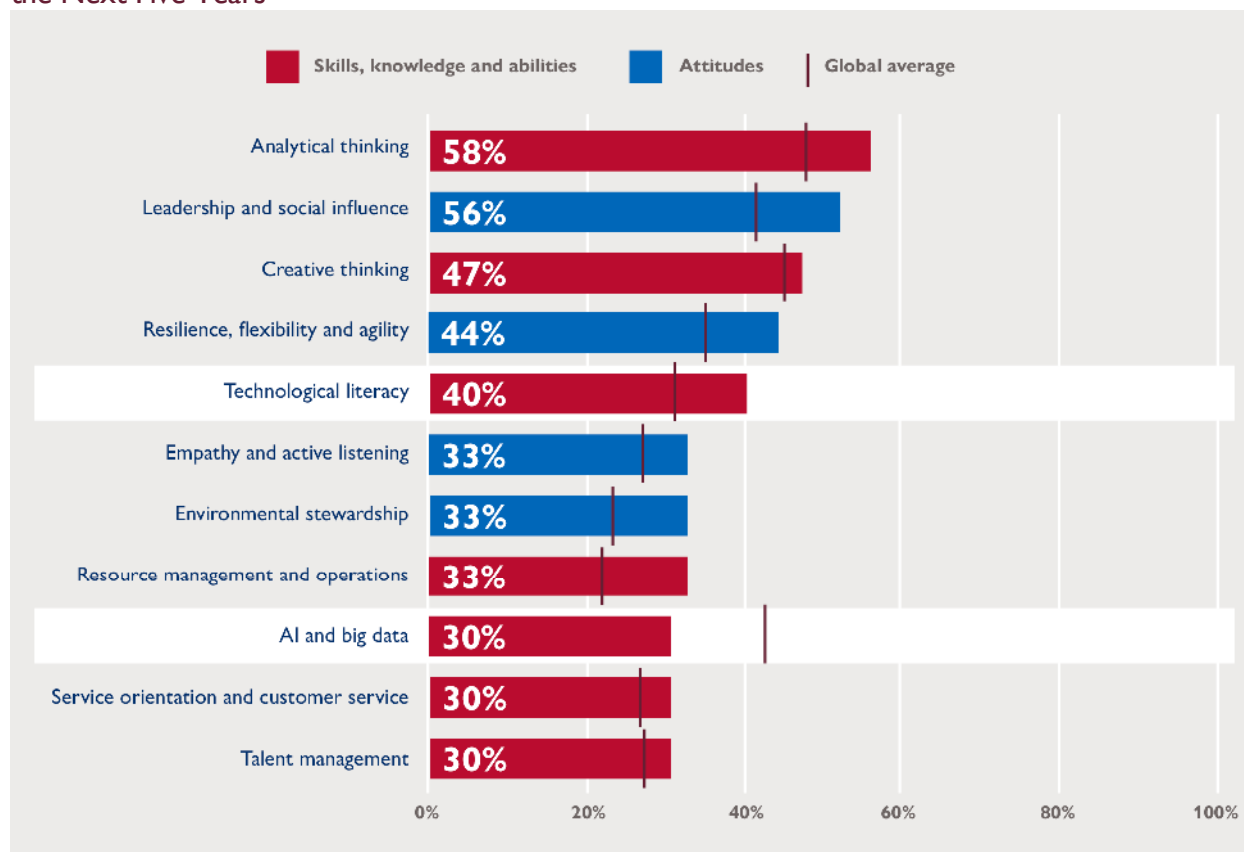
<https://www.ghana.accessbankplc.com/Personal-Banking/Womenpreneur-Pitch-a-ton.aspx>.

²⁹⁰ "Women Entrepreneurs' Transformation Program (WETP) - GCIC," August 22, 2019. <https://www.ghanacic.org/about-old/women-entrepreneurship-transformation-program-wetp/>.

²⁹¹ World Bank. 2022. Ghana Country Partnership Framework for the Period of FY22-FY26. Washington, D.C.: World Bank. Accessed October 23, 2023. <https://documents1.worldbank.org/curated/en/823041645721495743/pdf/Ghana-Country-Partnership-Framework-for-the-Period-of-FY22-FY26.pdf>.

discussion in Pillar I, Digital Literacy and Skills). According to IFC, almost 65 percent of new jobs at African companies require at least a basic level of digital skills.²⁹² Advanced digital skills are key to developing the thriving IT sector required to drive Ghana's cross-sectoral economic growth and transformation. These advanced digital skills include big data, Internet of Things, AI, cybersecurity and problem solving, analytical and creative thinking, and other soft skills for the existing and future job market. This aligns with the global and regional skills priorities for upskilling and reskilling, according to the World Economic Forum 2023 report (Figure 39).

Figure 39: Sub-Saharan Africa Reskilling Skill Focus: Skills Most Prioritized for Reskilling and Upskilling in the Next Five Years



Source: World Economic Forum, *Future of Jobs*, 2023²⁹³

Developing a workforce with these advanced skills is critical for propelling Ghana's ability to innovate and create new jobs; improve global competitiveness, efficiency and productivity; attract investment and talent from abroad; and grow both digital and nondigital entrepreneurship and jobs in Ghana.

According to the WEF Future of Jobs report, in Sub-Saharan Africa, organizations have the highest net expectations for job growth in environmental, social and governance (ESG) application (64 percent of surveyed companies expecting job growth) and investments in the green transition (60 percent of surveyed companies operating in Sub-Saharan Africa). In digital access and digital trade enabled jobs (such as e-commerce specialists, digital transformation specialists, and digital marketing and strategy specialists), the report forecasts 15 percent growth within the next five years.²⁹⁴

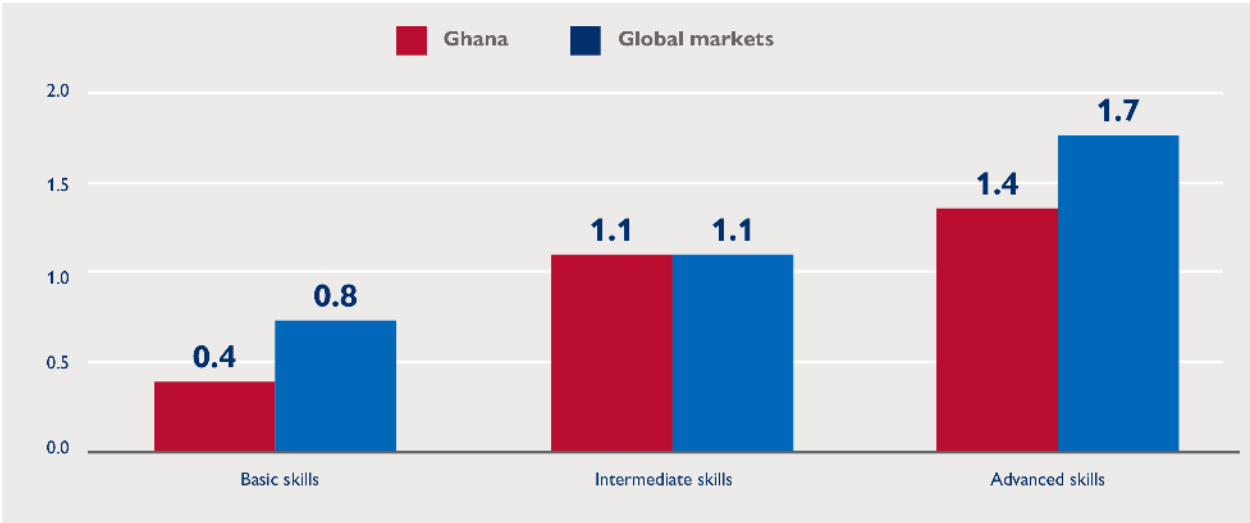
²⁹² IFC. 2019. Digital Skills in Sub-Saharan Africa: Spotlight on Ghana. Accessed October 23, 2023. <https://www.ifc.org/content/dam/ifc/doc/mgrt/digital-skills-final-web-5-7-19.pdf>

²⁹³ World Economic Forum, "The Future of Jobs Report 2023," World Economic Forum, April 2023, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf.

²⁹⁴ Ibid.

The IFC report identified advanced skills among the top required skills for the future workforce in Ghana. The report asserted that as sectors increasingly adopt digital technologies, demand will only grow.²⁹⁵

Figure 40: Demand-Supply Gap in Digital Skills by Skill Level



Source: IFC, *Digital Skills in Sub-Saharan Africa: Spotlight on Ghana*, 2019.

Ghana’s IT and digital media and digital content production sectors are growing,^{296, 297} influenced by global trends such as coding, data analytics, big data, digital-intensive science, e-infrastructure, virtualization, and artificial intelligence. These advancements present immense opportunities for the country’s technological landscape. However, this advancement of technologies is still not widely spread and does not have a massive spillover effect on many nondigital industries such as manufacturing.²⁹⁸ According to DECA KIs, the overall level of digital adoption among MSMEs is growing but remains low.

IFC predicts that by 2030 9 million jobs in Ghana will require digital skills in formal and informal sectors and will generate nearly \$4 billion in revenue potential. The report also estimated that, supporting those 9 million jobs will be nearly 20 million training opportunities over the same period.²⁹⁹ The World Bank highlighted that Ghana’s labor market is constrained by a shortage of relevant employable skills and a lack of information on labor market demand. Despite the high demand for digital skills from the private sector, this has not resulted in substantial job prospects for young people because of the skills and demand mismatch.³⁰⁰ Under the World Bank Ghana Jobs and Skills Project, the Ministry of Employment and Labor Relations developed the Ghana Labor Market Information System (GLMIS) to leverage algorithms to match job seekers with suitable employment opportunities, provide access to training, including Coursera, and latest labor market data. Notably, at the time of the DECA research, GLMIS had a predominant number of IT jobs announcements.³⁰¹ Notably, at the time of the DECA research, GLMIS had a predominant number of IT jobs announcements such as Java Test Analysts and Developers, DevOps, Software and QA Engineers.³⁰²

²⁹⁵ IFC. 2019. *Digital Skills in Sub-Saharan Africa: Spotlight on Ghana*. Accessed October 23, 2023. <https://www.ifc.org/content/dam/ifc/doc/mgrt/digital-skills-final-web-5-7-19.pdf>.
²⁹⁶ Statista. “Digital Media - Ghana | Statista Market Forecast.” Accessed November 9, 2023. <https://www.statista.com/outlook/dmo/digital-media/ghana>.
²⁹⁷ Fitch Solutions. “Ghanaian Economy Will Underperform in 2023 and 2024,” May 22, 2023. <https://www.fitchsolutions.com/country-risk/ghanaian-economy-will-underperform-2023-and-2024-22-05-2023>.
²⁹⁸ Ibid.
²⁹⁹ IFC. 2019. *Digital Skills in Sub-Saharan Africa: Spotlight on Ghana*. Accessed October 23, 2023. <https://www.ifc.org/content/dam/ifc/doc/mgrt/digital-skills-final-web-5-7-19.pdf>.
³⁰⁰ World Bank Ghana CPF FY22–26 <https://documents1.worldbank.org/curated/en/823041645721495743/pdf/Ghana-Country-Partnership-Framework-for-the-Period-of-FY22-FY26.pdf>.
³⁰¹ GLMIS. “GLMIS | Ghana Labour Market Information System.” Accessed November 9, 2023. <https://glmis.gov.gh/jobs/joblistings?page=4>.
³⁰² Ibid.

The Global Talent Competitiveness Index³⁰³ (GTCI) is an annual report that measures a country's ability to attract, develop, and retain talent. In the 2022 report, Ghana ranked 95th out of 132 countries, down one slot from 94th in 2021.³⁰⁴ Overall, Ghana improved greatly between 2017–2018 but has declined slowly in recent years. According to the report, Ghana improved significantly on the pillar related to vocational and technical skills. Ghana made good progress in attracting and retaining talent and improved its vocational or professional training for technical skills.³⁰⁵

Figure 4I: Ghana in the Global Talent Competitiveness Index 2015–2022, Overall Rank (1–133) and Regional Rank (1–32)



Source: INSEAD³⁰⁶

The Global Innovation Index³⁰⁷ (GII) measures a country's ability to innovate, including in the technology field with ICT services export and PCT patents and digital skills. In the 2023 report, Ghana ranked 99th out of 132 countries, up from 112th in 2021, reflecting the nation's progress in this area.

Interest in attaining digital skills among youth is high. Youth outside large cities express interest in obtaining advanced digital skills and gaining knowledge about emerging technologies, following buzzwords populated by Ghanaian technology bloggers and global trends (e.g., a young man in Tamale most likely will apply for AI training in the local hub). However, as noted by one of the DECA KIs, “In fact, a lot of students do not even know why they apply to the programs. It is just trendy.”

There is also a significant mismatch between supply of IT specialists and demand of companies. In Ghana more than 100 hubs function as IT centers (discussed in the previous section) that provide training on emerging technologies such as AI, blockchain, Internet of Things and more. DECA interviewees noted many individuals enroll in these programs, but they are unable to apply their newly acquired skills because few Ghanaian companies employ the technologies that would otherwise create demand for the skills.³⁰⁸ Some KIs also questioned the quality of instruction in these programs.

³⁰³ INSEAD Global Talent Competitiveness Center. 2022. Global Talent Competitiveness Index 2022: Thriving in a World of Volatility and Uncertainty. Fontainebleau, France: INSEAD. Accessed October 23, 2023. <https://www.insead.edu/sites/default/files/assets/dept/fr/gtci/GTCI-2022-report.pdf>.

³⁰⁴ Lanvin, Bruno, and Felipe Monteiro. “The Global Talent Competitiveness Index 2021,” n.d.

³⁰⁵ Ibid.

³⁰⁶ INSEAD. “Global Talent Competitiveness Index.” Accessed October 23, 2023. <https://www.insead.edu/global-talent-competitiveness-index>.

³⁰⁷ World Intellectual Property Organization. 2023. Global Innovation Index 2023. Geneva: World Intellectual Property Organization. Accessed October 23, 2023. <https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023-en-main-report-global-innovation-index-2023-16th-edition.pdf>

³⁰⁸ Yison Tech Hub. Ghana Innovation Hub. DECA Interviews. April 2023.

To create a pipeline of students who are interested and able to pursue the more advanced training and education needed for IT sector development, K-12 needs to teach digital literacy, basic coding skills, critical thinking, and problem solving. These programs are limited now, reflecting a lack of trained teachers and little access to devices and national IT curriculum.³⁰⁹

The Government of Ghana understands these gaps and has implemented some initiatives. The ICT in Education Policy for Ghana (2015)^{310, 311} explains the relevance, responsibility, and effectiveness of utilizing ICT in the education sector. Despite progress toward developing the talent pool and ongoing efforts by private and public agencies, a set of critical challenges remains. During the DECA field visit, respondents highlighted that the ICT for Education policy, although well-intentioned, faces challenges in its execution. Limited capacity and expertise hinder government officials responsible for implementing the policy. DECA KIIs stated that the hiring of government officials seems to prioritize political connections over qualifications and competence, exacerbating the issue further. This then compromises the execution of the ICT for Education Policy, leading to inefficiencies and slower progress toward leveraging technology to enhance education in Ghana. Under the World Bank Ghana Digital Acceleration Project, the Government of Ghana is finding material support to create a quality pipeline of ICT workers and digital entrepreneurs, including demand gap analysis, digital skills training for employment pathways at various skill levels, facility upgrades, and delivery of IT equipment to training centers, including the Kofi Annan Center, community information centers, and selected technology hubs and digital inclusion programs to support tailored digital skills training for PWDs.³¹² The draft Digital Economy Policy, which is intended to supersede the old ICT4AD policy, plans to support digital skills development, including advanced capabilities and workforce development. However, as discussed in Pillar 2, the proposed policy is not yet approved and is in stakeholder consultation phase.

The current Minister of Education places a strong emphasis on science, technology, engineering, and mathematics (STEM) education, including new and renovated schools and laboratories that will enhance the learning environment and student experience. The Ghana Education Service (GES) helps with teacher training, while community information centers offer access to IT resources and training for the public.

However, the country lacks a national IT Sector Development Strategy and a “future jobs” vision to align the ICT national curriculum or skills development initiatives. Without a solid vision and strategy in place to grow the ICT pipeline, foster the acquisition of relevant competencies and address skill gaps, the universities and training providers may struggle to keep up with the evolving demands of the IT industry. The existing skills mismatch will hamper the ICT sector development.

The main challenges are in the insufficient understanding of mathematics, programming, logic, and problem-solving abilities among students who have completed secondary school. When students begin their first year of university, their skill levels in these areas vary greatly, primarily because of the type of secondary school they attended. While secondary schools do provide courses on information and communication technology (ICT) and computer studies, these primarily focus on using computers and software applications rather than on building a solid foundation in computer science principles. The mathematics curriculum is poorly taught at school and as a result the mathematical skills required for university computer science courses are underdeveloped prior to a student’s entering university.³¹³

³⁰⁹ Mukherjee, Anirban, and Saurabh Kumar. 2023. “Computer Science Education in Selected Countries from Sub-Saharan Africa.” ICTworks. June 16 <https://www.ictworks.org/wp-content/uploads/2023/06/Computer-Science-Education-in-Selected-Countries-from-Sub-Saharan-Africa.pdf>.

³¹⁰ “ICT IN EDUCATION REFORM - Ministry of Education Ghana,” January 16, 2021. <https://moe.gov.gh/index.php/ict-in-education-reform-2/>.

³¹¹ Adopted in 2003 and updated in 2006, 2008 and 2015.

³¹² Claudia, Pachon, Maria. “Concept Environmental and Social Review Summary (ESRS) - Ghana Digital Acceleration Project - PI76126.” Text/HTML. World Bank. Accessed November 9, 2023. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/536531632860497828/Concept-Environmental-and-Social-Review-Summary-ESRS-Ghana-Digital-Acceleration-Project-PI76126>.

³¹³ ICTworks. 2023. Computer Science Education in Selected Countries from Sub-Saharan Africa. Accessed October 23, 2023. <https://www.ictworks.org/wp-content/uploads/2023/06/Computer-Science-Education-in-Selected-Countries-from-Sub-Saharan-Africa.pdf>.

Several factors compromise the overall quality of education, particularly in Northern Ghana, including insufficient teacher training and mastery of subjects, a lack of accountability in the administration of schools, a deficit in implementing inclusive education for persons with disabilities, and inefficient allocation of funds for education.³¹⁴

Universities and training centers ICT programs. Out of the 302 accredited tertiary institutions in the country, 41 are presently offering undergraduate programs in computer science.³¹⁵ Government-funded universities offer a computer science curriculum that includes programming, web design, data analytics, computer networking, computer graphics, AI, and Internet of Things. The curriculum is delivered primarily through in-person and virtual lectures.³¹⁶ The government has supported higher technical education by advancing universities such as Ashesi University, Pentecost University, Ghana Communication Technology University, University of Energy and Natural Resources, University of Media Arts and Communications. Ghana has ten technical universities aiming to teach advanced skills in the engineering fields. However, because of a lack of resources, equipment, and capacity, technical universities struggle to establish partnerships and effectively teach students. One of the DECA interviewees—a representative of a technical university— noted that at some schools there is only one computer for every 30 students, making it challenging to maintain the learning process for IT.³¹⁷

During interviews, respondents noted that academia maintains a conservative approach to curriculum development. Consequently, resources can appear outdated and focused on theory rather than on practical application. This deters would-be students as they seek alternative education at hubs and IT centers, particularly in emerging technologies and advanced digital skills.

Low faculty retention rates and a general lack of qualified computer science create significant concerns for universities in Ghana.

Limiting the development of ICT skills and the growth of the tech sector at universities are often the school's lack of resources, capabilities, and flexibility to improve the skill set for both teachers and students, conduct industry research, and build partnerships with the private sector.

Some technological companies have supported selected universities in providing training, including Google Ghana, Google's First Ai Lab, IBM Ghana, and local companies such as Slydepay and others. One of the most illustrative examples is the Ashesi University, which offers an engineering specialization. The university offers students free access to additive and Internet of Things technologies. It is a private university, not supported by the state, that maintains partnerships with leading companies from the U.S. technology sector and is supported by donors, including USAID. Notably, more than 90 percent of Ashesi students are employed immediately following graduation, while many of Ashesi's peer universities cannot boast a percentage higher than 10. Ashesi's success stems from sound management and private funding from multiple international sources.

Though uncommon, selected universities sometimes partner with private companies to train IT specialists. Ghana Innovation Hub, for example, partnered with Ghana Communication Technology University to support skills building and innovation activities. During the DECA interviews, respondents indicated that local ICT companies, including local MNOs, telecom providers, and ISPs, train their ICT specialists in-house because the quality of university tech graduates does not meet the hiring company's standards, especially because the knowledge these graduates do take with them does not include industry experience.

Internships can play a crucial role in enhancing students' employability and entrepreneurship skills. However, students find that what few internship opportunities they find often focus on general ICT management rather than on computer science specifically. Few local technology companies offer internships and even fewer offer internships outside of Ghana.

³¹⁴ World Bank. 2022. Ghana Country Partnership Framework for the Period of FY22–FY26. Washington, D.C.: World Bank. Accessed October 23, 2023. <https://documents1.worldbank.org/curated/en/823041645721495743/pdf/Ghana-Country-Partnership-Framework-for-the-Period-of-FY22-FY26.pdf>.

³¹⁵ These 41 institutions include seven public universities, five chartered private tertiary institutions, 22 private tertiary institutions, ten public technical universities and one regionally owned tertiary institution. ICTworks. 2023. Computer Science Education in Selected Countries from Sub-Saharan Africa. Accessed October 23, 2023. <https://www.ictworks.org/wp-content/uploads/2023/06/Computer-Science-Education-in-Selected-Countries-from-Sub-Saharan-Africa.pdf>.

³¹⁶ Ibid.

³¹⁷ Ghana University. DECA Interview, April 2023.

Ashesi may be the only local university that cooperates with U.S. technology companies and allows students to intern at Facebook, Google, and other leading tech companies.

International partners, hubs, and training centers in Ghana offer multiple skills development programs including the Mastercard Foundation, the United Nations Development Programme (UNDP), MEST, and Kofi Annan Centre of Excellence in ICT. The Mastercard Foundation³¹⁸ has been a significant supporter of digital skills training in Ghana, including its backing of the University of Cape Coast's Digital Innovation and Entrepreneurship Program (DIEP) and the Ghana Tech Lab's Skills Development Program. Additionally, the UNDP³¹⁹ has supported the Skills Development Program at Ghana Tech Lab, among other initiatives that aim to enhance digital skills and foster entrepreneurship in the country.

MEST³²⁰ offers training in software development, entrepreneurship, and business management, and it assists with job placement. The Kofi Annan Centre of Excellence in ICT³²¹ provides training and certification in advanced skills such as data analytics, cybersecurity, and software development.

However, according to multiple DECA KIs, there are significant imbalances in the availability of quality technical, vocational, and tertiary education for different groups, with noticeable disparities in access based on gender, disability, and income levels.³²²

Box 14: Artificial Intelligence Development and Interest in Ghana

Although still embryonic, developing artificial intelligence (AI) applications in Ghana has been experiencing a surge of interest and investments in recent years. In 2018, Google opened Africa's first AI research center in Accra. The research team has undertaken groundbreaking projects such as the Open Buildings Dataset, which has used satellite imagery and machine learning to grow the representation of African buildings on Google Maps (now past the 250-million mark). Other projects have included championing Sub-Saharan African languages and creating robust flood forecasting systems tailored to the African context.

In the private sector, innovative startups such as mPharma have designed AI-driven solutions to assist doctors to craft personalized treatment plans that take into consideration detailed factors from patients' medical histories. Chesify AI Labs has introduced AI platforms that diagnose pathologies from medical images. AgroCenta's is using AI-driven crop yield predictions to enable farmers to strategize their farming and financial ventures.

Among donors, UNESCO and the Ghana Institution of Engineering have organized hands-on AI sessions, gifting young enthusiasts with AI-powered CogBots and crafted in alliance with tech giants such as Google. Some Ghana's universities are also preparing their students for the AI era. The University of Ghana launched a comprehensive Master's program in AI to prepare professionals ready to tackle real-world challenges using AI. Ashesi University has integrated AI and machine learning into its curriculum, laying the foundations for AI advanced education in Ghana.

The government has been supportive of AI development. In 2019, Vice-President Dr. Mahamudu Bawumia championed AI's potential to transform aspects of health care, agriculture, and education. More recently, like other governments globally, Ghana has started to discuss the risks associated with this emerging technology. Ghana is developing a new AI Strategy and considering potential new legislation and regulation. Chief among the concerns are ensuring transparency and accountability in AI systems and curbing potential biases and discrimination. The government envisions a society where citizens are aware of AI's role in their lives and they have the tools to hold AI accountable.

Sources: <https://www.sme10x.com/technology/artificial-intelligence/ghana-becomes-home-to-googles-first-african-ai-lab>
<https://sites.research.google/open-buildings/>
<https://blog.google/technology/ai/expanding-our-ml-based-flood-forecasting/>
<https://amchamghana.org/2023/09/14/google-is-leveraging-the-power-of-artificial-intelligence-ai-to-tackle-pressing-issues-in-africa/>
<https://ghanatechlab.medium.com/14-ghanaian-artificial-intelligence-ai-startups-seek-to-disrupt-various-industries-in-ghana-and-175958ec63b7>
[Ghana debates regulating artificial intelligence](https://www.ghanareport.com/is-ghana-prepared-for-the-artificial-intelligence-revolution/)
<https://www.ghanareport.com/is-ghana-prepared-for-the-artificial-intelligence-revolution/>

³¹⁸ Mastercard Foundation. "How to Apply to the Scholars Program." Accessed November 9, 2023.

<https://mastercardfdn.org/all/scholars/becoming-a-scholar/apply-to-the-scholars-program/>.

³¹⁹ UNDP. "UNDP Ghana Announces 22 Winners of Its COVID-19 Innovation Challenge | United Nations Development Programme." Accessed November 9, 2023. <https://www.undp.org/ghana/press-releases/undp-ghana-announces-22-winners-its-covid-19-innovation-challenge>.

³²⁰ MEST. "MEST Africa Training Program." Accessed November 9, 2023. <https://meltwater.org/mest-africa-training-program/>.

³²¹ "Courses - GI-KACE." Accessed November 9, 2023. <https://gi-kace.gov.gh/courses/>.

³²² Mukherjee, Anirban, and Saurabh Kumar. "Computer Science Education in Selected Countries from Sub-Saharan Africa." ICTworks.

Gender disparity remains prevalent in computer science, reflected in both the student population and the teaching staff across numerous universities, despite a rise in the number of computer scientists in educational institutions. This gender imbalance extends beyond computer science and permeates the broader STEM fields. However, this is not necessarily true for all regions. Because of the efforts of local players, donor support, and overall changes in this field, in some locations girls are more likely to enter training programs than boys. According to the DECA interviewee from Tamale, there were more girls than boys among technical university students.

DECA KIs highlighted that the divide is also noticeable in ICT education and employment, where the cost of courses and the perception of limited return on investment deter women and their families from pursuing such opportunities. Additionally, employers tend to prefer hiring male graduates over women, perpetuating the gender imbalance in the sector.

Box 15: Soronko Academy

Soronko Academy is known for focusing its digital and soft skills development programs primarily on women and girls.

The academy takes pride in the broad spectrum of courses and programs it markets to a wide audience. Programs that empower women such as Women in Digital Skills Program, Soronko Rotary Girls Coding Project, Pre Tech Program, and Code with Agility, comprise courses for Digital Marketing, Social Media Management, user interface/user experience design with Figma, basics of Web development and support with CV writing and job applications.

In 2022, Soronko's programs reached and educated more than 24,500 women from 13 regions. More than 500 of these women entered Ghana's workforce.³²³ Soronko Academy partners with French outsourcing platform Isahit to employ its alumni.

The government and international development organizations focus on building digital skills among girls and women. The Ministry of Communications and Digitalization runs several initiatives, including Young Girls in ICT Programme and Girls-in-ICT for high school students and includes training on website design, games development, coding, and simple ICT applications. The primary goal is to spark an interest among girls in ICT as a career path and to teach them entry-level IT skills.³²⁴ In 2023, The MCD announced plans to establish a trust fund for the Girls in Information and Communication Technology Programme (Girls-In-ICT) as a public-private initiative. It invited the Ministry of Education, MTN, Vodafone, and other agencies to become anchor members in a Girls in ICT trust fund, whose aim is to increase the number of female ICT students and professionals around the country.³²⁵

In 2022, the Ministry in collaboration with the Ministry of Education, Ghana Education Service, and Huawei Technologies conducted Cybersecurity and Data Privacy training for 100,000 girls across seven regions: Northern, Bono East, Bono Ahafo, Volta and Oti.³²⁶ In 2023, Jobberman, working with GIZ, announced the M-Fit Project: Matchmaking of Females in Tech initiative, which aims to teach at least 100 young women ages 18 to 35 with a STEM background important soft skills and to place them in appropriate tech-related roles by the beginning of 2024.³²⁷

Rise of Business Processing Outsourcing (BPO). Graduates from IT programs find it difficult to apply their newly acquired skills in Ghana, so they leave for other countries in Africa (Nigeria, Kenya, South Africa) or for the United States and Europe (the United Kingdom and Germany), where demand for tech skills is higher.

June 16, 2023 <https://www.ictworks.org/wp-content/uploads/2023/06/Computer-Science-Education-in-Selected-Countries-from-Sub-Saharan-Africa.pdf>.

³²³ Soronko Academy, DECA team interview, April 2023. Offline. Soronko Academy, <https://soronkoacademy.com/>

³²⁴ "Girls-In-ICT 2022 – Ministry of Communications and Digitalisation." Accessed October 24, 2023. <https://moc.gov.gh/girls-in-ict-2022/>.

³²⁵ "COMMUNICATIONS MINISTRY TO SETUP GIRLS-IN-ICT TRUST FUND – Ministry of Communications and Digitalisation." Accessed November 9, 2023. <https://moc.gov.gh/2023/11/02/communications-ministry-to-setup-girls-in-ict-trust-fund/>.

³²⁶ "100,000 Girls Targeted for This Year's Girls-in-ICT (SHS) Training in Cyber Security and Data Privacy – Ministry of Communications and Digitalisation." Accessed October 24, 2023. <https://moc.gov.gh/2022/08/05/100000-girls-targeted-for-this-years-girls-in-ict-shstraining-in-cyber-security-and-data-privacy/>.

³²⁷ "Jobberman Ghana, GIZ Partner to Empower Females in Tech - MyJoyOnline," September 7, 2023. <https://www.myjoyonline.com/jobberman-ghana-giz-partner-to-empower-females-in-tech/>.

The Ministry of Communication and Digitalization highlighted that the business process outsourcing landscape could be revitalized under AfCTFA by providing services for call centers, data processing, analytics, and other digital services for businesses in Africa and beyond.³²⁸

In Ghana, the nascent stage of the BPO sector presents a significant challenge in nurturing leadership talent, as the industry's relative novelty means there is a limited pool of experienced professionals to take on managerial roles. The rapid growth trajectory of the market intensifies the need for robust management training programs to equip frontline operators, client service staff, and trainers with the skills necessary to surpass client expectations. Without such investment in developing managerial competencies, Ghanaian BPOs may struggle to compete internationally where leadership is a critical determinant of success.³²⁹

Box 16: IT Business Process Outsourcing Potential for Ghana

Ghana is one of the leading business process outsourcing (BPO) destinations in Africa. According to [Outsourceaccelerator.com](https://www.outsourceaccelerator.com), the country offers “60 percent to 70 percent lower outsourcing costs than other source markets”³³⁰ and provides tax incentives for international businesses that outsource to the country. Ghana is seen as a preferred BPO destination because of its large pool of English-speaking talent, competitive labor costs and geo-political stability. Although recruitment, legal, and accounting processes are most popular, several companies provide IT outsourcing services. These include Abelway Technology, Liranz Limited and others. Additionally, Ghana operates within the same business hours as the U.K. and the rest of Europe.

The BPO companies collaborate with universities, academies, and IT institutes in Ghana to develop a skilled workforce. For example, the Accra Digital Centre partners with educational institutions and the private sector to provide training and skill development opportunities for the BPO industry.³³¹

Based on the existing business models and experience, there is a strong opportunity for more development of IT outsourcing in the country. This could include offering IT-enabled services to clients, including data entry, transcription, software development, customer support, and back-office functions.

Based on DECA interviews, software developers based in Ghana often earn significantly lower salaries than their counterparts in the United States. This income disparity creates a strong incentive for skilled IT professionals to seek better opportunities abroad, leading to a loss of talent and expertise from the local market. The presence of a large Ghanaian diaspora abroad also facilitates communication and collaboration, attracting more talent to seek opportunities outside of Ghana.

³²⁸ “Ghana launches continental free trade for digital trade.” Accessed October 24, 2023.

<https://www.africanleadershipmagazine.co.uk/ghana-launches-continental-free-trade-for-digital-trading/>.

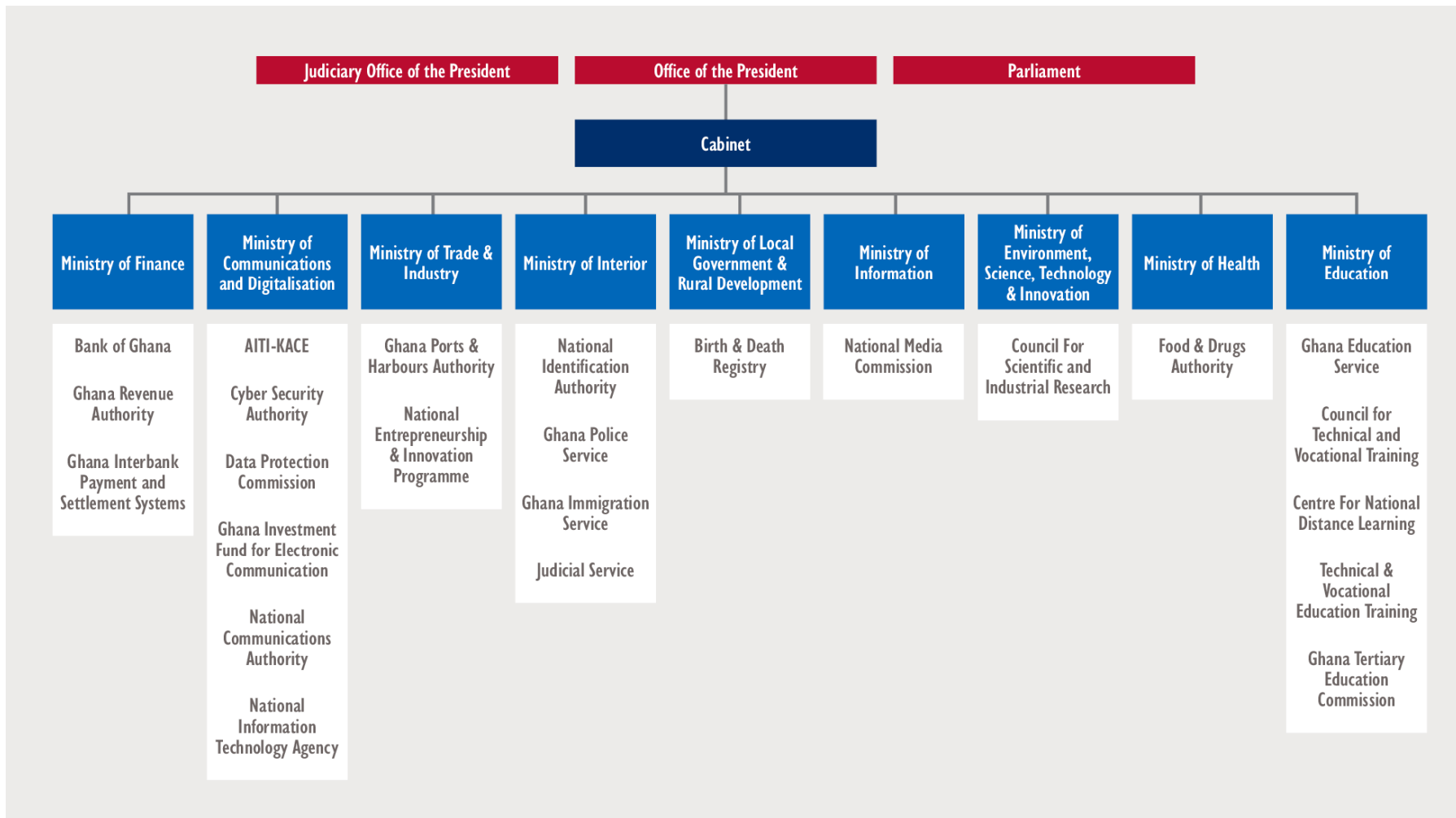
³²⁹ “Outsourcing to Africa: Top countries for BPO.” Accessed October 24, 2023. <https://www.customerserv.com/blog/outsourcing-to-africa-top-countries-for-bpo>

³³⁰ Outsource Accelerator. “Top 20 BPO Companies in Ghana.” Accessed October 24, 2023. <https://www.outsourceaccelerator.com/guide/top-bpo-companies-in-ghana/>.

³³¹ The Rockefeller Foundation. “Rockefeller Foundation’s \$3.8 Million Grant Helps Position Ghana to Accelerate Future ICT Job Growth.” Accessed October 24, 2023. <https://www.rockefellerfoundation.org/news/rockefeller-foundations-3-8-million-grant-helps-position-ghana-to-accelerate-future-ict-job-growth/>.

Appendices

A. ILLUSTRATION OF KEY GOVERNMENT INSTITUTIONS FOR DIGITAL TRANSFORMATION



B. DESCRIPTION OF KEY GOVERNMENT INSTITUTIONS FOR DIGITAL TRANSFORMATION

GHANA GOVERNMENT BODY	EXECUTIVE/ INDEPENDENT/ OTHER	RELATIONSHIP TO OTHER GOVERNMENT BODIES (e.g., sits under ministry of communications)	ABOUT THE GOVERNMENT BODY	KEY POWERS/REGULATORY MANDATE (as it relates to digital)	ORGANIZATION LINK	RELEVANT DECA PILLAR/TOPICS
Ministry of Communications and Digitalization	Executive	Accountable to the President and the Parliament of Ghana	Initiates and formulates ICT policies; facilitates communications infrastructure and services development	<p>National Digital Transformation Agenda: A National Digital Transformation Agenda outlines a road map for digitalizing key sectors including education, health, agriculture, and finance.</p> <p>National Identification System: The Ministry has started implementing the national identification system known as the Ghana Card. The biometric ID card is intended to enhance the accuracy and efficiency of public service delivery.</p> <p>E-Transform Project: The E-Transform Project improves the efficiency and effectiveness of selected government services through the use of information and communication technology (ICT).</p> <p>Mobile Money Interoperability: The Ministry has led efforts to promote mobile money interoperability, allowing customers of different mobile money operators to transact seamlessly across different networks.</p> <p>Cybersecurity: The Ministry is also responsible for ensuring the cybersecurity of Ghana's digital infrastructure. It has developed a National Cyber Security Policy and Strategy to guide the country's efforts in combating cyber threats.</p> <p>Responsible for policy of telecommunications and broadcasting sectors and has broad understanding of the digital space; also responsible for digital government transformation</p>	https://moc.gov.gh/	Cross-cutting
Ghana Investment Fund for Electronic Communications (GIFEC)	Executive	Under Ministry of Communications	Facilitates the implementation of national access to electronic communication and the provision of internet in underserved and unserved communities; facilitates capacity-building programs and promotes ICT inclusion in the unserved and underserved communities; facilitates the deployment of ICT equipment to educational, vocational, and other training institutions.	<p>Projects provide broadband connectivity, ICT centers, and other digital services to communities across the country.</p> <p>GIFEC partners with various government agencies to support initiatives such as the development of digital platforms and applications to enhance government service delivery and improve citizen interactions.</p> <p>Investment in rural areas, service and devices: working with Huawei, the Rural Telephony program delivers services and devices to rural communities.</p>	https://gifec.gov.gh/	Pillars I, III, cross-cutting

Data Protection Commission	Independent	Under Ministry for Communications and Digitalization	Protects user data. The Commission administers the process of obtaining, holding, using, or disclosing personal data online.	<p>Requires all organizations to protect personal data they collect, store, and process.</p> <p>Educates individuals and organizations about the importance of data protection and responsible data processing. DPC encourages the adoption of best practices for data protection and promotes a culture of privacy and security.</p> <p>Builds organizational capacity to develop robust data protection practices by providing training and support to organizations, conducting audits and assessments, and offering guidance on data protection compliance.</p>	https://dataprotection.org.gh/	Cross-cutting
National Communications Authority (NCA)	Independent	Reports to Ministry of Communications and Digitalization	The statutory body licenses and to regulates electronic communications activities and services in Ghana; it also promotes fair competition among communications service providers.	<ol style="list-style-type: none"> 1. Licenses Digital Terrestrial Television (DTT) operators in Ghana to promote the adoption of digital TV broadcasting across Ghana. 2. Manages the radio frequency spectrum in Ghana by allocating frequencies to different service providers, ensuring efficient use of the spectrum, and enforcing regulations to prevent interference and promote fair competition. 3. Administers consumer protection guidelines to ensure that consumers are not exploited by service providers; guidelines cover issues such as billing, quality of service, and complaints resolution. 4. Promotes the deployment of broadband services in Ghana through activities, including the licensing of broadband service providers and the establishment of policies to promote competition and investment in the sector. 5. Promotes digital inclusion in Ghana by ensuring that all citizens, regardless of their location or socioeconomic status have access to affordable and reliable communication services <p>Note: Telecommunications regulator</p>	https://nca.org.gh/	Pillar I
Cyber Security Authority (CSA)	Executive	Under the Ministry of Communications and Digitalization	Regulates cybersecurity activities in the country. Pursuant to sections 4(k), 49, 50, 51, 57 and 59 of Cybersecurity Act, 2020	<ol style="list-style-type: none"> 1. Develops and implements cybersecurity policies and strategies including guidelines for the safe and secure adoption of new technologies. 2. Monitors Ghana's digital infrastructure and information systems for cyber threats and responds to them in a timely manner. 3. Receives and manages reports of cyber incidents and breaches; investigates and prosecutes cybercrimes. 4. Administers training and capacity-building programs to individuals, organizations, and institutions to improve their cybersecurity awareness and resilience. 5. Develops regulations and standards for the secure deployment and use of digital technologies, and ensures compliance with these regulations. 6. Collaborates with international organizations and agencies to enhance Ghana's cybersecurity capabilities and protect the country from cyber threats. 	https://www.csa.gov.gh/	Cross-cutting

Ghana-India Kofi Annan Centre of Excellence in ICT	Executive	Under the Ministry of Communications and Digitalization, but it has a board of directors that oversees its activities and operations	This agency operates under the purview of the Ministry of Communications and Digitalisation. It coordinates and oversees an ICT system that produces globally competitive research and innovation through quality-oriented and demand-driven learning for national development. It is a capacity-building and training institution, establishing partnerships with institutions globally for the sake of skills development.	<ol style="list-style-type: none"> 1. Provides training, capacity-building, and professional development in digital technology to individuals, institutions, and organizations in Ghana. 2. Conducts research and development in digital technology, including areas such as artificial intelligence, blockchain, and big data analytics. 3. Supports and incubates digital startups and innovative projects with the potential to contribute to digital transformation in Ghana. 4. Works with both public and private sector organizations to develop and implement digital transformation projects. 5. Promotes awareness of and advocacy for the importance of digital transformation in Ghana through workshops, conferences, and other events. 6. AITI-KACE provides guidance and standards for the development and deployment of digital technologies in Ghana, including regulations on data privacy and cybersecurity. 	https://www.aiti-kace.com.gh/	Pillars I, II
Bank of Ghana	Executive	Accountable to the president and the Parliament of Ghana	Develops policies for financial stability, financial regulations, digital financial development and regulations, payment and credit system supervision, and other fiscal activities to advise and regulate national fiscal development.	<p>Regulates digital financial services (DFS) providers in Ghana to ensure they operate within a framework that protects consumers and promotes financial stability.</p> <p>Licenses DFS providers, including mobile money operators, PSPs, and electronic money issuers. This promotes competition and innovation in the DFS sector.</p> <p>Oversees payment systems in Ghana, including the National Switch and the Ghana Interbank Payment and Settlement Systems (GhIPSS). This helps to ensure that payment systems are interoperable, efficient, and secure.</p> <p>Promotes financial inclusion in Ghana through digitalization. This includes initiatives such as the development of a national financial inclusion strategy, the implementation of a mobile money interoperability platform, and the establishment of financial literacy programs.</p> <p>Collaborates with other stakeholders, including government agencies, industry associations, and international organizations, to promote digitalization in Ghana. For example, the Bank of Ghana has partnered with the International Finance Corporation (IFC) to develop a regulatory sandbox for FinTech startups in Ghana.</p>	https://www.bog.gov.gh	Pillar III

Ghana Interbank Payment and Settlement Systems Limited	Independent	A wholly owned subsidiary of the Bank of Ghana	Implements and manages interoperable payment system infrastructures for banks and nonbank financial institutions in Ghana	<p>GhIPSS develops and deploys digital payment systems that promote electronic payments including the e-Zwich biometric smart card payment system, which allows customers to make transactions at ATMs, POS devices, and mobile money platforms; and the GIP system, which allows customers to make instant payments from their bank accounts to other bank accounts.</p> <p>Promotes interoperability among PSPs in Ghana so that customers can use different PSPs to make payments without any challenges.</p> <p>Promotes financial inclusion by making it easier and more convenient for people to access and use financial services. This includes deploying mobile money interoperability to allow customers to transfer money between mobile money accounts and bank accounts.</p> <p>Collaborates with stakeholders in the financial sector, including the Bank of Ghana, commercial banks, FinTech companies, and other PSPs, to promote the adoption of digital payments in Ghana.</p>	https://www.ghipss.net/	Pillars II, III
Ministry of Local Government, Decentralization, and Rural Development	Executive	Falls under the government's Central Management Agencies category .	Oversees governance and development of Metropolitan, Municipal, and District Assemblies, under the Civil Service Act, 1993 (PNDCL 327)	<p>Develops and implements policies that promote the use of technology and digitalization in local governance and rural development. The policies include National Information and Communication Technology (ICT) for Accelerated Development Policy.</p> <p>Supports digitalization initiatives that promote local governance and rural development. This includes initiatives such as the Ghana Open Data Initiative, which seeks to make data available to the public in an easily accessible and user-friendly format.</p> <p>Provides training and capacity-building to local government officials and other stakeholders in rural development as they acquire the skills and knowledge needed to use digital technologies effectively.</p> <p>Promotes e-governance by encouraging the use of digital technologies in the delivery of government services at the local level, including the use of digital platforms for the collection of revenue, issuance of permits and licenses, and the delivery of other essential services.</p> <p>Collaborates with other stakeholders (including the private sector and development partners) to promote the use of digital technologies in local governance and rural development.</p>	http://www.mlgrd.gov.gh/	Pillars II, III cross-cutting

Ministry of Education	Executive	Accountable to the President and the Parliament of Ghana	Formulates and coordinates education policies, develops standards, and monitors and evaluates implementation; works to ensure that quality education is accessible for all Ghanaians.	<p>Develops policies and guidelines that support the integration of technology into the education system. This includes promoting the use of digital tools and resources for teaching and learning. Investment in infrastructure: The MoE invests in infrastructure that supports digital education, such as providing internet connectivity in schools and equipping schools with digital tools such as computers and tablets.</p> <p>Offers teacher training on how to effectively use technology in the classroom. This helps ensure that teachers are equipped with the necessary skills to integrate technology into their teaching.</p> <p>Supports the development of e-learning platforms that grant students access to digital resources and educational content.</p> <p>Partners with the private sector to promote digital education initiatives. For example, the Ministry has partnered with technology companies to provide tablets to schools and with telecommunication companies to provide internet connectivity in schools.</p>	https://moe.gov.gh/	Pillars I, II, III, cross-cutting
Ghana Education Service	Executive	Under Ministry of Education	The GES agenda is to increase inclusive and equitable access to and participation in education at all levels; ensure provision of life-skills training and management of personal hygiene, family life, gender, health, HIV/AIDS/STIs, and others; improve the quality of teaching and learning and the management of education service delivery	<ol style="list-style-type: none"> 1. Develops and updates school curriculum to include digital literacy and technology skills. 2. Offers teacher training to develop digital literacy and technology skills, so teachers can effectively integrate technology into their teaching methods and lesson plans. 3. Provides and maintains digital infrastructure including computer labs, internet connectivity, and other equipment required for digital learning. 4. Ensures the quality of digital education and assesses the impact of technology on learning outcomes in schools. 5. Develops digital content including e-learning materials and digital textbooks to support teaching and learning in schools. 6. Develops policies and guidelines to integrate technology into teaching and learning in Ghana. 7. Works with other stakeholders in the education sector (including the Ministry of Education, private-sector organizations, and development partners) to promote digital transformation in education. 	https://ges.gov.gh/	Pillars I, II, III, cross-cutting
Ghana TVET Service	Executive	Under Ministry of Education	The National Council for Tertiary Education (NCTE) and the National Accreditation Board (NAB) merged to form the Ghana Tertiary Education Commission.	<ol style="list-style-type: none"> 1. Develops policies and strategies to promote the integration of digital technologies in TVET curricula and training programs. 2. Ensures that TVET institutions and training programs meet the standards and requirements set by the National TVET Qualifications Framework, which accounts for the integration of digital competencies. 3. Facilitates the development of partnerships and collaborations between TVET institutions, industry stakeholders, and other organizations to promote the use of digital technologies in TVET. 4. Conducts research and analysis to identify emerging trends and best practices in digital transformation in TVET, then uses that information to inform policy and program development. 5. Provides technical assistance and capacity-building support to TVET institutions and stakeholders to enhance their digital competencies and capabilities. 6. Monitors and evaluates the implementation and impact of digital transformation initiatives in TVET, then uses this information to inform 	https://moe.gov.gh/index.php/th-e-technical-vocational-and-skill-training/	Pillars I, III, cross-cutting

				future policy and program development.		
Ghana Tertiary Education Commission	Executive	Under Ministry of Education	Promotes transparent governance and best practices, including reporting, checks, and balances to ensure full accountability; promotes a culture of independent, life-long learning and of scientific and technological inquiry among staff, students, and the broader community.	<ol style="list-style-type: none"> 1. Promotes the development of e-learning and digital education in tertiary institutions in Ghana. 2. Ensures that tertiary institutions in Ghana incorporate digital technology into their teaching and learning processes. 3. Regulates the quality of digital education and e-learning materials offered by tertiary institutions in Ghana. 4. Accredits and monitors the operation of e-learning platforms and digital education programs offered by tertiary institutions in Ghana. 5. Collaborates with other regulatory bodies and stakeholders to promote the growth and development of digital education in Ghana. 6. Develops policies and guidelines to ensure that tertiary institutions in Ghana adhere to best practices in the use of digital technology in education. 	https://gtec.edu.gh/	Pillars I, II, III, cross-cutting
Ministry of Health	Executive	Accountable to the President of Ghana and operates under the authority of the government's executive branch	Develops and implements health policies to support socioeconomic development and the development of the local health industry. It also regulates and supervises the provision of health care in Ghana,	<ol style="list-style-type: none"> 1. Develops and implements policies and strategies to promote the use of information and communication technology (ICT) in health care delivery. 2. Develops and implements systems for health information management and surveillance, such as electronic medical records, health information exchanges, and disease reporting systems. 3. Develops and implements telemedicine and e-health programs to improve access to health care with a focus on rural areas. 4. Regulates the use of medical devices and equipment, including those that incorporate digital technology, to ensure safety and efficacy. 5. Promotes the development and adoption of standards and guidelines for digital health solutions and technologies. 6. Collaborates with other government agencies, private sector entities, and international organizations to promote innovation and investment in digital health. <p>Note: Policymaker</p>	https://www.moh.gov.gh/	Pillar III, cross-cutting

Ghana Health Service	Independent	Under the Ministry of Health	Provides and manages comprehensive, accessible health care with a special emphasis on primary health care at the regional, district, and subdistrict levels under approved national policies. It is a quasi-independent government agency responsible for the management and delivery of public health care in Ghana. It operates under the supervision of the Ministry of Health and is considered to be a semi-autonomous agency that is ultimately accountable to the executive branch of government.	<ol style="list-style-type: none"> 1. Develops and implements health information systems to support the delivery of health care services in Ghana. This includes the management of electronic health records, health data analytics, and other health information technologies. 2. Regulates health technology in Ghana, including medical devices and equipment by ensuring that all health technology meets appropriate standards and regulations for safety and effectiveness. 3. Promotes e-health initiatives to improve access to health care in Ghana, including the use of telemedicine, mobile health (mHealth), and other digital health solutions to enhance health care delivery. 4. Builds the capacity of health care workers and stakeholders to use digital health technologies. This involves training health care workers and promoting awareness of and education about digital health solutions. 	https://ghs.gov.gh/	Pillar II, cross-cutting
Ministry of Food and Agriculture	Executive	Accountable to the President and the Parliament of Ghana	Facilitates the development and growth of agriculture in the country with the exception of the cocoa, coffee, and forestry sectors. It is responsible for the development and implementation of policies, programs, and projects related to food and agriculture in Ghana.	<ol style="list-style-type: none"> 1. Develops and implements policies and strategies that promote the use of digital technology in the agricultural sector, including the use of precision farming techniques, agro-meteorology, and the use of e-extension services. 2. Promotes research and development in the application of digital technology in the agricultural sector, including the development of digital tools and platforms that facilitate the efficient and effective use of agricultural inputs. 3. Develops regulatory frameworks and standards for digital technology to be used in the agricultural sector, including data protection regulations, cybersecurity measures, and standards for the use of precision farming techniques. 4. Collaborates with other stakeholders (e.g., the private sector, development partners, and research institutions) to facilitate the adoption and use of digital technology in the agricultural sector. 5. Builds capacity for stakeholders in the agricultural sector on the use of digital technology, including farmers, extension agents, and other relevant stakeholders. 	https://www.mofa.gov.gh/	Pillar III, cross-cutting

National Development Planning Commission	Independent	Operates as an autonomous agency with a mandate to advise the President and Parliament on all aspects of national development planning	Focuses on national development planning policy and strategy by providing a national development policy framework, preparing and ensuring effective implementation of approved national development plans and to coordinate economic, and social activities country-wide in a manner that will ensure accelerated and sustainable development of the country to promote continuous improvement in the living standards of all Ghanaians. The National Development Planning Commission (NDPC) in Ghana is an independent government body. It is responsible for the planning, formulating, and coordinating national development policies, strategies, and plans in Ghana. NDPC operates independently of other government bodies, although it works closely with them in the development and implementation of national policies and programs.	<ol style="list-style-type: none"> 1. Coordinates and prepares comprehensive national development plans, strategies, and policies that are aligned with the government's overall development agenda, including integrating digital transformation into the national development plans and strategies. 2. Monitors and evaluates the implementation of national development policies, plans, and programs. Monitoring and evaluation activities include tracking progress towards digital transformation goals and targets. 3. Engages stakeholders (including the private sector, civil society organizations, and development partners) to effectively implement national development plans and programs, including digital transformation-related plans. 4. Provides technical support to the government and other stakeholders in the planning and implementation of development policies and programs, including those related to digital transformation. 	https://ndpc.gov.gh/	Cross-cutting
Ghana Statistical Service	Independent	Operates as an autonomous agency under the Ministry of Finance and Economic Planning	The Statistical Service Act, 2019 (Act 1003) was designed to improve the legal framework to reflect changes in the statistics landscape worldwide and to replace the Statistical Service Law, 1985. The new law established the Ghana Statistical Service as the central statistics producing and coordinating institution for the National Statistical System to strengthen the production of quality, relevant, accurate, and	<ol style="list-style-type: none"> 1. Collects data on socioeconomic indicators in the country including data on the adoption and use of digital technologies by businesses and households. 2. Analyzes data collected and disseminates it to stakeholders, including government agencies, businesses, researchers, and the general public, to help identify trends and patterns related to the adoption and use of digital technologies in the country. 3. Develops and maintains statistical standards to ensure the quality and consistency of statistical data produced. This includes the development of standards related to the collection, analysis, and dissemination of data on digital technologies. 4. Monitors and evaluates the impact of digital technologies on Ghana's economy and society through activities such as identifying areas in which digital technologies can be leveraged to improve socioeconomic outcomes. 	https://www.statsghana.gov.gh/	Cross-cutting

			timely statistical information for national development.	5. Provides technical assistance to government agencies, businesses, and other stakeholders on matters related to statistical data and the use of digital technologies in data collection, analysis, and dissemination.		
Ministry of Trade and Industries	Executive	Accountable to the President and the Parliament of Ghana	The Ministry is involved in activities of production and commerce. It formulates and harmonizes policies to ensure intersectoral collaboration in the implementation of trade and industrial policies at national and global levels.	<ol style="list-style-type: none"> 1. Promotes and facilitates e-commerce by creating an enabling environment for businesses to grow by employing digital technologies. 2. Develops policies that promote the development of the digital economy, with a particular focus on the manufacturing sector. This includes developing policies that encourage the adoption of digital technologies in manufacturing processes, and developing regulations to protect businesses operating in the digital space. 3. Protects the intellectual property of businesses operating in the digital space by managing the registration and enforcement of trademarks, copyrights, and patents. 4. Promotes and facilitates international trade by creating an enabling environment for businesses to operate in the global digital economy. 5. Regulates trade practices in the digital space to protect consumers from unfair practices and thereby ensure a level playing field for businesses. This includes the enforcement of consumer protection laws, competition laws, and regulations related to data protection and privacy. 	https://moti.gov.gh/v2/	Pillar III
Ministry of Finance and Economic Planning	Executive	Accountable to the President and the Parliament of Ghana	Ensures effective and efficient Macroeconomic and Financial Management of Ghana's economy. It is responsible for the formulation and implementation of financial, economic, and fiscal policies in Ghana, working closely with other government bodies, international partners, and stakeholders to manage Ghana's public finances, promote economic growth, and development, and maintain fiscal stability.	<ol style="list-style-type: none"> 1. Regulates FinTech companies in Ghana, including those that provide payment and remittance services. 2. Oversees the national budget, including the allocation of funds for digital transformation initiatives. (This includes initiatives such as the implementation of a digital addressing system, the development of a national digital identity system, and the creation of a national digital payment system.) 3. Implements and enforces taxation policies related to digital transactions, including taxes on e-commerce transactions and on digital services provided by nonresident companies operating in Ghana. 4. Facilitates public-private partnerships in the area of digital transformation, including partnering with private sector companies to provide digital infrastructure and services and collaborating with international organizations to access funding for digital transformation initiatives. 	https://mofep.gov.gh/	Pillar III, cross-cutting

National Identification Authority	Independent	Operates as an autonomous agency under the Ministry of the Interior	The NIA was established by an Act of Parliament 707. The Authority is mandated to establish, maintain, and otherwise manage a national data center for identifying Ghanaians.	<ol style="list-style-type: none"> 1. Develops and implements a comprehensive national identification system for Ghana that is designed to provide a unique and reliable means of identifying individuals and to support the delivery of government services in a more efficient and effective manner. 2. Manages a biometric registration system for individuals applying for national identification cards. Registration includes the collection of personal information, fingerprints, and facial images, which are used to verify the identity of applicants. 3. Provides verification services to government agencies, financial institutions, and other organizations to confirm the identity of individuals using their national identification cards. 4. Ensures personal information collected is protected during the registration process. NIA developed data protection policies and guidelines to safeguard personal information and prevent unauthorized access to it. 5. Issues and manages national identification cards for citizens and foreign residents in Ghana, including the development and maintenance of a database of all registered individuals and the issuance of secure and tamper-proof national identification cards. 	https://nia.gov.gh/	Pillar II, cross-cutting
National Information Technology Agency	Executive	Under the Ministry of Communications and Digitalization	Implements Ghana's IT policies.	<ol style="list-style-type: none"> 1. Develops and implements national policies and guidelines on information technology to promote the adoption and use of digital technologies across all sectors of the economy. 2. Develops and maintains the national information and communication technology infrastructure, including the development of the national backbone infrastructure, which provides the connectivity necessary to deploy digital technologies. 3. Develops and implements e-government services to improve public service delivery in Ghana, including online portals and platforms that deliver government services such as online tax filing and payment systems. 4. Provides training and capacity-building to enhance the skills and knowledge of government employees and the general public on how to use digital technologies. 5. Protects the security of the national ICT infrastructure and the protection of personal and sensitive data in Ghana. This includes the development of cybersecurity policies and guidelines and the provision of cybersecurity awareness and training. 	https://nita.gov.gh/	Pillars I, II, III, cross-cutting

Council for Scientific and Industrial Research (CSIR)	Independent	Under the Ministry of Environment, Science, Technology, and Innovation. Maintains a governing council, which allows it to operate with a certain degree of autonomy.	Implements government policies on scientific research and development.	<ol style="list-style-type: none"> 1. Conducts research and development in various fields, including digital technologies. The organization is actively involved in developing and deploying digital technologies to improve a number of sectors, agriculture, health, energy, and the environment. 2. Develops and tests standards for various products and services in Ghana, including digital products and services. CSIR's National Metrology Institute (NMI) develops and maintains the national measurement standards for the country, which are used to ensure accuracy and consistency when measuring digital products and services. 3. Manages intellectual property from its research activities including protecting the intellectual property rights of its researchers and ensuring that their work is recognized and used to develop digital products and services. 4. Transfers technology to industry for commercialization including the transfer of digital technologies to develop digital products and services that can be used to promote national development. 5. CSIR collaborates with other institutions in Ghana and internationally to leverage resources and expertise in the development and deployment of digital technologies. (Partnerships include academic institutions, private sector companies, and international development organizations.) 	https://www.csir.org.gh/	Pillar III, cross-cutting
Ministry of Environment, Science and Technology	Executive	Accountable to the President and the Parliament of Ghana	Facilitates socioeconomic development in Ghana by formulating policies and a regulatory framework to promote the use of environmentally friendly, scientific, and technological practices.	<ol style="list-style-type: none"> 1. Manages Ghana's natural resources and protects the environment. In the context of digital transformation, MESTI has implemented various initiatives to improve the monitoring and management of environmental resources. (i.e., MESTI launched a digital mapping system of Ghana's natural resources, and has also implemented a system for tracking illegal mining activities.) 2. Promotes the development of science and technology in Ghana. MESTI has implemented various initiatives to support digital innovation and entrepreneurship. For example, it developed technology park to support the growth of tech startups in Ghana, and has launched a digital innovation hub to support the development of digital products and services. 3. Regulates activities related to the environment, science, and technology in Ghana, including the regulation of activities related to electronic waste management, biotechnology, and nanotechnology, among others. MESTI also plays a key role in enforcing environmental regulations related to air and water quality, waste management, and biodiversity conservation. 4. Conducts research and development in the areas of environment, science, and technology. In the context of digital transformation, MESTI has conducted research on various topics related to digital innovation and entrepreneurship, including the development of digital ecosystems and the impact of digital technologies on the environment and society. 	https://mesti.gov.gh/	Crosscutting

Ghana Police Service	Executive	Accountable to the President and the Parliament of Ghana	Mandated to maintain law and order.	<ol style="list-style-type: none"> 1. Prevents and detects crime in Ghana. The GPS developed digital initiatives, including the use of CCTV cameras and facial recognition technology, to monitor public spaces and identify suspects. 2. Responds to emergencies and provides assistance to citizens in need. A digital emergency response system allows citizens to report emergencies via mobile apps and text messages. The system also allows GPS to dispatch resources to the scene of an incident. 3. Manages information related to crime and public safety. GPS has developed digital systems to store and manage criminal records, fingerprints, and other biometric data, thereby improving the accuracy and reliability of criminal investigations. 4. Manages traffic in Ghana's cities and towns. GPS developed digital traffic management systems that allow for the monitoring of traffic flow, the issuance of traffic tickets, and the collection of fines. 	https://police.gov.gh/en/	Crosscutting
Ghana Immigration Service	Executive	Under the Ministry of Interior	Regulates examination and authorization of applications for visas, entry, and residence permits in Ghana.	<ol style="list-style-type: none"> 1. Manages Ghana's borders and ensures that people entering and leaving the country are in compliance with immigration laws. GIS has developed digital initiatives to improve border management, such as the use of biometric data and electronic systems for visa applications and processing. 2. Issues Ghanaian passports and ensures their security. There is a biometric passport system that includes features such as facial recognition and fingerprint identification to enhance security and prevent fraud. 3. Enforces Ghana's immigration laws, including the detection and prevention of illegal immigration. Digital systems track and monitor individuals who are deemed to pose a security risk, and identify and verify individuals seeking asylum or refugee status. 4. Manages data related to immigration and border control. GIS collaborates with other government agencies, including the National Identification Authority, to ensure the accuracy and reliability of biometric data and other personal information. 	https://home.gis.gov.gh/	Crosscutting
Ghana Judicial Service	Judiciary	Independent arm of government that is responsible for interpreting the laws of Ghana, and resolving disputes and administering justice	Manages the judiciary and judicial service of Ghana.	<ol style="list-style-type: none"> 1. Manages court cases and ensures that they are handled efficiently and effectively. The Judicial Service has implemented various digital initiatives to improve case management, including the use of electronic case management systems to track the progress of cases. 2. Maintains an e-filing system that allows parties to file court documents electronically, thereby improving the speed and efficiency of court processes. 3. Administers electronic courtrooms, which include recording and playback of court proceedings and improved the accuracy and transparency of court proceedings. 4. Provides training and capacity-building for judicial staff on digital technologies and their use in court processes. 5. Protects the personal data of individuals involved in court cases and ensures the confidentiality of court information. The Judicial Service collaborates with the Data Protection Commission to ensure 	https://judicial.gov.gh/	Crosscutting

				compliance with data protection laws.		
Electoral Commission of Ghana	Independent	Independent as part of the Constitution. Not under the control or direction of the executive branch	Manages the conduct of all public elections and Referenda, to handle all election-related matters.	<ol style="list-style-type: none"> 1. Registers eligible voters for elections and referenda. Digital initiatives help streamline the voter registration process, including biometric technology for voter verification and the use of mobile registration centers to increase accessibility. 2. Manages election results and announces the winners of elections and referenda. In recent years, the EC has implemented digital initiatives to improve the speed and accuracy of results management, including the use of digital transmission of results from polling stations to the national collation center. 3. Educates voters on electoral processes and procedures. The EC has used digital platforms including social media and online voter education portals, to reach a wider audience and improve voter education. 4. Protects voters' personal data and ensures the confidentiality of electoral information. The EC collaborates with the Data Protection Commission to ensure compliance with data protection laws. 	https://ec.gov.gh/	Crosscutting
Ghana Standards Authority	Independent	Under the Ministry of Trade and Industry	The Ghana Standards Authority (GSA) is the National Statutory Body responsible for managing the nation's quality infrastructure in adherence to three pillars: Metrology, Standardization, and Conformity Assessment (i.e. Testing, Inspection and Certification)	<ol style="list-style-type: none"> 1. Develops and promotes digital standards in Ghana including technical regulations and standards for digital products and services and guidelines and best practices for digital transformation initiatives. 2. Certifies and tests digital products and service providers to ensure they meet the required quality and safety standards. 3. Inspects and monitors activities to ensure digital products and services comply with relevant regulations and standards. This includes monitoring digital infrastructure, such as broadband networks and data centers, to ensure they are secure and reliable. 4. Provides capacity-building and training services to individuals and organizations in Ghana to enhance their knowledge and skills in digital transformation (i.e., training on digital standards, digital product testing and certification, and other aspects of digital transformation). 5. Collaborates with various stakeholders in Ghana, including government agencies, private sector organizations, and civil society groups, to promote digital transformation in the country. This includes partnering with other regulatory bodies to ensure that digital transformation initiatives are implemented in a coordinated and effective manner. 	http://www.gsa.gov.gh/	Pillar III, cross-cutting

Northern Regional Coordinating Council (NRCC)	Executive	Under Ministry of Local Government, Decentralization and Rural Development in Ghana	Facilitates the overall development of the Northeast region by effectively coordinating, monitoring, and evaluating the activities of the Ministries, Departments, Agencies, District Assemblies, and nongovernmental agencies operating therein to improve the quality of life for all people.	<ol style="list-style-type: none"> 1. Promotes digital literacy in the Northern region of Ghana, striving to ensure that the population has the necessary skills and knowledge to effectively use digital technologies for personal and professional purposes. 2. Facilitates the development of digital infrastructure in the Northern region, including the establishment of broadband networks, the deployment of mobile networks, and the provision of other digital services. 3. Supports the development of digital entrepreneurship in the Northern region, offering training, mentorship, and funding to entrepreneurs looking to establish digital businesses and endeavoring to create an enabling environment for digital innovation. 4. Coordinates cross-sectoral initiatives related to digital transformation in the Northern region of Ghana, working with other regional government bodies, and with national government agencies and private sector stakeholders, to promote the development and adoption of digital technologies. 5. Regulates and oversees digital initiatives in the Northern region, helping to ensure that regional digital initiatives comply with applicable laws and regulations, and that they are developed and implemented in a responsible and sustainable manner. 	https://northernrcc.gov.gh/about-us/	Pillar III, cross-cutting
North East Regional Coordinating Council (NERCC)	Executive	Under Ministry of Local Government, Decentralization and Rural Development in Ghana	Coordinates and supervises the implementation of government policies, programs, and projects at the regional level in the Northeast Ghana.	<ol style="list-style-type: none"> 1. Promotes the development of digital infrastructure in the Northeast region, including broadband connectivity, ICT facilities, and digital literacy programs. Works to ensure that the region has the necessary digital infrastructure to support economic growth and development. 2. Facilitates digital innovation in the Northeast region, including the development of digital products and services that can improve the lives of people in the region and support for digital entrepreneurs and startups . 3. Collaborates with other regulators, including the National Communications Authority and the Ghana Investment Fund for Electronic Communications, to ensure that digital transformation in the Northeast region is regulated in a coordinated and effective manner. It participates in cross-regulatory initiatives to promote regulatory consistency and to address emerging issues in the digital space. 4. Ensures that all residents of the Northeast region have access to digital technologies and services, including those in underserved communities. Promotes digital inclusion programs that aim to bridge the digital divide and to ensure that everyone can benefit from the opportunities found in digital transformation. 5. Supports the development of digital entrepreneurship in the Northeast region by providing training, mentorship, and financing support to entrepreneurs looking to establish digital businesses and striving to create an enabling environment for digital innovation. 	https://nercc.gov.gh/	Pillar III, cross-cutting

National Media Commission (NMC)	Independent	Under Ministry of Information	Promotes and ensures the freedom and independence of the media for mass communication or information	<ol style="list-style-type: none"> 1. Regulates online media in Ghana (i.e., news websites, social media platforms, and blogs). It has the authority to license and regulate online media outlets, and to ensure that they comply with Ghana's laws and regulations. 2. Monitors the content of traditional and digital media in Ghana to ensure that it complies with applicable standards and guidelines. It has the authority to investigate complaints and to take action against media outlets that violate these standards. 3. Promotes media literacy in Ghana, including digital literacy, by educating the public on how to responsibly use digital media. 4. Collaborates with other regulators, including the National Communications Authority and the Data Protection Commission, to ensure that digital transformation in Ghana is regulated in a coordinated and effective manner. It participates in cross-regulatory initiatives to promote regulatory consistency and to address emerging issues in the digital space. 5. Promotes innovation in the media industry in Ghana, particularly the use of digital technologies. It supports development of new media products and services that leverage digital technologies to improve accessibility and quality, while ensuring that ethical and professional standards are maintained. 	https://mofep.gov.gh/sites/default/files/pbb-estimates/2017-PBB-NMC.pdf	Pillars I, II, cross-cutting
Food and Drugs Authority	Executive	Under the Ministry of Health	The Ghanaian Food and Drugs Authority is the national regulatory body responsible for the regulation of food, drugs, food supplements, herbal and homeopathic medicines, veterinary medicines, cosmetics, medical devices, household chemical substances, tobacco and tobacco products, blood and blood products and the conduct of clinical trials protocols.	<ol style="list-style-type: none"> 1. Regulates digital health products, including software and mobile applications. It is responsible for ensuring that these products comply with applicable laws and regulations, and that they are safe and effective for their intended use. 2. Oversees online pharmacies licensing and regulating them to ensure compliance. 3. Supports the development of e-commerce platforms for regulated products, including food and drugs. It works to promote the use of digital technologies to improve the efficiency and accessibility of the regulatory process, while ensuring that safety and quality standards are maintained. 4. Works with other regulators (including the National Communications Authority and the Ghana Standards Authority) to ensure that digital transformation in Ghana is regulated in a coordinated and effective manner. It participates in cross-regulatory initiatives to promote regulatory consistency and to address emerging issues in the digital space. 5. Promotes innovation in the food and drugs industry in Ghana, including through the use of digital technologies. It supports the development of new products and services that leverage digital technologies to improve safety, efficacy, and accessibility, while ensuring that regulatory standards are maintained. 	http://www.fda.gov.gh/	Pillar III, cross-cutting

Ghana Stock Exchange	Independent	Under the Securities and Exchange Commission and a subsidiary of the Bank of Ghana	The Ghana Stock Exchange as a public company limited by guarantee has no owners or shareholders as such, but members are either corporate bodies or individuals.	<ol style="list-style-type: none"> 1. Regulates digital trading platforms that operate in Ghana and is responsible for ensuring the platforms comply with securities laws and regulations, and that investors are protected from fraud and other illegal activities. 2. Promotes the use of digital technologies to improve trading efficiency, transparency, and accessibility. It supports the development of new digital trading platforms and services that enable investors to trade securities in a more efficient and cost-effective manner. 3. Educates investors about digital trading and the risks and benefits of investing in securities through digital platforms. It provides guidance and resources to help investors make informed decisions about their investments in the digital space. 4. Works closely with other regulators, including the Securities and Exchange Commission and the Bank of Ghana, to ensure that digital transformation in Ghana is regulated in a coordinated manner. It participates in cross-regulatory initiatives to promote regulatory consistency and to address emerging issues in the digital space. 5. Promotes innovation in the securities industry in Ghana (including through the use of digital technologies). It supports the development of new products and services that leverage digital technologies to improve trading efficiency, accessibility, and investor protection. 	https://gse.com.gh/	Pillar III, cross-cutting
Securities and Exchange Commission	Executive	Under Ministry of Finance	Aims to regulate and promote the growth and development of an efficient, fair, and transparent securities market in which investors and market integrity are protected.	<ol style="list-style-type: none"> 1. Regulates digital assets (including cryptocurrencies) in Ghana and ensures that the issuance and trading of digital assets comply with applicable laws and regulations, and that investors are protected from fraud and other illegal activities. 2. Oversees digital investment platforms that operate in Ghana. It has the authority to license and regulate digital investment platforms to ensure they comply with securities laws and regulations. 3. Educates investors about digital assets and investment platforms, and raises awareness of the risks and benefits of investing in these products. It provides guidance and resources to help investors make informed decisions about their investments in the digital space. 4. Collaboration with other regulator, including the Bank of Ghana and the National Communications Authority, to ensure that digital transformation in Ghana is regulated in a coordinated and effective manner. It participates in cross-regulatory initiatives to promote regulatory consistency and to address emerging issues in the digital space. 5. Promotes innovation in the securities industry in Ghana, including through the use of digital technologies. It supports the development of new products and services that leverage digital technologies to improve efficiency, accessibility, and investor protection. 	https://sec.gov.gh/	Pillars II, III, cross-cutting
Ministry of Gender and Social Protection	Executive	Accountable to the President and the Parliament of Ghana	Responsible for the formulation, coordination, and monitoring of policies, plans, and programs for the promotion of gender equality and the	<ol style="list-style-type: none"> 1. Ensures that gender perspectives are integrated into digital transformation policies and programs in Ghana. This includes advocating for gender-sensitive policies and programs that address gender disparities in access to and use of digital technologies. 2. Protects marginalized groups, including women, children, and persons 	https://www.mogcsp.gov.gh/	Pillar II, III, cross-cutting

			protection of the marginalized in society.	<p>with disabilities, from abuse, harassment, and exploitation online. It works with other stakeholders to develop and implement policies and programs that safeguard the rights and dignity of these groups in the digital space.</p> <p>3. Promotes digital skills and entrepreneurial opportunities for women and youth in Ghana. It does this by providing training and support programs that enable women and young people to acquire digital skills and leverage technology for economic empowerment.</p> <p>4. Advocates for gender-sensitive and socially inclusive policies and programs in digital transformation, and engages stakeholders to promote the welfare of marginalized groups in the digital space. It works with civil society organizations, development partners, and other stakeholders to raise awareness of the importance of gender equality, social protection, and digital inclusion in Ghana.</p>		
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C. KEY POLICIES, LEGISLATION, AND REGULATIONS

NATIONAL STRATEGIES, POLICIES, AND PLANS

NAME	YEAR OF APPROVAL
Ghana National Artificial Intelligence Strategy	Currently in draft
Ghana Integrated Digital Transformation Blueprint (2021–2030)	Currently in draft
National Digital Economy Policy	Currently in draft
Digital Financial Services Policy	2020
National Financial Inclusion and Development Strategy (NFIDS) 2018–2023	2018
National Intellectual Property Policy and Strategy	2016
Ghana National Cyber Security Policy and Strategy	2015
ICT in Education Policy	2015
National Broadband Policy and Implementation Strategy	2012
National Telecommunications Policy	2005
ICT for Accelerated Development (ICT4AD) Policy	2003

LAWS AND REGULATIONS

NAME	YEAR OF APPROVAL
Startup and Innovation Bill	Currently in draft
Electronic Transfer Levy, Amendment Act	2022
Cybersecurity Act	2020
Communications Service Tax Amendment Act	2019
Companies Act	2019
Payment Systems and Services Act	2019
Information Access Law	2019
Electronic Communications Tribunal Regulations	2016
Investment Promotion Center Act	2013
Electronic Transaction Amendment Act	2012

Data Protection Act	2012
Electronic Communications Regulations	2011
Mobile Number Portability Regulations	2011
Subscriber Identity Module Registration Regulations	2011
Electronic Communications Amendment Act	2009
National Communications Authority Act	2008
Electronic Communication Act	2008
Electronic Transactions Act	2008
National Information Technology Agency Act	2008
Payment Systems Act	2003
National Media Communication Act	1993
Ghana Constitution	1992
Criminal Offences Act	1966

OTHER IMPORTANT PROVISIONS

NAME	YEAR OF APPROVAL
Ghana Digital Economy Policy	2022 (Draft)
Fintech Regulatory and Innovation Sandbox	2022
Digital Trade Regulatory	2020
Ghana COVID-19 Alleviation and Revitalization of Enterprises Support (CARES) Plan	2020
Guidelines for Television White Spaces Data Services	2019
Electronic Communications (Interconnect Clearinghouse Services) Regulations	2016
Unsolicited Electronic Communications Guidelines	N/A
Mast and Towers Guidelines	N/A

D. KEY DIGITAL DEVELOPMENT DONOR PROGRAMS

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
AfCFTA Secretariat	AfCFTA's mandate is to eliminate trade barriers and boost intra-African trade. It is to advance trade in value-added production across all service sectors of the African Economy.	The launch of the operational phase (March 2023) included adopting the online mechanism for monitoring, reporting, and the elimination of nontariff barriers, and the Pan-African payment and settlement system. MSME's awareness and its capability to effectively engage in cross-border, Pillar II (Digital government platforms are interoperable); Private sector engagement (PSE) will be supported on e-commerce regulatory and interoperability issues (investment and trade-enabling environment). Develop relevant new metrics on the implementation of the AfCFTA and its impact on women trading companies, Pillar III (e-commerce and cross-border trade)	https://au-afcfta.org/about/	Pillar II Pillar III
African Development Bank Group	Affirmative Finance Action for Women in Africa (AFAWA) initiative	Equipping women-owned businesses to drive the country's (digital) economy	https://www.afdb.org/en/news-and-events/press-releases/international-womens-day-2023-afawa-finance-series-enhances-gender-focus-ghanas-digital-financial-services-policy-bolsters-commitments-overcome-financing-gaps-59587	Pillar I Pillar III

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
African Development Bank Group	Ghana—Post COVID-19 Skills Development and Productivity Enhancement Project—PSDPEP	<p>The objectives of the project are to support Ghana's sustainable post-COVID-19 recovery through skills development in the health sector and the restoration of livelihoods, income, and employment opportunities, along with private sector development; digitalize the Ghana Microfinance and Small Loans Centre (MASLOC) loan management system to enhance its efficiency and coverage and to create approximately 20,000 indirect jobs; provide entrepreneurial (including financial literacy) and climate-smart skills training among youth and women and other marginalized groups to enhance their productivity and employability; establish a U.S. \$4 million credit facility to support (MSMEs) of women and youth as they recover</p> <p>from COVID-19 impacts, to create at least 4,800 jobs, and to form a basis for establishing Ghana's Youth Entrepreneurship Investment Bank.</p>	https://www.afdb.org/en/documents/gpn-ghana-post-covid-19-skills-development-and-productivity-enhancement-project-psdpep	Pillar III
European Commission (EC)	Green Growth for Jobs	<p>In line with Ghana's National Green Job Strategy, which strives for social inclusion, a wide range of measures will take effect under this priority, including developing the green economy in agriculture and fishing, developing the skills, education, and training systems</p> <p>needed for such development, and ensuring the inclusion of women and other disadvantaged groups in these developments. European Partners, together with relevant CSOs, will support business creation to produce more opportunities, particularly for women, girls, youth, and socially excluded groups, thereby facilitating the development of viable green and digital enterprises. The EU will increase its support to integrate green and digital skills into TVET, and higher education and research. The digital transformation</p> <p>offers key opportunities to implement these changes. Through these interventions, the partnership should therefore also focus on strengthening the local digital innovation ecosystem that provides solutions for technological innovation in various</p>	https://international-partnerships.ec.europa.eu/countries/ghana_en	Pillar III, Cross-cutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
		sectors and generates productive employment in the digital economy and traditional sectors of the economy.		
European Commission (EC)	Smart and Sustainable Cities	This project focuses on secondary cities and regional capitals in Ghana. It will support green urban development initiatives, governance improvement, and the use of digital technologies to achieve these goals. Efforts to mobilize resources through direct collaboration with EU cities and programs such as Copernicus are of special interest. Digital technologies (such as Internet of Things, Artificial Intelligence, robotics, Geographic Information System (GIS) based e-services, and big data analytics) will also support innovation in services management and delivery, domestic resource mobilization and accountability, inclusion and security, innovation and knowledge economy and better regulation at urban scale. The digital transition will include e-governance solutions improving the management and delivery of quality urban e-governance services to citizens. The citizens should benefit from improved and transparent public and private e-services (land registry, registry office, tax office, trade office, transport, services to	https://international-partnerships.ec.europa.eu/countries/ghana_en	Crosscutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
		people with disabilities, etc.), based on progress in digital innovation.		
European Commission (EC)	Good Governance and Security	<p>The EC will support actions to engage with CSOs, promote gender equality and efforts to improve taxation policy and practice. Other actions will target migration and improve public services through digitalization. Addressing illegal fishing will also be a priority. European Partners will provide specific attention to gender issues and will support interventions aiming to increase women's representation in governance and decision-making to create an enabling environment for equal opportunities. European Partners will also address the persistent gender gaps in education, digital access, and ownership of key assets. European Partners will support the digital transformation policies through the Ministry of Communication, the National Information Technology Agency (NITA), and the National Cyber Security Centre. The EU will also support the Data Protection Commission to protect personal data in view of the growing threats to the security and privacy of users of digital technologies.</p>	https://international-partnerships.ec.europa.eu/countries/ghana_en	Pillar II, Cross-cutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
Expertise France	This is a Micro Small Medium Enterprises (MSMEs) Digital Skills Training Programme in Accra	The GNCCI MSMEs Digital Skills Training Programme aims to train and build capacity in digital techniques of MSMEs and to improve staff performance. It will support participants as they integrate and apply knowledge gained from the training.	https:// ghanachamber.org/gncci-and-expertise-france-launch-msmes-digital-skills-training-programme/ Note: project not listed on site	Pillar III, Cross-cutting
Federal Ministry for Economic Cooperation and Development (BMZ)	Tertiary Innovation Program (TDIP)	Tertiary Digital Innovation Program (TDIP) aims to equip tertiary graduates with the knowledge, skills, and tools to transition from school to industry in response to the growing youth unemployment in Ghana.	https://citinewsroom.com/2022/06/gdcl-make-it-in-africa-to-launch-tertiary-digital-innovation-program/	Pillar III, Cross-cutting
Federal Ministry for Economic Cooperation and Development (BMZ)	Digital Transformation for Sustainable Development in Ghana (DTEG)	This bilateral project supports Ghanaian businesses, especially women-led informal micro-enterprises, to strengthen their economic situation through digital transformation. It seeks to improve policy frameworks, foster collaboration for digital entrepreneurship, promote user-centered inclusive design and accessibility of digital services, and build digital entrepreneurship skills through coaching and mentoring.	https://www.bmz-digital.global/en/initiatives/digital-transformation-center-ghana/	Pillar II, Pillar III, Cross-cutting
GIZ	#eSkills4Girls Initiative	The #eSkills4Girls initiative aims to raise awareness of the empowering and disempowering nature of digital technologies for women and girls and considers women's participation as key to an inclusive economy and development.	https://www.eskills4girls.org/about/	Pillar II, Pillar III, Cross-cutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
GIZ	Pan-African e-Commerce Initiative (PeCI)	The PeCI offers tailor-made training and coaching for SMEs in Ghana, Kenya, and Rwanda, that they may integrate e-Commerce solutions into their business models. It will deliver citizen- and business-facing e-services and engage the public through digital channels, including a country-level digital strategy.	https://www.eacgermany.org/projects/panafrican-e-commerce-initiative-pe-ci-boosting-african-digital-trade	Pillar II, Pillar III
GIZ	FAIR Forward— Artificial Intelligence for All	FAIR Forward supports the shaping of policy frameworks by supporting the Ministry of Communication and Digitalization in the drafting of the Ghana National AI Strategy, contributes to building local AI expertise by organizing AI Fellowship training programs for recent graduates, and champions the development of a local AI innovation to aid cashew farmers with early pest and disease detection on their farms.	https://www.giz.de/expertise/html/61982.html	Pillar III, Cross-cutting
MasterCard Foundation	MEST Scale Accelerator Program, Young Africa Works strategy	Since the launch of the MEST Scale Accelerator in January 2022, the program has supported 12 high-growth SMEs in Ghana by providing strategic, technical, and operational support to address key technology gaps and capital links and to increase SME scaling capacity. Launched by the MasterCard Foundation in 2018, The Young Africa Work Strategy (YAW) works with governments, the private sector, educators, young people, and other funders to improve the quality of education and vocational training, prepare young people for the work force, expand access to financial services for entrepreneurs and small businesses, and connect job seekers to dignified and fulfilling work.	http://meltwater.org/	Pillar III, Cross-cutting
MasterCard Foundation	Young Africa Works Strategy	The Young Africa Works strategy support young people in Africa as they secure dignified and fulfilling work. The YAW strategy is based on a comprehensive approach to addressing the challenges of youth unemployment and underemployment in Africa, and involves several key activities and partnerships with various stakeholders.	https://mastercardfdn.org/who-we-are/young-africa-works-strategy/	Pillar III, Cross-cutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
MasterCard Foundation	Ghana Tech Lab	The Base program prepares individuals to think and innovate. It includes one month of training and two months of intensive incubation. Ghana Tech Lab is an innovation hub and startup incubator based in Accra, Ghana. It was established in 2017 to provide support and resources to young entrepreneurs and innovators in Ghana and across Africa. The Ghana Tech Lab aims to promote technological innovation and entrepreneurship in Ghana by providing access to training, mentorship, and resources for young people who are interested in developing innovative solutions to local and global challenges.	https://www.ghanatechlab.com/	Pillar III
MasterCard Foundation	Ghana Digital Financial Services Lab	The Ghana Digital Financial Services (DFS) Lab project promotes the use of DFS in Ghana, particularly among underserved and unbanked populations. The project is supported by the Mastercard Foundation, in collaboration with the Consultative Group to Assist the Poor (CGAP), and is implemented by a consortium of partners, including Fidelity Bank, BFA Global, and Multimedia Super Corridor.		Pillar II, Pillar III, Cross-cutting
MasterCard Foundation	Mastercard Foundation Scholars Program	With a focus on young entrepreneurial women, this program provides future business leaders with access to business development skills, financing, and marketplaces. It also identifies growing sectors of the economy and strengthens education in these areas, prioritizing digital training and technology-focused employment.	https:// mastercardfdn.org/all/scholars/	Pillar III, Cross-cutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
MasterCard Foundation	MasterCard Foundation Scholars Program e-Learning Initiative	Mastercard Foundation Scholars Program e-Learning Initiative addresses the disruption to learning as a result of the COVID-19 pandemic. It supports Scholars Program partner universities as they deliver high-quality, inclusive online instruction and virtual support to all students. It also supports the development of a community of practice in e-learning. In phase I (September 2020 to March 2022), the initiative focused on instructional design, pedagogy, content development, and acquisition. An estimated 95,000 tertiary students benefited indirectly from phase I through strengthened pedagogy and access to online content. During the second phase (March 2022 to 2025), the initiative will expand to other institutions and countries in the Foundation's network.	https://mastercardfdn.org/mastercard-foundation-scholars-program-e-learning-initiative/	Pillar II, Pillar III, Cross-cutting
World Bank	Ghana Digital Acceleration Project	The World Bank has provided \$200 million to Accelerate Ghana's Digital Transformation Agenda for Better Jobs (April 2022), which increase access to broadband, enhances the efficiency and quality of selected digital public services, and strengthens the digital innovation ecosystem in Ghana thereby helping create better jobs and economic opportunities. Pillar I: Digital Public Infrastructure; Pillar II: Country-level digital strategy, Pillar III: Ecosystem strengthening. The project strengthens the local digital entrepreneurship ecosystem and improves the survival and growth rate of digital technology-enabled startups. This goal will be achieved through support for more effective innovation ecosystem coordination, better service provision by Entrepreneur Support Organizations, expansion of access to early-stage financing, and promotion of advanced digital innovation skills.	https://projects.worldbank.org/en/projects-operations/project-detail/P176126	Pillar I, Pillar II, Pillar III
World Bank	Ghana Commercial Agriculture Program (GCAP)	\$145 million collaboration between the Government of Ghana's Ministry of Food and Agriculture (MOFA), the World Bank, and USAID that aims to improve the competitiveness of Ghanaian commercial agriculture. The goal of this project is to further commercialize and digitalize the agriculture market to improve efficiency and competitiveness.	https://mofa.gov.gh/site/projects/commercial-agriculture-project-gcap	Pillar III

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
Tony Blair Institute for Global Change (TBI)	DigSMART	<p>DigSMART aims to build digital skills, culture and leadership within the public sector to determine a more cohesive and accelerated digital transformation to improve service delivery. It will train more than 170 public sector workers from various levels of leadership. The training was implemented over a six-month period, from</p> <p>April to September 2023, at the Kofi Annan Centre of Excellence (AITI-KACE). The training covers various aspects of digital skills and knowledge necessary for leadership and transformation in government.</p> <p>Participants will learn about digital strategy, digital leadership and governance, digital transformation, digital change management principles and processes. DigSMART also includes an introduction to learning management systems, digital communication, and collaboration tools. The course also delves into emerging technologies such as AI, Internet of Good Things, and the metaverse and their applications. Participants learn about digital strategy, digital leadership and governance, digital transformation, and digital change management principles and processes.</p>	https://www.institute-global/insights/tech-and-digitalisation/fast-tracking-africas-future-tbi-digital-academy-supporting-national-transformation	Pillars I, II
United Nations Development Programme (UNDP)	Promoting innovations and inclusive entrepreneurship in Ghana	<p>The UNDP and Société Générale Ghana PLC (SG Ghana) have signed a Memorandum of Understanding (MOU) to encourage and support innovators, especially small businesses led by youth, women, and persons with disabilities (PWDs) to scale innovations in sustainable development. As part of the partnership, the UNDP</p> <p>Accelerator Lab, SG Innov8 Hub, and SG Home of Business will lead efforts to co-create opportunities for innovators to thrive, scale, and penetrate markets beyond the shores of Ghana.</p>		Pillar II, Pillar III

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
UNDP	Digitizing Payments for Agricultural Value Chains	Based in the UN Capital Development Fund, the Better Than Cash Alliance (BTCA) is a partnership of 70 governments, companies, and international organizations that accelerates the transition away from cash to advance the Sustainable Development Goals. Payments completed in agribusiness value chains represent some of the most significant payment flows of national economies and play an important role in building inclusive digital payments ecosystems. As part of catalyzing the global movement from cash to digital with the private sector, the Better Than Cash Alliance is committed to supporting digitalization of payment flows in different business sectors, including the cocoa sector in Ghana.	https://jobs.undp.org/ci_view_job.cfm?cur_job_id=98179	Pillar III, Cross-cutting
UNDP	Project for Digital Solutions for Health, Nutrition, and Medical Services	The project aims to improve gender equality and digital systems for better delivery of health and nutrition services in Ghana.	https://open.undp.org/projects/00140132	Pillar II, Cross-cutting
UNDP	Digital Inclusion for Development	To advance sustainable development in Ghana, UNDP leverages digitalization, innovation, and financing to promote structural transformation, inclusive governance, and climate resilience. It engages partners and communities to ensure no one is left behind. UNDP in Ghana focuses its development interventions on two main program areas for 2023–2027: Sustainable, resilient and inclusive growth and structural transformation.	https://www.undp.org/sites/g/files/zskgke326/files/2023-02/UNDP%20Ghana%20CPD%202023-2027.pdf	

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
UNICEF	Internet of Good Things—GLOBAL	Internet of Good Things is a set of free, mobile-ready web-based resources and applications that improve life by creating and expanding access to educational and lifesaving information. With local mobile network operators, UNICEF has launched Version 2 of the Internet of Internet of Good Things with a bold new look and improved functionality. On the upgraded platform, users can find updated information on COVID-19 prevention, parenting tips and activities, frontline worker training and resources, and robust youth offerings on health, climate change, and internet safety. Version 2 offers remote courses to users and tests their knowledge on each course module. It also allows users to create free accounts to comment on articles, ask questions, and participate in opinion polls that can help inform decision-making. By connecting to Internet of Good Things, users can access localized, updated, quality content from their mobile devices, at any time. All Vodafone users can access the platform at no cost. It is also available to MTN users with minimal data usage.	https://www.unicef.org/ghana/press-releases/unicef-ghana-launches-internet-good-things-20	Cross-cutting
UNICEF Ghana and UNICEF Innovation	The Pathfinder in Ghana	The Pathfinder in Ghana was based on two streams of DPG discovery and development: (1) To engage the local startup ecosystem, the Country Office built activities around its UNICEF StartUp Lab, an accelerator and training program for early-stage, tech-enabled startups that develop social impact products; and (2) to promote large, country-level, open-source platforms, UNICEF built on partnerships and relationships with government and academic stakeholders.	https://www.unicef.org/innovation/pathfinding-countries/ghana	Pillar II, Digital Government
UNESCO	Education—Major Programme I	This program comprises three key actions: (1) support Member States to develop education systems that foster high-quality, inclusive, lifelong learning; (2) empower learners to be creative and responsible global citizens; and (3) lead and coordinate the Education 2030 agenda through partnerships, monitoring, and research. In achieving these goals and targets, UNESCO has developed a blueprint—the Education 2030 Framework for Action (FFA)—to assist all Member States in the rollout. The Ministry of Education is in the process of developing a draft National	https://unesco.org/ghana/programmes/education/	Pillar II, Cross-cutting

DONOR/ ORGANIZATION	PROGRAM/ PROJECT/ ACTIVITY	SHORT PROJECT DESCRIPTION	PROGRAM/ PROJECT/ ACTIVITY LINK	DECA PILLAR(S)
		Action Plan to achieve the Education 2030 Agenda, which includes ICT in Education.		
Research and Innovation Systems Africa (RISA), UKAID	Sustainable Systems for Research and Innovation Financing	The project connects investors and businesses through a digital investment connection resource aimed at increasing the number of local investments in Ghana via Impact Investing Ghana.	https://www.risa-fund.org/wp-content/uploads/2022/07/Impact-Investing-Ghana-Profile.pdf	Pillar III
Research and Innovation Systems Africa (RISA), UKAID	Using a GESI-Focused Approach to Research and Innovation Value Chain Development and Commercialization in Ghana	The project creates digital resources that address the challenges and needs of researchers, entrepreneurs, and academia as they strengthen local capacity to commercialize research and innovation projects with iSpace Foundation as the implementing partner.	https://www.risa-fund.org/wp-content/uploads/2022/07/iSPACE-Foundation-Profile.pdf	Pillar II, Pillar III
Research and Innovation Systems Africa (RISA), UKAID	Bridging the Research Innovation-Industry Assimilation Gap through Technology Capacity-Building in Rural Ghana	This University of Ghana Business School project disseminates training and resources to strengthen the agriculture sector in rural areas by integrating technology and digital resources into learning and agricultural activities.	https://www.risa-fund.org/resource/the-university-of-ghana-business-school-ugbs/	Pillar III, Cross-cutting
Research and Innovation Systems Africa (RISA), UKAID	Africa Health Research and Innovation Project	The project uses a design-thinking approach to increasing health-related research and innovation through Accra Technical University.	https://www.risa-fund.org/resource/accra-technical-university-atu/	Pillar III

E. DEFINITIONS

Definitions from USAID Digital Strategy 2020–2024 or other USAID DECAS ([USAID Bosnia and Herzegovina](#), [USAID Guatemala](#), [USAID Moldova](#)).

Cybersecurity: The prevention of damage to, protection of, and restoration of computers, electronic communications systems, electronic communications services, wire communication, and electronic communication, including information contained therein, to ensure its availability, integrity, authentication, confidentiality, and nonrepudiation.

Cyber hygiene: The practices and steps that users of computers and other devices take to maintain system health and improve online security. These practices are often part of a routine to ensure the safety of identity and other details that could be stolen or corrupted.

Data privacy: The right of an individual or group to maintain control over, and the confidentiality of, information about themselves, especially when that intrusion results from undue or illegal gathering and use of data about that individual or group.

Data protection: The practice of ensuring the protection of data from unauthorized access, use, disclosure, disruption, modification, or destruction, to provide confidentiality, integrity, and availability.

Digital divide: The distinction between those who have access to the internet and can make use of digital communications services, and those who find themselves excluded from these services. Often, one can point to multiple and overlapping digital divides, which stem from inequities in access, literacy, cost, or the relevance of services. Factors such as high cost and limited infrastructure often exacerbate digital divides.

Digital economy: The use of digital and internet infrastructure by individuals, businesses, and government to interact with each other, engage in economic activity, and access both digital and nondigital goods and services. As the ecosystem supporting it matures, the digital economy might grow to encompass all sectors of the economy—a transformation driven by both the rise of new services and entrants, and backward links with the traditional, pre-digital economy. A diverse array of technologies and platforms facilitate activity in the digital economy; however, much activity relies in some measure on the internet, mobile phones, digital data, and digital payments.

Digital ecosystem: The stakeholders, systems, and the enabling environment that together empower people and communities to use digital technology to gain access to services, engage with each other, or pursue economic opportunities. A digital ecosystem is conceptually similar to, but broader than, a digital economy. Although certain aspects of the digital ecosystem have country-wide reach, other features differ across geographies or communities. The critical pillars of a digital ecosystem include (1) sound enabling environment and policy commitment, (2) robust and resilient digital infrastructure, (3) capable digital service providers and workforce (e.g., both public and private institutions), and (4) empowered end users of digitally enabled services.

Digital identity: “A set of attributes that uniquely describes an individual or entity,” as defined by the widely accepted [Principles on Identification for Sustainable Development](#). Digital identification (ID) systems often require registering individuals onto a computerized database and providing certain credentials (e.g., identifying numbers, cards, digital certificates, etc.) as proof of identity. Government actors can set up these systems to create foundational, national ID programs, or donors or nongovernmental organizations (NGOs) for functional purposes to identify beneficiaries, e.g., for humanitarian assistance and service-delivery.

Digital literacy: The ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life. Digital literacy may include competencies that are variously referred to as computer literacy, information, and communication technology (ICT) literacy, information literacy, and media literacy.

Disinformation: False information spread with the specific intent to deceive, manipulate, or influence behavior. It differs from misinformation because it requires malign intent.

Gross national income: The total domestic and foreign output claimed by residents of a country, consisting of gross domestic product, plus factor incomes earned by foreign residents, minus income earned in the domestic economy by nonresidents.³³² Previously known as gross national product.

³³² Gross national income is used rather than gross domestic product because the World Bank, the European Union, and other major global players increasingly prefer it. Chappelow, Jim. “Gross National Income (GNI).” Investopedia, accessed June 2022. <https://www.investopedia.com/terms/g/grossnational>.

Internet service provider (ISP): Includes both fixed-line and wireless technologies. Wireless ISPs operate over unlicensed spectrum. ISPs include both small, local services and global providers.

Misinformation: Refers to any false or inaccurate information, such as rumors and hoaxes. Social media platforms are regularly used to spread misinformation.

Mobile network operator (MNO): An entity that provides voice and data services primarily via wireless terrestrial networks. MNOs typically use licensed spectrum bands, which because they are not shared, tend to deliver a higher quality, more reliable (and more cost-intensive) service.

Spectrum: Refers to different frequencies of electromagnetic radiation. Regulators designate specific frequency ranges (or bands) for different purposes, including telecommunications. Some bands (e.g., Wi-Fi) are unlicensed, meaning that anyone can use them with the proper equipment. Licensed spectrum requires a regulator’s approval to broadcast (e.g., cellular networks or FM radio). Licenses are typically allocated through spectrum auctions.

F. METHODOLOGY

THE GHANA DECA INCLUDED THREE COMPONENTS:

A. USAID/Ghana engagement: USAID/Ghana designated a Mission DECA Team from the USAID/Ghana program office. The Mission DECA team helped identify stakeholders and reviewed relevant documents during planning, interviews, and the analysis and report-writing stages.

The Mission DECA Team also helped organize the Introduction and Post-Interview Presentations with USAID/ Ghana on the first and last days of the in-country research which was a mix of in-person and virtual meetings. These meetings were important to socialize the DECA purpose and preliminary findings across various USAID/ Ghana technical offices.

B. Desk research: The desk research used a standardized template organized around three pillars (digital infrastructure and adoptions; digital society, rights, and governance; digital economy). The desk research included three components: (1) review of USAID/Ghana’s CDCS, funding allocations, and digitally relevant programming;

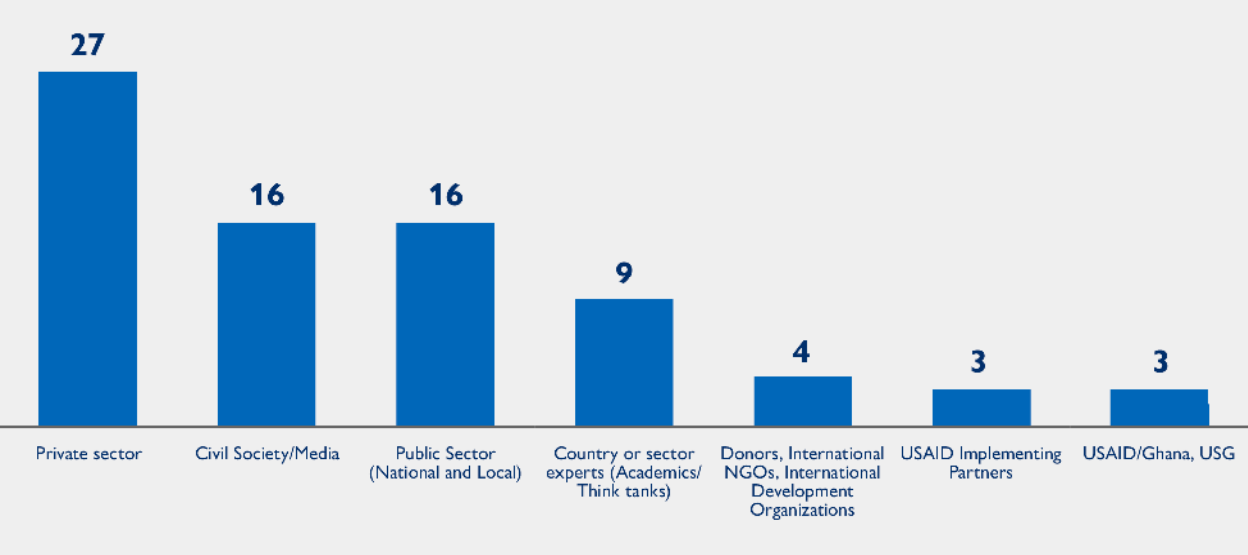
(2) quantitative analysis of open-source data and indices to produce regional comparisons (e.g., GSMA, World Economic Forum, International Telecommunication Union); and (3) internet research guided by high-level questions under each pillar about the state of Ghana’s digital ecosystem. The research team shared the desk research with the Mission DECA Team before interviews and used it to inform the interview guide questionnaires.

C. Interviews: The research team collaborated with USAID/Ghana to compile a list of target stakeholders across civil society, academia, international organizations, the private and public sectors, and within USAID/ Ghana. The research team and USAID/Ghana networks secured initial interviews. More interviewees were added throughout the research process through referrals from completed interviews.

During the interview phase, the research team conducted three to nine interviews per day while in country on the field visit. Most interviews were attended by at least two team members, with a lead interviewer and a notetaker. To best triangulate findings and to test different interview styles, team members rotated whom they paired with on interviews. Each interviewee was asked a general set of questions, which were developed before the interview phase, tailored to targeted interviewees, and based on learnings from previous interviews. The research team also traveled to Ghana regions to ensure better regional visibility and analysis.

To ensure a diverse mix of interviewees, the research team evaluated the list of scheduled interviews and conducted outreach in an attempt to fill identified gaps. Figure 42 and Appendix F show the 81 interviews by sector (informed by 20 female interviewees and 83 male interviewees).

Figure 42: Interviews Conducted



Source: WinDT Consulting

D. Analysis: The research team conducted most of the preliminary analysis while in-country. Every day during the three weeks of interviews, the team conducted debriefs of key findings. These meetings not only ensured that all team members were briefed on each interview but also facilitated the triangulation of emerging themes that could then be tested in subsequent interviews. Midway through the interviews, the team identified primary themes based on these initial findings. Upon completing the interview

phase, the team convened to revisit these themes, confirmed their validity against interview notes, and proceeded to organize the findings around the three pillars outlined in this report (digital infrastructure and adoption; digital society, rights, and governance; and digital economy).

E. Limitations: Research team members were limited, to an extent, by their technical expertise. Team members were chosen to provide coverage of key technical areas identified in a preliminary review, particularly regarding digital infrastructure, human rights online, digital government, DFS, e-commerce, and digital trade. This may introduce some bias—weighting the specializations of team members more heavily than areas such as cybersecurity, emerging technologies, digital inclusion and digital divides, and startup ecosystems.

Many interviewees were selected through USAID/Ghana and research team networks, which may have excluded stakeholders who are less comfortable engaging with U.S. Government representatives. Most interviews took place in Accra, Bolgatanga, Aburi, Tamale and virtually for participants from other regions which the research team could not visit; as a result, information is limited to four regions-based interviewees’ knowledge and work across the country. Rather than rigorous qualitative methods (e.g., thematic coding), analysis of interview notes depended on research team members triangulating findings and attempting to balance thematic gaps by consulting technical experts and seeking more interviewees.

F. Research team: The research team was composed of digital development generalists and specialists with technical expertise in telecommunications sector, digital government transformation, digital inclusion, online human rights, digital and data economies, data ethics, digital platforms, DFS, e-commerce, digital trade, and startups ecosystem. Team members who were technical experts attended most interviews that were relevant to their expertise.

G. INTERVIEWEE LIST

COUNTRY OR SECTOR EXPERTS (ACADEMICS AND THINK TANKS)	
1	Institute of ICT Professionals Ghana
2	University of Ghana
4	Ashesi University
5	IMANI Center for Policy and Development Ghana
6	Ms. Mavis Ampah Sintim-Misa, Independent Digital Development Consultant
7	Dr. Charles Aheto-Tsegah, Educationist
8	Tamale Technical University
9	Ghana-India Kofi Annan Centre of Excellence in ICT, Bolga Campus
10	Kobby Spiky, Joy FM
PUBLIC SECTOR (NATIONAL AND LOCAL)	
11	Ministry of Communications and Digitalization
12	National Information Technology Agency
13	Ghana Investment Fund for Electronic Communications
14	Ministry of Education
15	Ghana Health Service
16	Ghana Education Service
17	Ghana Technical and Vocational Educational Training Service
18	National Communications Authority
19	National Cyber Security Authority
20	Bank of Ghana
21	Ghana Interbank Payments and Settlements Systems
22	Drivers and Vehicle Licensing Authority
23	National Entrepreneurship and Innovation Program
24	North East Regional Coordinating Council (NERCC)
25	Upper East Regional Coordinating Council (UERCC)
26	Ghana Education Service, Tamale
DONORS, INTERNATIONAL NGOS, INTERNATIONAL DEVELOPMENT ORGANIZATIONS	
27	Mastercard Foundation
28	GIZ

29	UNDP
30	The World Bank
CIVIL SOCIETY AND MEDIA	
31	PenPlusBytes
32	Media General
33	Daily Graphic
34	Media Foundation for West Africa (MFWA)
35	Child Online Africa
36	Internet Society Ghana Chapter (ISOC)
37	Songtaba
38	STAR Ghana Foundation
39	Ghanaian Academic and Research Network (GARNET)
40	E-Governance and Internet Governance Foundation for Africa (EGIGFA)
41	Inclusive Tech Group
42	LGBT+ Rights Ghana
43	Ghana FinTech Association
44	e-Sports Association, Ghana
45	Association of Trade Agents
46	Artisans Association of Aburi
PRIVATE SECTOR	
47	IT Consortium
48	Innovare
49	mPedigree
50	Smart Infra Co
51	Logiciel Ghana
52	Uptech Farm Services (Tamale)
53	Kelroses (Tamale)
54	DemiPearl (Tamale)
56	ZeePay
57	Wangara Capital
58	Glovo
59	Jawoto (Tamale)
60	Daani (Tamale)

61	Onix Data Centres
62	American Tower Company
63	Vobiss Solutions LTD
64	MTN
65	CSquared
66	Meltwater Entrepreneurial School of Technology Africa (MEST Africa)
67	HOPin Academy
68	eCampus
69	Ghana Innovation Hub
70	Soronko Academy
71	Noni Hub
72	Yison Hub
73	Digital Print Ultimate (Tamale)
74	Royal-Avielle Dee Farms (Tamale)
USAID IMPLEMENTING PARTNERS	
75	USAID/Ghana Agriculture Policy and Knowledge Management (Policy LINK)
76	USAID/Ghana AGRA PIATA
77	USAID/Ghana-FTF Market Systems Resilience MSR)
USAID/GHANA, U.S. GOVERNMENT	
78	USAID/Ghana Democracy, Rights, and Governance Office (DRG)
79	USAID/Ghana Health, Population and Nutrition Office (HPNO)
80	USAID/Ghana Economic Growth Office

NOTE: One interviewee did not consent to be included in this list.

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