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# DIGITAL ECONOMY DIAGNOSTIC

## Liberia

#DE4A

Digital Economy  
for Africa Initiative



DIGITAL  
DEVELOPMENT  
PARTNERSHIP





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# About DE4A

**Rapid digital transformation is reshaping the global economy**, permeating virtually every sector and aspect of daily life, changing the way we learn, work, trade, socialize, and access public and private services and information. In 2016, the global digital economy was worth some US\$11.5 trillion, equivalent to 15.5 percent of the world's overall gross domestic product (GDP). It is expected to reach 25 percent in less than a decade, quickly outpacing the growth of the overall economy. However, countries like Rwanda are currently capturing only a fraction of this growth potential and need to strategically invest in the foundational elements of their digital economy to keep pace.

**The Digital Economy for Africa (DE4A) Initiative forms part of the World Bank Group's support for the African Union's Digital Moonshot for Africa**, which aspires to see every African individual, business, and government digitally enabled by 2030. The DE4A Initiative is underpinned by five principles:

- ▶ **Comprehensive:** Taking an ecosystem approach to digital economy development that looks at both supply and demand and defies a narrow, siloed approach in defining the elements and foundations that make up the digital economy.
- ▶ **Transformative:** Aiming at a very different scale of ambition beyond incremental 'islands' of success.
- ▶ **Inclusive:** Recognizing that the digital economy is for 'everyone, in every place, and at all times' as well as creating equal access to opportunities and dealing with risks of exclusion.
- ▶ **Homegrown:** Supporting solutions anchored in the local context and unleashing the African spirit of enterprise to support more homegrown digital content and solutions.
- ▶ **Collaborative:** Dealing with the digital economy requires a more flexible mindset, including collaboration among countries, across sectors as well as between public and private players.

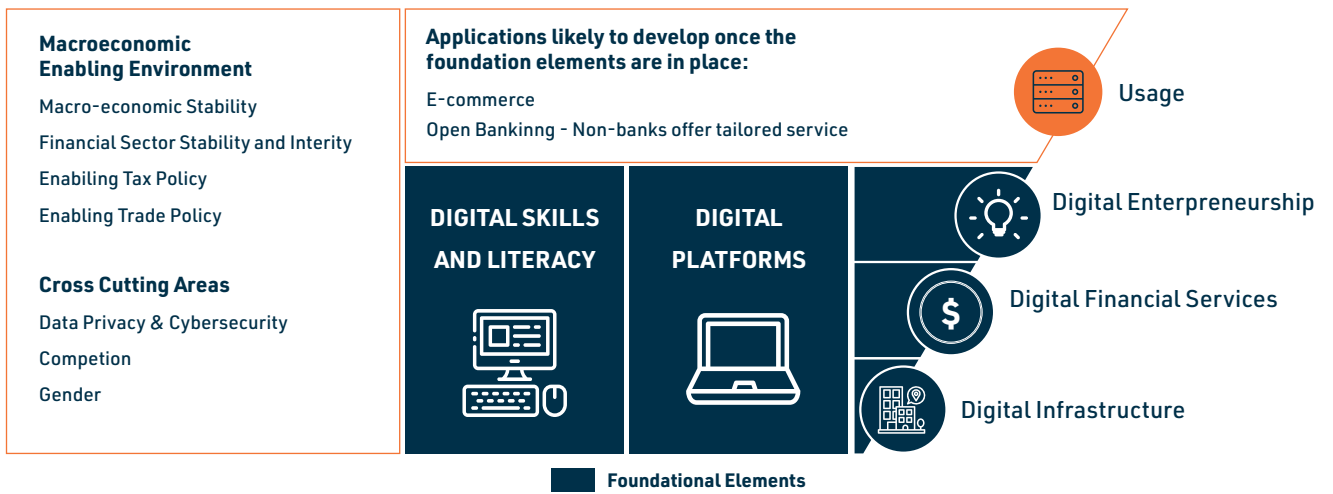




**For a successful and inclusive digital economy, African countries need to support the development of the key foundational building blocks** (see Figure 0-1). Five foundational elements, which are closely interlinked and synergistic, have been identified:

- ▶ **Digital Infrastructure:** Digital infrastructure provides the means for people, businesses, and governments to get online and link with local and global digital services, thus connecting them to the global digital economy. High-quality and affordable internet connectivity is a critical foundational component of the digital economy.
- ▶ **Digital Platforms:** Digital platforms offer products and services, accessible through digital channels, such as mobile devices, computers, and the internet. They facilitate digital exchange and transactions, enabling producers and users to create value by interacting with each other. Governments, for example, operate digital platforms to offer citizen-facing government services and share information. Commercial firms and non-profit foundations also operate digital platforms to offer a growing array of products, services, and information.
- ▶ **Digital Financial Services:** Digital financial services enable individuals and businesses to conduct transactions electronically and open a pathway to a range of digital financial services in addition to digital payments, including credit, savings, and insurance. Access to affordable and appropriate digital financial services is critical for the participation of individuals and businesses in the digital economy.
- ▶ **Digital Entrepreneurship:** Digital entrepreneurship and innovation create an ecosystem that helps bring the digital economy to life, by spurring new, growth-oriented ventures, products, and services that leverage technology. By enabling the transformation of existing businesses, digital entrepreneurship contributes to net employment growth and helps enhance competitiveness and productivity.
- ▶ **Digital Skills** equip a digitally savvy workforce to build robust digital economies and competitive markets. Digital skills are technology skills, together with business skills for building or running a start-up or enterprise. Greater digital literacy enhances the adoption and use of digital products and services among the larger population.

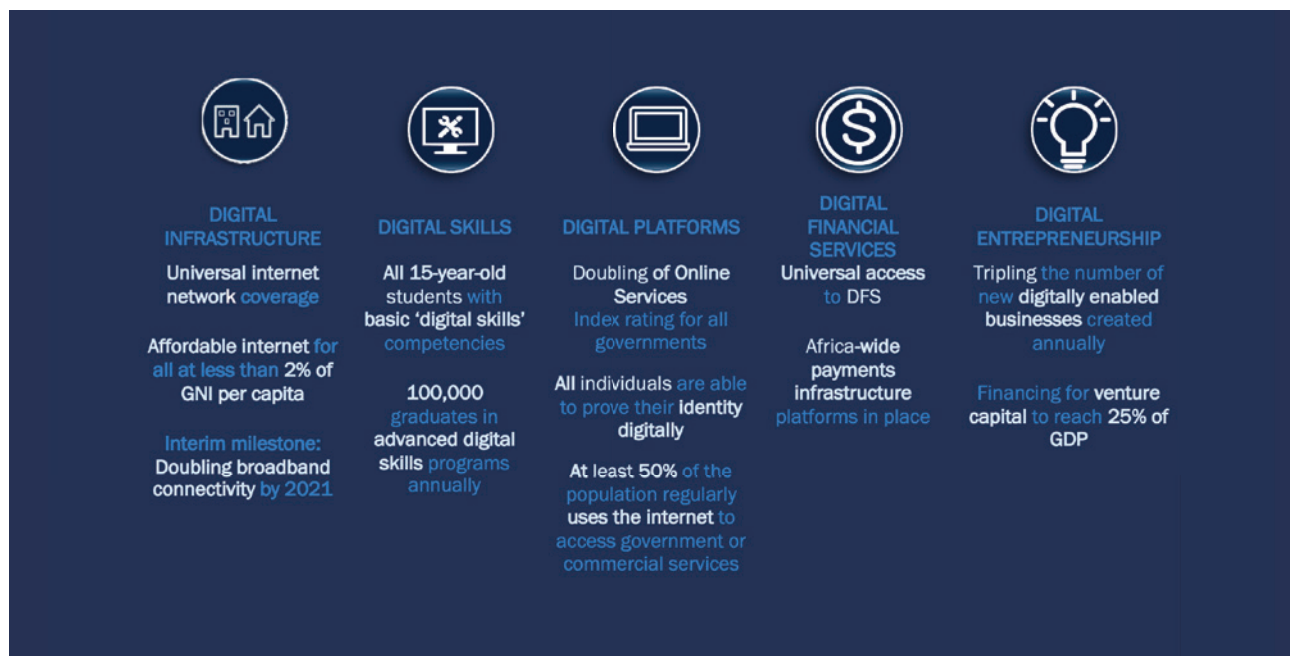
**Figure 0.1: Key Component of the Digital Economy Ecosystem**





As part of the DE4A Initiative, ambitious, high-level targets have been established for all five foundational pillars of the digital economy, articulated under the DE4A framework, as a way to define and measure success against the goal of ensuring that every individual, business, and government is digitally enabled by 2030 (see Figure 0-2).

Figure 0.2: Digital Moonshot Targets across Pillars



Note: GNI = Gross national income. DFS = Digital Financial Services. GDP = Gross Domestic Product.

# Contents

<b>Acknowledgments</b> . . . . .	<b>6</b>
<b>Diagnostic Methodology</b> . . . . .	<b>7</b>
<b>Acronym List</b> . . . . .	<b>8</b>
<b>Executive Summary</b> . . . . .	<b>11</b>
Introduction . . . . .	20
Liberia at a Glance . . . . .	20
Background on the Digital Economy . . . . .	22
Structure of this Report . . . . .	23
<b>Digital Infrastructure</b> . . . . .	<b>24</b>
The Importance of Digital Infrastructure . . . . .	24
Diagnostic Findings . . . . .	25
Recommendations . . . . .	31
<b>Digital Skills</b> . . . . .	<b>33</b>
The Importance of Digital Skills . . . . .	33
Diagnostic Findings . . . . .	34
Recommendations . . . . .	39
<b>Digital Platforms</b> . . . . .	<b>41</b>
The Importance of Digital Platforms . . . . .	41
Diagnostic Findings . . . . .	43
Recommendations . . . . .	46
<b>Digital Financial Services</b> . . . . .	<b>48</b>
Importance of Digital Financial Services . . . . .	48
Diagnostic Findings . . . . .	49
Recommendations . . . . .	55
<b>Digital Entrepreneurship</b> . . . . .	<b>58</b>
The Importance of Digital Entrepreneurship . . . . .	58
Diagnostic Findings . . . . .	59
Recommendations . . . . .	65
<b>Conclusion: Main Messages and Recommendations</b> . . . . .	<b>68</b>
Liberia at a Glance . . . . .	68
Infrastructure . . . . .	68
Digital Skills . . . . .	69
Digital Platforms . . . . .	69
Digital Financial Services . . . . .	70
Digital Entrepreneurship . . . . .	71
<b>References</b> . . . . .	<b>72</b>
<b>Endnotes</b> . . . . .	<b>72</b>



## List of Figures

Figure 01: Key Component of the Digital Economy Ecosystem .....	3
Figure 02: Digital Moonshot Targets across Pillars .....	3
Figure 11: Digital Economy and Development Outcomes .....	22
Figure 2.21: 2G Mobile Coverage, 2017 .....	25
Figure 22: Households with Mobile Phone, Liberia .....	27
Figure 23: Households/Individuals with Mobile Phone .....	27
Figure 24: Predicted & Surveyed Internet Use 2018/19 .....	27
Figure 25: African Regulatory Watch Initiative Index .....	29
Figure 26: Potential Impact of LTA Price Order .....	30
Figure 31: Education Attainment by Age Cohort .....	35
Figure 32: Total Enrollment by Grade in 2018 .....	35
Figure 33: Students with Access to Electricity .....	36
Figure 41: Digital Public Platforms-Benefits and Requirements .....	41
Figure 42: EGD: Liberia versus Benchmark Countries .....	42
Figure 43: Components for E-Government Index 2018 .....	43
Figure 44: Component Change in Ranking .....	43
Figure 51: Net Lending to the Private Sector (as % of GDP) .....	49
Figure 52: Digital Banking in Liberia and Comparator Countries: 2017 .....	50
Figure 53: Growth in Financial Account Ownership across Africa .....	51
Figure 54: Made or Received a Digital Payment in Past Year .....	51
Figure 55: Gender Gap in Use of Digital Payments .....	51
Figure 56: Growth in Total and Active Accounts .....	52
Figure 61: Entrepreneurship Index 2018 .....	60
Figure 62: Venture Capital Availability (Rank) .....	61
Figure 63: Indicators of Entrepreneurship Culture .....	62

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# Diagnostic Methodology

An **in-country kick-off and fact-finding mission** was undertaken in preparation for this diagnostic.

Preliminary findings were presented and validated at a closing meeting held on February 1, 2020.

Draft final report was shared for comments and feedback from the Government Officials in April 2021.

In addition to desk research conducted, these engagements allowed for broad stakeholder consultation with both the public and private sector, as well as civil society.

The following stakeholders were consulted as part of this country assessment:

- ▶ Public sector: Ministry of Post and Telecommunications, Ministry of Finance and Development, Central Bank of Liberia, National Investment Commission, Ministry of Education, Ministry of Commerce and Industry, Liberia Revenue Authority Liberia Water and Sewage Corporation, Liberian Business Registry
- ▶ Incubators, accelerators, and business support: ILab, Smart Liberia, BSC Monrovia, Spark Liberia
- ▶ Telecommunications sector: Liberia Telecommunications Authority, Liberia Telecommunications Company, Cable Consortium of Liberia CSquared, Orange, MTN Lonestar, Power Net ISP, K3 ISP, Electroshock ISP
- ▶ Financial sector: Prospective members of the National Switch Implementation Committee
- ▶ Education sector: Teach for Liberia, University of Liberia; Bluecrest, Mercy Corps
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Analysis presented also draws on regional and global benchmarking, based on standardized indicators that form part of the DE4A diagnostic methodology, as well as government statistics and data shared by the private sector.

# Acronyms

<b>ACH</b>	Automated Clearing House
<b>ACE</b>	Africa Coast to Europe
<b>AIM</b>	Aid Information Management System
<b>ASYCUDA</b>	Automated System for Custom Data
<b>ATM</b>	Automated Teller Machine
<b>B2B</b>	Business to Business
<b>B2C</b>	Business to Consumer
<b>BDS</b>	Business Development Services
<b>CAPEX</b>	Capital Expenditure
<b>CBC</b>	Competency-Based Curriculum
<b>CBL</b>	Central Bank of Liberia
<b>CCL</b>	Cable Consortium of Liberia
<b>CEO</b>	County Education Officer
<b>CICO</b>	Cash in Cash out
<b>CIO</b>	Chief Information Officer
<b>CoA</b>	Chart of Accounts
<b>CS-DRM</b>	Commonwealth Secretariat Debt Reducing and Management
<b>DE4A</b>	Digital Economy for Africa Initiative
<b>DFS</b>	Digital Financial Services
<b>ECOWAS</b>	Economic Community of West African State
<b>EDMS</b>	Electronic Document Management System
<b>EFT</b>	Electronic Funds Transfer
<b>EGDI</b>	E-Government Development Index
<b>EVC</b>	Ebola Virus Crises
<b>EVD</b>	Ebola Virus Disease
<b>FCV</b>	Fragility, Conflict, and Violence
<b>FSDIP</b>	Financial Sector Development Implementation Plan
<b>G2B-ESP</b>	Getting to Best Education Plan
<b>G2P</b>	Government to Person
<b>GDP</b>	Gross Domestic Product
<b>GEI</b>	Green Energy Interface
<b>GNI</b>	Gross National Income
<b>GoL</b>	Government of Liberia
<b>GSMA</b>	Global System for Mobile Communications Association
<b>HBW</b>	Home-based Work
<b>HCI</b>	Human Capital Index
<b>ICT</b>	Information and Communication Technology



- IFMIS** Integrated Financial Management Information System
- ISP** Internet Service Provider
- ITAS** Installation, Test and Acceptance
- ITU** International Telecommunication Union
- LIPO** Liberia Intellectual Property Office
- LRD** Liberian Dollars
- LTA** Liberia Telecommunications Authority
- MACs** Ministries, Agents, and Commissions
- MFDP** Ministry of Finance Development and Planning
- MMO** Mobile Money Network Operator
- MNO** Mobile Network Operator
- MoCI** Ministry of Commerce and Industry
- MoE** Ministry of Education
- MoPT** Ministry of Post and Telecommunications
- NBFI** Non-bank Financial Institution
- NBIS** National Biometric Identification system
- NEPS** National Electronic Payment Switch
- NEPSIC** National Electronic Payment Switch Implementation Committee
- NFIS** National Financial Inclusion Strategy
- NGO** Nongovernmental Organization
- NIR** National Identification Registry
- OPGW** Optical Ground Wire
- P2B** Person to Business
- P2P** Person to Person
- PAPD** Pro-Poor Agenda for Prosperity and Development
- PPP** Public-Private Partnership
- PER** Public Expenditure Review
- RTGS** Real Time Gross Settlement
- SSS** Senior Secondary School
- STEM** Science, Technology, Engineering, and Mathematics
- TVET** Technical, Vocational Education, and Training
- UAF** Universal Access Fund
- UNCTAD** United Nations Conference on Trade and Development
- UL** University of Liberia
- USAID** United States Agency for International Development
- USD** United States Dollars
- USSD** Unstructured Supplementary Service Data
- WAAP** West African Power Pool
- WASSCE** West African Senior School Certificate Examination
- WEF** World Economic Forum

# Executive Summary



**B**road adoption and productive application of digital technologies characterize economies of the future, particularly in a post-COVID-19 world.

As digital connectivity increasingly serves to mitigate the growing risks of pandemic, an economy's ability to succeed in the 'new normal' global marketplace and offer a rising quality of life for citizens will depend on the radically altered traditional business models and pathways to development. Even before the global pandemic altered future expectations and gave rise to the urgent need to digital technology, the digital economy was expected to reach 25 percent of global in 2026 from 15.5 percent in 2016 far outpacing the growth of the 'traditional' economy (Huawei and Oxford Economics 2017). Now with the global pandemic raising the ubiquity of digital technologies around the world, the need to adopt digital solutions and methods in everyday life will be even greater.

**Africa has been a leader in the rapid application of mobile technologies to everyday use, considering the idiosyncrasies of emerging and sometimes fragile economies.** Mobile money and electronic banking are driving financial inclusion with the number of financial accounts in Africa doubling between 2014 and 2017. African e-commerce is also rapidly growing, at an estimated annual rate of 40 percent. Over the last five years, there has been a tenfold increase across the region in the supply of new intermediaries such as incubators, accelerators, and tech hubs, numbering more than 400 across Africa today. The digital economy in Africa is expected to grow to over US\$300 billion in nominal terms by 2025 (McKinsey 2013) but represents only a tiny fraction of the benefits to be achieved.

**The rise in digital economic activity also introduces new types of risks, including a growing 'digital divide', risk of cyberattacks and fraud, threats to privacy, and disruption to markets.** Access to the internet remains out of reach for most people and very few citizens have digital IDs or transaction accounts—locking them out of access

to critical public services, financial inclusion, and markets. Digital startups struggle to attract funding and ‘traditional’ businesses are only slowly adopting digital technologies and platforms to boost productivity and sales. Few interventions invest strategically and systematically to develop digital infrastructure, data frameworks, digital platforms, and digital skills.

**Digitizing the economy was a priority before COVID-19 but a new degree of urgency has emerged for unconnected countries such as Liberia to take concerted actions to prepare for the future.** Two areas stand out as particularly urgent in this regard, expanding the connectivity infrastructure so a large share of the country has access to new technology and raising the level of foundational skills in the country so that efforts introducing digital literacy can take hold. In parallel, steps to connect government internally and with citizens will provide two-way feedback to improve accountability, outreach, and service delivery. The private sector can then take the highest advantage of the foundations for connectivity, literacy, and governance by providing a new range of digital financial services (DFS) and entrepreneurial opportunities for citizens.

**Liberia has progressed in digital connectivity, but it is a long way from achieving its affordability and access targets for broadband.** Households with a mobile phone increased from less than one-third in 2007 to almost two-thirds in 2016, even though only one-fifth of households have electricity. After the arrival of the Africa Coast to Europe (ACE) fiber optic submarine cable, international bandwidth rose by a factor of 1,000 and its wholesale price fell by more than a factor of 10. Yet, for most Liberians, access to broadband is limited as no nationwide high-speed transmission network exists and the regulatory environment is not conducive for developing a secure, universal, and affordable data infrastructure.

**As compared to 90 percent GSM (2G) coverage of the population, broadband covers less than two-thirds of the population.** Global System for Mobile Communications Association (GSMA) reported 1.3 million mobile broadband subscriptions in 2018 for a penetration of just over a quarter of the population (26 percent), but only 8 percent of the population reports using the internet according to International Telecommunication Union (ITU), as compared to 22 percent average for Sub-Saharan Africa. Actual internet usage in Liberia is uncertain with estimates varying widely but it appears that the internet is used by a lower share of Liberians than seen in neighboring countries. Usage is estimated to be just above Sierra Leone’s figure but half of that in Senegal, and much less than in Ghana, Côte d’Ivoire, and The Gambia. Competition and regulatory issues have made pricing a constraint to adoption by many, as the price of accessing the internet remains well above the Africa-wide 2 percent of gross national income (GNI) target adopted by Liberia.



**Significant bottlenecks inhibit growth of high-speed internet, particularly outside of Monrovia.** Liberia remains one of the few Economic Community of West African State (ECOWAS) countries without a nationwide fiber optic backbone. Although metropolitan fiber networks have recently been established in Monrovia, virtually no fiber links exist outside of the capital city, apart from a link to the airport, and less than one-fifth of the population lives within 50 km of a national transmission link. As a result, the international submarine cable has considerable excess capacity to offer to the citizens of Liberia, but telecommunications operators have so far been prevented from pursuing their commercial interest to build fiber optic backbone links outside of Monrovia. At the same time, the Universal Access Fund (UAF) created in 2014 is only now becoming active but is doing so by procuring stand-alone infrastructure for rural areas on a pilot basis instead of leveraging private investments.

**A key bottleneck to the expansion of at least some of the fiber optic links outside of Monrovia is a highly anticipated decision on the government's approach to its deployment and financing.** The government commissioned a feasibility study for a nationwide fiber optic backbone in 2016 but as of February 2020, no decision has been made on the strategy for the deployment and financing. Instead, the government has prevented telecommunications operators from building fiber optic backbone links outside of Monrovia despite several operators expressing interest in building certain routes. This opportunity for the government to leverage the private sector and optimize the use of scarce public resources is considered best practice for infrastructure financing. Therefore, policy and regulatory reforms in support of private investments may be considered before public funding is pursued. This means that in general, private sector investments should be promoted without limiting the number of licenses.

**The regulatory regime for telecommunications has improved over the past decade but remains relatively weak compared to peers, particularly in competition policy and licensing.** Liberia ranks 113 out of 193 countries in ITU's information and communication technology (ICT) Regulatory Tracker 2018, with the lowest score recorded for the cluster of regulations covering the competition framework. Compared to ECOWAS standards, Liberia's licensing regime is complex and fragmented with multiple categories of licenses that may impede innovation relative to the use of universal licenses. To some degree, the segmentation of a small market maintains the concentrated industrial structure, where dominant players' competitive position and profitability is highly sensitive to small regulatory changes.

**Internet prices demonstrate the importance of transparent, predictable, and market-friendly regulation, particularly in the case of retail pricing.** Even with the massive fall of wholesale prices after connection to the ACE cable, a standard bundle of



mobile data costs the equivalent of 6.7 percent of monthly per capita income as of October 2019, well above the 2 percent of GNI target, and Liberia ranked 172 out of 181 countries in mobile internet pricing. With the already implemented price floor and the contemplated massive regulatory surcharge, mobile data may become unaffordable for many Liberians. The regulatory surcharge would also be damaging to the financial viability of the mobile operators. The use of domestic retail price regulation and regulatory fees to address issues ranging from corporate competition issues to domestic resource mobilization, while legitimate objectives for the government, is having detrimental effects on internet usage and innovation now, when access to connectivity is most critical.

**Second only to a blueprint for greater connectivity is the urgent need to increase the level of foundational and digital skills in the country.** With the arrival of the fourth industrial revolution, Africa requires a digitally competent workforce and a digitally literate citizenry to participate and contribute. Digital skills are the prerequisite for benefiting from any technology across all sectors of the economy and at all levels of the skills spectrum. The digital skills coupled with modern 21st century soft skills of problem solving and critical thinking is key to digital transformation in both the private and public sectors and will be a requirement of economy vibrance in a post-COVID-19 world.

**However, Liberia's severe deficiency in digital literacy gap will serve to exclude much of the population from the benefits of the digital world, with the greatest burden on the poorest.** With foundational skills being the prerequisite for digital education, Liberia's 2.3 learning-adjusted years of schooling and overall adult literacy of 43 percent (27 percent for women) underscore the immense task for Liberia's education system to strengthen skill levels across the spectrum of society. This challenge is more daunting given the desperate state of the public education system in Liberia. High rates of dropout are pervasive, resulting in a 13 percent net enrollment rate at the secondary level. Sadly, 40 percent of children entering Grade 1 will drop out before completing basic education.

**On top of these basic educational challenges are those related to the specific needs for building digital skills.** Electricity accessibility in schools is one of the lowest in the region with one-third of senior secondary and one-fifth of junior secondary schools having electricity compared to 57 and 47 percent, respectively, for Africa as a whole. Computers and digital devices are limited in government and public schools in Liberia as traditional needs are prioritized at the expense of little or no investment in classroom computer equipment. Computer Teachers often teach computer science without computers for demonstration and practice. Finally, among some thirty





public and private tertiary education institutions, only four offer bachelor's degree programs in IT-related areas and no master's degree is available in Liberia. Even the leading university of the country, the University of Liberia, is planning for its first computer science program this year.

**With conditions of limited resources, the task for Liberia to develop digital skills of its citizens to catch up with the rest of Africa is monumental.** On the 'hardware' side, infrastructure, affordable broadband, and access to digital devices at home and education institutions at all levels are a basic constraint. Sufficient funding, appropriate policies, and organization capacity could help address digital infrastructure in a relatively short time but the challenge of addressing the 'software' side of digital capabilities is more difficult. A dearth of trained teachers, administrators, and specialists in ICT/digital skills at all levels of education institutions and the low level of foundational skills across most of the youth make the attempt of accelerating digital skills development much harder in Liberia than perhaps elsewhere. The COVID-19 pandemic further uncovers the challenges of inadequate digital infrastructure (internet access) and limited basic digital skills (able to use the internet) that hinder the alternative ways of teaching and learning that are becoming necessary.

**Liberia's initiatives around its own public sector digital platforms are at the core of numerous dimensions of public sector governance.** The strength of digital platforms stems from their ability to virtually connect people and things, thereby facilitating digital transactions and interactions. The government is aggressively seeking to apply this power to its own functions, ranging from transparent, efficient, and accountable public resource management to digital connectivity with citizens for services and payments and to public platform for business to better comply with tax and commercial regulations.

**Liberia's pace of improving its public digital platforms lags those of its neighbors, but the latest statistics may understate recent advances.** The country has generally been characterized by weak supply of and demand for digitalized public sector as evidenced by its 173 ranking out of 194 countries in the United Nation's E-Government Development Index (EGDI). Like most countries, Liberia has been advancing faster in developing its online service presence than in infrastructure or human capital. Still, even though Liberia's score increased from 2016 to 2018, moving the country from the low to medium category, Liberia's overall global ranking fell while neighbors such as Guinea (189 to 181), Sierra Leone (186 to 174), Côte d'Ivoire (175 to 172), and Ghana (120 to 101) improved.

**Liberia now has in place some of the key building blocks to connect government, improve financial management, and digitize internal government operations.** Critical to this effort is the ongoing rollout of a National Biometric Identification System

(NBIS) for all citizens and legal residents to increase efficiencies: linking key functional identification systems, such as civil registry, driver's licenses, passports, and human resource management (including payroll and pensions). While the data infrastructure and systems are increasingly shared, interoperability remains low as most digital platforms do not communicate well with each other. A key example is the fact that the National Identification Registry (NIR) has yet to ensure interoperability with Liberia's social registry platforms, a crucial step to support poverty alleviation. The Government of Liberia (GoL) has also been slow to adopt an open standard and open source-based approach to its public platform. Finally, the government's internet presence is lagging after a good start. Many websites are offline and/or outdated, and all have one-way information flow, with the notable exception of the tax return e-filing. In the government, pockets of ICT excellence coexist within limited ICT skill base at the level of senior leaders, civil servants, and technical specialists.

**As these key gaps are filled, the future challenge will be to boost citizen uptake by increasing digital literacy, expanding internet access, and building trust in the government.** In this regard, stronger institutional leadership would help overcome coordination challenges that end up presenting to citizens an unfriendly user experience. The National ICT Policy calls for coordinated actors and actions as key ICT decisions increasingly are taken over by the National ICT Governing Board, comprising ministries, mobile network operators, and civil society. A Chief Information Officer (CIO) Council plays the executive role for the governing board by facilitating technical implementation and coordination.

**Finally, dimensions of the legal framework governing platforms need modernizing across the board, given some of the emerging relevant gaps and implementation issues.** Elements of data security, archiving, and digital preservation exist but without a single consolidated, harmonized policy framework that provides formal procedures or mechanisms to address data security. Therefore, the call for data protection and consumer privacy in the National ICT Policy needs appropriate regulations on data protection and online data privacy for implementation and compliance.

**In light of challenges in responding to the COVID-19 pandemic, the government has utilized platforms to make sure funds are released on time to frontline service providers.** For example, there have been efforts to respect social distancing guidelines to help 'flatten the curve' of infections by expediting the transition to electronic payments for health care workers to reduce manual check writing, distribution, and collection. Still this type of digital payments outreach by the government to more citizens and businesses is needed, requiring a more sophisticated platform architecture than exists today, given that the need for a system of electronic payments is on the rise.



**With the introduction of mobile money in 2014 by two mobile money operators, financial account ownership has increased but usage and use cases remain limited.**

Although cash and other manual-based transactions dwarf electronic ones in Liberia, the rise of mobile wallets from 0.5 to 2.5 million from 2014 to 2017 has raised overall account ownership. From the last survey covering 2017, 36 percent of adults in Liberia had a bank account or used a mobile money service as compared to less than one-fifth in 2011 before the introduction of mobile money. Account ownership by women is 78 percent that of men in Liberia, equal to the regional average but somewhat comparable to the 54, 56, and 64 percent in Nigeria, Sierra Leone, and Guinea, respectively, or even the 74 percent in Ghana. And, while the share of wallets that are active has fallen dramatically, 28 percent of adult Liberians made at least one digital transaction in 2017.

**Despite these improvements, there are many obstacles to increase access to and usage of DFS in Liberia, particularly in rural areas.** These include (a) less than full penetration of mobile services outside urban centers and the difficulty for branches, agents, and digital providers to operate where roads and electricity are lacking; (b) limited awareness of and trust in digital money transfers provided by agents; (c) challenge of agents having enough cash liquidity outside of the main cities; (d) limited acceptance of mobile money by merchants for purchases; and (e) limited interoperability between financial institutions and mobile money networks operated by the telecommunications digital payments.

**Digital banking on the other hand has been slower to take off, due to a difficult, high-cost banking environment generally as well as a cautious approach to liberalizing regulations by the Central Bank of Liberia (CBL).** Electronic banking went live in 2016 when CBL introduced its Real Time Gross Settlement (RTGS) for large wholesale payments, Automated Clearing House (ACH) for direct credits, and National Electronic Payment Switch (NEPS) to interconnect financial institutions. Uptake at the retail level by merchants and consumers has been limited. For example, the ACH accounts for only half of cleared checks and handles only a handful of ACH credits such as automatic salary deposits. The ACH debit system is not yet operational, preventing bill payment through electronic mode as vendors and citizens lack the option of automatic account deductions for recurring payments such as paying bills, further sustaining preferences for check and cash. Similarly, the NEPS is not yet fully operational, facilitating less than US\$10,000 automated teller machine (ATM) transactions among four banks without broader digital payments interconnectivity.

**Regulatory reforms are being introduced by CBL with a view to increase the use of DFS not just in support of pro-poor growth and in response to recent and future crises.** Following the highly successful introduction of mobile money in 2014 as well as technological advances in digital payments systems over the years, improvements are slowly being made in the body of legislation governing financial service providers, bank and non-bank remittance providers, and mobile money network operators (MMOs). Regulating different providers of similar services differently has led to lagging adoption of, and limited benefits from, innovations offered by DFS. A step in the direction toward unified regulation was made with the introduction of a generalized E-payment Services Regulation in December 2019 that also mandated interoperability via NEPS. Yet regulatory gaps in the universal framework still exist. Remittance providers are prevented from termination of remittances into digital transaction accounts and non-bank institutions cannot provide basic DFS.

**At the same time CBL responded to the financial crises of late 2019 and then the COVID-19 crises beginning in March 2020 with measures to encourage the rapid uptake of DFS.** To help mitigate the shortfall in physical cash (particularly Liberian dollars) during late 2019, CBL allowed proprietary bilateral switch connections between banks and mobile network operators (MNOs), in advance of interoperability requirements coming into force via NEPS. Several banks set up bilateral switching that enabled a bank account to push money to and pull money from a mobile wallet, thus enabling a direct link between banking services, such as direct deposit and payment services, with a mobile wallet located where no branch would exist. Second, in response to the urgent use of electronic payments by many frontline services, CBL has suspended fees and charges for most electronic transfers and point-of-sale outlets used by merchants and mobile money operators and increased allowable daily limits. CBL has also increased the allowable daily and aggregate limits for mobile money transactions for a period of three months.

**The global pandemic also underscores the critical importance of countries being prepared with robust, secure, and dependable DFS to provide resilience during a crisis.** Countries with adequate macroeconomic policy tools, robust financial systems, and well-functioning payment systems have been able to better respond to, and will likely recover quickly from, the effects of the global pandemic. The lack of banking confidence and a shortage of currency in Liberia has caused CBL to procure Liberian dollar (LRD) banknotes to meet the economy's needs. Without links between government payments and mobile money wallets and an institutional set-up for digital safety nets, payment inefficiencies and financial exclusion are unavoidable. In one case, a bank physically delivers cash to recipients. In another, a few rural health



workers are paid in mobile money. As merchants do not yet use electronic payments, face-to-face interactions will remain an integral part of daily economic life.

**Entrepreneurship, now more than ever, is a matter of necessity rather than choice, as the bulging youth population enters a job market that lacks attractive professional opportunities.** As the first case of COVID-19 was discovered in Liberia on March 16, 2020, and the state of emergency that shut down non-essential businesses and government was announced on April 10, it became clear that professions that lend themselves to home-based work (HBW) will be the most resilient, relative to manual-based activities or those requiring predominantly on-site, face-to-face interaction. As social distancing becomes more entrenched in daily life, digital entrepreneurs will become more important, providing incentives for a new wave of youth to enter the digitally enabled workforce.

**The pandemic's effect on medium-term business relations and competitiveness underscores the value of professions and livelihoods that are enabled by the digital revolution.** Yet, as an indicator of digital exposure of Liberian businesses, only 13 percent of firms in Liberia claim to have such basic access to digital technology compared to almost half of firms in Sub-Saharan Africa having a website and access to email. This, along with the now urgent and universal need for digital solutions from tech savvy entrepreneurs, means that demands on the country's nascent digital ecosystem will be immense.

**The challenge for the country will be to enable an adequate supply response in terms of supporting the budding ecosystem.** For example, in addition to providing a wide range of services for entrepreneurs and startups through digitally enabled incubators and co-working hubs, attention is needed for the other enabling factors in the ecosystem. A conducive business environment that rewards and protects successful innovation while allowing ease of entry and speedy exit for new startups is needed. A business-friendly environment will also attract risk-oriented finance in the form of angel, impact, or venture investing partnerships to help young entrepreneurs move beyond their typical source of small, one-off, passive funding that comes from friends and family members.

# Recommendations

## Infrastructure

**Support rapid deployment of digital infrastructure as part of the COVID-19 emergency response**, through (a) additional spectrum resources, (b) flexibility in network traffic management and quality of service rules, (c) classification of network equipment as essential infrastructure, (d) rapid approval of network installations, (e) special tariffs to support vulnerable consumers, and (f) deferring of sector-specific taxes.

**TIER 1-SHORT TERM**

**Reconsider the regulatory practices** of retail tariff regulation and use of regulatory fees for domestic revenue mobilization.

**TIER 2-SHORT TERM**

**Consider a multi-modal approach to nationwide broadband access**, involving private sector funding for fiber optic backbone, a strategy for national backbone routes that are not commercially viable, and a review of the UAF strategy for last-mile infrastructure in underserved areas.

**TIER 1-MEDIUM TERM**

**Consider reducing wholesale prices on the ACE submarine cable** and divesting the ACE landing station in Monrovia as well as securing redundancy through backbone connections to other countries.

**TIER 2-SHORT TERM**

**Encourage commercial infrastructure sharing** for faster deployment and reduced cost, especially in rural areas, and investigate cross-sector infrastructure sharing as an opportunity to reduce network deployment cost and improve network resiliency.

**TIER 3-MEDIUM TERM**



## Skills

**Carry out mapping exercise** to take stock of current interventions in the digital skills space based on primary data collection and analysis for policy development.

**TIER 1-SHORT TERM**

**Spend more public funds in support of the increased digital emphasis** in new education curriculum at basic levels.

**TIER 1-SHORT TERM**

**Leverage growing use of mobile devices** by developing attractive mobile learning apps and use short-term, ad hoc innovations for students and the community to practice digital skills.

**TIER 2-SHORT TERM**

**Develop capacity for public-private partnerships** (PPPs) to accelerate digital skills development and engage in such skill development at the tertiary level through partnerships.

**TIER 2-MEDIUM TERM**

## Platforms

**Create digital identification** by rolling out the national biometric ID system and limiting direct and indirect costs of ID card attainment for the poor and marginalized.

**TIER 1-MEDIUM TERM**

**Improve public infrastructure and shared services** by upgrading the national data center and strengthening interoperability of public platforms with link to the integrated financial management information system (IFMIS).

**TIER 1-SHORT TERM**

**Review and improve core digital platform enablers:** ICT leadership; training for all levels of government staff; and improved legal framework for records, data management, and data privacy and protection.

**TIER 1-SHORT TERM**

**Expand government functions and services** by introducing e-procurement and strengthen e-filing for tax returns.

**TIER 2-MEDIUM TERM**

**Assess public spending on ICT** through public expenditure review (PER) and adjustment of the Chart of Accounts (CoA) to unify analysis of budgeted ICT expenditures.

**TIER 3-MEDIUM TERM**





## Entrepreneurship

**Improve the policy and regulatory environment for digital enterprises** with emphasis on startups and young firms and address critical gaps in policies through an inclusive process.

**TIER 1-SHORT TERM**

**Facilitate access to early-stage finance for digital entrepreneurs** by protecting ‘intangible’ assets, strengthen links between investors and investment-ready entrepreneur, and actively explore various financing mechanism to support digital enterprises.

**TIER 1-SHORT TERM**

**Promote entrepreneurship and boost supply of skills in the labor market** through strengthening higher learning institutions to provide more business and ICT education and invest in physical and networking assets to support innovation and networking.

**TIER 1-SHORT | MEDIUM TERM**

**Stimulate the market for digital goods and services** by providing procurement opportunities for domestic businesses during government digitization, promote technology adoption by businesses to support business-to-business (B2B) market opportunities, and reduce the cost of digitization to expand the base of digitally enabled individuals to support business-to-consumer (B2C) ventures.

**TIER 2-MEDIUM TERM**

**Establish COVID-safe networking and co-working spaces** for hubs and incubators to operate safely and attract young aspiring entrepreneurs to share knowledge and collaborate.

**TIER 3-MEDIUM TERM**



# Introduction





## COUNTRY AT A GLANCE

# Liberia



## Key Messages

- ▶ Liberia is a particularly fragile country undergoing its second ‘twin health/ economic shock’ in less than a decade. The impact of the liquidity crises that started in late 2019 is being compounded by the COVID-19 pandemic starting in the first half of 2020.
- ▶ Important public health lessons from the Ebola Virus Crises (EVC) helped prepare the Liberia health system for a public health crisis, but the resilience of the economy has been more limited, in part due the lack of digital mechanisms for doing business.
- ▶ The global dimension of the current crises provides a stark reminder about the value of resilience, flexibility, and technological innovation in the 21st century and the government’s critical role in helping prepare the country through universal adoption of the digital economy.

## Liberia at a Glance

**Liberia is a resource-rich, fragile state striving to overcome the legacy of 30 years of devastating civil wars that severely disrupted the socioeconomic foundations of the country.** Founded by freed American slaves in 1847, Liberia is Africa’s oldest republic. It is also rich in natural capital that takes the form of a fertile land and climate, abundance of highly valuable mines and minerals, and two-thirds of the remaining natural forests of West Africa. On the other hand, the level of human capital is exceedingly low with Liberia’s Human Capital Index (HCI) ranked 153 out of the 157 countries for which the HCI is calculated.<sup>1</sup> With infrastructure destroyed, massive population displaced, and public services shut down, including health care and education, an entire generation of Liberians have survived with low development outcomes and minimal schooling. Even Liberia’s low level of schooling of 4.4 average years must be adjusted downward to 2.3 years when factoring in learning achievement.

**As a result, poverty reduction has been slow and poverty has remained widespread.** With a gross national income (GNI) per capita of just US\$600 in 2018, Liberia is among the 10 poorest countries in the world. The good growth that occurred from 2007 to 2014 helped reduce the poverty rate from 69 to 39 percent but was followed by a rise in the poverty rate to 43.4 percent as per capita gross domestic product (GDP) contracted at an average rate of 2 percent per year.<sup>2</sup> Non-monetary poverty indicators, including access to health care, ed-



education, and utilities, are also low by regional and international standards, with especially acute rural/urban and gender disparities driven by unequal access to land and productive assets, infrastructure and public services, and markets for goods and labor.

**Liberia is experiencing its second ‘twin shock’ in less than a decade.** In 2014, the dual impact of the Ebola virus and global collapse of commodity prices devastated the socioeconomic status of the country as it was just beginning to recover from three decades of civil war. After contracting for a quarter century, Liberia’s economy grew steadily during 2004–2013 at an average annual rate of 7.4 percent. The regional outbreak of the Ebola virus disease (EVD) in 2014 and a sharp decline in global prices for iron ore and rubber disrupted the economic recovery, and the real GDP growth rate dropped to near 0 for the next two years. After a collapse in growth, loss of livelihoods, and socialized losses mounting throughout the economy, Liberia was ill prepared to withstand the 2019 economic downturn that resulted in the liquidity crises by the end of the year. The modest 1.8 percent recovery in 2018 became a 1.5 percent contraction in 2019, led by a 3.4 percent fall in non-mining activities.

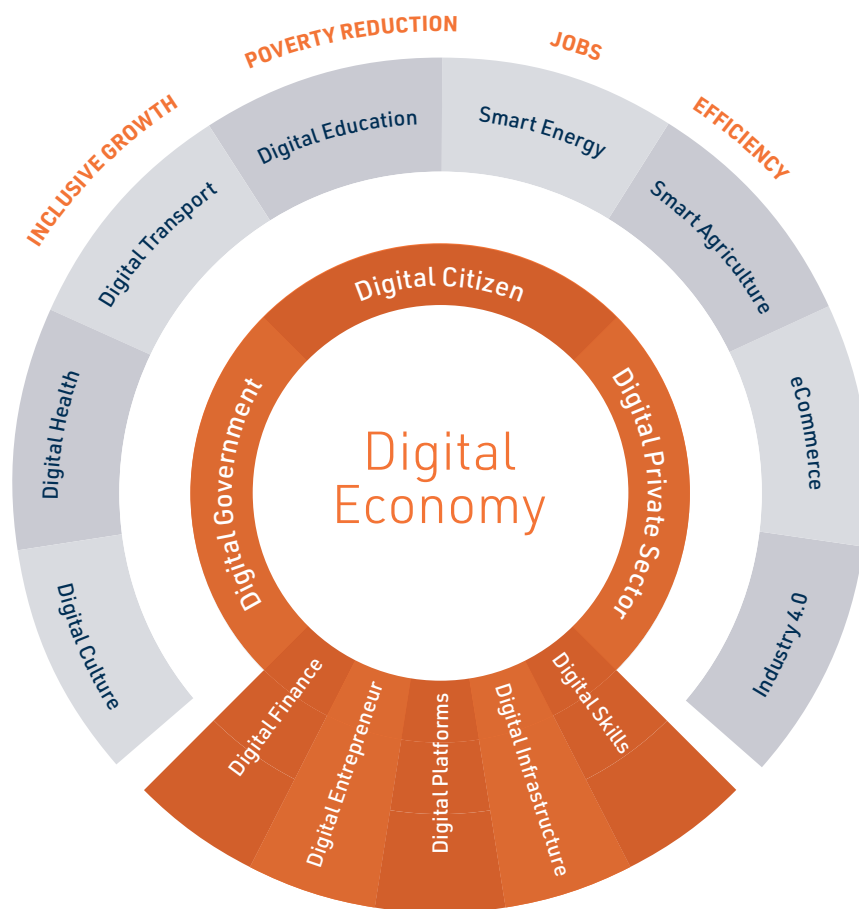
**Now Liberia, like the rest of the world, is entering a difficult and uncertain time.** The authorities acted quickly to shut down society and the economy after the first detected case of COVID-19 was reported in Liberia on March 16, 2020. Within five days, a declaration was issued to enforce severe social distancing, including closure of all schools and banning of gatherings of more than 10 persons. As the global pandemic spread, the government announced a state of emergency on April 10, 2020, that remained in force through May, issuing stay-at-home orders for the hardest-hit areas, prohibiting inter-county and intra-country movements, and issuing closure of all non-essential businesses and government offices. With a low prevalence of information and communication technology (ICT) skills and usage, insufficient bandwidth and affordability around the country, and challenges accessing even handsets or airtime, the challenges arising from an extended lockdown would be much greater than elsewhere.

Yet, as Liberia undoubtedly will experience the common health-induced demand shock from temporarily quarantine orders, the potential external exogenous shocks may be more severe. Commodity prices for Liberia’s top exports of iron, minerals, rubber and palm oil have fallen dramatically and will adversely affect the main value chains in the country that provide livelihood to the rural population and foreign exchange to finance the large import bill. In addition, despite the temporary removal of pre-shipment inspection requirements and some protective surcharges there may be disruptions in trade logistics, protective trade policies by partners, and difficulties finding shipping lines at reasonable costs. A distribution in trade capacity can serve to muffle the recovery.

As the authorities finalize a COVID-19 preparedness plan in conjunction with the donor

community, the medium-term vision may see a more integral role for the digital economy. On the infrastructure side, providing additional spectrum, relaxing site approval and service quality regulations, and leveraging private sector investment wherever possible may be needed to increase the level of connectivity in the country. Digital financial services (DFS) and public sector platforms may be utilized more extensively to support government-to-citizen social payments and government-to-business interactions for not only socially distant transactions but also more efficient and effective use of government resources. Yet as much as the new innovations are made possible by the digital economy, without skills in the workforce, the citizenry, education sector, and the government, actual gains will lag physical investment. Therefore, a preparedness plan is needed that increases the use of technology and application of digital mechanisms, by definition includes a rapid skill response as an equal and critical component.

**Figure 1.1. Digital Economy and Development Outcomes**



Source: *Digital Economy for Africa Toolkit 2019*.





## Background on the Digital Economy

**The new government put into place its Pro-Poor Agenda for Prosperity and Development (PAPD) at the latter part of the first year of office.** The PAPD is guided by four pillars focusing on empowering Liberians through education, health, youth development, and social protection; enabling private sector-led economic growth; supporting a peaceful society; and creating an inclusive and accountable public sector. Throughout each pillar, a digital dimension is envisioned. For example, under pillar one, ‘Power to the People’, the PAPD calls for greater access to ICT through the life cycle of all Liberians. Under pillar four, ‘Governance and transparency’, ICT is seen as essential for reducing corruption and improving business processes and productivity.

**For countries like Liberia the digital economy offers opportunities and brings the risk of being left behind.** Improved digital connectivity can only achieve the desired transformational impact on economic opportunity and inclusive growth if combined with improvements in digital skills and literacy, the coverage of digital identity schemes, access to digital payments and other financial services, as well as digital support to startups and existing businesses. With such capabilities, Liberia can harness digital data and new technologies, generate new content, link individuals with markets and government services, and roll out new and sustainable business models.

**Yet in Liberia, like in much of the Africa region today, too few citizens have digital IDs or transaction accounts, hindering access to public services, financial inclusion, and online markets.** Digital startups struggle to attract funding and ‘traditional’ businesses are only slowly adopting digital technologies and platforms to boost productivity and sales. There is a shortage of workers with the digital skills needed, while limited digital literacy holds back adoption and use of digital products and services. Inadequate policy and regulatory frameworks, including for data protection, cyber security, and competition, also constrain the development of a digital economy in Africa.

**Digital economies also introduce new risks—to consumers, creditors or firms—on personal data and cyber threads and require safeguards to mitigate these risks.** A key area of concern has been that the widespread adoption of automation and other digital technologies can cause significant net job losses. However, in the aggregate, technological change does not seem to have led to a significant increase in unemployment and global employment continues to expand in line with the growth in labor force<sup>3</sup>. Though it may displace jobs, automation using technology causes ‘creative destruction’, stripping some jobs while creating new ones. To develop safeguards for job markets, developing countries in Africa need to invest in requisite skills and systems early on,

including in the digital domain, such that such skills are tied to meaningful jobs. This can help strengthen the country's competitiveness in the global marketplace.

**A digital economy has potential to enhance productivity and gains in multiple ways.**

A digital economy can change the way economies of scale are achieved, particularly with online service delivery, as the incremental cost of offering an additional product or service may become negligible. The digital economy may provide better matching of buyers and sellers in a competitive marketplace. It may address certain concerns with asymmetric information, solving some principal-agent problems where buyers and sellers are separated by intermediaries or, even, multiple levels of intermediaries. It may strengthen people's trust in firms or governments by enabling some decentralized forms of trust (such as with blockchain) where centralized authorities are not trusted. It may allow products and services to be customized and targeted—enabling better inclusion but also easier ways to exclude some too.

## Structure of this Report

**The chapters that follow present a summary of key diagnostic findings on the current state of the five foundational pillars of the digital economy.** The methodology for analysis is set out in the Digital Economy for Africa Initiative (DE4A) Diagnostic Toolkit based on the integrated and foundation-based diagnostics framework described earlier. The second chapter discusses the current access, quality, and usage of digital infrastructure, as well as the availability and affordability of connectivity. The third chapter looks at the current state of digital skills attainment and coverage, in relation to the basic, specialist, and e-business skills needed to support further uptake of digital services and application of digitally enabled solutions. The fourth chapter analyzes current application and scope to expand the use of digital platforms in the public sector. The fifth chapter examines the state and uptake of DFS among the public sector, businesses, and individuals. The sixth chapter turns to assessing the state of the digital entrepreneurship ecosystem and culture of innovation. The report concludes with a summary of key issues and recommendations.





# Digital Infrastructure



### Key Messages

- ▶ Liberia has progressed in digital connectivity over the past decade, but internet usage is low, internet pricing is high, and broadband access is largely limited to the urban areas.
- ▶ Access to broadband services is hindered by the lack of fiber optic backbone networks and the deficient regulatory environment.
- ▶ The government should encourage private sector funding for digital infrastructure by strengthening the enabling legal and regulatory environment and targeted funding for infrastructure and services in commercially unviable areas.

## The Importance of Digital Infrastructure

### The Socioeconomic Rationale

**High-speed internet (or broadband) has the potential to accelerate Liberia's socio-economic development.** An extensive body of research confirms the impact of increased investment in broadband on economic growth. The arrival of fiber optic submarine cables in Africa was found to have positive effects on employment through increased firm entry, productivity, and exports; growth in employment in the region due to submarine cable ranged from 3.1 to 6.9 percent.<sup>4</sup> Looking to the future, McKinsey estimates that increased access to the internet could contribute US\$300 billion to Africa's GDP by 2025, with the largest impact on six sectors of the economy: education, health, agriculture, financial services, retail, and government.<sup>5</sup>

**At the most basic level, the internet shapes countries' development path through several interrelated channels:** (a) bridging the information gap, alleviating asymmetry problems, and improving communication; (b) cost-effectively and quickly connecting all citizens, especially those living in remote areas, to markets and services; and (c) increasing productivity, lowering transaction costs, and optimizing supply chains. The internet thereby promotes inclusion, efficiency, and innovation, expanding markets and services to excluded communities and improving supply chains.

**More broadly, broadband is a key enabler to harness the digital economy transformation; thus, the need to develop broadband infrastructure<sup>6</sup> in Liberia is high.** With the right policies in place, broadband has the potential to transform Liberia's economy and help leapfrog development stages. Digital economies present unprecedented opportunities to create jobs and transform people's lives as a platform for innovation that reverberates throughout the entire economy. It potentiates entrepreneurship, with businesses and individuals using fast internet to create new applications in areas such as e-commerce and financial services. It also enables effective service delivery in sectors critical to inclusive growth, such as education, health, and agriculture.

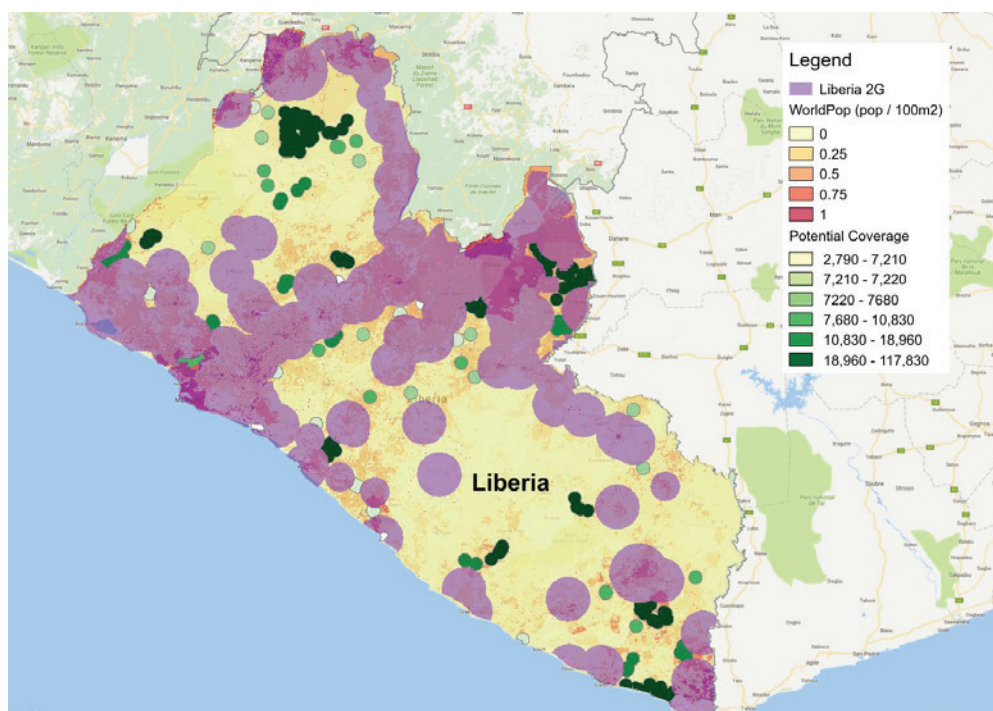
## Government Development Policy

**The Government of Liberia (GoL) recognizes the importance of ICT as a driver of social and economic development.** Liberia's national development plan for 2018–2023, the PAPD, makes several references to ICT as an important enabler. Under pillar one, 'Power to the People', the PAPD calls for greater access to ICT through the life cycle of all Liberians. Under pillar four, 'Governance and transparency', ICT is seen as essential for reducing corruption and improving business processes and productivity.

**The Liberia ICT Policy (2019–2024) has 13 ambitious objectives aimed at supporting the country's development,** including to (a) expand ICT infrastructure and establish a national fiber optic backbone to connect all 15 county capitals and cross-border connectivity with reliable links; (b) ensure universal access to voice services and broadband, supported by the adoption of infrastructure sharing and 'dig once' policies and effective use of the Universal Access Fund (UAF); and (c) leverage the assets of all telecommunication operators to support improved connectivity.



Figure 2.1. 2G Mobile Coverage, 2017



Source: <https://manypossibilities.net/2017/04/mapping-the-unserved/>

## Diagnostic Findings

### Current State of Digital Infrastructure

**Liberia has progressed in digital connectivity over the past decade.** The basic digital connectivity, GSM mobile service, has grown from covering a little over half of the population in 2011 to around 90 percent (Figure 21). Households with a mobile phone increased from less than one-third in 2007 to almost two-thirds in 2016, even though only one-fifth of households have electricity. As an industry, telecommunication has emerged as a significant sector with revenues estimated to be equivalent to around 3 percent of Liberia's GDP in 2018. International internet bandwidth was dramatically improved with the arrival of submarine cable in 2013 and the focus on digital connectivity is increasingly centered on broadband. Yet, for most, broadband access is still limited since no nationwide high-speed transmission network exists and the regulatory environment is deficient for development of a secure, robust, competitive, affordable, and universal data infrastructure



**Mobile networks are the primary means for connecting to the internet as fixed line networks are limited.** However, even though GSM (2G) covers around 90 percent of the population,<sup>7</sup> 3G mobile (which provides internet access but at lower speeds than 4G/LTE) coverage is only about 63 percent of the population, with 4G/LTE reaching about 30 percent.<sup>8</sup> Although these figures are in line with the regional average of 63 and 28 percent, respectively, the latest mobile broadband technology is largely limited to the urban areas.

**Liberia, and therefore most of the current users, gained access to high-speed internet only relatively recently.** Before 2013, Liberia relied on expensive satellite connectivity for international internet access, severely constraining development of internet use and services in the country. With donor funding, Liberia connected to the Africa Coast to Europe (ACE) fiber optic submarine cable, the Cable Consortium of Liberia (CCL) was created as a public-private partnership (PPP) to own and operate the cable landing station in Monrovia. CCL is three-quarters owned by the GoL, with MTN/Lonestar (15 percent) and Orange (10 percent) as partners.<sup>9</sup> After the arrival of the ACE cable, international bandwidth rose by a factor of 1,000 and the wholesale price fell by more than a factor of 10, underscoring the immense hurdle to digital development before 2013.

**CSquared operates a wholesale metropolitan fiber optic network in Monrovia.** During the Ebola virus outbreak in 2014–2015, United States Agency for International Development (USAID) funded an installation of about 200 km of fiber in Monrovia. CSquared owns and operates the network as a wholesale-only infrastructure provider, offering other telecommunications operators and internet service providers (ISPs) access to the network on an equal and neutral basis. Incumbent LIBTELCO operates a separate 322 km fiber network in Monrovia.

**Internet usage has been low.** There were 2.9 million mobile subscriptions in 2018 for a penetration rate of 60 percent. Global System for Mobile Communications Association (GSMA) reported 1.3 million mobile broadband subscriptions in 2018 for a penetration of just over one-quarter of the population (26 percent). On the other hand, according to the International Telecommunication Union (ITU) there were only 11.6 active mobile and 0.2 fixed broadband subscriptions<sup>10</sup> per 100 inhabitants in 2018. Only 8 percent of Liberians reported using the internet in 2018 according to ITU, well below the 22 percent average for Africa; however, actual internet usage in Liberia is uncertain with estimates varying widely.

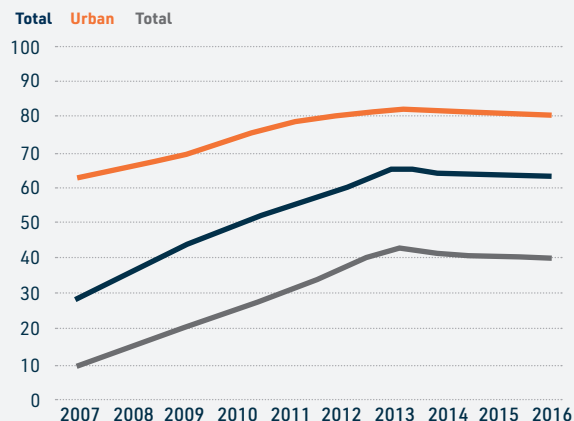
**The supply side of the telecommunications market is consolidated, with an incumbent fixed line operator, two mobile operators, and a handful of ISPs.** The incumbent government-owned operator, LIBTELCO, had much of its fixed line network damaged during the civil war and now is a provider of fiber broadband and leased lines in Monrovia. The mobile market has consolidated into two private sector operators, Orange, with two-thirds of

the subscribers, and Lonestar MTN, both part of international groups. The Liberia Telecommunications Authority (LTA) issued a third mobile license to Jamcell Communications (JamCell) in February 2019, but it has not yet started to operate. Three relatively small ISPs offer mostly fixed wireless services and some fiber broadband access.

**Indicators suggest mobile phone take-up has stagnated; 63 percent of households owned mobile phones in 2016 (latest survey), down from 65 percent three years earlier** (Figure 22). Even as four-fifths of urban households have a mobile phone, only half of rural households have one, making household mobile telephone access in Liberia extremely low compared to neighboring countries (excluding Sierra Leone). This low household mobile phone penetration coupled with large household sizes leads to relatively low individual mobile phone ownership. In 2017, only 57 percent of Liberian adults had a cellphone, higher only than Sierra Leone among its neighbors (Figure 23).

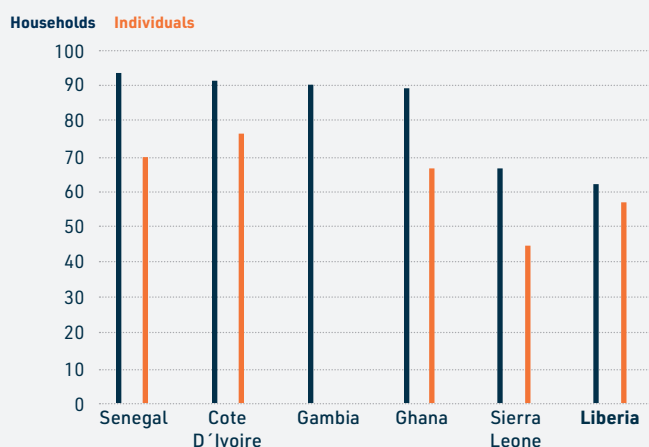
**At the same time, though estimates vary, the internet is used by a lower share of Liberians than seen in neighboring countries.** Though no government survey exists, Afrobarometer, a regional opinion poll organization, surveyed Liberia and other countries on internet use. The last survey in 2017/18 found that 36 percent of Liberian adults used the internet at least once a

**Figure 2.2**  
**Households with Mobile Phone, Liberia**



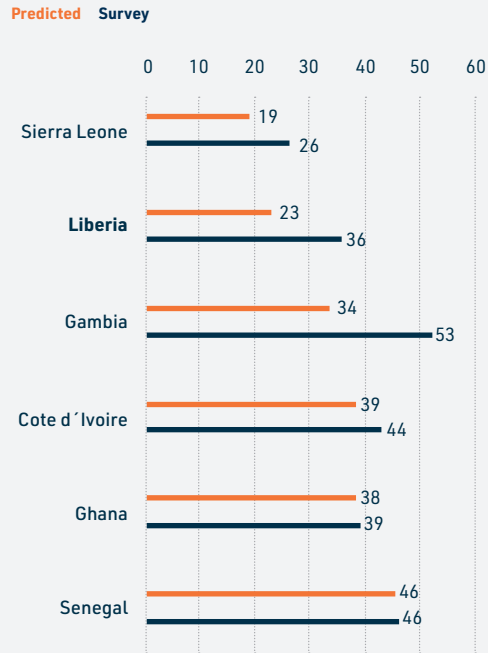
Source: Demographic and Health Survey (DHS), United Nations Children's Fund (UNICEF), and World Bank Global Findex.

**Figure 2.3**  
**Households/Individuals with Mobile Phone**



Source: Demographic and Health Survey (DHS), United Nations Children's Fund (UNICEF), and World Bank Global Findex.

**Figure 2.4**  
**Predicted & Surveyed Internet Use 2018/19**



Source: Afrobarometer, Facebook, Pew, and ARTCI.

month. Alternatively, an estimate of internet usage based on actual social media usage suggests that less than one-quarter of Liberian's regularly use the internet, just above the similar estimate for Sierra Leone and half of that in Senegal, and much less than in Ghana, Côte d'Ivoire, and The Gambia.





## Constraints to High-Speed Internet Access

Constraints to the development of high-speed internet in Liberia are examined according to a standard framework unbundling the analysis of digital infrastructure. The broadband value chain starts where international bandwidth enters the country (the first mile), continues through the national backbone and intercity network (the middle mile), and terminates with the end user through local access networks (the last mile). The enabling policy and legal and regulatory environment that facilitate intangible parts of the network (the invisible mile)—such as spectrum, licensing, and competition issues—can constrain or promote broadband access.

### Severely Underdeveloped and Low Capacity Transmission Network

**Liberia remains one of the few ECOWAS countries without a nationwide fiber optic backbone.** Although metropolitan fiber networks have recently been established in Monrovia, virtually no fiber links exist outside the capital city, apart from a link to the airport. In addition, the country is exposed to a significant risk by depending on a sole outlet for its high-speed international bandwidth.<sup>11</sup> To mitigate the risk, Liberia needs to establish redundancy for access to international bandwidth, for example, via a national backbone connected to its neighbors, which would have the added benefit of putting competitive pressure on wholesale international bandwidth prices.

**The absence of a nationwide fiber optic backbone to distribute the broadband capacity throughout the country significantly constrains broadband services outside of Monrovia.** A 2016 feasibility study estimated the cost of a nationwide fiber optic backbone at US\$66 million (LTA 2016a). The backbone would provide cross-border connectivity to Liberia's three neighbors (Côte d'Ivoire, Guinea, and Sierra Leone) and be routed along more densely populated areas. No decision has been made on the strategy for deploying the national fiber optic backbone and its financing as of February 2020. Meanwhile, the telecommunications operators have so far been prevented by the government from pursuing their commercial interest to build fiber optic backbone links outside of Monrovia.<sup>12</sup> This practice conflicts with international best practice requiring the government to leverage the private sector and optimize the use of scarce public resources. Private sector investments should be promoted, and the number of licenses should not be limited unless scarce resources are involved. Policy and regulatory reforms in support of private investments should be considered before public funding is pursued.

### Limited Access to Services in Rural Areas

**Liberia is still a long way from achieving widespread use of broadband because of major infrastructure challenges and market failures, particularly in rural areas.**

Less than one-fifth of the population lives within 50 km of a national transmission link. High capital and operational costs and low disposable income render the services unviable in many areas on their own, but the lack of reliable grid electricity supply and bad roads create additional hurdles. Current battery technology requires access to reliable power supply for sustained use of broadband devices but only one-fifth of households have access to electricity. The limited road network makes certain areas of the country difficult or impossible to access during the rainy season. Accordingly, network operators have focused on the most profitable geographical areas, primarily Monrovia, to the disadvantage of the rural population. Significant further investments will be needed to provide universal and affordable access to broadband, especially in rural areas.

**The UAF was created in 2014 but is only now becoming active by procuring stand-alone infrastructure for rural areas on a pilot basis.**<sup>13</sup>

The UAF calls for contributions “that are not more burdensome than necessary for the Universal Access goals to be achieved” which were set at 2 percent of annual gross revenues originally. Only in 2018, did operators start making payments to the fund with the contribution of 0.5 percent of gross revenue. Projects providing services to unserved and underserved areas or to disadvantaged groups are eligible for UAF subsidy.

### Weak Legal and Regulatory Environment

**The regulatory regime<sup>14</sup> in Liberia has improved over the past decade but remains relatively weak when benchmarking with peer markets, particularly in competition policy and licensing.**

Liberia ranks 113 out of 193 countries in ITU’s ICT Regulatory Tracker 2018, with the lowest score recorded for the cluster of regulations covering the competition framework. Among Economic Community of West African States (ECOWAS) countries, Liberia ranks 11 out of 15 according to the index of the African Regulatory Watch Initiative. Liberia scored particularly low on its licensing regime (Figure 25).

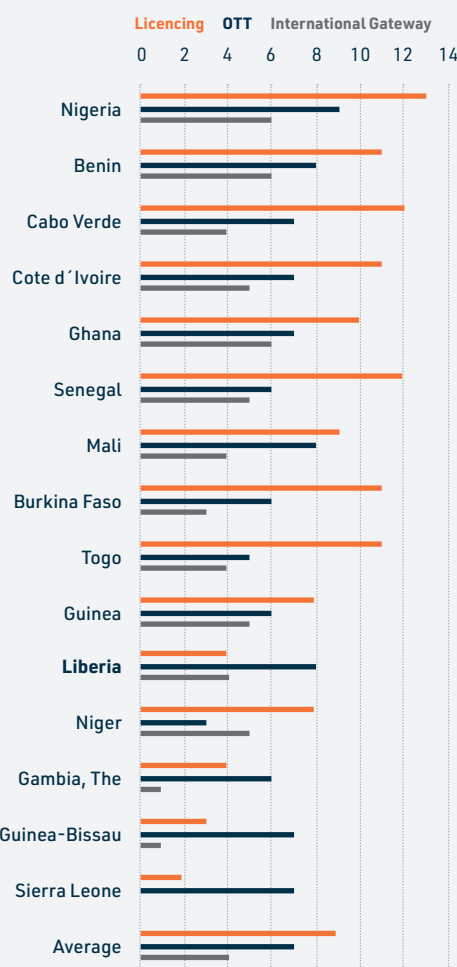
**Liberia’s licensing regime is complex and fragmented with multiple categories of licenses and a fine segmentation that may impede innovation relative to the use of universal licenses.**

Unlike the standards for ECOWAS countries, the Telecommunications Act of 2007 does not expressly lay down two key principles for access regimes: technological neutrality and absence of limitation in terms of number of licenses, except to optimally manage the radio spectrum. There is also no express prohibition of exclusive rights. Although the act appears to conform with the spirit of the

ECOWAS Supplementary Acts' and there is a general principle of non-discrimination among operators providing services in the same market, the licensing regime itself is neither open nor transparent since any activity of providing a network and/or a service open to the public is subject to an individual license and since LTA determines, on a case-by-case basis, the procedure for awarding the license.

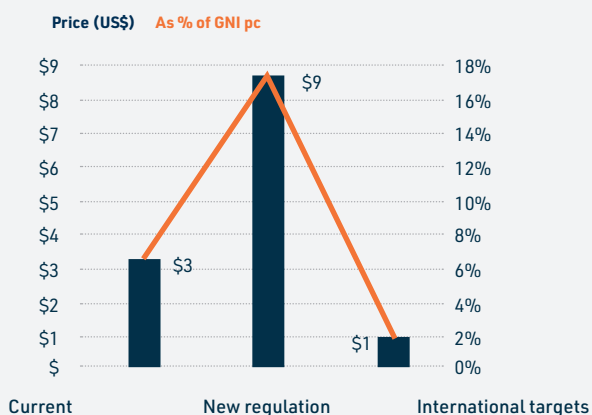
**Certain wholesale and retail markets were found by LTA to exhibit dominance in 2016.**<sup>15</sup> These include the following retail markets: (a) mobile voice/SMS access and call service, (b) mobile data and internet access, and (c) fixed data and internet access. The wholesale services identified include (a) call termination, (b) local fiber access, (c) dedicated fiber transport, and (d) fiber optic international connectivity. In 2016, Lonestar MTN was found to be dominant in the mobile voice/SMS service based on revenue and subject to filing its tariffs in advance and justifying any large differences between on-net and off-net prices; however, MTN is no longer dominant as Orange has emerged as the largest operator but it is not clear if LTA has revised its determination. All operators were found to be dominant in mobile call termination and subject to mobile termination rates being cost based. As the only provider of bandwidth from the ACE cable, CCL was found to be dominant in the fiber optic international connectivity market with the requirement to offer cost-based prices and capacity in a non-discriminatory manner.

**Figure 2.5**  
African Regulatory Watch Initiative Index



Source: Digital Development Partnership 2019.

**Figure 2.6. Potential Impact of LTA Price Order**



Source: Author calculations

## Regulation Adversely Impacts Affordability and Viability

**Even though bandwidth prices came down dramatically after connection to the ACE cable, mobile internet pricing in Liberia is high, symptomatic of the region.** A bundle of at least 1 (GB) of mobile data cost US\$3.33 in October 2019, equivalent to 6.7 percent of monthly per capita income. Liberia ranks 172 out of 181 countries in mobile data pricing and is well above the international targets that call for broadband prices of less than 2 percent of monthly income.<sup>16</sup> To meet that target, the price of 1 GB of mobile data would have to drop to about US\$1 in Liberia.

**Moreover, an LTA regulation issued in 2019 has made mobile data unaffordable for many Liberians.** LTA's 2019 order introduced a price floor and a regulatory surcharge for mobile on-net voice and data services as well as a regulatory fee equal to 5 percent of revenue.<sup>17</sup> If fully implemented, the regulation would push the retail price of 1 GB of data above the equivalent of 17 percent of Liberia's 2018 monthly GNI per capita, or almost nine times higher than international targets, and would be damaging to the financial viability of the mobile operators since it would result in a decrease in traffic that would not be offset by the higher per unit revenue (Figure 26).



## Recommendations

### **Liberia is far from achieving the digital infrastructure goals established for Africa.**

DE4A targets universal internet coverage, internet at less than 2 percent of GNI per capita, and doubling of broadband connectivity. In Liberia, mobile broadband covers between one-half to two-thirds of the population with a price equivalent to 7 percent of per capita GNI in October 2019. A series of recommendations are provided to support Liberia in moving closer to the digital infrastructure targets:

**R1. In response to the COVID-19 emergency, digital infrastructure may be rapidly deployed to support social distancing, ensure business continuity, and prevent service interruptions.** With the need for digital infrastructure never greater, immediate actions may include the following:

- ▶ *Allocate additional spectrum resources* for relieving congestion, expanding or improving broadband access, and enabling diverse technology solutions.
- ▶ *Allow flexibility in the rules* governing management of network traffic and quality of service, to support continuity of digital services.
- ▶ *Streamline customs and logistical processes* and classify network equipment as essential infrastructure to ensure the continuity of the digital industry supply chain.
- ▶ *Streamline planning processes* to enable rapid approval of installation of additional capacity on existing network sites and approval of new sites and installations.
- ▶ *Relax regulatory barriers* and permit commercial flexibility for special tariffs and zero-rated access to specific services and websites in support of vulnerable consumers.
- ▶ *Reduce, waive, or defer payment of sector-specific taxes, duties, and fees* on communications services, mobile money services, and international gateways.

**Beyond the short-term responses to the crisis, acknowledging the power of technology and the basic need for digital adoption creates a renewed urgency to advance the digital agenda.** Concerted government action, in consultation with the ICT industry, is needed to achieve universal, affordable, and quality broadband access and to mobilize private financing for digital inclusion.

**R2. Reconsider the practice of retail tariff regulation which should be used as a last resort.** The use of price floors and surcharges establishes a non-market-based price, inhibiting the natural interaction of supply and demand. Complications in administration often make them ineffective. LTA may adopt regulatory tools to maximize rather than limit consumer and producer welfare.

**R3. Discourage using regulatory fees and surcharges for domestic revenue mobilization.** Taxation of telecommunications should account for significant positive externalities of the services and the regressive nature of taxes on mobile services and be approved by the parliament and collected by the tax authority as other taxes. Regulatory fees are imposed on the sector to pay for the expenses of regulation and for the UAF to support rural access.

**R4. Encourage private sector funding for digital infrastructure such as fiber optic backbone.** Enabling private operators to fund and build fiber optic backbone links is a clear policy objective in an environment of scarce resources. The process of allowing licenses and competing networks when several operators express interest in building certain routes, while less orderly than a national backbone, facilitates infrastructure for access to services without public resources.

**R5. Develop a strategy for national backbone routes that are not commercially viable.** Given the limited resources available for the GoL, public funding should be leveraged as much as possible to attract the maximum private sector funding through tools such as targeted or output-based subsidies, PPPs or similar on commercially unviable routes.

**R6. Review UAF strategy for last-mile infrastructure in underserved areas.** Consider (a) using UAF resources to leverage private sector through competitive awards of subsidies instead of funding full capital expenditure (CAPEX); (b) establishing a 'Pay or Play' mechanism so operators can choose to contribute financially to the fund or invest directly in projects and guarantee specific targets in exchange for relief from UAF levies; and (c) promoting accountability through operator involvement in project selection and performance reporting.

**R7. Encourage commercial infrastructure sharing and open access to critical infrastructure to allow faster deployment and reduce cost especially in rural areas.** Infrastructure sharing and open access wholesale cable could help bring broadband to rural areas quickly. Infrastructure sharing is optimally market based as agreed between the operators but in certain situations may be mandated without eliminating the infrastructure-based competition critical for ICT development.

**R8. Cross-sector infrastructure sharing may be implemented and enforced as a key opportunity to reduce network deployment cost and improve network resiliency.** The infrastructure sharing and 'dig once' policy in the ICT Policy calls for ducts to be placed along all new and rehabilitated roads for use by any telecommunications operator. Utilization of the excess capacity of the optical ground wire (OPGW) along transmission lines of the West African Power Pool (WAPP) is another opportunity to



support low-cost deployment of a fiber backbone to the Côte d'Ivoire border.

**R9. Consider reducing wholesale prices on the ACE submarine cable and divesting CCL.** The excess capacity on the ACE should enable CCL to consider reducing wholesale prices to stimulate internet usage. This would be particularly relevant for smaller ISPs who are not members of the consortium. The planned divestiture of the government's majority stake in CCL would provide opportunities for more investment.

**R10. Core internet infrastructure needs to be improved to grow usage, expand expertise, and create trust.** This includes making it easier to register a .lr domain, establishing a proper legal framework for cybersecurity coupled with enforcement, creating a cybersecurity emergency response team, and making better use of the internet exchange point to improve performance and reduce reliance on costly international bandwidth.

**Spurring adoption and use of broadband networks and services by users will also require government and private sector to focus on driving demand for and comfort with broadband.** Specific interventions may focus on demand-side strategies to stimulate broadband use, for example, by promoting attractive services to potential consumers (such as WhatsApp or social media) and by digitalization of government services and making them accessible through the internet. Similarly, it is of paramount importance to educate users about the benefits of broadband and develop user skills needed to use broadband services effectively, targeting women and vulnerable households.



# Digital Skills





### Key Messages

- ▶ Liberia has been working with development partners to address its digital skills development challenges, but the effort is hindered by low foundational skills (literacy and numeracy) among its youth, ranked one of the lowest in the world.
- ▶ The lack of basic infrastructure such as electricity, internet access, and computers/mobile devices at all levels of educational institutions, plus poor quality of education and training in general, has led to traditional education programs not coping well with rapid technological changes.
- ▶ Improvement needs to foremost focus on increasing investment and performance in foundational skills to have the necessary building blocks for digital skills development, along with effective coordination among development partners, leveraging PPPs and scaling up innovations.

## The Importance of Digital Skills

### The Socioeconomic Rationale for Digital Skills Development

With the arrival of the fourth industrial revolution, Africa requires a digitally competent workforce and a digitally literate citizenry to participate in and contribute to the digital economy. Digital skills are the prerequisite for benefiting from any technology across all sectors of the economy and at all levels of the skills spectrum. Digital skills, together with 21st century skills,<sup>18</sup> are key to digital entrepreneurship, digital adoption and transformation, and even successful conceptualization and implementation of digitization projects in both the private and public sectors. In other words, basic digital skills are foundational requirements for not only developing a vibrant digital economy but also obtaining jobs in growing sectors.

Digital skills span a broad spectrum and are needed across all sectors of the economy with different levels of ‘specialization’ on both ‘user’ and ‘producers’ of digital technology. Of the three ‘layers’ of digital skills, each spans a spectrum of skills from basic to more advanced and includes various combinations of complementary non-digital skills with these areas: (a) *digital users* who use digital/ICT products to effectively use ICT systems, tools, and devices to support non-ICT tasks/functions, including use of

the internet, applications, and software; (b) *e-Businessmen* who apply, create, and invent innovative business models, products, and services afforded by digital technologies; and (c) digital specialists who develop, create, and produce digital/ICT tools, in researching, designing, producing, installing, managing, and maintaining digital/ICT software and systems.

## Alignment with Country Development Strategy and Goals

The GoL recognizes the importance of digital skills to achieving its vision and its development strategic plan—*Pro-poor Agenda for Prosperity and Development 2019–2023*. The government’s ICT policy for 2019–2024 sets up specific targets for digital skills of youth in the country through (a) improving internet access in schools by 20 percent over the current level, (b) offering at least one ICT-related course or program in all secondary schools, (c) offering ICT certification at tertiary education institutions, (d) training teachers to use ICT in teaching their subjects, and (e) increasing the proportion of such trained teachers by 50 percent over the current level. The policy also envisions an information system to identify and list the ICT skills that are required for different jobs so that it can be used by the Ministry of Education (MoE) in curriculum design.

**The MoE has been implementing the sector strategy, *GETTING TO BEST EDUCATION SECTOR PLAN 2017–2021 (G2B-ESP)*.** The plan explores innovative approaches to address demand, quality, and other challenges facing the education sector. In its reformed competency-based national curriculum framework unveiled in 2018, digital literacy was identified as the first of eight competencies and mandatory for all grades (Grades 1–12). The new curriculum has specific learning outcomes required for each grade level and highlights basic digital skill areas such as how to use digital devices (calculators, computers, mobile phones) to search and store items on devices and how to use ICT to access, evaluate, organize, and communicate information. According to the plan, the new curriculum will be piloted in selected public and private schools in the 15 counties across the country and based on the pilot, finalized and rolled out in all schools in the country.

**The MoE has also piloted innovative initiatives with private institutions and promoted incorporating ICT in their teaching models.** As a result, there are a few public schools where teachers have started to use tablets as a mode of instruction. Although this initiative is promising, there is yet a best approach of improving teacher competency in the digital area.



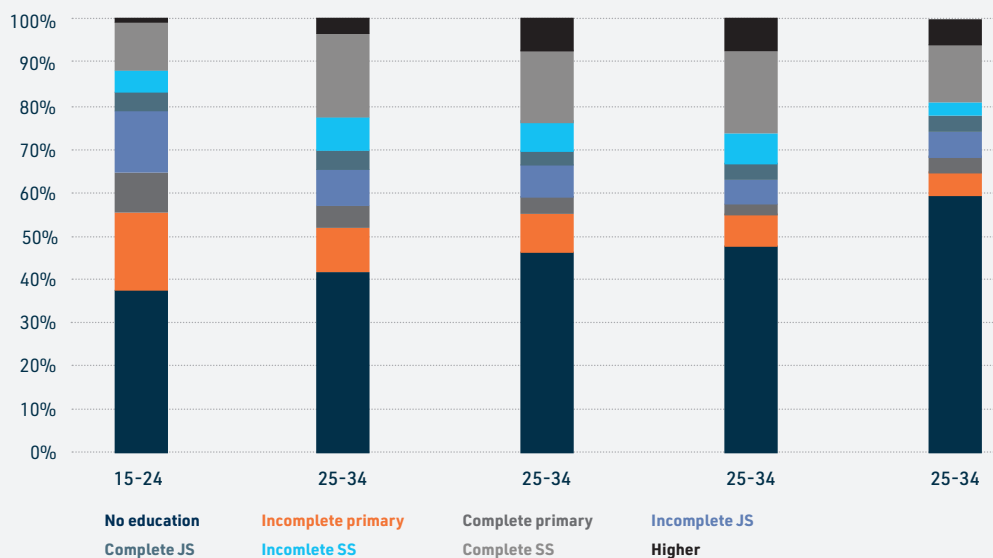
# Diagnostic Findings

## Current State of Foundational Skills

**Liberia's socioeconomic conditions provide immense challenges for an education system.** Liberia has a population of about 4.9 million, of which, over 40 percent are under age 15. Half of the population lives in poverty, and over two-thirds of the country's poor live in rural areas. As would be expected, human capital in Liberia is low with adult literacy rate (among the population age 15 years and older) about 43 percent overall with literacy for women at 27 percent. More than 20 percent of young people ages 15–24 in Liberia are illiterate.

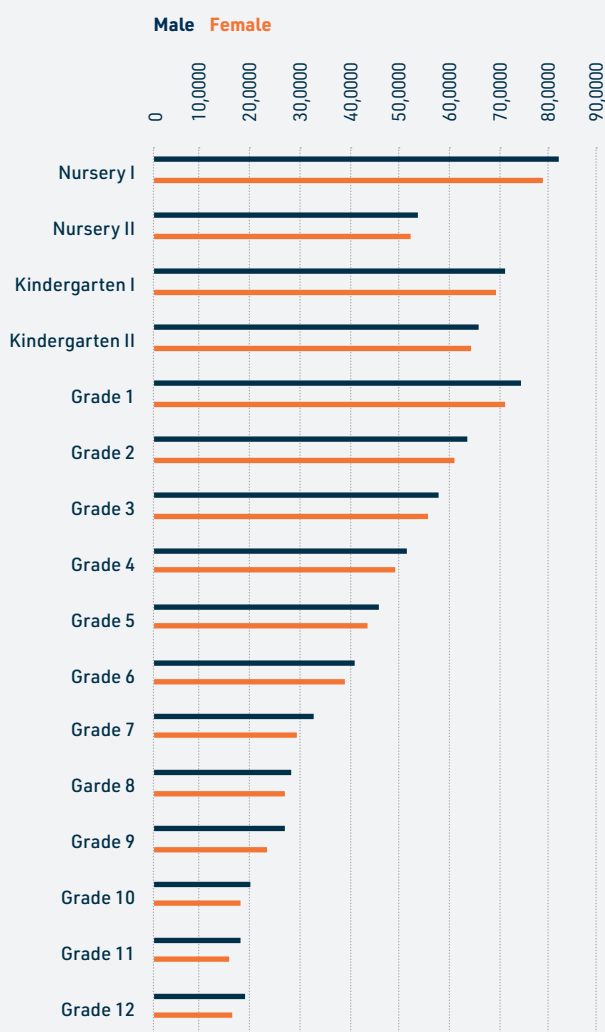
The building blocks of digital skills are foundational literacy and numeracy skills which are developed through the provision of basic education. Like other countries, Liberian children are expected to have a year of early childhood education, six years of primary, three years of junior secondary, and three years of senior secondary education before four years of tertiary education. However, due to the constraint of public financing on education (about 15 percent of government expenditures, lower than many other African countries), about half of the education provision in Liberia comes from the private and nongovernmental sectors.

**Figure 3.1. Education Attainment by Age Cohort**



Source: Household income and Expenditure Survey 2014, Liberia Institute of Statistics & Geo-Information Services (LISGIS), 2016.

Figure 3.2. Total Enrollment by Grade in 2018



Source: Secondary Education Sector Analysis, MOE & WB, 2018.

**Despite the government’s effort, learning outcomes remain poor and are a serious concern.** The education attainment of the population is shown in Figure 31. The learning-adjusted years of schooling is only 2.3 years—at the bottom of the global index. In the regional secondary education exit examinations (West African Senior School Certificate Examination [WASSCE]), almost none of the Liberian students received a score in the 1st (Excellent) or 2nd (Good) division. The state of the education system in Liberia is dire. High rates of dropout are pervasive, resulting in the net enrollment rate at secondary level being only about 13 percent. For example, 40 percent of children who enter Grade 1 drop out before completing basic education (Figure 32).

**The quality of teaching, teacher recruitment, and deployment reinforces inequality and low-quality instruction.** Over half of public primary and secondary school teachers do not hold the minimum qualification for their teaching positions and some do not even possess basic literacy skills required to teach. Teaching at technical, vocational education, and training (TVET) institutions on basic computer science is also underperforming its potential, due to lack of a national qualification framework in Liberia. More importantly, the results are extremely poor with over 81 percent of TVET graduates being underemployed or unemployed.

Although the size of Liberian tertiary education has been doubled in the last decade, most students entering tertiary in-



stitutions are insufficiently prepared for the rigors required. Science, technology, engineering, and mathematics (STEM) training is underdeveloped in terms of programs offered and number of students enrolled. For example, in 2014 not one of the 25,000 students who took the entrance exam of the University of Liberia (UL) passed. On the other hand, there is an expectation on the part of employers (34 percent) for job applicants to have a tertiary education and they continue to struggle to fill certain skilled positions. The curricula and programming of Liberia's 33 institutions (only 11 of them offer bachelor's or master's degrees) are poorly aligned with demand in the Liberian labor market.

## Current State of Digital Skills

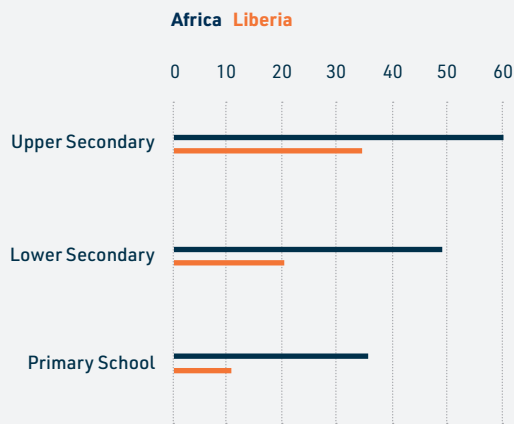
Despite the challenge to develop foundational skills, the government has been making efforts to develop digital skills, particularly among the youth, with help from development partners. Even so, given the state of information in the country, taking stock to draw a baseline to start from is a challenge. The state of digital skills development in the country is based on the review of relevant literature and the information gathered under this study through the quick surveys of County Education Officers (CEOs),<sup>19</sup> tertiary education institutions, development partners/nongovernmental organizations (NGOs), and private companies. Common challenges facing the government and training institutions are also identified.

## Constraints to Digital Skills Development

### Access to Electricity and Internet

With only 12 percent of the population having access to electricity, one of the lowest rates in the world, student learning is severely hindered, particularly for digital skills. Science and computer labs cannot be in operation without electricity, which is often the case in Liberia. Only one-fifth of Monrovia have access to electricity and most areas of the country where half of the population live have no access. Compared to other African countries, electricity accessibility in schools is also one of the lowest in the region—only one-third of senior secondary and one-fifth of junior secondary schools have electricity compared to 57 and 47 percent, respectively, for Africa as a whole (Figure 33).

**Figure 3.3. Students with Access to Electricity**



Source: UNESCO/SDG 2019.

Although both internet users and mobile subscriptions have been increasing in Liberia, access to the internet is still limited and most schools have no internet access. Most users in the country access the internet and social media via mobile devices but only about one-quarter of mobile connections are broadband (3G or 4G), making accessing online content—for example, learning materials and modules for any subjects, including digital skills training—difficult if not impossible. At the same, in the few lucky schools in Liberia that have internet access, sponsorship is usually by NGOs, churches, or private companies. Among the surveyed 15 countries, only 2 out of 146 senior secondary schools (SSSs) (1.4 percent) have internet access (the school in Cape Mount County is sponsored by an NGO—Cross Cultural Care—and the school in Margibi County is sponsored by Firestones company and Lutheran church). Among five tertiary education institutions surveyed, only two have internet access, but only in their computer labs. None of these institutions have on-campus wi-fi provision.



## Lack of Digital Facilities

**Computers and digital devices are limited in government and public schools in Liberia.** Generally, there is no district and school budget nor any government allocations specifically for the use of ICT in government and public schools. Traditional needs are prioritized, as evidenced by low or no investment in computer equipment for classrooms. The computer labs that exist often teach computer science without computers for demonstration and practice. Other labs have been converted to alternative purposes. Survey results regarding access to computers in public schools is bleak. The following results from the survey show that the digital divide is a reality in Liberia.

- ▶ Out of 15 counties, 4 do not have a public school with a computer lab.
- ▶ One-fifth of public schools have computer labs but less than one-fifth have functioning computers.
- ▶ The coverage ratio is 58 students per computer.
- ▶ Less than 20 percent of teachers and 10 percent of students have access to computers or tablets.
- ▶ About 80 percent of teachers and less than 20 percent of students possess a smart phone.

**At tertiary education institutions, the hardware situation is a little better.** The five surveyed institutions, **including vocational and teacher training institutions, report the following:**

- ▶ All the surveyed institutions have computer labs in operation and available for use.
- ▶ **23 labs have 440 computers on campuses, most for general use but some for specialized use.**<sup>20</sup>
- ▶ 11 percent of UL's 19,000 students have access to and use computer labs regularly.

### Extremely Low Level of Digital Skills Training at School Level

**The use of technology in Liberian schools is not a common practice regardless of the level of education.** Besides the lack of clear requirement in curriculum and in learning outcome measurement, few teachers have received proper training in ICT and its application in teaching and learning in both pre- and in-service training programs. Teaching approaches do not incorporate the use of ICT and students' assessments, which are conducted through tests that are never computer based or done online. This even includes annual national and regional exams like WASSCE and other standardized tests administered for students who want to access higher education. When the subject of how to use computers is taught, only theoretical aspects are covered. From six counties surveyed,

- ▶ About 10 percent of government and public SSSs offer some ICT and digital skills training.
- ▶ Less than a tenth of teachers have received computer training, but only half use it.

### Limited Digital Skills Training at Tertiary Education Institutions

**Like other countries, Liberia's tertiary education institutions, including technical and vocational ones, are the main training ground for digital skills at intermediate and advanced levels.** They produce the skilled personnel much needed for realizing the country's digital economy ambition. Currently, among 30 public and private tertiary education institutions, only 4 offer bachelor's degree programs in IT-related areas. There are no ICT-related master's programs or above levels in Liberia. The leading university, UL, does not yet have a computer science program but plans to launch one in the academic year of 2020/2021.<sup>21</sup> However, outside the IT field, across other disciplinary areas, it is uncommon to have digital skills training or digital technology introduction incorporated in curriculum or integrated in teaching and learning.<sup>22</sup>





## Demand for Digital Skills of Graduates

**At 14 percent of the country's GDP, industry in the Liberian economy is relatively small and still heavily reliant on agriculture.** Among its labor force of 1.7 million people, less than 10 percent work in industry and another 22 percent in services. With the penetration rates of electricity and the internet and mobile devices mentioned earlier, the demand for workers with digital skills is increasing though still limited. According to the enterprise survey, in 2018, only about 13 percent of formal firms in Liberia have a website and about 47 percent of firms use email to interact with their clients and suppliers. Compared to Sub-Saharan Africa's average of 29 and 57 percent, respectively, there is less industry demand for using digital technologies in conducting routine business in Liberia, which in turn sends weak market signals for acquisition of digital skills.

**Despite the mismatch and other shortfalls in training, the demand for workers with digital skills continues to grow.** Among a sample of eight service and technology-based firms,

- ▶ All rank ICT/digital skills among the top three skills that their future workers must have,
- ▶ Six noted that over half of their routine production tasks require ICT/digital skills,
- ▶ Five say all new hires are expected to have at least basic-level ICT/digital skills,
- ▶ Three will be looking for intermediate-level ICT/digital skills, and
- ▶ One firm wants 3 of upcoming 20 new hires to have advanced ICT/digital skills.

## Fragmented Support of Development Partners in Digital Skills

**There is a shared urgency in the government and the donor community to not let young Liberians fall further behind their peers.** Therefore, given the poor digital infrastructure in the country, many development partners and NGOs have provided support in two forms, training and equipment for developing ICT/digital skills, but in a fragmented way. Five counties (Bong, Margibi, Maryland, Rivercess, and Nimba) reported direct support related to digital skills development. These activities initiated by the government, development partners, NGOs, and private companies have provided training, computers and digital devices, digital materials and applications, and internships. The scale and coverage tend to be small and limited, with challenges of coordination and sustainability.

## Recommendations

**With a late start and limited resources, Liberia has a monumental task ahead to develop the digital skills of its citizens, youth in particular, to catching up with the rest of Africa and the world.** On the ‘hardware’ side, infrastructure, affordable broadband, and access to digital devices at home and at education institutions at all levels are a basic constraint. Sufficient funding, appropriate policies, and organization capacity could help address digital infrastructure in a relatively short time. More challenging is addressing the ‘software’ side of digital capabilities. A dearth of trained teachers, administrators, and specialists in ICT/digital skills at education institutions at all levels and the low level of foundational skills across most of the youth make the attempt to accelerate digital skills development much harder in Liberia than perhaps elsewhere.

Building on the current initiatives, to move forward, the effort in digital skills development and produce greater impact, the following actions are recommended:

**R1: Mapping exercise to take stock of current interventions in the digital skills space.** More cohesiveness, integration, and linking among interventions in the sector is needed. For a sound, holistic ICT/digital skills strategy for the education/training sector, a mapping exercise should be carried out to take stock in detail of the current supply in the digital skills space in the country. A clear mapping of donor interventions and an inventory of training providers provide a road map for future public and private initiatives.

**R2: Data collection and analysis for policy development.** Strengthen data collection and analysis of digital skills supply and demand to support evidence-based policy development, decision-making, and intervention design. There is very little data from the education sector to industries on digital skills development, acquisition, and utilization in the country. Since almost half of formal education and training in the country is delivered by private and nongovernmental service providers, for example, knowing whether and how digital skills development is incorporated in their programs could help the government formulate appropriate policies to reduce the digital divide and identify interventions for scaling up impact.

**R3: Spend more in support of digital emphasis in new education curriculum at basic levels.** The current public spending on education is about 15 percent of the total public expenditure, lower than most other African countries that, on average, spend over 20 percent. With digital skills constrained by poor learning outcomes of basic education, more investment is needed at all levels, but mostly basic education. Increased



spending would be for formulating digital competency requirements, training teachers in digital skills, and bringing ICT into classrooms.

**R4: Build capacity for digital skills development at the tertiary level through partnerships.** A parallel effort to building foundational skills of the youth is needed to address the emerging needs of industries in tertiary education. Partnerships with advanced institutions and the private sector can use twinning, association, or other incentive-based arrangement to raise the capacity of tertiary education institutions to provide the advanced digital skills being demanded by industry, business development services, and government.

**R5: Short-term, ad hoc innovations for students and the community to practice digital skills.** Given the limited connectivity and resource constraints, two short-term approaches could be considered: (a) encourage and incentivize education institutions that have functional computer labs to open the labs to nearby schools during downtime and (b) establish local resource centers equipped with computers and digital devices to provide internet access to students and other community members.

**R6: Leverage growing use of mobile devices by developing attractive mobile learning apps.** Given the rapid growth in people accessing the internet through a mobile device (now at 24 percent penetration and growing), digital skills development could complement the classroom with informal learning from a mobile device. Leading tertiary education institutions, such as UL, could lead the effort in collaboration with technology companies on this.

**R7: Develop capacity for public-private partnerships to accelerate digital skills development.** Institutional capacity to lead, coordinate, and implement digital skills development initiatives needs strengthening and further development. Incentive mechanisms to mobilize the private sector to work alongside the government are needed. For example, lessons can be learned from various types of PPPs that have helped digital skills development in other countries in areas such as coding boot-camps, computer centers, student internships, and adjunct teaching fellowships.



# Digital Platforms



### Key Messages

- ▶ Liberia improved its scores under the UN's EGovernment Development Index, but its global ranking fell from 170 to 173. In Africa, its 2018 ranking was 32 out of 49.
- ▶ Liberia has in place some of the key building blocks to connect the government, improve financial management, and digitize internal government operations. Online portals are starting.
- ▶ As key gaps in building blocks are filled, the future challenge will be to boost citizen uptake by increasing digital literacy, expanding internet access, and building trust in the government.

## The Importance of Digital Platforms

### Socioeconomic Rationale for Digital Platform Development

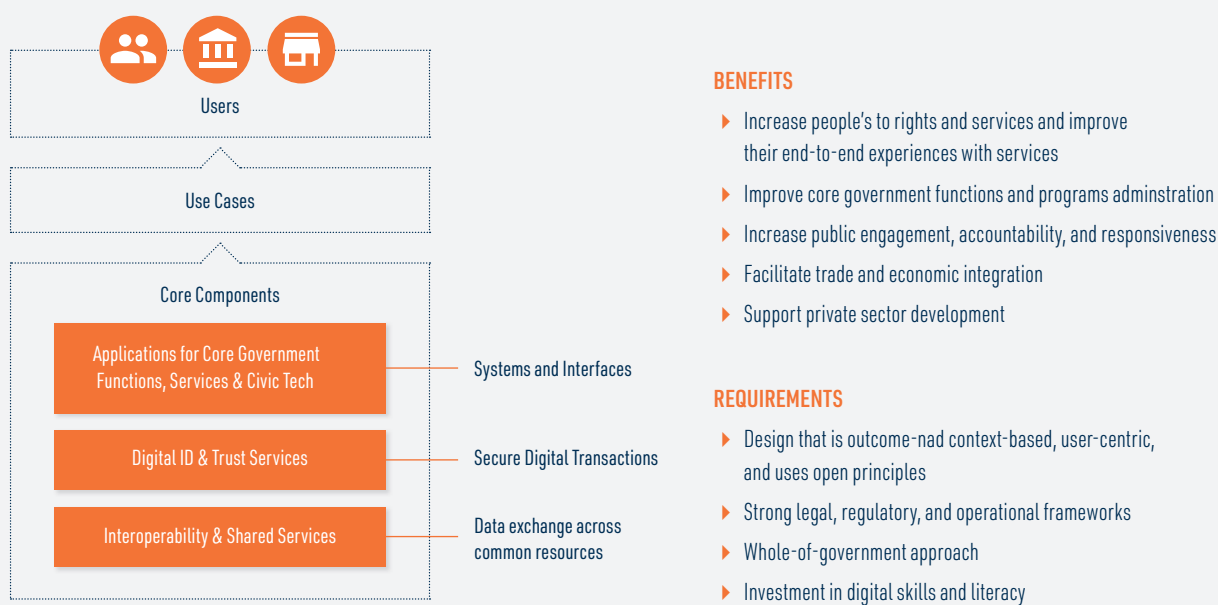
**Digital platforms enable information exchange, arm's-length financial transactions, and access to online services, making them a critical enabler of improved government performance.** Digital platforms support positive interaction among citizens, business, and government through improved information sharing, data exchange, and financial transfers, thereby minimizing rent-seeking and improving citizens' perceptions of the government. Not only do platforms allow for the improving of public sector transparency and accountability, they offer digital services for all aspects of life: from obtaining public records to receiving services to accessing information. Importantly, digital platforms also target government attention to the neediest of the population by using technology to collect data, receive feedback, and deliver services, particularly in remote or less densely populated areas.

**The growth of the digital economy has the potential to play a positive role in addressing drivers of fragility in fragility, conflict, and violence (FCV) affected states.**

The World Bank’s FCV Strategy (FY20–25) notes that it is even more critical than elsewhere to ensure that demands for openness are met. Given the significant role that virtual connectivity can play in reducing the socioeconomic exclusion and polarization that led to Liberia’s civil war (1989–2003), developing the necessary enabling environment and promoting the growth of digital platforms—while ensuring equitable benefits to vulnerable groups—could play an outsize role in helping the country mitigate many of its fragility drivers, including corruption, high rates of inequality, and vulnerable youth.

**Figure 4.1. Digital Public Platforms—Benefits and Requirements**

Source: Rwanda DE4A Report.



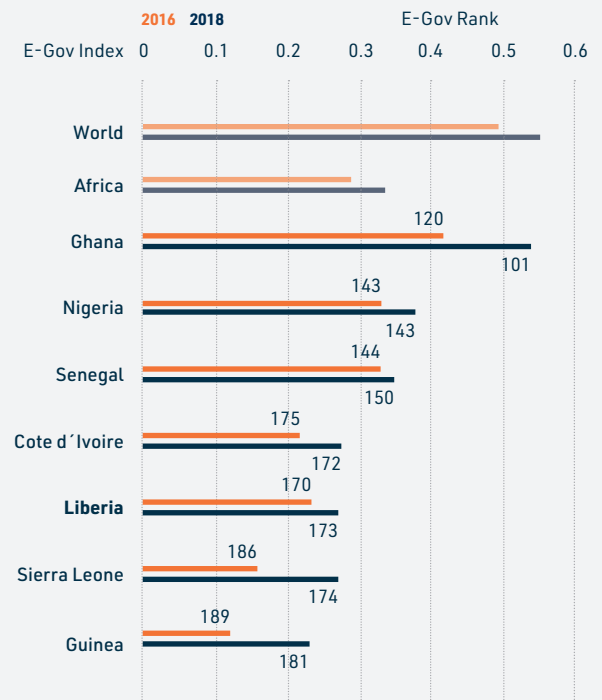
## Alignment with Country Development Strategy and Goals

**In a context of extremely limited fiscal space, an economic slowdown and continued political instability, the GoL has nevertheless prioritized the development of its digital platforms.**

The PAPD's 16 development outcomes includes "universal migration to ICT platforms and wider adoption of e-government to improve business processes and productivity." E-government is considered central to the government achieving its 2023 high-level national targets: (a) revenue generation of 14 percent of GDP; (b) two-thirds of financial transactions captured within the integrated financial management information system (IFMIS); (c) at least half of the citizens and residents registered in the national biometric database; and (d) an e-procurement system linked to IFMIS and deployed in 50 ministries, agencies, and commissions (MACs).

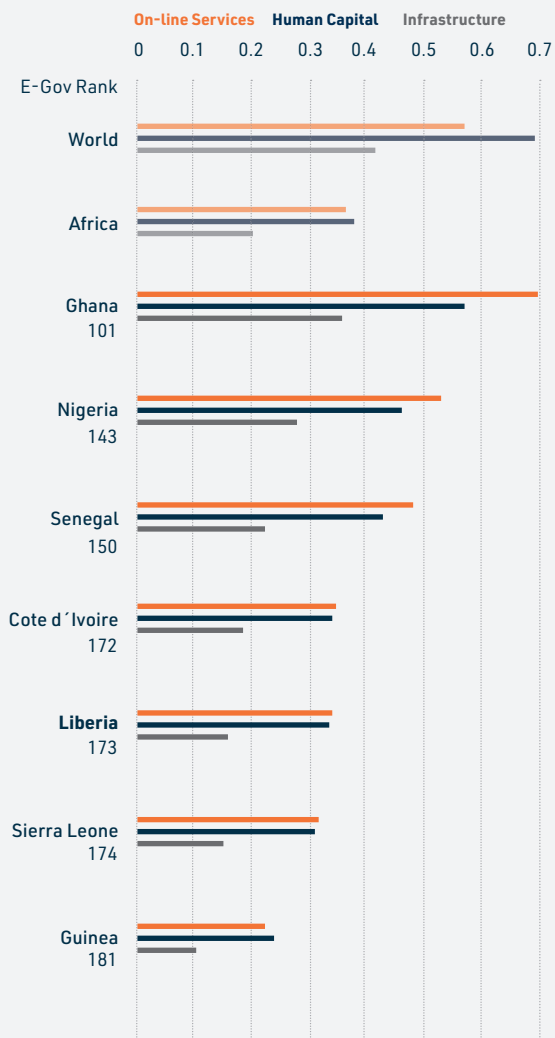
**In line with the high-level objectives of the PAPD, a new five-year ICT policy was signed by the President in 2019 that articulates the next level objectives pertaining to public digital platforms.** The ICT policy represents a cascade of the PAPD high level goals down to more specific objectives that can serve to support broader pro-poor targets, including connectivity for the government, citizen-based services, and the use of ICT for inclusion and skills development. At the same time, the ICT policy underscores transparency and good governance in government through greater automation and the expanded use of outreach services enabled by ICT.

Figure 4.2. EGDI: Liberia versus Benchmark Countries



Source: United Nations 2016, 2018.

**Figure 4.3. Components for E-Government Index 2018**



Source: United Nations 2016, 2018.

## Diagnostic Findings

### Current State of Digital Platforms

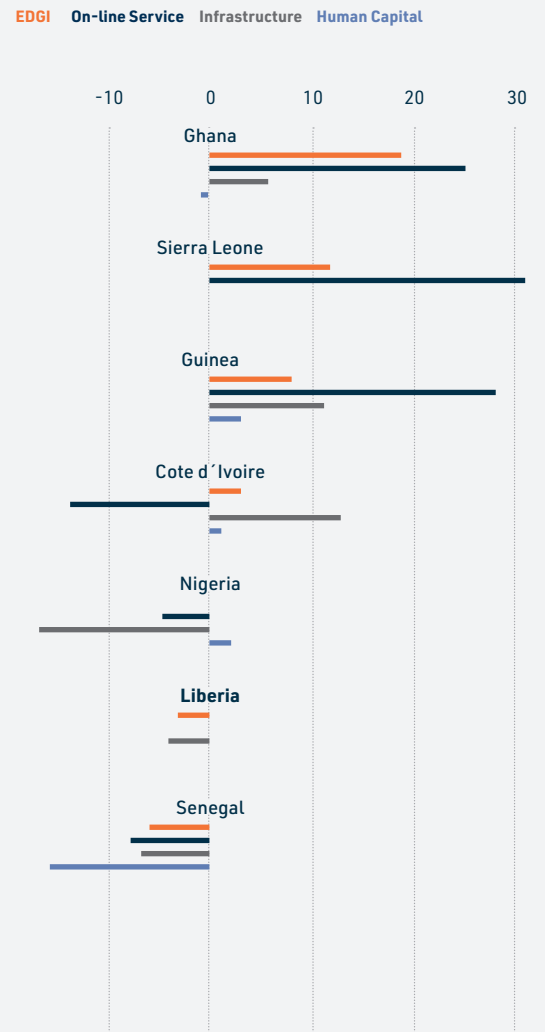
**Liberia's pace of improving its public digital platforms lag those of its neighbors, but the latest statistics may understate recent advances.** Based on a variety of indicators, the country has over time been characterized by weak supply of and demand for digital services and products, as evidenced by its 173 ranking in the world out of 194 countries in the United Nation's EGDI. At the same time, incremental progress has been registered. Even though Liberia's score increased from 2016 to 2018, moving the country from the low to medium category, its overall global ranking fell from 170 to 173. Neighboring countries like Guinea (189 to 181), Sierra Leone (186 to 174), Côte d'Ivoire (175 to 172), and Ghana (120 to 101) improved global rankings due to larger improvements in composite scores during 2016–2018. (Figure 42)

**Unbundling the three EGDI components reveals that Liberia, like most countries, has been advancing faster in developing its online service presence than in infrastructure or human capital.** Some countries are reaching world averages in the online presence component of the index but lag in infrastructure, particularly human capital. Importantly, the world average shows human capital generally leading other components while in Africa, it lags. As a result, the global ranking of the human capital and infrastructure components of the EGDI is much lower than for the online services. Liberia's components lag Africa's average, but the weakness lies less in the human capital component than the very low ranking for the infrastructure component of the EGDI (Figure 43).



Perhaps most notable has been the little or no change in Liberia's global ranking in any of the components from between 2016 and 2018. Of the seven comparator countries, Liberia joins Senegal as the only countries to have lower global ranking in the overall EGDI over the period. While not as dramatic as Senegal's across the board fall in global ranking, Liberia's slippage has been the result of slightly improved indexes but in an environment where considerable activity has taken place in neighboring countries. Even the improvement in Liberia's online presence was negligible compared to neighbors such as Sierra Leone, Guinea, and Ghana that increased global ranking by 31, 29, and 25 places, respectively. Importantly, infrastructure scores also increased in all comparator countries apart from Nigeria and Liberia while human capital rankings changed little for all countries, Liberia included (Figure 44).

Figure 4.4. Component Change in Ranking



## Constraints to Digital Platform Development

### Nascent National Identification

**The National Identification Registry (NIR) is currently rolling out a National Biometric Identification System (NBIS) for all citizens and legal residents, which is not yet interoperable with the Liberian Household Social Registry.** This foundational identification system assigns a unique number to all Liberians enrolled in the system and issues secured, biometric ID cards. Increased efficiencies are expected from linking key functional identification systems—civil registry, driver’s license, passports, human resource management (including payroll), and pensions—thereby reducing unnecessary redundancies. Linking the NBIS to the human resource management system will also create digitally enabled efficiencies by preventing payroll padding in the public sector. When the NBIS is linked with the Social Registry platform cross-verification of each person’s unique identity will take place, enabling eventual delivery of critical public services to the poor.

**As the NBIS platform suffers from resource shortfalls, it also embodies a barrier to entry through costly smart cards for those unable to afford it but most in need.**

As result, the current NBIS strategy focused initially on residents in the capital city, government employees, and legal residents working for development partner agencies for resident cards. Optimally the ID platform will eventually provide a government-recognized digital proof of identity to enable access to services without a cost of entry that is, to some, prohibitive. NIR operates its own data center, disaster recovery data center, and printing facilities to allow for production of not just Liberian IDs cards but also resident and regional ID cards. The NIR branch enrollment offices operate in 14 of 15 counties but without power generators and reliable connectivity. The current operation also lacks a verification platform to send the relevant information to other entities that request verification of the national ID, for example, to receive remittances from abroad or provide public service paychecks.

### Interoperability, Data Infrastructure, and Shared Systems

**Data infrastructure and systems are increasingly shared, but interoperability remains low as most digital platforms continue to be developed without cross-system integration.** Liberia’s digital platforms generally do not communicate well with one another. Even the IFMIS Financials Suite with its various built-in modules is not yet interoperable with non-IFMIS systems. The 2014 e-Government Interoperability Framework lays the basis for inter-MAC interaction, but implementation of the framework is lagging.



**Now with the National ICT Policy seeking greater consistency in ICT architecture across MACs, tangible steps are needed to address the issue.** A first step would be to develop an interface between IFMIS and other back-office public financial management systems as well as other public platforms, such as the Automated System for Customs Data (ASYCUDA), revenue collection (Installation, Test and Acceptance [ITAS]), recurrent payments (Central Bank of Liberia [CBL] Electronic Funds Transfer [EFT]), the Ministry of Finance Development and Planning (MFDP) aid information management system (AIMS), and Commonwealth Secretariat Debt Reducing and Management System (CS-DRM). The technological challenges are less than the challenges of inertia.

### **Minimal Functions and Services on Offer**

**As noted in the statistical analysis above, the GoL has a limited but increasing presence on the internet.** Many MACs' websites are often offline and/or provide outdated information. All are characterized by a one-way information flow; there are none with interactive requests for services or the online provision of services, with the notable exception of the tax return e-filing. The unique format for all government websites developed by the Ministry of Post and Telecommunications (MoPT) is not used uniformly as its Project Management Office (PMO) has had trouble coordinating and harmonizing the GoL's web presence.

**The GoL e-Services are to be provided through eLiberia, its one-stop-shop e-portal, but still limited to providing information to citizens to obtain government services.**

The information package provides links to and information about ICT-related issues, such as technology firms in the country, e-government policies and links, and ICT projects. The current service capacity falls far short of the aspirational objective articulated in the most recent e-Government Strategy (2014–2018), that is, “using ICT to bring the Government closer to the people through effective governance, improved service delivery, and socio-economic growth.”

### **Attention Still Needed to Build Core Systems**

**There are pockets of excellence in government, but the overall ICT skill base is limited at the level of senior leaders, civil servants, and core technologists.** There is no coordinated effort to boost digital skills in the public sector, much less change management to ensure adoption of new platforms. Few governmental officials receive

regular training on ICT, data standards (collection, management, or publication), or data analytics. Currently, a Chief Information Officer (CIO) Council has started limited training to CIOs to complement ongoing basic training on Microsoft Office and economic software that is being provided to government staff.

**The dimensions of Liberia's legal framework that need modernizing across the board have gaps and implementation issues for public platforms as well.** Institutional and regulatory clarity is needed from the legal framework for public platforms to reach their full potential in Liberia. Elements of data security, archiving, and digital preservation exist in policies but without a single overarching policy that consolidates and harmonizes these or provides formal procedures or mechanisms to address data security. The same is true regarding electronic financial transactions and e-payments. The framework for data protection and consumer privacy in the National ICT Policy needs regulations on data protection and online data privacy for implementation and compliance.

**Institutional leadership in the sector is limited and the GoL's IT governance model is largely inadequate for the fast-moving, private sector-driven field of technology and digital applications.** The MoPT's ability to coordinate the development and maintenance of public sector platforms across government is largely limited, particularly among its other ICT activities. There is therefore no authoritative body to coordinate the effective implementation of the National ICT Policy and the delineation of mandates and roles among relevant government actors is unclear. The IT staff hired by MACs are not trained centrally and nor embedded by the MoPT, complicating the ability to enforce common standards and practices across government. ICT staff of the MoPT and MACs are generally involved only at project implementation without input at design. IT-related activities are thus developed with unnecessary redundancies, a lack of coherence, and without interoperability in mind.

**Coordination challenges in the sector are significant but improving.** The National ICT Policy can coordinate actors and actions as high-level ICT decisions are increasingly taken by the National ICT Governing Board comprising ministries, MNOs, and civil society. The CIO Council will meet regularly to discuss policy decisions and intervention of the ICT Governing Board. Importantly, CIOs are increasingly receiving training in project management and the business side of ICT, among other topics, to build their capacity; such trainings also help build interpersonal relations that will facilitate coordination at the technical level.



# Recommendations

## Create Digital Identification

**R1. Roll out NBIS with a vision of achieving the PAPD objective of ‘digital identity for all’.** Roll out digital identification to help access to services, exercise of rights, and participation in the digital economy. NIR may ensure access to services based on a service-oriented pro-poor agenda.

## Improve Interoperability, Data Infrastructure, and Shared Services

**R2. Upgrade LIBTELCO’s National Data Center.** Upgrade LIBTELCO’s Data Center (including a disaster recover site) and boost adoption of shared services. Centralizing data infrastructure and services reduces costs and frees up resources for needed upgrades and system investments.

**R3. Boost interoperability of public sector digital platforms.** Boost interoperability of digital platforms according to the e-Government Interoperability Framework, starting with IFMIS as the core government system and develop greater data sharing and services around it. Roll out IFMIS to the remaining MACs and develop a help desk to respond to queries in real time.

## Expand Government Functions and Services

**R4. Introduce e-Procurement.** Design, pilot, and scale up e-Procurement within the GoL to lead to greater efficiencies, spur more competition for government contracts, and tackle opacity.

**R5. Strengthen e-Filing for tax returns.** Integrate revenue management systems, including the taxpayer portal, to promote e-filing; integrate back- and front-office systems to facilitate the shift from pencil and paper to electronic data management. Expand e-filing and -payment.

**R6. Improve records and data management.** Improve, on top of the Electronic Document Management System (EDMS), the largely paper-based records management and electronic data management that exists in the public sector.

## Review and Improve Core Digital Platform Enablers

**R7. Strengthen ICT Leadership.** Strengthen leadership in the MoPT through the establishment of an operational unit to coordinate the effective implementation of the National ICT strategy. The CIO Council, governed by an ICT Governing Board, can ensure efficient adoption and needed coordination in the use of ICT platforms and collaboration in government.

**R8. Boost training.** Boost digital training of public sector, including through pre- and post-training diagnostics to target training and ensure impact. This will address the gap in knowledge and skills among public servants on ICT, data standards, and data analytics.

**R9. Revise data-oriented legal framework.** Strengthen framework for data security, record archiving, digital preservation, and data privacy and protection, ensuring that legislation protects physical ICT infrastructure, addresses cybersecurity, and enhances national security.

**R10. Assess public spending on IT.** Conduct a public expenditure review (PER) of IT spending and consider findings such as revising the Chart of Accounts (CoA) to a single budget line for IT.







# Financial Services Digital





### Key Messages

- ▶ Around 27.6 percent of Liberians reported making or receiving digital payments in the last year, behind the Sub-Saharan average and key comparators like Ghana and Nigeria, underscoring the need to prioritize progress on digital payments as an entry to other DFS.
- ▶ The financial sector can bolster the role of DFS, with a fully operational national retail payment switch and a stronger legal and regulatory environment.
- ▶ As the switch becomes operational and the regulatory framework is improved, increased digital literacy and disincentivizing the use of cash and checks will be critical.

## Importance of Digital Financial Services

### Socioeconomic Rationale for Digital Financial Services Development

**Digital Financial Services (DFS) stand to bolster the provision of financial services in support of economic development.** The definition of DFS according to the G-20 High-level Principles for Digital Financial inclusion is “financial products and services, including payments, transfers, savings, credit, insurance, securities, financial planning and account statements delivered via digital/electronic technology such as e-money (initiated either online or on a mobile phone), payment cards and regular bank accounts.” The entry point and platform on which all other financial services are built is the digital transfer of payments. This means that once the jump has been made from a cash-based to an integrated digital payment system, other DFS may follow.

**Significant benefits can accrue to an economy from adopting DFS, particularly one in transition.** First, DFS stand to reduce costs by reducing the need for physical of cash and moving it. Second, DFS enhance efficiency of government, business, and personal payments, by reducing waiting time for obtaining cash, and from manual processing. Third, DFS foster accountability by creating an electronic trail, which ensures payments arrive and reach the right customer. Fourth, DFS stand to bolster commerce through the creation of digital portals and a better consumer payment experience. Finally, DFS expands access to financial services, as individuals and enterprises need accounts to send and receive payments.

## Alignment with Country Development Strategy and Goals

The Financial Sector Development Strategy (FSDIP), launched in 2016, provides guidance for comprehensive financial sector reform. The FSDIP recommended deepened usage of DFS through the development of a payment systems infrastructure, legal framework, and oversight mechanism. Actions identified included updating the regulatory framework, operationalizing the national switch, fostering retail and government to person (G2P) payments, and developing a modern payment systems oversight function.

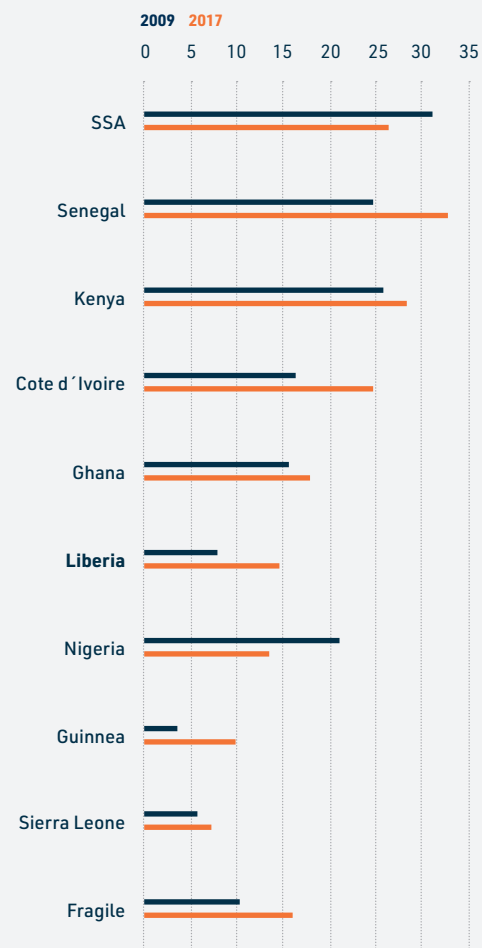
**The National Financial Inclusion Strategy (NFIS), launched in December 2019 has a vision** to “build a sustainable financial sector deeply rooted in digital financial services...to provide access to and enhance usage of a wide range of affordable financial services.” In addition to those areas identified in the FSDIP, the NFIS focused on facilitating usage. Specifically, the NFIS advocates for functionality of the national switch, including integration of banks and MNOs; open access to Unstructured Supplementary Service Data (USSD) digital termination of international remittances; and digitizing of government payments. CBL has also prepared a National Retail Payment Strategy to support the reduction in the use of cash and checks through expansion electronic payment services and digital payment instruments.

# Diagnostic Findings

## Current State of Digital Financial Services

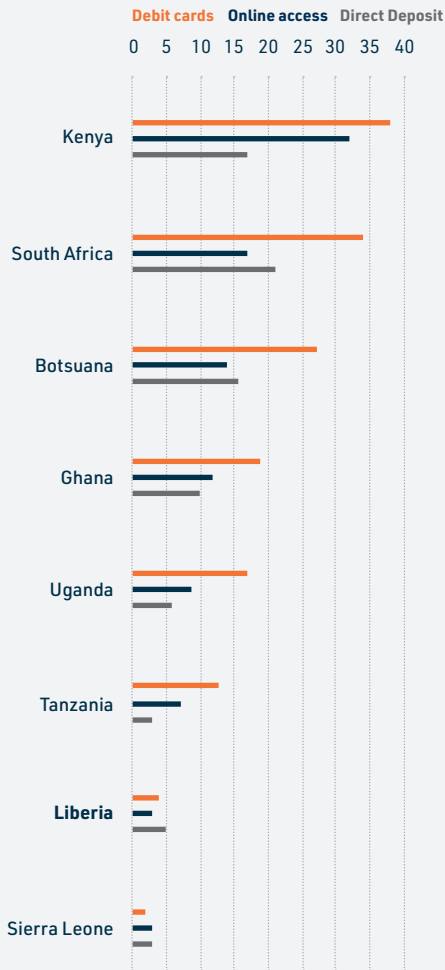
Liberia's traditional preference for cash, derived from country conditions, nascent payment systems, and dollarization of the economy, has been amplified by macroeconomic uncertainty. Even before the recent macroeconomic instability, access to the financial system has been limited for several issues, including the high degree of risk in the lending environment, a lack of bankable projects, and a predominantly informal set of borrowers in the country. Liberia has consistently recorded one of the lowest lending rates (loans to private sector/GDP) in the region with the bulk of lending directed to the import and domestic trade and service sector (Figure 51).

Figure 5.1  
Net Lending to the Private Sector  
(as % of GDP)



Source: IMF 2018.

**Figure 5.2**  
**Digital Banking in Liberia and**  
**Comparator Countries: 2017**



Source: *Findex 2017*.

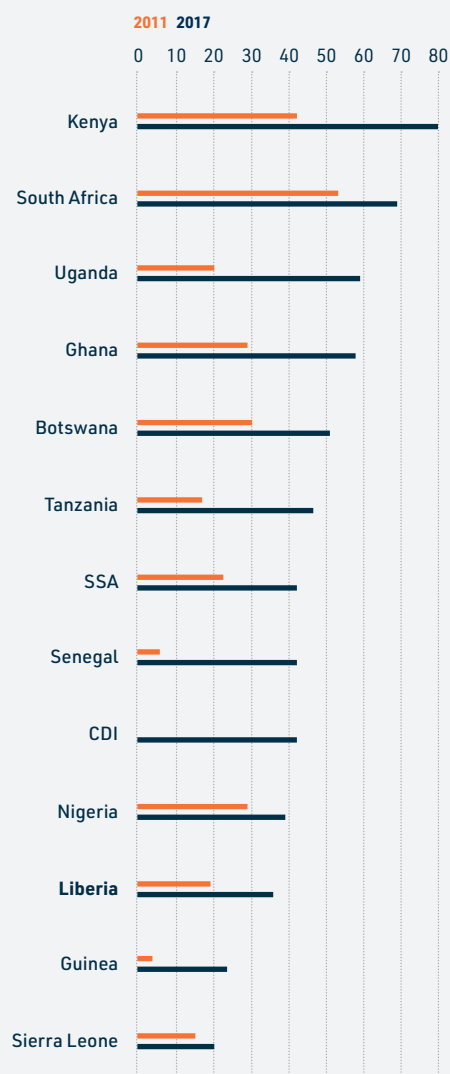
**At the same time, the high cost of doing business and the low demand for banking services has limited ready access to financial services largely around Monrovia.** The 500 or so bank branches achieve limited coverage outside of greater Monrovia. There are only 2.7 automated teller machines (ATMs) per 100,000 adults in the country—lower than the average for fragile countries and well below other countries in the region. Moreover, severe infrastructure weaknesses (road, communications, and electricity) have increased financial institutions’ operating costs and deterred expansion. There has been practically no growth in ATM penetration since 2011.

**Digital banking went live in 2016 when CBL introduced its Real Time Gross Settlement (RTGS) for large wholesale payments with participation limited to the licensed banks, along with its ACH.**

To date, however, uptake at the retail level by merchants and consumers has been limited compared to Liberia’s neighbors (Figure 52). Still, around half of the 200,000 checks were cleared through the ACH in 2018 with the other half were manually exchanged by banks each day at CBL. There were only just over 17,000 direct ACH credits in 2018, such as automatic salary deposits. Even the number credit transactions made by direct ACH credit are small relative to paper checks, but the ACH debit system is not yet operational. Therefore, a key reason for the lack of digital banking is that vendors and citizens do not yet have the option to enable automatic account deductions for recurring payments like paying bills, further sustaining preferences for check and cash.

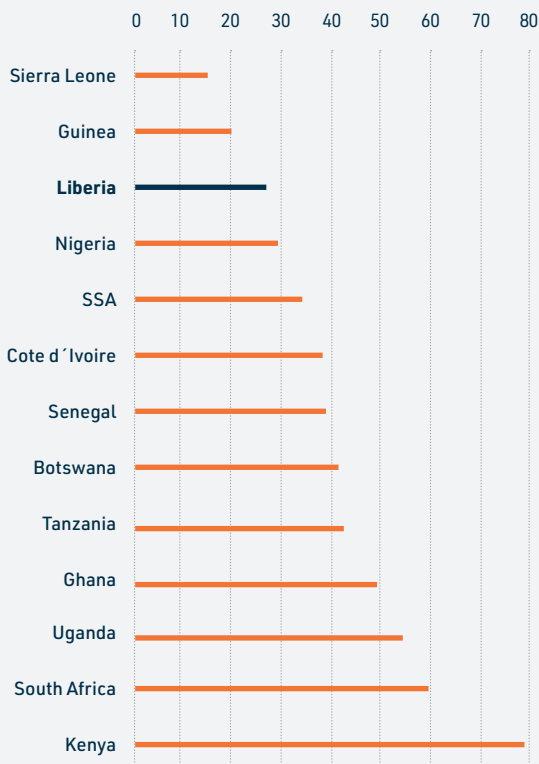
**Mobile money, on the other hand, was introduced before the availability of bank-oriented electronic payment instruments and has led the digital payment revolution in Liberia.** With the introduction of mobile money guidelines in 2011 and the enabling regulations in 2014 by CBL, the two telecommunications companies, Orange and MTN, each offered a proprietary mobile money product and network. The number of mobile wallets/subscribers skyrocketed from 265,000 in 2014 to 2.8 million in 2017. About 21 percent of Liberian adults reported having a mobile money account in 2017, with 18 percent for women and 23 percent for men; the gender gap is similar at the regional level. Importantly, for the country's financial inclusion goals, the wide coverage of approximately 7,000 mobile money agents has enabled services to be available in all of Liberia's 15 counties. Current use cases include cash in cash out (CICO), some bill payments, manual person to person (P2P) transfers via mobile money agents, and limited number of person to business (P2B) transfers. Limited number of vendors numbering less than 1,500 accept payments via mobile money.

**Figure 5.3**  
Growth in Financial Account Ownership across Africa



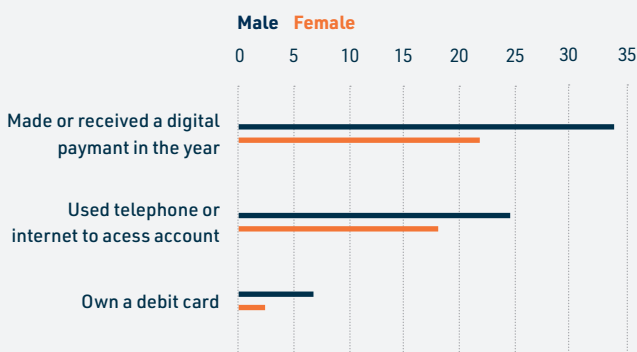
Source: *Findex 2017*.

**Figure 5.4. Made or Received a Digital Payment in Past Year**



Source: Findex 2017.

**Figure 5.5. Gender Gap in Use of Digital Payments**

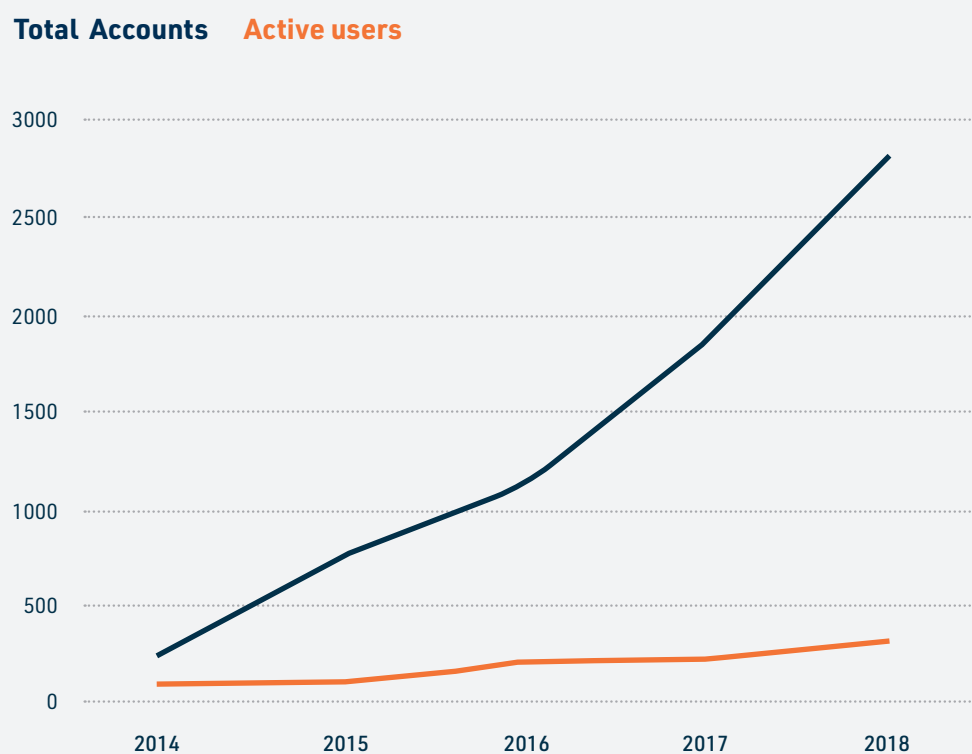


Source: CBL.

**At first look, the introduction of mobile money seems to have moved Liberia to the regional average in terms of financial inclusion.** About 36 percent of adults in Liberia now have a bank account or use a mobile money service, an increase from less than 20 percent in 2011 before the introduction of mobile money (Figure 53). Though exact figures are not available, the increase in account ownership, in Liberia, has been driven primarily by the increased number of mobile money wallets in Liberia as opposed to bank accounts. Similar patterns occur in other countries with low bank account ownership, like Sierra Leone and Guinea. Countries with deeper financial sectors, like South Africa, Botswana, Nigeria, and to some extent Ghana, experienced bank-led increases in financial inclusion.

**Yet, while digital transactions are being carried out by almost 30 percent of the population, usage of DFS remains low compared to other African countries** (Figure 54). Moreover, like account ownership, usage patterns also reveal a gender gap with 34 percent of men making or receiving digital payment in the past year compared to 22 percent of women. Similarly, only 2.2 percent of women report owning a debit card compared to 6.7 percent of men. The gap also exists in the usage of a mobile phone or the internet to access an account, as 24 percent of men report using such digital channels to access their account in comparison with 18 percent of women (Figure 5.5).

Figure 5.6. Growth in Total and Active Accounts



Source: CBL.

**At the same time, the share of active mobile accounts in the total is decreasing.** The number of registered mobile money wallets increased tenfold from 2014 to 2018 to just under 3 million but active mobile money users increased to only 340,000 (Figure 56). Though financial incentives for selling multiple wallets are strong, the preference for cash remains as the number of use cases remains low while people cannot electronically transfer balances back and forth between digital wallets and bank accounts. A use case scenario that goes beyond CICO to more universal use and acceptance of digital payments would provide the foundation for other digital products, such as credit, bill payments, and insurance, among others, which could be marketed to the same customer base.

## Enabling Environment for Digital Financial Services

**Digitized financial services are at an early stage of development in Liberia with checks and cash continuing to dominate the payment systems.** Indicators of card usage, online access, and use of direct deposit demonstrate wide differences in DFS use across countries. Despite the urgency to expand usage, the slow growth in the uptake of DFS reflects not just the challenging market, spatial, and income conditions that have limited financial deepening in Liberia generally but rather a set of idiosyncratic technical and commercial challenges particular to fragile countries: (a) poorly functioning financial sector environment; (b) a developing policy, regulatory, and oversight environment; (c) rising risks and the need for various forms of risk mitigation by regulator, providers, and consumers; and (d) limited interoperability in the payment system infrastructure.

### Enabling Environment for Financial Services

**The environment for financial sector operations is challenging in Liberia, and so DFS in Liberia have remained at the most basic levels with nonfinancial companies leading the way.** Poor credit discipline and opaque investment opportunities in a contracting economy have diminished banks' appetite for risk and limited lending. Credit to the private sector has maintained an increasing trend from 8 to 17 percent from 2009 to 2017 but remains low when viewed against comparators. An important reason is the nascent credit infrastructure that limits the ability of creditors to enforce loan contracts and take collateral. Therefore, the credit that is extended is short-term, high spreads and, if not with recurrent, well-known customers, requires significant but scarce immovable collateral.

**During the past few years, reforms enhancing the legal rights of creditors have been adopted to improve access to financial services but these are at early stages of implementation.** Key commercial law reforms include the Commercial Code and Commercial Court Law and, more recently, the Insolvency and Restructuring Law, in force since January 2017. In contrast, other critical aspects of the creditor rights ecosystem remain at early implementation stages. Statistics covering the enforcement of contracts has remained one of the lowest in the world over the past decade. The public credit registry covers 3.2 percent of adults, is supported by manual data input, is without online access, and does not have historical data and is thus limited in its ability to mitigate credit risk.<sup>23</sup> The secured transaction law and movable collateral registry may eventually complement a wider collateral system to increase access to finance but will depend on implementation of the Land Rights Act (2018) and rollout of the land title registry to develop the secured lending market.





## **A Slowly Developing Policy, Regulatory, and Supervisory Environment**

**As elsewhere, CBL is engaged in the ongoing task of adequately balancing financial sector innovation with safety and soundness for consumers.** Since digital payment platforms developed in a diversified manner, with remittances, mobile money, and then other payment systems, room for confusion, inefficiency, and regular arbitrage has developed as each type of network is regulated and overseen differently even though the product/delivery channel may be the same. There is a need for the authorities to ensure that the regulatory framework across provider and service type develops in as harmonized a manner as possible, to facilitate growth, encourage competition, and protect consumers.

**As the digital economy develops and the payment system deepens, fundamental legislation such as the Payment Systems Act, 2014, and its subsidiary legislation may need to adapt.** This objective of leveling the playing field and creating harmonization is generally supported by the establishment of a single set of principles and guidelines for non-paper instruments that supersede instrument-specific regulation.<sup>24</sup> Such a regulatory framework would not only unify all relevant rules on mobile money and other types of electronic transfers and their execution, it would ensure that enforcement of the framework would be borne by a similarly unified supervision and oversight function.

**However, while some unification is taking place, remittance service providers and mobile money issuers remain governed by different CBL regulations that appear to lack consistency.** Remittance providers are licensed and supervised by CBL but regulated separately from other payment service providers performing similar functions. A key limitation is that while remittance providers are licensed and supervised by CBL, they can provide only a limited number of payment services. As a result, the two regulations governing remittances providers preclude “digital termination” of international remittances onto mobile wallets or into bank accounts. Instead, customers must physically visit one of less than 500 branches across the country to collect the transfer and the collection must be in cash. With remittances exceeding 25 percent of GDP, an immense opportunity to replace cash with digital payments is forgone.

**Finally, deepening use of DFS requires a new set of complementary legal instruments to enable processes and protections to facilitate daily use of expanding services.** A digital identification will give each citizen’s online presence a legal status and foster trust through a reduction in fraudulent transactions, the formation of a digital credit history, a foundation for public transfers, merchant payments, and market participation. Other legal instruments required to support DFS include e-signatures, e-documents, and biometric identification all at nascent stages in Liberia.

**While it is still under development, the legal and regulatory framework for DFS is starting to open to new products, such as digital credit that can offer small amounts**

**to wider populations.** Financial institutions can now partner with mobile money operators (or mobile money operators can create a bank or non-bank financial institution [NBFI]) to offer digital credit. Additionally, CBL recently approved amendments to the consumer protection regulations to allow digital credit via USSD feature and not just smart phones. CBL also approved amendments to the NBFI regulations, which bring credit-only microfinance institutions under the framework, to allow them to participate in the digital credit landscape as NBFIs.

### **Need for A Tri-Partite Approach to Risk Mitigation**

**With new benefits, DFS also carry new risks—for individuals who use them and the institutions that provide them.** Understanding and mitigating the added risks is particularly important for stakeholders in a financial system that lacks deposit insurance, limited regulatory capacity, and low rates of financial inclusion, underscored by a general unfamiliarity with financial products, particularly digital ones. Risk management in the new world of DFS therefore requires a tripartite approach that actively involves regulators, financial services providers, and users of financial products and capacity building across the board.

- ▶ **For the regulator,** a key part of prudential oversight is devoted to payment systems, and other DFS, involving the deployment of activities and instruments needed to identify, assess, contain, and resolve technical risks on a continuous basis.<sup>25</sup>
- ▶ **For providers of services,** various provider-specific regulations contain requirements to protect consumers' funds and provide clearly understood statements of user risk, but all have recourse to CBL's Consumer Protection Unit. Enforcement is nascent due to limited capacity.
- ▶ **For users of DFS,** financial literacy needs significant improvement in general and specifically in the case of DFS. A CBL campaign, launched in December 2019, is one of many efforts under way to improve understanding and encourage uptake.

### **Slow Investment by and Limited Participation on Interoperability**

**Digital financial interoperability provides for seamless integration of digital transactions across financial institutions and offers a variety of benefits to financial system participants.** It provides a wider network of potential clients from participating financial institutions. For consumers, the convenience and cost savings from integrating various types of networks means new connectivity and efficiencies can be realized as networks will compete through service provision rather than through exclusivity. Vendors benefit by offering consumers access to electronic purchases without the need to have the same network.<sup>26</sup> Recipients of government transfers and payments can access



their payments at any financial institution account and the Ministry of Finance need not process separate transactions to various financial institutions, thereby improving traceability and record keeping for salaries, transfers, and payments.

**At its basic level, interoperability requires technical connectivity via switches, a legal framework, and inter-industry coordination. On the infrastructure side, CBL began installing a national electronic payment ‘switch’ (NEPS) in 2016 to facilitate interoperability of retail payments.** The first part of the switch project has been partially completed but only with the ATM USD-cash withdrawal function operational while the LRD code requires initiation. Nine banks are participating, but four are live. While the additional ‘push’ is being tested at CBL, the ‘pull’ functionality as well as the QR code requires procurement and installation, for full functionality for sending and receiving instant payments across financial institutions.

**Digital payment interoperability in Liberia at present is therefore limited to switching US dollar ATM transactions among four banks. Not surprisingly only 10,000 transactions are ‘switched’ per year, meaning that of the 1.7 million ATM transactions in 2018, less than 0.1 percent were switched.** Without the ability to pull funds from accounts, account holders are only be able to ‘push’, or send funds across institutions, but cannot request for funds. Therefore, without a bilateral switch between a bank and an mobile money network operator (MMO), Liberia lacks a key functionality, the ability of account holders to instantly move money back and forth among financial institutions, including between mobile money wallets and between bank accounts and mobile wallets.

**The legal and regulatory underpinning for interoperability is specified in the recent e-payment regulation of 2019.** The e-payment regulation requires participation in NEPS when it becomes operational. Since it was discussed during a severe local currency cash crunch, the regulation also relaxed restrictions on bilateral switches between banks and mobile operators. In response to the longer-than-expected time to operationalize all the functionality of the national switch and the immediate need to economize on physical cash, in December 2019, CBL allowed banks and MMOs to conduct bilateral switching along the MNO proprietary networks.

**Even so, intra-industry coordination may still be mobilized to move interoperability forward through the National Electronic Payment Switch Implementation Committee (NEPSIC).** This formation, launch, and activation of the NEPSIC will boost participation, help coordination, and promote robust strategic planning. Through the development of an implementation plan and NEPS rules, continuous monitoring of the NEPS implementation and operation, and rationalization of the charges for all stakeholders, the activity can pave the way for a public-private ownership model.

# Recommendations

**Based on the review of constraints to DFS development, recommendations are proposed in five areas** covering the (a) enabling environment, (b) regulatory reforms, (c) risk mitigation, (d) payment infrastructure, and (e) digital payment architecture for a COVID-19 response.

## Deepen Financial Intermediation through an Improved Banking Environment

**R1: Introduce a modern credit registry.** The lack of an operational modern electronic credit registry means lenders are unable to capture financial profiles to support credit underwriting. The customer-banking relationships is a ready source of digitized transactions. The new modern digital system being tested now needs integration with information providers.

**R2: Strengthen enforcement of creditor rights.** Stronger enforcement of creditor rights will give lenders confidence to take more risk and deepen banking relationships. The ability to restructure debts of viable enterprises will become even more critical. To lower the risk profile of customers and have banks take on new risk of the digital economy, the insolvency regime, secured transactions system and Commercial Court needs immediate attention.

## Amend Urgently Needed Regulations and Carry out Legal/Regulatory Review

**R3: Enable digital termination of remittances.** There are restrictions on digitizing of inbound remittances, so regulations should be amended to allow for their digital termination and inclusion in the wider payment system. With remittances accounting for 25 percent of GDP, the digital economy would receive a boost from amendments to two remittances' regulations that are needed to facilitate digital termination into mobile wallets and bank accounts.

**R4 Facilitate digital credit.** Access to small loans through digital means is becoming increasingly important as a tool for outreach, particularly given the high cost of in-person banking. currently small value to the informal sector have not done so yet. Publishing already adopted amendments to consumer protection and NBFIs regulations will expand institutions that can offer digital credit and types of phones that can receive it.



**R5: Modernize the legal framework for the digital economy.** In parallel with specific amendments to enable short-term improvements by digitizing remittances and credit, a comprehensive review is needed to introduce new instruments (that is, e-signature, facial recognition, e-documents, and digital thumbprint) and manage new types of risks. Similarly, the Payment Systems Act may need amending to modernize its role as a key enabler.

## Organize and Apply System of Tripartite Risk Mitigation

**R6: Strengthen oversight, bolster consumer protection, and support financial literacy.** The Payment Systems Oversight Framework that has unified the DFS and payment systems units may now be effectively operationalized to strengthen risk management from the regulator’s perspective. From the provider’s perspective, protection of consumer’s electronic funds privacy and data is needed in parallel with a major effort at broadening financial literacy by launching CBL’s National Financial Education Strategy among other efforts.

## Strengthen and Activate Payments Infrastructure

**R7: Expand interoperability and operationalize ACH debit.** Efforts by CBL to operationalize the NEPS are needed, including (a) empowering the NEPSIC to develop NEPS rules; (b) technically integrating full ‘push’ functionality of the switch; (c) procuring and operationalizing the switch pull QR code functionality; (d) operationalizing the LRD functionality; (e) integrating all banks, MNOs, and qualified stakeholders; and (f) establishing published rules, operational reliability, and open access. Going live with ACH debit would also deepen usage.

## Leveraging Digital Payment System to Deepen Usage in Response to COVID-19<sup>27</sup>

**R8. Leverage the country's payment systems to support government's COVID-19 response.** CBL took steps to lessen the burden on the poor by removing fees on the country's payment systems and increasing the allowed mobile money transaction levels. The next step would be to harmonize government payments to enable digitizing through the country's ACH for small payments to individuals and RTGS for larger payments. Payments from bank accounts can reach mobile money users through recently established bilateral switching arrangements.

**R9: Digitize payments to and from the public sector.** The system's capacity for digital transfers is needed now to respond to the crises by enabling social distancing. Any opportunity immediately available should be utilized while medium-term actions to deepen the systems are prepared. Salaries and social protection should be the highest priority.

**R10: Digitize government salaries.** Connecting the IFMIS and CBL's EFT systems would enable government payments to be digitized so the GoL can migrate government payments to ACH, RTGS, and NEPS. Public employees can be paid by digital means while various fees, taxes, and bills may be allowed through online or mobile money payments using CBL's systems.





# Digital Entrepreneurship







# The Importance of Digital Entrepreneurship

## Key Messages

- ▶ “If you want to go fast, go alone. If you want to go far, go together.” Digital entrepreneurship, a nascent subsector in Liberia, faces a challenging enabling environment and so scaling up is difficult. Even so, a small group of dynamic early innovators are using digital solutions to bring innovative products and services to market. With major socioeconomic challenges ahead requiring innovative approaches, an inclusive policy dialogue would allow digital enterprises to participate in shaping potential solutions.
- ▶ “Build it and they will come.” Risk-based investment (entrepreneurship funds, angel investment, venture capital financing) will become viable when there is cohort of investment-ready firms to pave the way. In the meantime, the government may seek innovate partnerships with private sector operators to develop digital entrepreneurship support programs such as innovation labs and technology hubs jointly sponsored by large operators.
- ▶ “The whole is greater than the sum of the parts.” Adopting an ecosystem approach to boost digital entrepreneurship yields greater results than a collection of ad hoc activities. The distinct contribution of each actor (that is, entrepreneurs, policy makers, investors, learning institutions, business support programs, and consumers) combines to yield transformational results. A coordination function is required with government alongside the private sector intentionally facilitating links and networking among ecosystem actors on a regular basis.

## The Socioeconomic Rationale for Digital Entrepreneurship Development

**Digital entrepreneurship is loosely defined as the creation of new ventures and the transformation of existing business by creating and using novel digital technologies.** Digital enterprises are characterized by a high intensity of utilization of new digital technologies (particularly social, mobile, analytics, and cloud solutions) to

improve business operations, invent new business models, sharpen business intelligence, and engage with customers and stakeholders through new digital channels. As such, two categories of digital entrepreneurs are, or could, operate in Liberia: ‘ICT firms’ and ‘e-commerce firms’. A third type of digital entrepreneur, the ‘platform aggregators’, has not yet appeared, though some are contemplating setting up digital marketplaces for regional sales.

**A robust economy depends on the creation and existence of dynamic firms that rise, and fall, based on commercial risk-taking by entrepreneurs, driven by, often, new profit opportunities.** In a thriving digital economy, entrepreneurs motivated by a drive for business success, seek to leverage opportunities from a ready supply of digital infrastructure, finance, skills, and government platforms to bring innovations and offer improved services and products to consumers. The economy and society benefit from jobs and income and, for the government, additional revenue generation.

**Entrepreneurship provides a pathway for women’s economic empowerment yielding direct results of income-generation opportunities for women, their families, society, and the economy.** Thus, unlocking barriers to women’s entrepreneurship in the digital economy is central to advancing broader development objectives of the country. Despite data showing that these barriers are not based on legal forms of discrimination between male and female entrepreneurs,<sup>28</sup> societal and cultural norms have served to affect women’s access to resources such as land, credit, and education. As noted above, gender differences in education outcomes, mobile money account usage, and device ownership underscore the reality on the ground and the need to proactively mitigate the differences.

**As an enabler for other parts of the economy, ICT is increasingly becoming a determinant of productivity and competition in today’s globalized world.** Digital entrepreneurs facilitate innovation into the economy through (a) creation of technology (software and hardware); (b) integration of technology into traditional sectors—agriculture, tourism, education, and health—and (c) use of technology to transform transactions. The use of technology created opportunities to facilitate financial inclusion (for example, M-Pesa in Kenya), support farmers’ access to extension services (Farmerline in Ghana), facilitate access to health services (e-Health Africa), and improve education (Imano Portal).



## Alignment with Country Strategy and Goals

**Technology can contribute to the economic transformation envisioned in the government's pro-poor development strategy, entitled the PAPD.** For Liberia, investing in promoting digital entrepreneurship is set to provide social and economic returns. With a bulging youth population concentrated in urban areas, developing new sectors for growth that enable the growth of other sectors and contribute to the creation of new category of jobs is critical in fostering continued stability in the post-war era. Entrepreneurship, particularly digital entrepreneurship, has the potential to provide a source of livelihood for some of the 20,000 graduates annually. Liberia's national development pins hope on what it terms as 'Seeds of Change' for these urbanized and tech-savvy youngsters to have the potential to escape decades of economic exclusion and poverty.

**Accordingly, the GoL has prioritized facilitating entrepreneurship and digital entrepreneurship across several policies and strategies.** The National ICT Policy (2018–2023) prioritizes the need to boost the development of a vibrant e-commerce and digital services sector as well as promote entrepreneurship in the nascent digital economy. At the same time, there is recognition that limited data on the current status of digital entrepreneurship hinders development of an effective policy approach that would unlock the full potential of digital entrepreneurs in Liberia.

# Diagnostic Findings

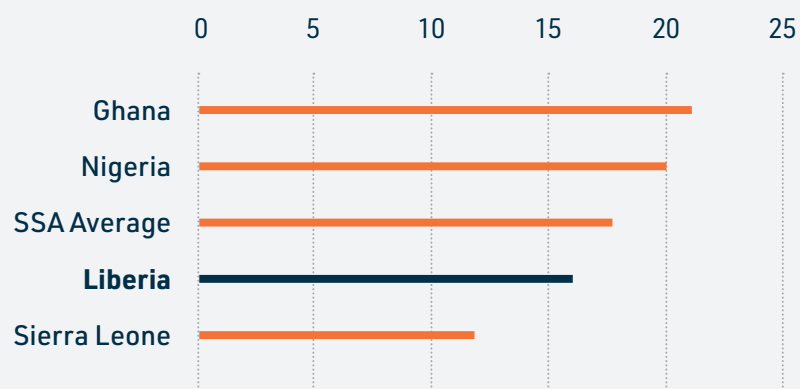
## Current State of Digital Entrepreneurship

**Digital entrepreneurship is nascent in Liberia as the country continues to put in place the key foundations of an enabling business environment.** Multiple factors combine to constrain the emergence of digitally enabled businesses and serve to reduce incentives for adopting digitalization by firms. Digital adoption at the firm level is low. Compared to almost half the firms in Sub-Saharan Africa having a website and access to email, only 13 percent of firms in Liberia claim to have such basic access to the digital economy. Other surveys confirm the lack of connectivity among even the more established firms with only 5 percent of large Monrovia firms having a website.<sup>29</sup>

**However, though nascent, there is a cadre of innovative Liberian digital entrepreneurs including those that develop technology and those that use technology in the business model.** A small sample of digital entrepreneurs in Liberia shows them to be new; 80 percent operating less than a year, small; 56 percent employing less than five people; and just emerging—75 percent report annual turnover to be less than US\$50,000. A few ICT firms and e-commerce vendors have been developed within the past several years. These include [banjoosuperstore.com](http://banjoosuperstore.com); [cookshop.biz](http://cookshop.biz), Smart Systems Lib, HAK Technology, and Tunes Liberia. There is a sense of optimism among entrepreneurs and other stakeholders regarding the potential to offer a tangible business opportunity, boost firm productivity, provide access to markets, support broader development agenda, and create new jobs.

**Entrepreneurs, who normally flourish where market frictions exist by nature, are presented in Liberia, like other FCVs, with a combination of business challenges that are difficult to overcome.** Despite the sense of optimism about digital entrepreneurship, entrepreneurs contend with the entire range of challenging business environments that increase all types of cost of doing business such that scaling up even marketable ideas is difficult. Indicative of the challenge faced by Liberians, as compared with regional and global peers, are the low ranking in many global indexes measuring the quality of the business environment.

**Figure 6.1. Entrepreneurship Index 2018**



Source: World Economic Forum (WEF), *Global Entrepreneurship Index*

- ▶ The country's performance in the *World Bank Doing Business* ranking has been worsening in recent years, scoring 172, 174 and 175 out of 190 economies, in the 2018, 2019, 2020 reports.
- ▶ The *Enterprise Survey 2017* cites access to finance, access to electricity, and high tax rates as the top three constraints for private sector firms in a wide range of sectors including IT.
- ▶ The *Global Competitive Index* ranks Liberia 137 out of 137 economies. Liberia is particularly performing poorly in indicators for infrastructure, technology, market size, and innovation.
- ▶ The *Global Entrepreneurship Index (2018)* ranks Liberia 119 of 137 countries with a Global Entrepreneurship Index score of 16 percent, pointing to a weak entrepreneurial ecosystem.

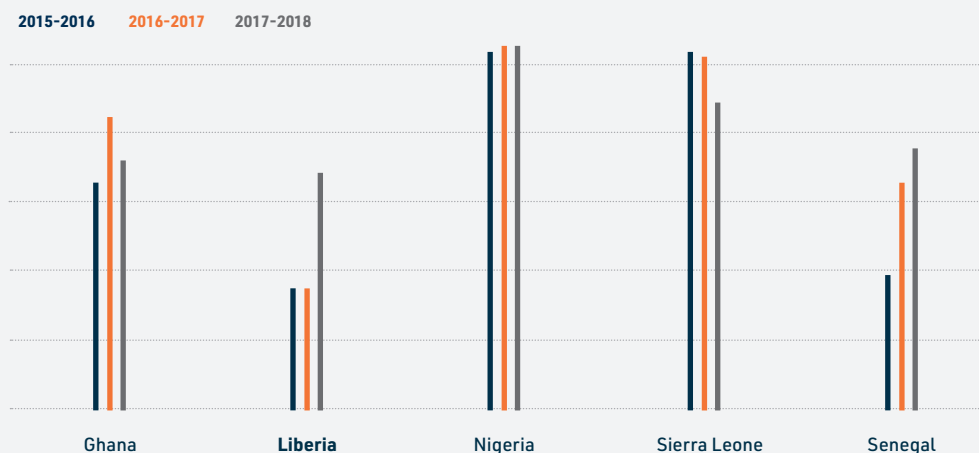
## Constraints to Digital Entrepreneurship Development

The ensuing assessment of Liberia's digital entrepreneurship ecosystem uses the Babson Framework that focuses on key foundational elements: The framework identifies six areas that underpin a vibrant entrepreneurship ecosystem: (a) Policy; (b) Financial Capital; (c) Culture, Infrastructure, and Support; (d) Human Capital; and (e) Markets. The components are interdependent so that together they determine the ease with which entrepreneurs can access opportunities.

### A Challenging Policy and Regulatory Environment

An open policy regime and a conducive regulatory environment are generally accepted as the prerequisite to, and foundation of, a thriving digital ecosystem for entrepreneurs. Digitalization enables and disrupts business models, so authorities seek a good balance between enabling the sector to grow and managing emerging risks. For digital entrepreneurs, achieving such balance requires that the authorities make economywide investments to improve the business environment. For the business community, a strong and conducive regulatory environment exhibits predictability, transparency, and consistency. Such an environment is normally characterized by strong institutions, effective inter-government coordination, effective data collection and monitoring and evaluation mechanisms, and strong engagement with the private sector to shape and influence policies.

Figure 6.2. Venture Capital Availability (Rank)

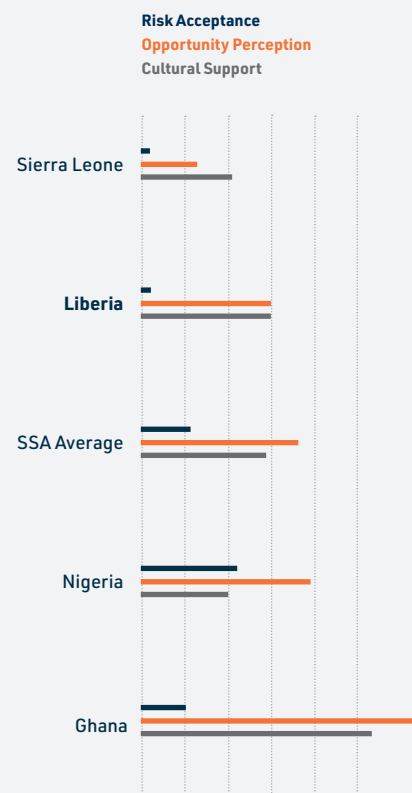


Source: WEF Competitiveness Index

Liberia's investment climate cannot be characterized as predictable or transparent but rather, by uncertainty, weak institutions with coordination failures. With reforms cutting across mandates of multiple government ministries and departments, effective coordination and leadership is needed. Initiatives, such as the 'Better Business Forum', a public private dialogue forum to inform government reform commissions were effective but not sustained due to resource shortages and technical capacity issues. The institutional framework remains complex to navigate and includes multiple face-to-face interactions for inspections, licensing, and regulatory compliance. This opaque and inconsistent regulatory framework discourages entry into the formal sector, particularly for digital entrepreneurs managing with many normal commercial uncertainties in starting a business.

At the same time, the policy framework to manage emerging risks remains fragile. Policies and regulations around e-commerce, data protection and privacy, e-transaction, and e-signature are currently not in place. The government has initiated the introduction of a cyber-crime law; this however has remained in draft with no clear timeline for full effectiveness. Lack of a clear policy framework to manage emerging risks will continue to serve as a deterrent for investors and their financiers in the sector. While businesses can register intellectual property rights in Liberia, enforcement upon infringement is weak. The Liberia Intellectual Property Office (LIPO) has limited capacity to enforce and deter risks which undermines validity of intellectual property rights.

Figure 6.3. Indicators of Entrepreneurship Culture



Source: Global Entrepreneurship Index 2017

## Absence of Financial Risk Capital

**Firms generally cite access to finance as an impediment to growth and competitiveness.** As financial sector credit to the private sector has improved from just under 8 percent in 2009 to over 14 percent in 2017, it exceeded the 5 percent level in Sierra Leone but is well behind the regional average (26.4 percent) and median (17.2 percent) and the average for countries in fragile states (16 percent) in 2017. For digital entrepreneurs, the share of private sector credit is significantly lower with limited sources of finance that are appropriate and accessible. Digital startups that are generally informal, typically young (0–5 years), with little history and no risk profiles, are usually not considered bankable by formal financial institutions. Yet the lack of an external financing mechanism for these firms presents a challenge even in well-functioning financial sectors.

**Though limited, there is emerging interest from early-stage financiers to support this nascent sector, viewing it as relatively untapped and ripe with opportunity.** Venture capital funds have scoped the market and made one significant investment. Several of Liberia's high net worth individuals have acted as angel investors for digital entrepreneurs and incubators though through individual connections rather than a formal network of angel investors. There is no knowledge or interest in existing crowdfunding platforms abroad and none exists in Liberia. Thus, demand for risk finance is high but the proportion of entrepreneurs that can secure it is extremely low. As a result, there are limited options that combine risk capital, technical assistance, and mentorship.

## Entrepreneurship Culture is Based on Necessity Rather Than Desired Risk Taking

**Being an entrepreneur in Liberia is a choice made largely out of necessity.** In recent years, there has been continued growth of domestic oriented, necessity-based entrepreneurs. Urbanization, population growth, and limited job opportunities has made entrepreneurs out of many who are only looking for a livelihood. Limited role models exist for digital entrepreneurs, but opportunities exist for emerging trail blazers. This is supported by analyzing Liberia's entrepreneurship culture with three indicators from the Green Energy Interface (GEI), 'Risk Acceptability', 'Opportunity Perception' and 'Cultural Support'. There is evidence of great opportunity, great risk (and a lack of desire to take it on), and community support for those that must choose it. Compared to its neighbors, Liberia demonstrates low risk acceptability level, meaning that the high risk for entrepreneurship would prevent almost all from starting a business. Low risk acceptability is not uncommon in the Africa region but Liberia scores particularly low. On the other hand, opportunity recognition is almost as





high in Liberia as it is for the entire continent, indicating that much of society can identify opportunities to start a business. Finally, society supports starting a business from a career standpoint, even if, or mainly because, it is out of necessity.

### Access to Reliable Infrastructure

**Key to increasing digitally enabled businesses in Liberia will be public and private sector investments for an efficient and cheap supply of key infrastructure services.** Access to broadband speed internet and a ready-supply electricity form the bedrock of the digital business. To that end, recent investment in digital infrastructure had an impact in Monrovia where the ACE cable brought the internet to Liberia in 2016 and the Montserrado fiber optic ring brought it to Monrovia in 2019. Investment by telecommunications operators facilitated the supply of communications services, mobile money networks, and internet in the country. New ISPs started up and are trying to compete with the large ISPs. Yet broadband internet remains only in Monrovia due to limited infrastructure, making digital business primarily a Monrovia opportunity for now.

**Even in Monrovia, costly and inconsistent supply of electricity severely affects the ability for digital entrepreneurs to easily establish and compete.** The digital sector inherently requires consistent supply of electricity to power operations, but businesses in Liberia face a twofold challenge: (a) the time and cost it takes for a business to gain connectivity and (b) consistency in the supply of electricity particularly in the dry season (November–May). Liberia is ranked 175 out of 190 in 2020 in the ease of accessing electricity. A typical firm takes 482 days for a first-time connection to a business premises in Monrovia and the process costs over US\$13,000. After connection, the technical and efficiency challenges result in tariff rate that is among the highest.

### Business Development Support Services

**Firms, particularly small and medium enterprises in early stages of development, value the support of Business Development Services (BDS) for business efficiency and to a lesser extent, so do digital entrepreneurs.** These range from finance and tax, network development, market links, legal, training, and mentoring services. These services tend to be supplied by dedicated BDS providers, incubators, accelerators, and some government-supported projects and initiatives. As quality BDS can help budding firms improve performance, it is important to assess the BDS market for digital entrepreneurs.

**Though the supply of BDS is growing, content targeted at digital entrepreneurs is limited.** Liberia's small but dynamic and growing community of BDS providers rely on contracts from donor-funded projects to provide short-term training to beneficiaries that meet project objectives. BDS providers therefore have difficulty understanding how to

support businesses to advance in the digital economy. From interviews with BDS providers, firms unaffiliated with donor projects account for less than one-fifth of the portfolio of the top BDS providers in Liberia. Equally, only one in ten of the digital entrepreneurs surveyed received business coaching and mentoring from incubation programs.

**Specialized, targeted programs, including those that include training on personal initiatives, yield positive performance for women-led businesses (World Bank, 2018a).** As economic empowerment of women is at the heart of Liberia's development agenda, advancing digital entrepreneurship in Liberia will require investments to ensure that targeted entrepreneurship support programs are inclusive of the needs of female entrepreneurs, to unlock the potential of women-led businesses. Specific gaps that exist in the access to resources for female entrepreneurs require attention related to skill development; basic, financial, and digital literacy; and access to serviced, connected space and the latest devices.

### **Need for Physical Space and Networking Assets**

**There's a need to strengthen 'networking assets'<sup>30</sup> in the ecosystem as well as facilitate links among ecosystem actors.** Even as each ecosystem actor has a distinct function and role, utilizing the natural interdependence among them is critical for the budding entrepreneur. Stories of innovation hubs like Silicon Valley include famous cases of interaction and collaboration that perhaps were considered innocuous at the time but in hindsight were transformational. Thus, an ecosystem's ability to mobilize collective action to build networking assets is an important determinant of the quality and output of digital entrepreneurship ecosystems.

**In Liberia, as in other nascent business environments there are a few model initiatives that are building network assets but scaling up is proving difficult under the current conditions.** Startup costs, financial backing, and physical space are just a few of the factors limiting the organic growth of networking assets. A few hubs like iLab and Smart Liberia have been playing an important role in providing a physical space for entrepreneurs to network but without integration with other actors such as financiers, public sector officials, and private sector players in relevant linked industries. Events like the Liberia Tech Mixer underscore the potential for scaling up networking assets.

### **Dearth of Digital Skills for Business**

**Digital enterprises require e-business skills and access to a dynamic labor market, but e-business skills are lacking, with limited options for acquiring these skills.** Businesses are yet to leverage the full potential of the existing digital technology available in Liberia with limited e-business skills to do so. As a result, there are few places and service providers that provide e-business skills training. BDS providers



often lack an understanding of digital technologies in business.

**Limited supply of technical skills in the country will continue to impede efforts to support digital entrepreneurship.** Though improving with the introduction of private institutions, digital entrepreneurs find a limited supply of needed skills in the workforce. Survey results from a set of digital entrepreneurs rank satisfaction with the skills of local software developers in Liberia as 5.2 out of 10, with half indicating that they source skills internationally as well as locally. Advanced skills, such as website development, interfacing, and content management, are limited domestically that most web domains and website hosting services are provided by outside firms.

### Hard-to-Reach Markets

**Entrepreneurship, whether digital or otherwise, will only be stimulated by the prospect of a viable business opportunity, which in turn means a prospective set of customers and suppliers.** For the digital economy, the division of tasks across firms is more prominent than in traditional activities, so markets are relevant to the entrepreneurial ecosystem. Though digital entrepreneurs are risk takers, access to markets is fundamental to reducing the uncertainty across the board. In emerging and fragile ecosystems where the entrepreneurship culture is risk adverse, this becomes even more important in firms' use of market intelligence to inform decisions.

**In Liberia, and the digital sector, supply of reliable and accessible market information is limited, making it challenging for businesses to digitize and offer digital goods and services.** On the other hand, the low level of digitization offers an opportunity for entrepreneurs: to achieve the conditions for businesses to scale, a significant investment of time and energy will be required but there is an emerging market opportunity. The fact that digitization is at such a low level provides a business opportunity for technology-related firms offering software and data solutions to both the public and private sector. With just 120 digital enterprises currently registered in Liberia, the market is unsaturated, with a higher tendency for firms to benefit from first-mover advantage.

**Government demand has been driving the market for digital products but in a limited way.** As the government digitizes, it has created some market opportunities for technology firms through the provision of software solutions and websites for government ministries, departments, and agencies. In more recent years, there has been a decline in demand from government due to late payments and stringent contract terms. As a result, few domestic firms have been able to benefit from government procurement opportunities despite the large shift to technology solutions.

**Limited infrastructure, low level of digital literacy, and small market size have limited growth of business to consumer e-commerce ventures.** Liberia has a population of 4.8 million, 40.9 percent of whom live below the international poverty line. Latest data from the Household Income and Expenditure Survey estimate that about 2.3 million Liberians are unable to meet their basic needs. The result is that the purchasing power of the Liberian market remains low with digital goods and services sometimes seen as a luxury than a necessity. Low levels of digital literacy further constrict market opportunities for e-commerce venture. The 2017 FINDEX data show only 2 percent of Liberians above age 15 years used the internet to pay bills or buy something. As such, few digital enterprises operate fully end-to-end digital models but rather use cash payment upon receipt.



## Recommendations

**The DE4A initiative sets out ambitious objectives:** (a) triple the number of digitally enabled businesses created annually and (b) increase financing for venture capital to 0.25 percent of GDP by 2030. Reaching these targets will take a concerted effort:

### Improve the Policy and Regulatory Environment for Digital Enterprises

- ▶ **R1: Improve the business environment to support startups, young firms, and women-led businesses.** A focus on improving various aspects of the business environment that affects startups and smaller, newer firms is needed. For example, making business entry and exit easier through digitizing business registration and decentralizing approval for key instruments under the Liberia Business Registry would facilitate formal business entry.
- ▶ **R2: Strengthen policy framework through an inclusive process.** This identification of a government champion to establish a coordination mechanism for cross-collaboration would be important. Ministry of Commerce and Industry (MoCI) officials need exposure to digital technology, its potential, and various applications to sponsor legislation relating to e-commerce, cybersecurity, data, and consumer protection regulation. This process must be inclusive of private sector perspectives to be effective.

### Facilitate Access to Early-Stage Finance for Digital Entrepreneurs

- ▶ **R3: Protect ‘intangible’ assets to support investment.** Strengthening protection of intangible assets is critical for digital entrepreneurs to determine value and attract investors. This includes strengthening LIPOs’ capacity to support intellectual property regulations and enforcement. Similarly, significant progress has been made in intellectual property rights at the ECOWAS level; the GoL should leverage these existing structures to better protect intangible assets. Doing so not only protects businesses but also provides confidence and protection for investors in digital enterprises.
- ▶ **R4: Strengthen links between investors and investment-ready entrepreneurs.** To attract investment and reduce transaction costs for investors, well-designed startup and entrepreneurship support programs are needed to provide

e-business training, coaching, mentoring, and business management skills to startups and early-stage digital entrepreneurs focused on investment readiness. Female entrepreneurs will require targeted support programs such as Personal Initiative Training. The GoL may support events that link investors and businesses to facilitate matching.

- ▶ **R5: Explore various financing mechanism to support digital enterprises.** In the short term, the GoL may explore establishing a grant mechanism or co-investment in a revolving fund to stimulate and de-risk investment in Liberia's emerging digital enterprises. Additionally, the GoL may seek to leverage diaspora investment that has proven to be effective in the Caribbean and other parts of the world. This may include piloting a diaspora investment portal and providing investment facilitation for diaspora interested in investing in innovative young companies.

## Promote Entrepreneurship and Boost Supply of Skills in the Labor Market

- ▶ **R6: The supply of business and ICT education in higher learning institution needs strengthening.** Integrate business education in curriculum of higher learning institutions. Conduct review of entrepreneurship curriculum to integrate e-business skills and generally improve curriculum. Develop specialized business education programs, hackathons, app and prototype competitions, and business plan competitions in response to private sector needs. Such programs should be inclusive of women and girls and include specialized bootcamps. A specialized fund can provide small grant financing to successful student business initiatives.
- ▶ **R7: Invest in physical and networking assets to support innovation and networking.** Provide digitally enabled spaces for startups, including establishing a digital hub (m-Labs) to allow exposure to, and experimentation with, technology in piloting and prototyping goods and services. To support female interest in digital entrepreneurship, the design and operations of such spaces should be inclusive of the needs of women and girls, including childcare services. Networking assets to showcase existing digital entrepreneurs and local technologies such as tech expos and 'Digital Entrepreneurship week' could be co-funded flagship events.



## Stimulate the Market for Digital Goods and Services

- ▶ **R8: Promote procurement opportunities for domestic businesses during government digitization drive.** As the GoL digitizes, this creates demand for digital goods and services. Introducing flexible procurement laws to promote use of domestic digital enterprises is one way of stimulating the market for digital enterprises operating in Liberia.
- ▶ **R9: Promote technology adoption by businesses to support business-to-business (B2B) market opportunities.** Ongoing and planned initiatives to support business competitiveness could support technology acquisition and adoption by businesses, ranging from website utilization to data analytics, sensors, artificial intelligence, to drones. Market opportunities would be relevant for domestic digital businesses that are usually well positioned to fulfil such demands.
- ▶ **R10: Reduce the cost of digitization to expand the base of digitally enabled individuals to support business-to-consumer (B2C) ventures.** This may include streamlined import processes and reduced duties on technology hardware and handsets as well as addressing of long-term reduction in prices of internet, electricity, and the expansion of digital infrastructure.

# Conclusion

Main Messages and Recommendations





## Liberia at a Glance

- ▶ Liberia is a particularly fragile country undergoing its second ‘twin health/economic shock’ in less than a decade. The impact of the liquidity crises that started in late 2019 is being compounded by the COVID-19 pandemic starting in the first half of 2020.
- ▶ Important public health lessons from the EVC helped prepare the Liberia health system for a public health crisis, but the resilience of the economy has been more limited, in part due the lack of digital mechanisms for doing business.
- ▶ The global dimension of the current crises provides a stark reminder about the value of resilience, flexibility, and technological innovation in the 21st century and the government’s critical role in helping prepare the country through universal adoption of the digital economy.

### Infrastructure

#### Messages

- ▶ Liberia has progressed in digital connectivity over the past decade, but internet usage is low, internet pricing is high, and broadband access is largely limited to the urban areas.
- ▶ Access to broadband services is hindered by the lack of fiber optic backbone networks and the deficient regulatory environment.
- ▶ The government should encourage private sector funding for digital infrastructure by strengthening the enabling legal and regulatory environment and targeted funding for infrastructure and services in commercially unviable areas.

#### Recommendations

- ▶ Support rapid deployment of digital infrastructure as part of the COVID-19 emergency response, through (a) additional spectrum resources, (b) flexibility in network traffic management and quality of service rules, (c) classification of network equipment as essential infrastructure, (d) rapid approval of network installations, (e) special tariffs to support vulnerable consumers, and (f) defer sector-specific taxes.
- ▶ Reconsider the regulatory practices of retail tariff regulation and use of regulatory fees for domestic revenue mobilization.
- ▶ Consider a multi-modal approach to nationwide broadband access, involving private sector funding for fiber optic backbone, a strategy for national backbone routes that are not commercially viable, and a review of the UAF strategy for last-mile infrastructure in underserved areas.

- ▶ Encourage commercial infrastructure sharing for faster deployment and reduced cost, especially in rural areas, and investigate cross-sector infrastructure sharing as an opportunity to reduce network deployment cost and improve network resiliency.
- ▶ Consider reducing wholesale prices on the ACE submarine cable and divesting the ACE landing station in Monrovia as well as securing redundancy through backbone connections to other countries.

## Digital Skills

### Messages

- ▶ Liberia has been working with development partners to address its digital skills development challenges, but the effort is hindered by very low foundational skills (literacy and numeracy) among its youth, ranked one of the lowest in the world.
- ▶ The lack of basic infrastructure such as electricity, internet access and computers/mobile devices at all levels of educational institutions, plus poor quality of education and training in general, has led to traditional education programs not coping well with rapid technological changes.
- ▶ Improvement needs to foremost focus on increasing investment and performance in foundational skills to have the necessary building blocks for digital skills development, along with effective coordination among development partners, leveraging PPPs and scaling up innovations.

### Recommendations

- ▶ Carry out mapping exercise to take stock of current interventions in the digital skills space based on primary data collection and analysis for policy development.
- ▶ Spend more public funds in support of the increased digital emphasis in new education curriculum at basic levels.
- ▶ Develop capacity for PPPs to accelerate digital skills development and engage in digital skills development at the tertiary level through partnerships.
- ▶ Leverage growing use of mobile devices by developing attractive mobile learning apps and use short-term, ad hoc innovations for students and the community to practice digital skills.



## Digital Platforms

### Messages

- ▶ Liberia improved its scores under the UN's EGDI, but its global ranking fell from 170 to 173. In Africa, its 2018 ranking was 32 out of 49.
- ▶ Liberia has in place some of the key building blocks to connect the government, improve financial management, and digitize internal government operations. Online portals are starting.
- ▶ As key gaps in building blocks are filled, the future challenge will be to boost citizen uptake by increasing digital literacy, expanding internet access, and building trust in the government.

### Recommendations

- ▶ Create digital identification by rolling out the national biometric ID system.
- ▶ Improve underlying infrastructure and shared services by upgrading the national data center and strengthening the interoperability of public sector digital platforms with links to IFMIS.
- ▶ Expand government functions and services by introducing e-procurement and strengthen e-filing for tax returns.
- ▶ Review and improve core digital platform enablers, namely ICT leadership, training for all levels of government staff, and improved legal framework for records and data management.
- ▶ Assess public spending on it through a PER and adjustment of the CoA to unify analysis of budgeted ICT expenditures.

## Digital Financial Services

### Messages

- ▶ Around 27.6 percent of Liberians reported making or receiving digital payments in the last year, behind the Sub-Saharan average and key comparators like Ghana and Nigeria., underscoring the need to prioritize progress on digital payments as an entry to other DFS.
- ▶ The financial sector can bolster the role of DFS, with a fully operational national retail payment switch and a stronger legal and regulatory environment
- ▶ As the switch becomes operational and the regulatory framework is improved, increased digital literacy and disincentivizing the use of cash and checks will be critical.

## Recommendations

- ▶ Improve the environment for financial intermediation by introducing a modern credit registry and strengthening the enforcement of creditor rights
- ▶ Amend regulations to deepen usage of mobile money to allow digital termination of remittances to mobile wallets and facilitate digital credit.
- ▶ Modernize the legal framework for the digital economy to digital instruments (for example, e-signature, facial recognition, e-documents, and digital thumbprint) and manage new risks.
- ▶ Organize tripartite risk mitigation by strengthening oversight, bolstering consumer protection, and supporting financial literacy.
- ▶ Strengthen and activate payments infrastructure by expanding interoperability and operationalizing ACH debit.
- ▶ Leverage digital payment system to respond to COVID-19 and deepen usage through digital payments for social protection and support while digitizing government salaries.

## Digital Entrepreneurship

### Messages

- ▶ *“If you want to go fast, go alone. If you want to go far, go together.”* Digital entrepreneurship is nascent in Liberia and faces a challenging enabling environment. It is difficult to scale up. Yet a small group of dynamic early innovators use digital solutions to bring innovative products and services to market. With major socioeconomic challenges ahead requiring innovative approaches, an inclusive policy dialogue is needed to allow digital enterprises to participate in shaping potential solutions.
- ▶ *“Build it and they will come.”* Risk-based investment (entrepreneurship funds, angel investment, venture capital) will become viable when investment-ready firms pave the way. Meanwhile, the government may seek innovate partnerships with private sector operators to develop entrepreneurship support programs such as innovation labs and technology hubs.
- ▶ *“The whole is greater than the sum of the parts.”* Adopting an ecosystem approach to boost digital entrepreneurship yields greater results than a collection of ad hoc activities. The distinct contribution of each actor (that is, entrepreneurs, policy makers, investors, learning institutions, business support programs, and consumers) combines to yield transformational results. Government, alongside the private sector may intentionally facilitate links and regular networking among ecosystem actors.



## Recommendations

- ▶ Improve the policy and regulatory environment for digital enterprises with emphasis on startups and young firms and address critical gaps in policies through an inclusive process.
- ▶ Facilitate access to early-stage finance for digital entrepreneurs by protecting ‘intangible’ assets, strengthen links between investors and investment-ready entrepreneurs, and actively explore various financing mechanism to support digital enterprises.
- ▶ Promote entrepreneurship and boost supply of skills in the labor market through strengthening higher learning institutions to provide more business and ICT education and invest in physical and networking assets to support innovation and networking.
- ▶ Establish COVID-safe networking and co-working spaces for hubs and incubators to operate safely and attract aspiring entrepreneurs to share knowledge and collaborate.
- ▶ Stimulate the market for digital goods and services by providing procurement opportunities for domestic businesses during government digitization, promote technology adoption by businesses to support B2B market opportunities, and reduce the cost of digitization to expand the base of digitally enabled individuals to support B2C ventures.

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## Endnotes

- 1 According to the calculation. A child born in Liberia today will be 32 percent as productive when s/he grows up as s/he could be if s/he enjoyed complete education and full health.
- 2 Liberia Country Partnership Strategy 2019–2024, The World Bank.
- 3 ILO. 2018. Issue Brief #6. “The impact of technology on the quality and quantity of jobs”. [https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms\\_618168.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_618168.pdf)
- 4 Hjort and Poulsen 2019.
- 5 McKinsey 2013.
- 6 Digital infrastructure consists of connectivity (such as high-speed internet and internet exchange points); devices (such as computers and mobile phones); the internet of things (such as sensors, voice-activated devices, geospatial instruments, machine-to-machine communications); and data repositories (such as data centers and clouds).
- 7 LTA 2016b. The mobile operators indicated somewhat lower coverage (in the 70-80 percent range) in February 2020.
- 8 ITU 2018b. The mobile operators indicated somewhat higher 4G/LTE coverage (around 50 percent) in February 2020.
- 9 The GoL was to divest its majority stake of CCL once the consortium was established but it has still not materialized.
- 10 World average fixed broadband penetration is almost 14 percent but in Liberia, as in most of Africa (with 0.6 percent average), it is a ‘niche’ service used by public institutions, some businesses, and a few privileged households.
- 11 A cut to the ACE cable off the coast of Mauritania in 2018 affected 10 countries including Liberia. If a cut would occur between the landing station in Monrovia and the main ACE cable, there would likely be a period of several weeks without access to ACE bandwidth with only low-capacity, high-cost satellite available.
- 12 The most commercially attractive route appears to be through Ghanta to the Guinea and Côte d’Ivoire borders; a route that could also provide a link to four submarine cables landing near Abidjan, offering the elusive redundancy.
- 13 LTA 2014.
- 14 The Telecommunications Act of 2007 establishes LTA as responsible for sector regulation.
- 15 LTA-ORDER-0013-12-14-16. Determination of Markets Relevant for Ex Ante Regulation.
- 16 See (a) Development Committee 2019, (b) Broadband Commission for Sustainable Development. “2025 Targets: Connecting the Other Half”, and (c) Alliance for Affordable Internet. “Affordable Internet is ‘1 for 2”
- 17 “Establishing Price Floors for On-Net Voice and Data Services and a Regulatory Fee on Telecommunications Goods & Services.” The price floor and regulatory fee were implemented in September 1, 2019, but the regulatory surcharge that was scheduled to have been imposed on March 1, was delayed in late February 2020.
- 18 Required 21st century skills include problem solving, critical thinking, teamwork, learning how to learn, emotional skills, and so on, making a good all-around formal education system critical to the development of digital skills.
- 19 The survey was conducted in all 15 counties with the data from 146 government and public SSS with 1,575 teachers (1,491 males, 84 females) and 33,763 students (19,605 males, 14,158 females).
- 20 UL has 1 general and 10 specialized labs while Starz College (STARZ) has 6 general and 3 specialized labs.

- 21 Four of five tertiary education institutions reported to have an ICT strategy. The UL university's ICT strategic plan 2019-2024 identifies seven goals to advance the mission, including providing technology to support instruction and learning, fostering curriculum innovation, and building ICT capacity of the public and the private sectors. UL has an Office of Information Technology to coordinate support and services in ICT application in education across campus
- 22 The two most active IT training institutions in Liberia, BlueCrest University College and Starz University, are private and provide ICT training with funding from global IT companies, such as Microsoft and Cisco in the case of Starz University and the NIIT Limited (India) in the case of BlueCrest. Starz offers a prep program for high school including computer fundamentals (Starz for High School), a program for talented students (Honors Society), and a program for encouraging graduating students' research and innovation (IT Capstone)
- 23 CBL is testing a modern credit registry that could integrate with a new national ID, upload relevant data, and integrate with other systems.
- 24 Standards of this type were recently established under a new integrated e-payment regulation for all e-service providers/operators intending to introduce electronic payment channels or schemes.
- 25 These include cyber risk, settlement risk, and other forms of systems risk, where mitigation is needed to maintain confidence system's integrity. An assessment of capacities has been carried out by a separate cybersecurity review
- 26 Such as using a debit/credit card from Bank A when a restaurant uses Bank B.
- 27 Government support payments using mobile money to an account holder requires that the government pay MMOs using a list of beneficiaries who then credit the beneficiaries' account or pay a bank with a bilateral connection to a mobile wallet. MMOs can also integrate as sub-participants of the ACH credit system. The system will deepen as more people acquire accounts, as agents with enough liquidity increase, and when a national biometric ID is rolled out.
- 28 The World Bank, Women, Business and the Law Report, 2020.
- 29 Firms were in Monrovia, employing at least 20 people, and having annual turnover of more than US\$200,000. Building Markets. 2016. "Liberian Businesses: Engines of Economic Recovery and Growth, A Market Overview."
- 30 Networking assets are physical assets like co-working or collaboration spaces strengthened by events to facilitate interaction and networking among eco-system actors (mixers, training events, community events, and so on).





# DIGITAL ECONOMY DIAGNOSTICS

LIBERIA

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