Lesotho

Digital Economy Diagnostic

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This assessment of Lesotho's digital economy development has been initiated as part of the World Bank Group's (WBG) Digital Economy for Africa initiative (DE4A), which was launched in 2018 to support the African Union-led Digital Transformation Strategy for Africa. The initiative aims to ensure that every individual, business, and government in Africa will be digitally enabled by 2030.

The assessment maps the strengths and weaknesses that characterize the national digital economy ecosystem (see Figure 1) and identifies challenges and opportunities for future growth. The related diagnostic framework is based on a standardized methodology focused on five key foundations. **It looks at five, foundational elements of the digital economy:**

- **Digital Infrastructure:** the availability of affordable and quality Internet, which is instrumental to bringing more people and businesses online.
- **Digital Platforms:** the presence and use of digital platforms that can support greater digital exchange, transactions, and access to public services online.
- **Digital Financial Services:** the ability to pay, save, borrow, and invest through digital means, which is key to financial inclusion and increasing the e-commerce market.
- **Digital Entrepreneurship:** the presence of an ecosystem critical to widening and deepening digital economic transformation, which supports entrepreneurs, startups, and bigger companies to generate new products and services that leverage new technologies and business models, including private platforms.
- **Digital Skills:** the development of a tech-savvy workforce with both the basic and advanced digital skills to support the increased adoption of technology and innovation and to enable investments in high value-added services.

Figure 1: Five key foundations of the digital economy ecosystem

Digital transformation is reshaping our global economy and permeating every sector and aspect of our daily lives, changing the way we learn, work, trade, socialize, and access public and private services and information (Figure 2). In 2016, the global digital economy was worth some \$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 economy overall. However, countries like Lesotho are still currently capturing only a fraction of this growth and need to strategically invest in the foundational elements of their digital economy to keep pace.

Universal adoption and the effective application of digital technology is expected to characterize economies of the future, shaping their ability to succeed in the global marketplace and offer a better quality of life for their citizens. Disruptive technologies are already altering traditional business models and pathways to development, yielding significant efficiency and productivity gains, and increased convenience, as well as supporting better access to services for consumers. Well-functioning digital economies thus may offer innovative products and services and the potential to achieve faster economic growth, as well as creating more job opportunities. But disruptive technologies coming onto the market also carry risks that need to be managed and mitigated; for example, they may cause job losses in industries affected by structural change and automation. Assessing where strategic investments and interventions need to be made is a critical first step to enabling growth in the digital economy.

Figure 2: The digital economy can bring shared prosperity and reduced poverty

This report aims to highlight opportunities to develop Lesotho’s digital economy with a special focus on policies that can bridge the digital divide and help Lesotho achieve the DE4A targets. Based on quantitative and qualitative assessments and the results of an in-country fact-finding mission, diagnostic findings provide practical and actionable recommendations that inform country digital economy targets and decisions on priority areas for development. The mission resulted in a series of in-depth, background papers on each of the DE4A’s five pillars (digital infrastructure, digital platforms, digital financial services, digital entrepreneurship, and digital skills). They propose a mix of possible policy reforms and interventions that directly address the need for harnessing the economic and social benefits digital economies bring and the support for mitigating risks.

Figure 3: The Africa-wide DE4A proposed targets across the five pillars of the digital economy

This report was researched and prepared by a team from the World Bank Group. The team includes Aki Enkenberg, Ida Mboob, Anne-Elisabeth Costafrolaz, Justine White, Zoe Lu, Alice Zanza, Uzma Khalil, Crispin Mawadza, Kirstin Conti, Jana Kunicova, Rachel Ort, Harisoa Rasolonjatovo, Neil Butcher, and Monica Dzinotyiweyi (henceforth referred to as “the core research team”), representing the Digital Development, Finance Competitiveness and Innovation, Governance, and Education Global Practices. The report also benefited from valuable feedback and thoughtful comments provided by the following colleagues: Isabella Hayward, Nazaneen Ali, Dobromir Christow, George Daniel, Sonja Loots, Koji Miyamoto, Julia Liberman, Michael Alwan, James Neumann, Victoria Monchuk, Noor Ibrahim Mohamed, and numerous other colleagues. World Bank Group internal peer reviewers Tim Kelly, Koji Miyamoto, and Cristian Quijada Torres kindly reviewed this report. Comprehensive national stakeholder consultations were undertaken in preparing and finalizing the document.

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LIST OF ACRONYMS

ACH	Automated Clearing House
AfDB	African Development Bank
AFI	Alliance for Financial Inclusion
API	Application Program Interface
ASYCUDA	Automated System for Customs Data
ATM	Automated Teller Machine
B2B	Business-to-Business
B2C	Business-to-Consumer
BEDCO	Basotho Enterprise Development Corporation
BOS	National Bureau of Statistics
BTS	Base Receiver Station
CBL	Central Bank of Lesotho
CDD	Customer Due Diligence
CGP	Child Grants Program
CI	Critical Infrastructure
CII	Critical Information Infrastructure
CIT	Cash In Transit
CRB	Credit Reference Bureau
DE4A	Digital Economy for Africa
DFID	Department for International Development
DFS	Digital Financial Service
DPA	Data Protection Act
DPC	Data Protection Commission
EFT	Electronic Funds Transfer
EGDI	e-Government Development Index
EU	European Union
ETL	Econet Telecom Lesotho
FDI	Foreign Direct Investment
FIU	Financial Intelligence Unit
FNB	First National Bank of Lesotho
FSDS	Financial Sector Development Strategy
FSP	Financial Service Provider
G2B	Government-to-Business
G2C	Government-to-Citizen
GDP	Gross Domestic Product
GDPR	General Data Protection Regulations
GEI	Global Entrepreneurship Index
GNI	Gross National Income per Capita
GSM	Global System for Mobile Communications
GSMA	GSM Association
HCI	Human Capital Index
HRMIS	Human Resource Management Information System
ICT	Information and Communication Technology
ID	Identification Document
IDI	ICT Development Index
IFC	International Finance Corporation
IFMIS	Integrated Financial Management Information System
ILO	International Labour Organisation

IP	Intellectual Property
ISP	Internet Service Provider
ITU	International Telecommunication Union
IXP	Internet eXchange Point
KYC	Know Your Customer
LAA	Land Administration Authority
LCA	Lesotho Communications Authority
LCCI	Lesotho Chamber of Commerce and Industry
LEAP	Lesotho Enterprise Assistance Program
LEAP	Limkokwing Entrepreneurship Acceleration Program
LEC	Lesotho Electricity Company
LECC	LEC Communications
LNDC	Lesotho National Development Corporation
LPB	Lesotho Post Bank
LRA	Lesotho Revenue Authority
M&E	Monitoring and Evaluation
MCST	Ministry of Communications, Science and Technology
MDAs	Ministries, Departments and Agencies
MEST	Meltwater Entrepreneurial School of Technology
MET	Ministry of Education and Training
MFI	Microfinance Financial Institution
MIACH	Maseru Image Automated Clearing House
MNO	Mobile Network Operator
MET	Ministry of Education and Training
MoHA	Ministry of Home Affairs
MSBCM	Ministry of Small Business, Co-operatives and Marketing
MSME	Micro, Small and Medium Enterprises
MTI	Ministry of Trade and Industry
MTO	Money Transfer Organisation
NBFIs	Non-Bank Financial Institutions
NPS	National Payments System
NREN	National Research and Education Network
NSDP	National Strategic Development Plan
NUL	National University of Lesotho
OAP	Old Age Pension
ODA	Official Development Aid
OECD	Organization for Economic Co-operation and Development
OBFC	One Stop Business Facilitation Centre
OSI	Online Service Index
OTT	Over-the-top services
PCGF	Partial Credit Guarantee Fund
PPAD	Procurement Policy Advisory Division
RIA	Research ICT Africa
RTGS	Real Time Gross Settlement
SACU	Southern Africa Customs Union
SADC	Southern Africa Development Community
SAIS	Southern Africa Innovation Support
SCD	Systematic Country Diagnostic
SIMM	Lesotho Scaling Inclusion through Mobile Money Project
SIRESS	SADC Integrated Regional Electronic Settlement System
SME	Small & Medium Enterprise

SSA	Sub Saharan Africa
STEM	Science, Technology, Engineering and Mathematics
TVET	Technical and Vocational Education and Training
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
USD	United States Dollar
USSD	Unstructured Supplementary Service Data
USF	Universal Services Fund
VAT	Value Added Tax
VCL	Vodacom Lesotho
WBG	World Bank Group
WEF	World Economic Forum
WIPO	World Intellectual Property Organization

Lesotho's development agenda relies on its ability to create jobs and promote private sector growth. The second National Strategic Development Plan of 2019 aims to transform the country from a consumer-based economy to a producer- and export-driven economy. It emphasizes the government's commitment to engaging citizens and empowering individuals, characterizing the digital economy as something that holds promise for meeting these objectives but not as a panacea. In light of Lesotho's challenges with poverty and unemployment, a special focus is needed on inclusiveness and participation in the digital development process.

Globally, the digital economy has become an important driver of economic growth, innovation, and improved service delivery. Digitalization is fast changing the fundamental patterns of economic and social activity in our societies. Internet users worldwide increased from 1 billion in 2005 to around 4 billion by 2018. The digital economy's contribution is expected to grow from 15.5 percent to a quarter of global GDP between 2016 and 2026. Closing the digital infrastructure gap in Africa can yield clear economic benefits, create much needed jobs, and lead to better services for consumers, complementing development in human capital and improvements in other foundational areas.

This report uses the Digital Economy for Africa (DE4A) methodology to conduct an examination of the five pillars of the digital economy in Lesotho based on extensive desk research and interviews of a wide array of government entities and other stakeholders, and focusing on digital infrastructure, digital platforms, digital financial services, digital entrepreneurship, and digital skills. The report aims to highlight opportunities to further develop Lesotho's digital economy, with a special focus on policies that can bridge the digital divide. Practical and actionable recommendations are put forward to aid decision-making, constituting a mix of possible policy reforms and investments.

The report's diagnostic findings show that the digital economy is underutilized in Lesotho, though it holds significant potential for national development. A coordinated, holistic approach is needed for building an inclusive digital economy in the country. Improved digital connectivity can only make a transformational impact on economic opportunity and stimulate inclusive growth if it is combined with improvements in digital skills and literacy, access to digital payments and other financial services, and support to digital entrepreneurs. The government's ability to foster a strong, enabling environment, develop platforms such as digital identity schemes, and leverage technology for improved efficiency and service delivery is key to progress in many of these areas. The combined effect of these improvements is larger than their sum.

High-quality and affordable broadband Internet is a key foundation of the digital economy. It contributes to enhancing productivity, facilitating information exchange, and improving service delivery across economies. Although great strides have been made in improving Lesotho's digital infrastructure, the country's adoption and use of technology is lagging. Although 97 percent of the population was covered by a 3G network and 71.4 percent by a 4G network by 2018, demand remains modest. About two thirds of the population of Basotho are not using the Internet regularly, pointing to a wide digital divide. Weak competition in the broadband market remains a challenge and contributes to the high cost of communication services and low Internet use by businesses and consumers. The telecommunications regulatory environment is, in many ways, sound, and Lesotho has one of the best performing universal service funds in Africa, but the regulator's independence is hampered by its stake in the sector, creating a perceived conflict of interest. Efforts at improving affordability should be prioritized by promoting more competition and sharing of infrastructure. Demand-side measures looking at device affordability and at stimulating demand could encourage more adoption. The government should consider ways of reducing its role in the telecommunications market and keeping its levies and taxes reasonable. Overall, a more strategic approach to promoting universal access is encouraged.

Public and private digital platforms are critical elements of a digital economy. Digital technology offers potential for enhanced efficiency, transparency, and service delivery in the public sector, but the government's efforts in this field appear fragmented and slow moving. Lesotho ranks among Africa's lowest performers in the United Nations' global e-Government Development Index (EDGI). The state of institutional readiness for digital platforms is low, particularly with respect to Internet/mobile platform savviness and the sustainability of Information and Communication Technology (ICT) projects. Existing ICT tools in the public sector are not fully utilized and the interoperability of different systems is lacking. Private digital platforms have not yet found a proper footing in Lesotho and few locally developed, platform-based business models exist. However, progress is being made: Lesotho is one of the few countries in Africa with a biometric National ID. The ID has been rolled out to 85percent of the eligible population and is piloting an Application Programming Interface (API) to facilitate verification and the authentication of identity by third parties. Additionally, several government-to-Business (G2B) services have been developed and adopted with success. Going forward, a strategic, government-wide approach is needed, combined with an improved focus on the quality, accessibility, and interoperability of existing systems. Steps towards a more data driven and citizen centric approach are recommended. The ability to integrate government data directly into private platforms and services through open APIs would support the development of private platforms. Gaps in Lesotho's regulatory framework need to be addressed to facilitate the adoption and expansion of digital platforms.

Digital financial services (DFS) comprise a broad range of financial products and services delivered digitally, such as payments, transfers, savings, credit, and insurance. They constitute a key enabler for transactions and financial inclusion in the digital economy. DFS are crucial for Lesotho in the transmission of remittances, notably from South Africa, that play a vital role in many Basotho livelihoods. Inward remittances contribute 17 percent to the country's GDP. Developments in this sector in Lesotho have been led by mobile operators and banks. Consumers have been eager to adopt these services, and mobile money especially has successfully driven financial inclusion in Lesotho. The enabling and regulatory environment to support further innovation and market entry is still quite rigid. The government could demonstrate leadership by moving ahead to both use and accept electronic payments across its government services to businesses and citizens. The focus should also be on developing interoperability between different products and services and on improving consumer protection.

Ensuring the availability of digitally literate citizens and a digitally competent workforce will enable economies to reap the benefits that a digital society brings. Digital skills have a high priority in national and sectoral development strategies and plans, but their implementation remains insufficient, constituting a clear bottleneck for Lesotho and an area where policy and institutional reforms are needed. Lesotho's performance in digital skills needs to be understood against the broader context of education and human capital development: Lesotho scores 0.37 on the World Bank's 2018 Human Capital Index and is ranked 143 out of 157 countries. Digital skills development in Lesotho is hampered by the low levels of basic literacy and numeracy skills, with a wide gap in basic level digital literacy. Measures to improve digital skills could have a significant impact on the country's growth and development. Small- and medium-sized businesses, as well as large corporations, collectively indicate that there is a much higher demand for skilled ICT professionals than there are ICT professionals available and willing to work in Lesotho. However, these measures need to be backed up by an improved strategic focus and better data. Many of the key challenges reflect those that appear more broadly in the formal education system and require improvement in the learning infrastructure, curricula, pedagogy, and upgrading of teachers' competences. There is an opportunity for partnerships with the private sector to be expanded to fill these gaps and to promote innovation in digital skills development.

Digital entrepreneurship creates new markets, products, and services and helps in the adoption of new technology and business models in the economy. It can contribute to net employment growth and help enhance competitiveness and productivity. Vibrant digital entrepreneurship ecosystems are needed to help digital entrepreneurs flourish. Such ecosystems encompass a conducive business environment that supports organizations, provide access to early-stage financing, and nurtures talent. Lesotho's digital

entrepreneurship ecosystem is considered nascent, especially in comparison to its African peers. The country is further disadvantaged by its small market size, cost of data, and brain drain to South Africa, viewed by investors as a more attractive market. There are a limited number of IT firms operating in Lesotho and they face constrained growth due to a limited customer base. The diagnostic finds that the quality of existing programs and services is inadequate for supporting the growth of idea-stage and early-stage entrepreneurs. Digital entrepreneurship should find a clear champion in the public sector. It could be stimulated by increasing the quality of support programs, promoting access to finance, and leveraging the regional networks that exist across Southern Africa.

The findings suggest that there is a need to shift the emphasis from supply to demand-side measures in Lesotho. The digital services market is relatively underdeveloped and actions to develop better local content, digital government services, and improved digital skills could encourage the adoption of technology and its use among the population. Looking beyond Lesotho's borders is also necessary for the digital economy to flourish. As a small, landlocked country and market, Lesotho's dependence on its neighbors, most notably South Africa, is high. But regional digital integration could provide major benefits, by promoting access to regional infrastructure and to digital products and services, and by opening markets for Basotho entrepreneurs.

Based on the analysis, three broad, priority areas emerge as opportunities for Lesotho, illustrating where public and private efforts are needed to accelerate the digital economy. The full list of detailed recommendations is included in Annex 1, and all recommendations are elaborated upon fully under individual chapters of the report.

Priority 1: Improve the enabling environment for the digital economy

The priority area focuses on addressing noted policy, legal, and regulatory gaps, and stimulating the enabling environment for digital technology adoption and use. The measures outlined under this priority can assist Lesotho in increasing Internet adoption, as well as in improving the use of its digital infrastructure and advancing the development and use of its digital platforms and financial services. The foundational pillars of digital development are linked to this priority concern with digital infrastructure and digital financial services. The interventions recommended under this priority include the following:

- **Enhancing policy direction for the development of the digital economy in Lesotho, by building upon the draft national broadband strategy to guide the deployment of digital infrastructure deployment and bridge the digital divide.** The policy should be designed and drafted by the Ministry of Communication, Science and Technology (MCST) in cooperation with public and private sector stakeholders.
- **Improving the legal and regulatory environment for the digital economy by addressing identified gaps in legislation, with immediate priority given to passing the bills on cybersecurity and e-transactions,** for which the ministry responsible is MCST. Other important areas to address include data protection, consumer protection, and intellectual property.
- **Consider reducing the role of the state in digital infrastructure development and identify ways to leverage state-owned digital infrastructure in more strategically.** Priority should be given to divesting state-owned shares in the West Indian Ocean Cable Company (WIOCC) and considering how the fiber optic assets of the Lesotho Electricity Company (LEC) could be used more effectively for improving national broadband connectivity. This recommendation should be taken forward by the Ministry of Finance (MoF) and MCST.
- **Improving the regulatory environment for digital financial services,** including simplifying Know-Your-Customer (KYC) and Customer Due Diligence (CDD) requirements, lowering costs for remittances, improving market entry and interoperability, establishing a collateral registry and strengthening the regulatory institutions. The party responsible for taking these recommendations forward is in most cases the Central Bank of Lesotho (CBL).

Priority 2: Drive digital transformation and demand by strengthening public sector platforms and infrastructure

The priority area focuses on improving the public sector's ability to guide digital transformation in Lesotho, both by: a) improving the leadership and coordination of digital government transformation; b) enhancing the infrastructure and shared digital platforms that the ministries and agencies can use; and, c) enhancing citizen-facing digital service delivery. Recommended interventions under this priority include the following:

- **Building upon the National Strategic Development Plan II, deepen the approaches to digitization in the identified sectoral and thematic priority areas. These approaches may be used as key components of more comprehensive, whole-of-government approach to government in Lesotho.** Such an approach would define the roles, responsibilities, and coordination mechanisms between relevant ministries and agencies, and guide investments in skills and capacity development within key ministries and government entities driving digital policies.
- **Ensuring that government has the necessary infrastructure and connectivity and that these are widely used.** Specific measures for government infrastructure can include: purchasing Internet bandwidth in bulk for the government's own use; investing in shared services and enterprise systems; protecting and storing government data, including cybersecurity and data rescue and recovery facilities; enforcing standards; and providing technical support for the operation and maintenance of government systems. The MCST has a coordinating function within this agenda.
- **Increasing interoperability between platforms for increased efficiency and service delivery by leveraging experiences from the national identity system and enhancing the digital payment infrastructure.** A well-developed digital identity system can offer a platform for authenticating and verifying services, which should be used consistently where needed. Digital payments can introduce significant efficiencies and offer new ways to transact with the government. The government should take gradual steps to adopt digital payment options across the various services it offers, including paying taxes and fees, and receiving social grants. Increased collaboration between MCST, the Ministry of Home Affairs (MoHA), and CBL may further support the advancement of interoperability between critical platforms.
- **Developing citizen-facing digital public services to drive demand, access, and efficiencies.** Digital government transformation should be based on a user-centered approach that responds to citizens' needs. To enhance the quality of the services delivered, it would be beneficial to develop monitoring and evaluation tools for citizen-facing platforms and for robust citizen feedback mechanisms. Moving towards the progressive digitization of government data would improve the ability to innovate for service delivery in the private sector. Given that there are relatively few existing digital public services in Lesotho, the government may want to consider how the agenda should be coordinated among the responsible ministries.

Priority 3: Strengthen the digital ecosystem through digital skills and entrepreneurship

The priority area focuses on efforts needed in Lesotho for improving the digital skills of the population, ranging from basic entry-level skills to advanced digital talent and know-how. In addition, key actions are outlined for improving the conditions and support mechanisms for Basotho entrepreneurs to develop digital products and services for local and international markets. Both areas offer significant potential for public-private cooperation. Recommended interventions include:

- **Developing a strategy and defining the implementation mechanisms for digital skills development in Lesotho.** These efforts should be underpinned by a new digital skills framework and improved ways to monitor and collect data about existing skills. The education system should prioritize: a) expanding partnerships between industry and education; b) standardizing curriculum, assessment and pedagogy; and, c) improving achievement in foundational literacy. The responsible ministry for these actions is the Ministry of Education and Training (MET)
- **Improving digital infrastructure and connectivity in research and educational institutions by establishing a National Research and Education Network in Lesotho,** resulting in lower costs for

Internet bandwidth and improved access to educational resources. The commitment for establishing the National Research and Education Network (NREN) is already stated in the NSDP II.

- **Improve the coordination and implementation of the digital entrepreneurship agenda,** among others, by identifying a public sector entity to coordinate activities and catalyze private sector champions to support entrepreneurship programs, improving access to finance, developing the capacity of existing innovation hubs, and making sure Basotho entrepreneurs can benefit from regional and pan-African support programs. The Ministry of Trade and Industry (MTI) should take responsibility over most of the activities.

1. INTRODUCTION

Lesotho is a landlocked country with a population of about 2.0 million people. It is distinct in its mountainous terrain and it is surrounded geographically by South Africa. With a 2017 GDP per capita of US\$1,324, Lesotho is a lower-middle-income country, but still relatively poor by Southern African standards. Over the past decade, it has experienced strong GDP growth, averaging around 3 percent per annum, but experienced a slowdown after the droughts of 2015–2016. The economy is dominated by public spending and agriculture, which contributes around 7.4 percent to the country's GDP and provides sustenance to over 70 percent of the population. Basotho migrants, working mainly in neighboring South Africa, make a vital contribution to livelihoods through remittances. Lesotho is a member of the Southern African Customs Union (SACU) and government spending is highly dependent on SACU revenues. As well as finding public spending inefficient and high, the World Bank's 2015 Systematic Country Diagnostic (SDC) identified Lesotho's weak business environment, poor access to finance, lack of skills and infrastructure, as constraints for economic growth.¹

Lesotho is sparsely populated, and its population largely young and rural. Unemployment is high with 32.8 percent of the working age population unemployed in the 3rd quarter of 2016.² Life expectancy is relatively low at 56 years. The persistence of poverty in Lesotho is strong despite economic growth in the past 15 years. Lesotho's poverty rate as measured by the national poverty line fell from 56.6 percent in 2002 to 49.7 percent in 2017. By the international poverty line, 27.3 of Basotho were classified as poor in 2017. Although this is low when compared with other countries in Sub-Saharan Africa, it is high among other lower-middle-income countries and in the region overall. Urban areas recorded strong poverty reduction, while rural areas' poverty levels stagnated, adding to an existing urban–rural divide. The main channel out of poverty appears to be secondary and higher education, which disadvantages rural areas where educational attainments are lower.³ The UN Economic Commission for Africa estimates that Lesotho would require 5percent annual GDP growth to significantly reduce poverty⁴.

Strides have been made in improving Lesotho's digital infrastructure, but its adoption and use of technology is lagging. This is demonstrated by the low standing of Lesotho on the World Bank Digital Adoption Index measuring the adoption of technology by businesses, government, and citizens (Figure 4). About two thirds⁵ of Basotho are not regularly using the Internet, pointing to a wide digital divide that has been difficult to close. Weak competition in the broadband market remains a challenge and contributes to the high cost of communication services and low Internet use by businesses and consumers. Lesotho suffers from a persistent digital divide, and multi-faceted problems around affordability, the lack of Internet-enabled devices, limited demand, and poor digital skills hinder progress towards universal access.

Lesotho's private sector makes limited use of digital technologies. In the private sector, digital technology can change the way economies of scale are achieved, particularly through e-commerce and digital payments. The digital economy may provide the better matching of buyers and sellers in a competitive marketplace. Shifting cash into digital accounts for government payments, remittances, Small and Medium Enterprise (SME) payments, and agricultural value-chain payments can enable broad-based participation in digital economy. Data from the World Bank Enterprise Surveys⁶ show that only 15 percent of formal manufacturing and services firms in Lesotho have a website, compared with 31 percent of firms in Sub-Saharan Africa (SSA). Few Basotho firms engage in e-commerce to attract international customers. A recent

¹ World Bank (2015b)

² Lesotho Bureau of Statistics (BOS), <http://www.bos.gov.ls/>

³ World Bank Poverty Assessment: Lesotho (2019)

⁴ United Nations Economic Commission for Africa (2018)

⁵ Discussion about Internet penetration in Lesotho can be found in the Digital Infrastructure chapter of this report.

⁶ <http://www.enterprisesurveys.org/data/exploreeconomies/2016/lesotho>

e-Trade Readiness Assessment by the United Nations Conference on Trade and Development (UNCTAD) identified the high price of connectivity, low uptake of technology, and low levels of digital skills and access to financing as bottlenecks in developing e-commerce in Lesotho.⁷ A small local ICT industry has emerged in Lesotho, held back by the small local market.

The digital economy offers potential for enhanced service delivery in the public sector, but the Lesotho government's efforts in this field appear fragmented and slow moving. Lesotho ranks among Africa's lowest performers in the United Nations' global e-Government Development Index (EDGI), falling below the continental average and below other Southern African Development Community (SADC) countries (see Annex 6). Lesotho has taken first steps to develop e-Government through investing in government data centers and an online presence, but its efforts are not well coordinated. Examples of successful initiatives include the national digital ID system and various G2B services offered online. The 2019/2020 government budget reiterates commitment to accelerate the implementation of e-Government services, and plans are underway to establish 46 community e-services centers, housed in branches of the Postal Services and agencies countrywide.⁸ By ramping up its efforts to digitalize governance, Lesotho would be making services more efficient, accessible, and better targeted.

Figure 4: Lesotho in the Digital Adoption Index (scale 0-1)

Source: World Bank 2018.

Basotho consumers have been rapid adopters of new technology in the form of mobile phones and mobile payments. However, limited digital skills hold back the extent of their adoption and use of digital products and services. Although Lesotho has a relatively high literacy rate in the Sub-Saharan African context, with 77 percent of adults and 87 percent of youth classified as literate,⁹ human capital development remains weak. The country ranked 143 of 157 countries in the World Bank's 2018 Human Capital Index (HCI)¹⁰. The limited digital literacy holding back the adoption and use of digital products and services restricts the growth potential for digital businesses. Lesotho suffers from an exodus of skilled people to South Africa, which constitutes a drag on competitiveness and lessens the interest of companies hoping to grow their operations in Lesotho. This constitutes a major challenge for Lesotho, with a limited pool of skilled labor and a small domestic market.

⁷ UNCTAD (2019)

⁸ Parliament of Lesotho (2019)

⁹ <https://data.worldbank.org/indicator/SE.ADT.LITR.ZS> and <https://data.worldbank.org/indicator/SE.ADT.1524.LT.ZS?locations=LS>

¹⁰ <https://www.worldbank.org/en/data/interactive/2018/10/18/human-capital-index-and-components-2018>

Improved digital infrastructure can only achieve the desired transformational impact if combined with a capable public sector, investments in digital skills and literacy, increased access to digital financial services, and ramped up support for digital start-ups and existing businesses. A holistic view to developing the digital economy is required. The following chapters of the report will provide a diagnostic and offer recommendations on the five foundations of the digital economy in Lesotho. The report will examine, in turn, challenges concerning the policy and legal environment, digital infrastructure, public digital platforms, private digital platforms, digital financial services, digital entrepreneurship, and digital skills. This report reviews how the digital divide affects the foundations of the digital economy and provides policy options for bridging the digital divide.

2. DIAGNOSTIC FINDINGS

2.1. THE DIGITAL POLICY AND LEGAL LANDSCAPE IN LESOTHO

Well-defined policy direction and the ability to design national strategies and execute them are key to developing an enabling environment for the digital economy. Lesotho has followed a sound model for ICT sector development, including independent sector regulation and strong private sector participation. The telecommunications market was liberalized in the late 1990s and followed by policy and legal steps to keep on par with the technological evolution taking place in the sector¹¹. Lesotho's ICT Policy of 2005 and Communications Act of 2012 set the path for infrastructure expansion and growing the digital services market.

However, Lesotho currently lacks a comprehensive national digital policy or strategy that could provide policy direction, principles, objectives, and monitoring and evaluation (M&E) arrangements for advancing digital development. As a consequence, convening stakeholders around a shared vision for the country is problematic. Although the Ministry of Communications, Science and Technology (MCST) has a definitive overall responsibility for designing and implementing ICT policy, there is a lack of clarity about how ICT policy interfaces with other sectoral policies and the mandates of other ministries and agencies¹².

In the absence of an up-to-date digital policy or strategy, the five-year National Strategic Development Plan (NSDP) has a guiding role in Lesotho's development efforts. The first NSDP 2012/13 - 2016/17 identified ICTs as the backbone of a modern economy, contributing to the reduction of risks associated with urbanization, poor infrastructure, poverty, unemployment, and inequality. In June 2019, Lesotho finalized its second National Strategic Development Plan 2018/19 to 2022/23 (NSDP II), titled *In Pursuit of Economic and Institutional Transformation for Private Sector-led Jobs and Inclusive Growth*. It aims to transition from a "consumer-based economy to a producer- and export-driven economy" by emphasizing private sector development and prioritizing citizen-centric development. Furthermore, the NSDP II underscores the Government of Lesotho's commitment to citizen engagement, empowerment, and participation in development.

Technology and Innovation has been identified as one of the four key productive sectors in the NSDP II. Four key priority areas (KPAs) designed to foster job creation, inclusive growth, and poverty reduction have been identified. The KPAs—and the medium-term outcomes the NSDP II desires—are shown in Figure 5 below, with the outcomes directly related to the digital economy, highlighted.

¹¹ Gillwald, A., M. Deen-Swarrray, and Mothobi. O.(2017)

¹² As discussed in subsequent chapters

Figure 5. Key Performance Areas and Outcomes for Lesotho NSDP II13

KPA I: Enhancing Inclusive and Sustainable Economic Growth and Private Sector Job Creation	* Outcome 1.1: Sustainable Commercial Agriculture and Food Security
	* Outcome 1.2: Diversified Products and Effective Business Linkages
	* Outcome 1.3: Operational Industrial Clusters and Integrated Supply Chain
	Outcome 1.4: Improved and Diversified Tourism Products
	Outcome 1.5: Improved Creative Industry
	Outcome 1.6: Strengthened Research for Policy Making and Product Development
	* Outcome 1.7: Functioning Incubation Centres and Industrial Parks
	* Outcome 1.8: Improved Use of ICT
Mining and Financial Sector Development	Outcome 1: Mineral Resource Efficiency
	* Outcome 2: Stable and Efficient Financial Sector
KPA II: Strengthening Human Capital	* Outcome 2.1: Enhanced Skills for Employment and Sustainable Inclusive Growth
	* Outcome 2.2: Resilient Health Care Systems and Improved Health Care Outcomes
	Outcome 2.3: Reduced Malnutrition
	Outcome 2.4: Efficient Social Protection Programmes and Reduced Vulnerability
	* Outcome 2.5: Improved Migration Management
KPA III: Building Enabling Infrastructure	* Outcome 3.1: Sustainable Quality Transport Network
	Outcome 3.2: Sustainable Energy Production and Use
	Outcome 3.3: Sustainable Production, Use of Water Resources, and Improved Sanitation and Hygiene
	* Outcome 3.4: Economic-Friendly ICT Infrastructure
	Outcome 3.5: Improved Quality of Built Environment
	Outcome 3.6: Sustainable Solid Waste Management
KPA IV: Strengthening National Governance and Accountability Systems	* Outcome 4.1: Improved Public Financial Management and Accountability
	* Outcome 4.2: Effective Oversight Institutions
	* Outcome 4.3: Improved Service Delivery
	Outcome 4.4: Peace, Security, and Stability
	* Outcome 4.5: Respect for Human Rights and Protection of Civil and Political Rights for All
	Outcome 4.6: Effective, Transparent, Efficient, and Equitable Justice System
	* Outcome 4.7: Improved Corporate Governance and Protection of Investor Rights
	Outcome 4.8: Stable Labour Markets
	* Outcome 4.9: Improved Planning and Reliable Statistics for Monitoring and Evaluation
	* Outcome 4.10: Improved Cooperation and Relations between Lesotho and Other Nations
	* Outcome 4.11: Informed Nation

Source: Lesotho National Strategic Development Plan II

In support of the implementation of the NSDP II, the government recently concluded: the creation of “economic labs” designed to determine the country’s strategic development priorities; crowding in private financing to support its priorities; and increasing its ability to deliver on its policy commitments. Outcomes of these economic labs were centered on NSDP II’s four priority sectors and, as part of the process, investment proposals that would support these sectors were solicited. There were 17 projects proposed¹⁴ in the tech and innovation sector with an expected 2.132 billion Maloti, equivalent to around US\$140 million, investment, which would create a projected 2,943 jobs by the end of the NSDP II period.

The current state of legislation and regulation results in regulatory uncertainty and constitutes a bottleneck for digital economy development in Lesotho. Several gaps outlined below were identified as part of this diagnostic, requiring action to improve the enabling environment for both public and private

¹³ Analysis of outcome areas by authors

¹⁴ Examples of the selected project include digitization of economic services through (1) an e-payment gateway and (2) universal license issuance; establishing an (3) innovation hub, (4) industrial park, and (5) broadcast center; as well as proposals from specific companies like (6) Huawei, (7) Vodacom, and (8) Econet.

sector digitalization. The diagnostic in this respect reinforces the messages from several recent studies by the WBG¹⁵, Research ICT Africa (RIA)¹⁶ and UNCTAD¹⁷.

Lesotho's cyber security preparedness is relatively low across all dimensions. ITU's Global Cybersecurity Index 2015¹⁸ ranked Lesotho on last tier for both the regional (18) and worldwide (29) rankings with a score of 0.00. In 2017, Lesotho still ranked 143 with a score of (0.090). The WBG together with the University of Oxford conducted a cybersecurity assessment in Lesotho in 2019, with key results enclosed in Annex 9. There are a lack of strategies, institutions, and legal instruments to regulate and positively improve cybersecurity in Lesotho, and the private sector is concerned about the level of the country's risk exposure. The Government of Lesotho has been drafted the initial version of the *Cybersecurity and Cybercrime Bill* in 2013¹⁹, but efforts to finalize it have not yet led to new legislation being passed. Lesotho has benefitted from international expertise in the drafting process, improving the quality of the draft bill. For example, the draft bill was reviewed by the Council of Europe in 2019.

Having an e-transactions-ready legal environment is crucial to the development of the digital economy, but Lesotho lacks a clear legal and regulatory framework to enable online transactions. While the *Consumer Financial Protection Policy* is now in place, with support from the WBG, the *Electronic Transactions and Electronic Commerce Bill* has still not been adopted by the national Parliament²⁰. With assistance from ITU, the *Electronic Transactions and Electronic Commerce Bill* was drafted in 2013 and has subsequently been through multiple rounds of review. The long-awaited enactment of the bill would clarify rules for the authorization of electronic transactions and help to develop a safe and secure environment for consumers, businesses, and the government to rely on electronic transactions.

Consumer protection in Lesotho is presently regulated through fragmented pieces of legislation but there is no comprehensive legislation that protects customers in Lesotho from unfair business practices. There is no provision for consumer protection in e-commerce. The current, eight consumer rights' regulations in Lesotho are set out in the Consumer Protection Policy 2013, which is aligned with the UN Consumers' Rights Protocol. There is a *Consumer Protection Bill* under legislative discussion that aims to set out the appropriate regulations and establishment of institutional structures to enhance consumer protection in Lesotho. It has specific provisions for insurance, microfinance, and banking supervision. Consumer protection rules should be tailored for the full range of digital services and products. Such updates would best be combined with pro-competition regulation to ensure that digital platforms and digital start-ups are well-designed, secure, and operating in the context of market contestability.

The Data Protection Act (DPA) from 2013 is somewhat out of date, given the rapid growth in data flows in the global digital economy, and therefore presents significant weaknesses. The DPA is not fully aligned with European Union (EU) General Data Protection Regulations (GDPR) and the Organization for Economic Co-operation and Development's (OECD's) standards and guidelines. For instance, it sets out a mandatory breach notification obligation but not set a timeframe within which to report the incident, nor does it set out any standard or approach for technical measures to secure stored data. The DPA would also need revisions to how sensitive data is defined and handled, and introduce amendments for data minimization principles, as data controllers may refuse requests by data subjects to access and correct data that is inconsistent with accepted practices. Additional amendments could consider whether data subjects should be provided with additional rights, such as the right to data portability, right of objection, and the right to withdraw consent to processing in order to improve individuals' perception of sovereignty over their data.

¹⁵ World Bank (2018a)

¹⁶ Gillwald, A., M. Deen-Swarrray, and Mothobi. O.(2017)

¹⁷ UNCTAD (2019)

¹⁸ <https://www.itu.int/en/ITU-D/Cybersecurity/Pages/global-cybersecurity-index.aspx>

¹⁹ International practice usually takes a markedly different approach to regulating cybersecurity as it does to cybercrime laws. For example, in the UK, the 1990 Computer Misuse Act deals with cybercrime and offences against computers, whereas cybersecurity is separately regulated pursuant to the 2018 Network and Information Security Regulations. This is on the basis that cybercrime and cybersecurity are two different areas of law, with cybercrime rooted in criminal justice in contrast to cybersecurity regulations which are mainly related to information security standards.

²⁰ UNCTAD (2019)

Moreover, the DPA sets out the Data Protection Commission (DPC) as the main authority to enforce the law; however, the DPC has not been established yet and the law has therefore not been enforced since its enactment. Amendments are recommended to improve accountability and governance and especially the independence of the Commission. Lastly, the current act appears to unduly restrict data sharing within the public sector. Accelerating this process would be needed to ensure proper enforcement of the law.

Other areas where weaknesses are apparent include competition law, intellectual property (IP) and access to information. Although competition in the digital communications markets is well regulated through the Communications Act, general competition law presents an area where Lesotho could have stronger legislation in place. It is understood efforts are underway²¹ to formulate a law to enable the formation of a competition commission. IP in Lesotho is protected by a law that dates to 1997, and the country's IP protection regime is not well regarded by stakeholders interviewed for this study. Lesotho's lack of a specific law on access to information hampers efforts at developing a more responsive digital government and leveraging open data for development. Similarly, the lack of a *Collateral Registry Bill* prevents the establishment of an e-collateral registry. The *Collateral Registry Bill* passed the Lower House of Parliament but is still currently under consideration.

Stakeholder consultations also indicated that modest understanding among some lawmakers of the scope of the digital economy and the workings of digital platforms created an impediment to the development of a better legal and policy framework. In order to increase the degree of attention and the capacity to address ICT issues in parliament, an e-Government subcommittee has been established and first convened in May 2019, but its roles and responsibilities are still being defined. There are also capacity gaps in the capacity of the Office of Parliamentary Counsel (OPC) with respect to the technical aspects of drafting legislation related to the digital economy. The combination of challenges with drafting legislation and the need to build more technical understanding of digital platforms has proven to be a major hinderance to Lesotho's institutional readiness.

RECOMMENDATIONS

The resolution of key regulatory gaps should be a priority to improve the enabling environment for both public and private sector digitalization.

R1. Address gaps in legislation. Lesotho's regulatory framework needs to be updated to be made more conducive for digital economy development. Existing draft legislation especially should be promulgated as soon as possible. Based on this diagnostic, the following prioritization is recommended:

R1a. Passing the Cybersecurity and Cybercrime bill should be prioritized to promote trust and security in the digital economy. The current advanced draft of the bill has already gone through multiple rounds of reviews. The responsible ministry for this bill is the Ministry of Communications, Science and Technology.

R1b. Passing the Electronic Transactions and Electronic Commerce bill should be fast-tracked by making sure it is on the agenda of relevant bodies. For instance, the process should be integrated into the Investment Climate Steering Committee Agenda and placed as high priority in the Cabinet agenda and the Office of Parliamentary Counsel.

R1c. Legislation for remaining gaps should then be developed building upon best practices and regional frameworks²², but also by consulting stakeholders. These actors should be consulted during the drafting process and focused on provisions that are practical for public and private sector actors to both comply with and/or enforce. In addition to the two priority bills above, important legislation to focus on includes the Consumer Protection Bill, Data Protection Act, the Act on Intellectual Property, the Collateral Registry Bill and competition-related legislation.

²¹ <http://lestimes.com/competition-laws-beckon-for-lesotho/>

²² E.g., EU's GDPR, the OECD Privacy Principles, and AU Convention on Cybercrime and Personal Data Protection

2.2. DIGITAL INFRASTRUCTURE PILLAR

THE IMPORTANCE OF DIGITAL INFRASTRUCTURE

Fast, high-quality and affordable broadband Internet is a key foundation of the digital economy. It contributes to enhancing productivity, facilitating information exchange, and improving service delivery across the economy. The effect of increased broadband access on economic growth and employment has been well documented²³. Based on recent analysis by the World Bank²⁴, closing the digital infrastructure gap in the East and Southern Africa region could result in 1.5 percentage point growth increase in economic growth per capita. If complemented by expansion in human capital development, the growth effect could increase to 3.87 percentage points.

Lesotho has consistently followed a sound model for ICT sector development, including independent sector regulation and strong private sector participation. Lesotho was amongst the earliest of countries in SADC to reform its ICT market in the 1990s, adopting technologically neutral licenses for offering converged services. Telecommunications infrastructure has developed considerably, with three international gateways offering access to submarine cables landing in South Africa. The national backbone and backhaul networks are relatively well extended across the country. Furthermore, Lesotho's Universal Service Fund (USF) is well performing and has been credited with improving access to mobile communications services in remote locations.

The NSDP II of Lesotho²⁵ outlines the development of enabling infrastructure, including digital infrastructure, as one of its key goals. Within the ICT sector, the NSDP II aims at focusing on five areas: 1) Improving ICT Access and Use, 2) Improving Sector Regulation, 3) Enhancing e-Government Services, 4) Improving Digital Economy Uptake, and 5) Improving Governance of ICT Sector. The emphasis on ICT infrastructure, adoption and use has been carried over from the first National Strategic Development Plan 2012/13–2016/17, demonstrating a longer-term commitment to ICT as a key foundation for development. The full list of objectives is provided in Annex 2.

Despite several preconditions being in place, Lesotho has not been able to fully benefit from the expansion of its digital infrastructure. Lesotho was ranked 133th²⁶ on the 2017 ICT Development Index, (IDI) behind its neighbors South Africa (92), Botswana (105) and Namibia (118), largely due to limited use and demand of the country's broadband infrastructure. Based on statistics from the International Telecommunication Union (ITU), only 27.4 percent of the population used the Internet regularly in 2017²⁷. Competition in the mobile and fixed broadband markets remains inadequate and, despite the open market, no market entries in recent years have taken place.

THE STATE OF DIGITAL INFRASTRUCTURE IN LESOTHO

Internet Access

Mobile broadband provides the primary means for people to get online in Lesotho. Despite the early introduction of fixed broadband in the 1990s, the introduction of mobile broadband based on 3G and 4G technologies has resulted in mobile operators becoming the leading providers of broadband services. According to a 2016 survey by RIA²⁸, more than 85 percent of individual Internet users indicated that they first used the Internet on a mobile device, demonstrating the role that mobile connectivity plays. Mobile

²³ See for example ITU (2018), World Bank (2016b), Hjort J. and Poulsen J. (2017).

²⁴ Africa's Pulse No. 19: An Analysis of Issues Shaping Africa's Economic Future, April 2019. <https://openknowledge.worldbank.org/handle/10986/31499>

²⁵ Lesotho National Strategic Development Plan II

²⁶ On the African continent, Lesotho's ranking is relatively strong, 11th out of 38 countries included in the index.

²⁷ 2017 data from ITU: <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx> Data for 2018 not yet available.

²⁸ Gillwald, A., M. Deen-Swarrray, and Mothobi. O. (2017)

broadband coverage has been steadily growing in Lesotho. According to the Global System for Mobile Communications (GSM) Association (GSMA) data (see Table 1), 97 percent of the population was covered by a 3G network and 71.4 percent by a 4G network by 2018. Full coverage maps are provided in Annex 3. Considering Lesotho's difficult and mountainous terrain, progress on coverage has been rapid, although faster 4G services are only available in urban areas²⁹.

Based on ITU statistics used for benchmarking in this study, 27.4 percent of Basotho used the Internet regularly in 2017 (see Table 1), compared to around 10 percent in 2013. The level of Internet access in Lesotho is, however, lower than in its regional neighbors in South Africa, Botswana and Namibia. Although recent accurate statistics do not exist, based on a household survey from 2016³⁰, RIA defined Lesotho's Internet penetration to be at 32.5 percent, implying a significantly higher actual rate of access than the ITU statistics.

Overall mobile subscriptions in Lesotho stood at 106.6 per 100 inhabitants in 2017, driven by multiple SIM-card use. Based on GSMA estimations the country was home to around 2.42 million mobile subscriptions in 2018. Although the overall market remains saturated, growth in 3G and 4G has remained strong with customers using more and more data. Mobile broadband penetration is relatively high, at 49 percent according to ITU (2017) and 56 percent based on the Lesotho Communications Authority's (LCA) own reporting from 2018 (cut off point March 2018³¹). GSMA estimates that Lesotho had 0.67 million unique mobile Internet users in 2018. Based on the 2016 household survey, 44.5 percent of mobile phone owners reported owning an Internet-enabled device in 2016, although the operators' own figures estimate this to be lower³². Data use in Lesotho has grown rapidly³³, with consumers moving towards over-the-top (OTT) services and increased sophistication of use.

Internet use in Lesotho is strongly determined by age, settlement and education³⁴. Whereas most Basotho in the 15–24 age bracket were using the Internet in 2016, this drops to 12.6 percent in the 45–54 and 6.3 percent in the 55–64 age group categories. Education level appears to strongly correlate with Internet use as well: close to 90 percent of individuals with a tertiary degree used Internet against 32.7 percent for individuals with primary education only. Use dropped to 4.9 percent for individuals with no completed primary education. Spatial differences are also clear: more than half of the urban population used the Internet, but only 17.6 percent of the rural population were connected (see Figure 6). Gender does not appear to be a strong factor of influence for access and usage in Lesotho.

²⁹ Ibid.

³⁰ Ibid.

³¹ Lesotho Communications Authority (2019)

³² Gillwald, A., M. Deen-Swarrray, and Mothobi. O. (2017)

³³ Vodacom reporting over 25 percent year-on-year growth in March 2018.

³⁴ Lesotho Communications Authority (2017) State of ICT in Lesotho: Demand Side Facts and Figures (2017)

Figure 6: Internet use by settlement³⁵

Fixed broadband penetration in Lesotho is very low, around 0.2 percent based on data from 2016, one of the lowest in Southern Africa and well below the global average of 13.6 percent³⁶. Constituting a very small segment of the overall broadband market, it comprised government ministries and agencies, enterprises and individual customers in the Maseru area, with altogether 3,849 subscriptions in 2018 reported by LCA³⁷, with a downward trend: subscriptions contracted by around 1,800 between 2017 and 2018. Fixed broadband typically provides a more stable and faster connection than mobile and will form a crucial part of the next generation infrastructure mix. It is especially important in the case of high-bandwidth use cases, such as high-definition digital content streaming. However, deploying fixed lines can be costlier than mobile broadband, requiring more civil work, and is in some cases more difficult, due to geographical barriers or sparse population density.

Affordability and Quality of Service

Although mobile broadband coverage gaps are closing, affordability remains a concern. Voice prices in Lesotho are in line with the regional average but remain relatively high compared with the best performing markets in Africa³⁸. Based on RIA's Mobile Price Index³⁹, the cheapest mobile broadband product on the market would have cost US\$4.18 in Q2/2019, compared with US\$6.96 in South Africa, US\$8.99 in Botswana and US\$11.13 in Namibia. However, contrasting prices with Lesotho's lower income levels provides a different view. Based on ITU price data from 2017, 1GB of mobile broadband data appear to cost 8.79 percent of Gross National Income per Capita (GNIPC), well above the UN Broadband Commission target of 2 percent and higher than in neighboring countries.⁴⁰ There are structural issues with pricing that work against poorer consumers: postpaid data is cheaper than prepaid, and people with less disposable income also end up buying smaller data bundles, which are costlier than large ones. The price of Internet-enabled devices constitutes a bottleneck for the adoption of Internet among lower income consumers⁴¹.

The fixed broadband market is significantly less developed than mobile, and prices are much higher than the regional average (see Figure 7). Average fixed broadband prices in Lesotho are about 30 percent higher than the average in Sub-Saharan Africa, which restricts the use of ICT services by businesses and consumers. According to BDRC Continental, a 2 Mbit/s fixed broadband connection in Lesotho in December 2017 would

³⁵ Lesotho Communications Authority (2017)

³⁶ 2017 Data from ITU : <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

³⁷ Lesotho Communications Authority (2019). Data received separately from LCA in 2019 put this at: 62 percent active mobile broadband subscribers per 100 people.

³⁸ Gillwald, A., M. Deen-Swarrray, and Mothobi. O.(2017)

³⁹ https://researchictafrica.net/ramp_indices_portal/

⁴⁰ It is important to note that the RIA and ITU prices are not comparable, and accurate up-to-date price information is difficult to find across markets. The ITU prices used for the analysis are out of date, and more affordable offerings are on the market today.

⁴¹ Gillwald, A., M. Deen-Swarrray, and Mothobi. O.(2017), interviews with LCA officials

have cost around US\$114 per month, which is almost twice that in South Africa. The low subscriber numbers and lack of competition result in missing economies of scale in this part of the market.

Figure 7: Average cost of fixed broadband (US\$ per month)⁴²

Quality of Service is uneven in Lesotho. While overall international bandwidth has expanded, coverage of fiber-optic backbone networks is still limited to urban areas. Furthermore, 4G services are not available outside of urban areas. Accurate, up-to-date comparative data of download speeds is not easily available for Lesotho. The largest operator Vodacom indicates⁴³ that average download speeds in their network in March 2018 were higher than in Tanzania, the Democratic Republic of the Congo or Mozambique, standing at 18.9 Mbps. In any case, Internet speeds in rural areas are significantly lower than the average. Lesotho currently has one Internet Exchange Point (IXP), the Lesotho Internet Exchange, managed and funded by the LCA. An IXP allows Internet players to interconnect with each other and ensure local traffic is exchanged locally, improving latency and removing high fees for international transit.

Table 1: Benchmarking penetration, affordability and coverage based on ITU (2016/2017) and GSMA (2018) data

Indicator	Lesotho	Botswana	Namibia	South Africa	Kenya	Mauritius
Internet penetration (ITU 2017)						
Internet usage (per 100)	27.4	39.4	31	54	16.6	53.2
Active mobile-bb subscriptions (per 100)	49	66.9	59.3	70	36	144.2
Fixed broadband subscriptions (per 100) (2016)	0.22	2.1	2.5	3.43	0.6	16.9
Affordability (ITU 2017)						
Mobile broadband 1GB (% of GNIPC)	8.79	2.18	3.82	1.24	4	0.2
Fixed-BB basket (% of GNIPC)	108.79	4.93	9.78	2.73	37.9	0.6
Mobile-cellular basket (% of GNIPC)	8.79	2.18	3.82	1.24	4	1
Coverage (GSMA 2018)						
2G Population Coverage (%)	86.7	88.9	100	97.8	68.9	94.4
3G Population Coverage (%)	97	85	53	99.4	85.0	90
4G Population Coverage (%)	71.4	61.4	39	77.6	36.8	36.7

⁴² BDRC Continental (2018)

⁴³ Vodacom Group (2019)

<i>ITU ICT Development Index (2017)</i>	133	105	118	92	138	72
<i>ITU Regulatory Tracker Score (2018)</i>	67.83	85	70.67	71.33	87.5	80.83

Market Structure and Competition Environment

Currently, there are two Mobile Network Operators (MNOs) on the market: Vodacom Lesotho (VCL) and Econet Telecom Lesotho (ETL). Vodacom maintains a comfortable lead over its rival with 64.8 percent market share at the end of 2018⁴⁴. VCL has been in Lesotho for over 20 years, launching its first commercial GSM services in 1996 and its 4G services in 2014. It has also launched experimental 5G standard-based services⁴⁵. VCL is 80 percent-owned by the Vodacom Group, while the remaining 20 percent is held by Sekhametsi Enterprises, a group of local investors. ETL has been in the market since 2002, launched its 4G services in 2015, and in its current form is the result of a merger between the fixed line incumbent Telecom Lesotho and the mobile operator Econet Ezicell Lesotho in 2008. Lesotho also does not have any Mobile Virtual Network Operator (MVNOs) in the market, although the regulatory framework would allow for their entry⁴⁶.

Weak competition in the broadband market is a contributing factor to the relatively high costs of communication services and low Internet use by businesses and consumers. Despite the best efforts of the government to introduce more competition in Lesotho, the effective duopoly of VCL and ETL has been difficult to break with little interest from new entrants. The weak competition is reflected in the lack of standardized low-cost, high-value bundled services, which are available in other countries in Africa

ETL is the biggest operator in the fixed line market with both ADSL and FTTH⁴⁷ offerings, with the latter available only in Maseru. In addition, there are two Internet Service Providers (ISPs), ComNet and LEO, but their market share is small and concentrated in Maseru. Both ISPs indicate an interest in expanding their services beyond the capital, but high prices of leased lines and wholesale bandwidth form an obstacle.

Both MNOs also operate in the wholesale market. Additionally, LEC Communications (LECC), a subsidiary of the Lesotho Electricity Company (LEC) holds a Network Infrastructure Facilities License and operates as a fiberco. Its business model is based on commercializing the fiber assets of LEC, designed to lease dark fiber to MNOs and ISPs. LECC has a possible interest in starting to provide managed bandwidth to ISPs and to investigate the feasibility of building a national open access wholesale network, including last mile access, but so far this has not materialized.

The government owns shares in several companies offering telecommunications services, which may result in a conflict of interest. Following the privatization of Lesotho Telecom, the government still retains 30 percent of ETL. It also owns 100 percent of LECC, as well as a stake in the Eastern African Submarine Cable System (EASSy) through the West Indian Ocean Cable Company (WIOCC). WIOCC is a special purpose vehicle created to enable parties that lacked the capital to participate in EASSy to gain direct access to the capacity from the cable. That LCA holds a stake in WIOCC creates a perceived conflict of interest, with LCA acting as a market player and a regulator, although LCA holds the government's shares in trust and the management of the network is carried out externally by WIOCC. Operators are reluctant to provide commercial data to LCA as they view them as a competitor in the sector, leading to distrust among the market players. This was a point of concern for all operators interviewed for this study. The government

⁴⁴ Data from Telegeography, accessed June 2019. Data received separately in 2019 from the LCA indicate that the gap has grown further in 2018, with Vodacom having around a 4/5 market share

⁴⁵ <https://www.vodacom.co.ls/ls-personal/offers/voice-and-data-plans/data-plans/5g>

⁴⁶ Under the Lesotho Communications Authority (Licensing Classification and Fees) Rules 2018, companies that wish to operate as an MVNO require a Network Services licence from the Lesotho Communications Authority (LCA). The rules state that an "MVNO licence is granted only when there is an agreement with a host"

⁴⁷ At June 2018 ETL's fibre-optic plans ranged in price from LSL155 per month for a data allowance of 5GB to LSL5,865 for 950GB.

does however recognize these concerns, as is reflected in the new National Strategic Development Plan II that outlines the need to develop a framework for divesting from both ETL and WIOCC⁴⁸.

First Mile: International Connectivity

As a landlocked country, Lesotho is dependent on its neighbor South Africa for international connectivity. Through three international gateways⁴⁹, Lesotho has access to the submarine cables landing in South Africa⁵⁰. This part of the market is open and competitive and, in principle, non-discriminatory. However, VCL and ETL have direct and more favorable access to international capacity through their regional network infrastructure and parent companies.

WIOCC provides a point of presence for the EASSy submarine cable in Lesotho to provide interest entities with direct access the cable. Although the government's investment in WIOCC was intended to dramatically improve access to high-speed and low-cost bandwidth, benefits have been slow to materialize. It is unclear if WIOCC prices are more competitive than purchasing capacity from South African wholesalers across the border, which operators are free to do. Furthermore, the ongoing conflict of interest through LCA's shareholding in WIOCC is impeding the government's ability to effectively regulate the sector. The use of the cable by market players is limited. ETL is currently WIOCC's biggest customer by purchasing 2x1Gbps capacity.

While the total, available international bandwidth has been increasing rapidly, demand for bandwidth remains relatively low. The predominance of mobile broadband and limited broadband offerings skew user consumption patterns toward lower bandwidth services and content. Lesotho's overall international bandwidth capacity is around 30,000 Mbps, growing nearly 36 percent over the past 2 years⁵¹. Only 17 percent of the available capacity is currently being utilized⁵², and there is ample room to meet growth in data consumption.

Middle Mile: Backbone Networks

Backbone investment in Lesotho has been concentrated primarily on major urban areas and on inter-town routes. The national backbone and backhaul networks are relatively well extended across the country⁵³ by ETL, LECC and VCL. Significant investments have been made in recent years to expand or upgrade the backbone. ETL has been working on the gradual modernization of its legacy network, investing over LSL 100 million in the process. LECC has altogether laid around 600km of fiber using Optical Ground Wire (OPGW) cables on their electricity lines with an additional 300km to be built. And while VCL mostly utilizes LECC's network under an Indefeasible Right of Use (IRU) agreement, it has also built routes from LECC power substations to its base stations. The ETL and LECC backbone networks are described in Annex 4. Further links are being built through financing from the African Development Bank (AfDB). However, there is still heavy reliance on microwave for backhaul. The need for reliable backhaul will increase with extending 4G beyond the urban areas, requiring possible further investments in the fiber-optic backbone.

Last Mile: Internet Access

As outlined above, MNOs have played an important part in extending broadband connectivity in Lesotho. The last mile is mostly built and operated by the main vertically integrated operators ETL and VCL, with a very minor role played by the two ISPs ComNet and LEO. Lesotho performs well in terms of its mobile broadband coverage with 97 percent of the population covered by at least a 3G signal, making excellent progress towards the DE4A target of 100 percent mobile broadband coverage by 2030. Lesotho does not

⁴⁸ Government of Lesotho (2019)

⁴⁹ These are: Maseru Bridge, Mabote, Maputsoe

⁵⁰ See the World Bank Digital Economy Diagnostic Report for South Africa (forthcoming)..

⁵¹ Based on data received from the LCA in 2019

⁵² Based on data received from the LCA in 2019

⁵³ Lesotho Communications Authority (2019)

have any operators focusing specifically on the use of unlicensed spectrum, such as WiFi for Internet access. In 2018, the LCA reported 53 Internet Cafes in Lesotho providing public access to the Internet.

Lesotho currently has no independent tower operators in the market and relies on the MNOs to build out their own infrastructure or agree on infrastructure sharing. A specialized tower operator⁵⁴ could alleviate cost pressures and provide efficiency gains to the existing MNOs. Many mobile operators in Africa have followed this route to reduce costs and focus on their core business.

The smaller ISPs are disadvantaged by the vertically integrated structure of the market, resulting in relatively high wholesale prices. Their dependence on the major operators and the lack of open competition in the wholesale market makes accessing reasonably priced unbundled leased lines difficult and restricts the ISPs' ability to offer competitive retail services at scale, or to extend their services to smaller towns and villages⁵⁵. Although they can access capacity through WIOCC, it is unclear if this offers any price advantages.

Lesotho is one of the few countries in Africa to have a well-functioning Universal Access Fund (UAF). The UAF was launched in May 2009 to develop and expand telecommunications services to remote and underserved areas not attractive to private sector operators. The UAF spends its full allocation of funds annually and maintains an administrative cost below 20 percent. The UAF receives contributions from the LCA, the government and from private sector operators, which are required to contribute 1.5 percent of their net operating income to the fund. To date, the UAF has financed 47 base stations across all 10 of Lesotho's regions, providing connectivity to 158,500 people, and connected 40 schools to the Internet with an additional 10 schools receiving technology, digital literacy training and Internet access. Through its e-Government project, the AfDB has contributed to the fund by co-financing 75 percent of five Base Receiver Stations (BTS) in 2017–2018 and aims to scale up this work in the second phase of the project. The UAF also intends to support the roll out of public WiFi to stimulate demand for broadband.

Invisible Mile: Policies and Regulation

Lesotho has a sound institutional framework in place for the ICT sector and digital infrastructure development. The MCST has the overall responsibility of sector policies and legislation. Strong support for ICT sector development has been provided by both the first and the second NSDPs of Lesotho. The current sector legal and regulatory framework is based on the Communications Policy of 2008 and the Communication Act of 2012. The government's priority is achieving universal Internet coverage at affordable prices. Lesotho is however missing an up-to-date national broadband policy, strategy or a plan. Efforts at developing a National Broadband Policy since 2015 have stalled and the draft policy that was developed was never adopted or published⁵⁶. According to the MCST, the work has continued in recent years—with the intention to develop a more concrete broadband plan—but this work has also not led to an adopted document. The most recent view of what the government's current objectives are can be found from the NSDP II, which outlines the following priorities: i) improve ICT Access and Use, ii) improve Regulation in the ICT Sector, iii) enhance e-Government services, iv) improve Digital Economy Uptake; and, v) improve Governance of the ICT Sector.

The LCA is Lesotho's independent telecommunications regulator, also managing the UAF. Lesotho has taken active steps to promote the growth of the ICT sector including an overhaul of the licensing framework to enable technology neutral licenses⁵⁷. In terms of hierarchy, the LCA implements policies that are developed by the MCST, although there is a concerted level of coordination between the two bodies.

⁵⁴ Specialized tower companies that are active in Africa include Helios, Eaton Towers, and American Tower Corporation.

⁵⁵ Gillwald, A., M. Deen-Swarray, and Mothobi. O.(2017)

⁵⁶ Gillwald, A., M. Deen-Swarray, and Mothobi..(2017)

⁵⁷ LCA issues technology neutral licenses which enable operators to provide a range of services subject to compliance with license terms and conditions. In March 2013, LCA introduced a converged licensing regime that simplified the licensing procedures. In 2018, the LCA updated the Licensing Classification and Fees Rules which aimed to “align the regulatory framework with the evolving technology and national development imperatives.” There are four types of authorizations under this new framework including individual, class, permit and registration.

Lesotho has a score of 67.83 out of 100 on the ITU Regulatory Tracker Index⁵⁸, which is good by regional standards. The two weaker pillars on the index include the regulatory regime (score 16/30) and competition framework (score 18.33/28), indicating weaknesses in enforcing regulation and promoting a pro-competitive market environment. The current regulatory regime and licensing framework has been especially effective for expanding mobile network coverage in Lesotho.

Although the LCA's first attempts to regulate interconnection agreements dates to July 2007, they were unable to enforce any decisions until they were backed by the Communications Act of 2012, when a new glide path for a period of three years was established. Nonetheless, interconnection rates can be regarded as high when compared to neighboring countries. The structure of the current interconnection regime ultimately benefits VCL as the larger operator. The World Bank has suggested⁵⁹ to consider moving into a Sender Keeps All regime on interconnection fees but, based on the interviews carried out for this study, this proposal has not yet gained support.

There is concern about high sector levies and taxes in Lesotho. Operators in Lesotho are subject to regulatory fees and a requirement to contribute to the UAF. Currently, the LCA imposes an annual regulatory fee of 4 percent of Net Operating Income (NIO) on all operators. This can be regarded as high by regional standards and against international best practice (see Annex 10 for benchmarking)⁶⁰. The USF contribution stands currently at 1.5 percent of NIO and can be increased to up to 2 percent as per the LCA Act. This is higher than in a number of peer countries (see Annex 10). In March 2018, the Value Added Tax (VAT) for telecommunication services was increased from 5 percent to 9 percent, with the expectation that it will further go up to 12 percent and gradually be raised to be on par with the general VAT rate of 15 percent. This move would bring the VAT rate in line with South Africa. Even if partially absorbed by the operators, these VAT increases will impact retail pricing and raise the cost of communication for consumers.

Based on the LCA (General) Rules of 2015, the LCA may require a licensee to share its communications infrastructure with another licensee on a first-come, first-served basis, through a cost-based pricing structure and non-discriminatory terms and conditions. In practice, infrastructure-sharing agreements in Lesotho have been voluntary and based on agreements between the market players, not designated by the LCA. It is the general view of operators that infrastructure sharing is currently working, although problems with getting access to necessary ducts were mentioned by several market players. This is a concern, especially in Maseru, where all fiber runs underground. Information on existing infrastructure is hard to come by and not publicly available. The operators have joined forces and developed a Memorandum of Understanding (MoU) on infrastructure sharing in 2018, also encouraging the government to develop rules around a "dig once" policy.

CONSTRAINTS TO HIGH SPEED INTERNET DEVELOPMENT

The overall state of Lesotho's digital infrastructure is relatively robust but marked by an inability to fully turn the existing strengths into consumer benefits. As a result, Internet adoption—by individuals, businesses and the public sector—is lagging. Lesotho has made remarkable strides in a short period of time in extending voice and data communications to its citizens. The government's chosen strategy has been marked by a mobile-first approach, and equating Internet access with access to mobile broadband is currently the norm. Fixed line access has been left a marginal role. Some of the key constraints include:

- **The current, vertically integrated market structure provides little incentive for either MNO to introduce strong price competition.** Wholesale prices remain high, which create a barrier for market entry and for a scale up of services by independent ISPs or MVNOs. Additionally, the

⁵⁸ ITU's regulatory tracker is a composite index measuring a country's performance across four pillars: 1) Regulatory Authority, 2) Regulatory Mandate, 3) Regulatory Regime, 4) Competition Framework. Source: <https://www.itu.int/net4/itu-d/irt/#/tracker-by-country/regulatory-tracker/2018>

⁵⁹ The World Bank (2018a)

⁶⁰ The World Bank (2018a).

relatively high interconnection fees ultimately benefit the largest operator and squeeze out potential market entrants. A bigger gap between wholesale and retail prices, as well as lower interconnection fees, could enable smaller players gain foothold in Lesotho. The wholesale market remains largely unregulated.

- **The state's role in the market creates a perceived obstacle for effective regulation.** The LCA's role in WIOCC has made it difficult for the regulator to collect market data and has been a factor in the wholesale market being left unregulated, although significant market share has been identified.
- **The lack of a coordinated approach to infrastructure build out and sharing can lead to unnecessary duplication.** The lack of a coordinated dig once policy for fiber roll out may not be adequate for Lesotho and, combined with a voluntary model of infrastructure sharing and high expenses for build-out, can lead to higher than necessary costs.
- **The relatively high sector levies and taxes raise the cost of communication for consumers, even if operators are partially able to absorb these costs.** Rising VAT creates a scenario where prices are likely to increase in the near future and may further contribute to the unaffordability of services.
- **Finally, encouraging the adoption and use of broadband networks and services relies heavily on driving demand for services.** In Lesotho, international bandwidth appears underutilized and demand for data-heavy services remains low. There are a lack of digital public services that could drive adoption and demand. The price of Internet enabled devices also restricts use.

RECOMMENDATIONS

Improving the affordability and quality of Internet services should be an important priority for further development in Lesotho. Faster, cheaper and more reliable Internet will help Lesotho's businesses connect to markets and improve productivity. The recommendations below aim to address the key issues inhibiting the growth of high-speed Internet in Lesotho. The market entry of new players, able to challenge the existing MNOs and disrupt the current duopoly model, would be beneficial for Lesotho. This could be facilitated by: enforcing the stronger regulation of wholesale prices; lowering the price of interconnection fees for smaller competitors; and promoting infrastructure sharing.

R2. Develop a strategy to bridge the digital divide and guide broadband development. The government should establish an actionable national strategy for closing the gaps in Internet access and extending digital opportunity to all its citizens. This could be most realistically done by revisiting and completing the draft broadband strategy that has been in development by the MCST. The successful finalization and implementation of the strategy would probably require external support. The broadband strategy could also be a subset of a broader digital economy strategy for Lesotho.

R3. Considering reducing the role of the state in the development of ICT infrastructure and leverage state-owned digital infrastructure assets in a more strategic way. As part of the NSDP II, the government has already expressed its intention to develop a framework for divesting from WIOCC and reducing its role in Econet⁶¹. Divesting from WIOCC should be prioritized in the short term. Taking this step would clarify the LCA's position as an independent referee in the wholesale broadband market. In addition, the government should consider how the valuable fiber assets owned by LEC and managed by LECC could be further leveraged, for example, through bringing in private partners to assist with their commercialization. The burgeoning idea of the LECC building a national, open access wholesale network should be investigated as part of such a process, if proven commercially viable.

R4. Strengthen Lesotho's independent regulator while keeping costs reasonable. The current fee of 4 percent of Net Operating Income charged by LCA is significantly higher than the fees charged by regulatory

⁶¹ Econet has performed poorly in recent years and its liquidity indicators are a cause for concern, which could prompt the government to consider steps to divest from its ownership in the operator⁶¹.

authorities in the region. Best practice in Africa is around 1 percent and the regulatory levy should be used strictly for the cost recovery of the expenditures incurred by the regulator. In time, the government could consider rationalizing the regulatory fees in line with comparable markets.

R5. Encourage the development of the wholesale broadband market. Subsequent to the resolution of the WIOCC issue, the LCA should pay more attention to the regulation of the wholesale market segment of the broadband value chain. The promotion of: passive and active infrastructure sharing; strengthening of open access rules; implementation of transparent cost-plus wholesale pricing; and the determination of regulatory remedies and local loop unbundling would ensure that service providers have access to the newly developed networks on an open and non-discriminatory basis, which would help the market grow.

R6. Set up and implement a coordinated approach to digital infrastructure build-out with the private sector. A dig once policy, relying on real time information related to existing infrastructure, guidelines for rapid deployment and a coordinated way of accessing right of way should be considered. In order to promote competition, attract more investment and increase coverage, it is essential that an effective access policy is developed and enforced. This would result in effective access to civil infrastructure, such as ducts and poles held and managed by incumbents.

R7. Promote the affordability of broadband-enabled devices and consider widening opportunities for individual access through device subsidies. Ways to alleviate high prices for Internet-enabled devices could be explored to stimulate the adoption of smartphones. The government could consider lessening excise duties and other taxes on devices, and/or subsidizing their purchase, e.g., through the USF. Subsidies should be targeted, as a priority, at lowest income consumers, to reduce digital gaps.

R8. Purchase bulk Internet capacity for the government in order to achieve scale. The government could move to a centralized model for procuring data in bulk to stimulate competition by aggregating demand. Similar models have been implemented with success in WBG-financed projects, for example, in Uganda and Malawi. This would entail the government purchasing large volumes of international bandwidth and related services for Ministries, Departments and Agencies (MDAs) over an extended period (e.g., 10 years). As part of this process, service providers would be able to benefit from heavily reduced, wholesale prices for bandwidth.

Spurring the adoption and use of broadband services will also require significant efforts to drive demand and build digital skills. Specific interventions should be designed to promote the use of services that are attractive to potential consumers, such as e-Government services, digital payments and social media. Likewise, it is important to invest in the development of digital skills needed to use technology efficiently, targeting especially those parts of the population with less formal education. These will be further elaborated in the forthcoming chapters of this paper.

2.3. DIGITAL PLATFORMS PILLAR

THE IMPORTANCE OF DIGITAL PLATFORMS

Digital platforms are critical elements of a digital economy. According to the African Union Digital Transformation Strategy⁶², “digital public platforms—which may be provided by the government or through hybrid models in partnership with the private sector—serve as a layer on which multiple public and private sector organizations can build new or better services and solutions.” They are often part of wider e-Government systems designed to leverage ICTs and to enhance transparency, accountability and efficiency in public administration and service delivery. “Private or commercial digital platforms include multisided marketplaces that ‘enable producers and users to create value together by interacting with each other’⁶³

⁶² Forthcoming

⁶³ Still et al (2017)

and facilitate ‘matching, searching, exchanging, transactions, etc.’” They support a business environment where producers and consumers/users are able to create value through digital interaction, and “provide the place for collecting, sharing and aggregating data, performing analytics and delivering new and improved services and goods.”⁶⁴

Digital platforms can serve people, businesses, and government agencies in all aspects of life, including in healthcare, education, commerce, transportation, and other public benefits. For the value of these platforms to be maximized, they must be able to share critical information through an interoperability framework. Assessing the enabling environment for the further development of platforms is critical to the overall understanding of digital economy in Lesotho. This diagnostic will first assess the *foundations for digital platforms* (see Figure 8). The foundations include cornerstone public and private sector platforms, the enabling environment in which the platforms are developed and used, and the interoperability and/or availability of shared services. The analysis will also consider *use-cases* that drive the uptake and use of digital economy, and *additional platforms and functionalities* that enhance efficiency and service delivery.

Figure 8: Digital platforms ecosystem

SERVICE DELIVERY PLATFORMS – FOR PUBLIC AND PRIVATE SERVICES						
Use-cases			Additional platforms and functionalities			
FOUNDATIONS OF DIGITAL PLATFORMS						
Enabling Environment		Cornerstone Government Platforms		Interoperability for digital financial services	Cornerstone Private Sector Platforms	
Policies & Regulations		Digital Identity	Interoperability for service delivery and efficiency		Interoperability for market growth and innovation	Digital Payments
Systems & Infrastructure		Digital Financial Management				
Standards & Protocols		Digital Procurement				
Skills, Capacity Building, and Change Management		Digital Human Resources Management			Web-domains and hosting	

Source: Authors

THE STATE OF DIGITAL PLATFORMS IN LESOTHO

The landscape of public and private sector platforms in Lesotho is steadily evolving with the introduction of various back-end and front-end systems, applications and services; however, Lesotho still lags behind regional comparators significantly. Lesotho ranks among Africa’s lowest performers in the United Nations’ global digital development index, the EDGI, falling below the continental average and that of other SACU and SADC countries (see Annex 6).

Table 2: Key Indicators for Lesotho’s Digital Platforms⁶⁵

Assessment dimensions and measures/indicators	Data for Lesotho	Source
PUBLIC SECTOR PLATFORMS		
E-Government Development Index (EGDI) - (ranking, score)	167 (0.2968)	UN, 2018

⁶⁴ Evans (2013)

⁶⁵ Data on number of government services available online, number of users of online government services, number of online transactions and value of online transactions for government services were not available from a central government source and were manually collected across various entities for this report. They may vary from the actual situation. Data from One Stop Business Facilitation Centre (OBFC) on number of users and transactions were not made available for this version of the report.

Online Service Index (OSI) within EGDI - (ranking, score)	184 (0.1111)	UN, 2018
Number of government services available online	23	GoL MCST, 2019; GoL MCC; Central Bank of Lesotho Online Credit Bureau; GoL LRA; GoL OBFC
Number of users of online government services - (per year, unique users)	340,205	GoL MCC; Central Bank of Lesotho; LRA; OBFC
Number of online transactions for government services - (per year)	539804	GoL MCC
Value of online transactions for government services - (US\$, per year)	US\$39,023.76	GoL MCC
Number of digitally enabled unique identity proofs issued - (per 100 ppl)	>85	GoL MoHA, 2019
Open Data Implementation Score - (0-100)	76 of 94	Global Open Data Index, 2016/2017
PRIVATE SECTOR PLATFORMS		
UNCTAD Business-to-Consumer (B2C) ⁶⁶ ECommerce Index (ranking, score)	126 (27.2)	UNCTAD 2018
ICT Use for Business-To-Business (B2B) Transactions - (index 1-7, 7 is best)	3.36	World Economic Forum (WEF), 2018
Business-To-Consumer Internet Use - (index 1-7, 7 is best)	3.30	WEF, 2018

Lesotho's Cornerstone Public Sector Platforms

Lesotho has most of the cornerstone, digital public sector platforms in place, although the level of development of their functionality varies. Each platform is discussed in turn below.

Digital Identification Systems. Lesotho is one of the few countries in Africa with a fully biometric National Identification Document (ID), rolled out to approximately 85 percent of the eligible population (1.1 of 1.2 million). The roll out of biometric National IDs was led by the MoHA, Department of National Identity and Civil Registry (NID-CR), which is mandated to issue national IDs and passports, maintain a population registry, and issue birth and death certificates. The NID-CR platform is an integrated system based on civil registration data, which includes birth, marriage and death registration, biometric details (photo, fingerprints) and passport data for Basotho over the age of 16. Through itself a secure platform with user interface, the system links the front-end processes with the back-end database and updates it daily. Children are automatically linked with their biometrically verified parents and issued a unique, lifetime number, carried from birth to death. While uptake of the biometric ID has been high, further efforts are required to reach populations in hard-to-reach areas that do not yet have an ID.

The National ID platform has the potential to become important for 'government to people'⁶⁷ transfers, for example for the payment of agricultural subsidies, social cash transfers, or processes of identity

⁶⁶ Also known as 'e-commerce' this allows vendor to provide services or products directly to a consumer via a website for direct purchase from the company or a retail marketplace that connects consumers to multiple companies and brands.⁶⁷ G2Cplatforms focus on service delivery across a variety of sectors with the aim of delivering said service in the most efficient (cost-effective and time-sensitive) way possible for citizens. Platforms may also share data to improve transparency as well as encourage research and business innovation.

⁶⁷ G2Cplatforms focus on service delivery across a variety of sectors with the aim of delivering said service in the most efficient (cost-effective and time-sensitive) way possible for citizens. Platforms may also share data to improve transparency as well as encourage research and business innovation.

authentication for bank accounts and small business loans to support private sector growth, among other things. Technical assistance to further expand the functionality, security, and use of the ID system is being supported through the World Bank ID4D Global Program.

Box 1. Spotlight on Digital ID: Lesotho as a Pioneer in Africa

In 2009, the Government of Lesotho decided to provide all citizens with a biometric national ID as a foundation for other critical government systems. As a result, in 2011, the government passed the National Identity Cards Act and the Data Protection Act. The transition to a digitized and centralized ID system began in 2013. Over the course of three years, enrollment reached over 85 percent of the eligible population. The Department NID-CR is now piloting an API to facilitate verification and the authentication of identity by government agencies (e.g. pensions and payroll) and the private sector (e.g. banks and insurance companies).

Roll-out of the NID was the cornerstone of the 2018–19 biometric census of civil servants and civil pensioners, which leveraged the NID to verify and authenticate the identity of civil servants, identify anomalies within the government payroll, and eventually improve the efficiency of government spending on wages and civil pensions. Similarly, the NID is being used for the Old Age Pension (OAP) proof of life verification exercise. The envisioned interface with the HR management system, OAP system, and National ID platform would ensure that the National ID becomes the unique identification number for these types of government payments. The credit bureau has also launched the Credit Information Sharing Initiative, which matches consumers with identity data to access credit.

A generic interface has been developed that enables the NICR platform to be connected to the digital platforms of other public and private sector entities. At the time of the assessment, the following government systems had a basic connection to the NID platform for making queries: MCST's e-services platform; Ministry of Labor; Ministry of Tourism; Old Aged Pensions; Ministry of Public Services. Due to increased instances of fraud in the financial services sector, the private sector has also already demonstrated interest in the National ID system for authentication. Recently, the first MOU for data protection with third-party users was signed between a commercial bank and the MoHA. Additionally, the use of the generic interface with the bank's systems has been tested. The next phase of improvements to the NICR system will include increasing service providers' ability to conduct biometric authentication and increasing the robustness of the platforms' data privacy and protection functionalities.

However, a number of steps will still need to be taken before Lesotho's existing legal framework is ready to support data sharing with the public and private sector. The scope of permitted disclosures may need to be amended to cover the categories of recipients and data sharing purposes envisaged by the government, particularly for administering pensions and salary payments to public servants. Data minimization principles should be adopted, and governance arrangements bolstered to improve accountability and transparency. Sector-specific template agreements for ID data sharing with government agencies or the private sector, as well as a data sharing code of conduct, may also help to reinforce individual privacy rights, improve transparency and build confidence. Cybersecurity legislation may also be considered to provide legal protections, especially to critical digital infrastructure.

Financial Management Systems. An Integrated Financial Management Information System (IFMIS) is provided to all line ministries by the Ministry of Finance (MoF), Office of the Accountant General. The IFMIS system utilizes Epicor software and was originally installed in 2009 with EU and Department for

International Development (DFID) financing⁶⁸, but the system was only partially utilized and experienced major challenges with improper use due to inadequacies in:

- Infrastructure, e.g. Local Area Networks (LAN) and Wide Area Networks (WAN) issues, and a weak relationship with MCST resulting in the lack of software, core network and data center maintenance, joining of insecure workstations with IFMIS;
- capacity (e.g. large percentage of untrained users, no onboarding of new users, no ongoing training, weak quality control);
- support (e.g. weak business processes, reliance on consultants, high turnover, ineffective and mis-mapped help desk); and
- change management (e.g. limited change management due to pressure to “go live,” the lack of integration of software into business practices, limited use for financial control, a bypassing of approval and password protections, and transactions still occurring outside the system).

IFMIS⁶⁹ was subsequently upgraded in early 2019, using financing from the World Bank, and is configured as a government-wide platform to support budget execution by all line ministries. IFMIS implementation has the aim of being a single platform for public financial management of the Consolidated Fund. Utilization of the IFMIS facilitates national budget development, execution and financial control, by requiring all MDAs to execute and control their budgets through the IFMIS. As of now, IFMIS only connects central-level MDAs and supports their operations in the districts through sub-accountancies of the Office of the Accountant-general. Further roll-out (to District Councils) is dependent on connectivity and associated configuration, capacity building and change management. The IFMIS platform provides access to the “treasury single account” system provided by the CBL, the central bank, for the execution of cash transactions related to the revenue and expenditure budget, including the payment of civil servants’ salaries and old age pensions. The government is also moving to digitize back-office processes and is moving to digital payments for paying out old-age pensions. Digitization has already resulted in efficiency gains through the removal of persons erroneously receiving pensions. The Lesotho Revenue Authority electronically collects tax payment and the data is integrated into IFMIS.

Human Resource Management. The Government of Lesotho uses a Human Resource Management Information System (HRMIS)⁷⁰ to manage the size and structure of the civil service, maintain employment records, and manage its payroll. The payroll module has been used to process payroll for 55,000 plus civil servants and pensioners since July 2016; and the core modules have been rolled out to 32 line ministries. Additional modules have been purchased but are not in use. In the views of the Government of Lesotho and HRMIS experts familiar with the Lesotho context, the original system relied on an off-the-shelf modular software that was not sufficiently customized to the HR business processes of Lesotho. There are also control weaknesses related to data entry and validation. In an effort to address these challenges and leveraging financing from the World Bank, the government has completed biometric census of civil servants, civil pensioners, and village health workers to “clean” its HR records by authenticating the identities and employment status of those on the government payroll. There is a link between the HRMIS’ payroll function and IFMIS, wherein IFMIS validates the availability of government funds, before initiating a disbursement from the Central Bank. However, payroll transactions are not yet fully automated.⁷¹ The government recently undertook a detailed assessment of the HRMIS system and business processes. Simultaneously, it was informed by the HRMIS vendor that the existing system would no longer be licensed for clients in region. As a result, the government is procuring a new system with a view of customizing it to its existing business

⁶⁸ The EU was the primary donor and DFID supported a Treasury Advisor for the Treasury department and formation of IFMIS Implementation Work Groups (EU, 2013).

⁶⁹ The IFMIS platform runs on the EPICOR 10.2 - IFMIS Platform for Budget Management

⁷⁰ The HRMIS platform runs on the Resource Link Platform with operations and maintenance provided through NGA, as South Africa based firm.

⁷¹ At the moment there is an interface to upload payroll system to the ledger for IFMIS, but this is not yet automated. Importing and validation of electronic payroll files is still done manually.

processes. The new system would also interface data from the biometric census of civil service with the NICR system, the HRMIS and, eventually, the Old Age Pensions database to facilitate cross-checking.

Even with the procurement of a new system, analogue challenges will remain, including clarifying the types of payments that should occur through the payroll versus other government payment platforms, and change management for the successful implementation of the upgrades. There are some payroll transactions that still lie outside of the HRMIS system, including several grades of civil servants paid from local government budgets; separate accounts for paying teachers who are also nuns; and, temporary employees being paid directly from the treasury's single account as vendors. There are also non-payroll transactions that are completed through the HRMIS system, such as stipends for schools that collect data on behalf of the water and energy utilities and allowances for Chiefs, processed as salary payments to Senators. Changes to these procedures will require a clear, authorizing environment and smooth change management to ensure the HR platforms are optimized to increase government efficiency. Also, all support activities are currently handled by the system's vendors, not government IT employees. There is no user support structure in place. Therefore, the Ministry of Public Service would also need to take stock of their internal IT staffing requirements as part of change management and an effective system operations and maintenance.

Digital Procurement Systems. Lesotho does not have an electronic procurement system and limited information on tender notices and contract awards is published in the government portal, through which prospective bidders can download the bidding documents.⁷² The Procurement Policy Advisory Division (PPAD) under the MoF is responsible for monitoring public procurement and the management and disposal of assets. PPAD requires annual procurement plans from various ministries at the beginning of each fiscal year, but the plans are not available in the public domain. Vendor registration with the PPAD is mandatory for doing business with the government and the PPAD hosts the central database of vendors. But the PPAD still does not have its own web portal. Yet, the IFMIS captures supplier information and records requisitions and orders. In 2012, an initiative to develop a Public Procurement Management Information System began and will be evaluated during an upcoming e-procurement readiness assessment. The adoption and implementation of such a system would further develop these functions and increase accountability and competition, as well as supporting sourcing from local Small and Medium Enterprises (SMEs). Furthermore, a new public procurement law is being drafted and may have a bearing on how e-procurement develops in the coming years.

Lesotho's Cornerstone Private Sector Platforms

Lesotho has few cornerstone private sector platforms in place and lags behind comparators in this regard. Each platform is discussed below.

Digital Payment Platforms. Digital payment platforms are underdeveloped with few public and private sector platforms enabled for online payments. Only a handful of government agencies offer digital payment options, such as payments for land tax and construction permits. Currently most Child Grants Program (CGP) payments are paid by Cash in Transit (CIT), which provides cash payments in pre-packed envelopes marked with barcodes for improved security, accounting and reconciliation, while just less than 25 percent of the payments are made digitally via mobile money. For the OAP program, pensioners are paid cash in hand at pay points with relatively poor measures of recordkeeping and reconciliation. However, the Pensions Department of the Ministry of Finance is developing a new system where pensioners can be paid digitally via Lesotho Post Bank (LPB, the state-owned commercial bank) or mobile money (particularly MPesa) as an alternative to cash payments. The new system is being designed and will be piloted and rolled out in 2020⁷³. Ultimately, the government would like to develop harmonized payments systems across all social assistance programs (the CGP, OAP, and Public Assistance Program). Public enterprises for water and

⁷² Portal is accessible at <https://www.gov.ls/document-category/tenders/>

⁷³ Regarding the new system, it is not yet fully known what the uptake of e-payments will be among the pensioners; however, measures will be put in place to expand the share of e-payments over time. A cash option is being kept but will be designed in a more secure way.

electricity also allow customers to pay their bills via Unstructured Supplementary Service Data (USSD), online and mobile platforms. Consumer demand for digital payment platforms has, to date, remained low; stakeholders noted that, by and large, citizens prefer to pay through traditional paper-based banking, as people do not trust that their transactions will be secure or that their payments will reach the intended recipients.

Digital Commerce and Marketplaces. Both international indices and stakeholder consultations indicate that Lesotho has a low state of readiness for digital commerce and marketplaces. The three key indices for private sector platforms (see Table 2) place Lesotho in the bottom quartile, which indicates that growth potential is limited and improving the enabling environment is key. Most e-commerce and digital marketplaces used are international platforms based outside of Lesotho. Leading platforms include e-commerce giants such as Asos, Amazon South Africa, and eBay, but ideally, Lesotho would have a market mix that enables specialized local e-commerce platforms hosted by SMEs to piggyback on the availability of global platforms. Annex 5 lists the digital commercial platforms and marketplaces in use in Lesotho. The number of platforms/applications in Lesotho is low and not all platforms function well. Furthermore, stakeholder consultations indicated that private sector platforms are unable to grow their user base and reach scale, due to challenges with marketing (e.g., domain, or the platforms cannot be found easily) and business development.

Webhosting and Domains. Stakeholders cited the unavailability of local webhosting and domains as a barrier to public sector efficacy and private sector growth. For example, government ministries do not have a protected e-mail system and even cabinet-level officials use private email accounts to conduct government business. Few web domains are hosted within Lesotho. A 2016 report by the RIA group indicated that the number of local websites and applications was so low that they could not evaluate it on its own, and instead used the number of Facebook users as a proxy to measure locally generated web content.

Lesotho's Digital Platform Use-Cases and Applications

Main platform use-cases and applications in Lesotho are discussed below.

Digital Service Delivery. Numerous platforms are designed for service delivery across sectors, such as agriculture and trade. While development of a government e-portal is in the pipeline, most of these public platforms are not interoperable or readily interfaced with e-payment infrastructure. The platforms are briefly discussed below, and platforms developed by non-profits are highlighted in Annex 5. The platforms discussed begin with those that are least developed and functional, moving to the more developed and functional. Ordering the discussion in this way reveals that the more developed, functioning platforms are managed by semi-autonomous agencies and entities, implying that autonomy in HR and decision-making processes has, thus far, been an important factor in platform development in Lesotho.

- **E-Legal Information System.** In December 2018, the Law Reform Commission began using a digital platform to categorize and make publicly available statutory laws that were promulgated between 1800 to 2016. Lexis Nexis (Pty) was engaged to provide this service and the work is expected to be completed in June 2019.
- **E-Credit Bureau.** The e-credit bureau gathers credit data about legal persons and uses it for credit history and, sometimes, to establish a credit rating. Lesotho's e-credit bureau is third-party developed, maintained, and operated, but the license for the system is issued by the Central Bank.
- **Lesotho National Development Corporation (LNDC) Information Portal.** This platform is operated by the LNDC and includes information about foreign direct investment, lending to SMEs, special economic zones, the property management of industrial shells, export promotion and government shares in private companies.
- **Customs and e-Single Window.** Lesotho uses the Automated System for Customs Data (ASYCUDA) World system, which is an import/export/trade logistics system created by UNCTAD and managed

by the Lesotho Revenue Authority (LRA). The platform allows the various transactions required for customs clearance—such as health and safety clearance, and the collection of duties—to occur through a portal, greatly increasing efficacy at border crossings. The system is being upgraded to provide backup and redundancy measures for the data collected. Under WTO TFA Article 10.4, countries are required to have a digital “single window” trade platform. Single window enables those importing, exporting, or transiting goods through a port of entry to submit documentation to, and/or comply with, the data requirements set by the relevant authorities. Lesotho’s single window is under development and managed by LRA.

- **Digital Livestock Registry.** The livestock registry is managed by the Ministry of Agriculture and Food Security and allows livestock owners to tag their livestock and report missing and stolen cattle through an SMS-based mobile application. Stakeholders indicated that this platform has been successful in the recovery of numerous livestock, as well as in conflict prevention when livestock-ownership has been called into question.
- **One Stop Business Facilitation Centre (OBFC).** The OBFC is both a brick and mortar center and a web-portal that allows new businesses to access and complete the more than 20 separate procedures required to start a business in a single location. The OBFC portal was configured by UNCTAD and is managed by the Ministry of Trade and Industry (MTI) in collaboration with the Chamber of Commerce and Industry (LCCI). The portal aggregates several e-services, including e-construction permits and electronic requests for Tax ID.
- **E-Land Registry.** The Land Administration Authority (LAA) relaunched its digitized system in 2016. The platform is for tracking the land registration and deeds and data obtained from land surveys, the surrender of lease rights and land-related disputes. The system can alert the LAA to overdue land transactions and has increased the degree of efficiency in the land administration system. For example, land taxes can now be paid digitally. Additional phases of the system’s development will expand its functionalities over the next 2 to 3 years.
- **Lesotho Integrated Transport Information System and Road Accident Data Management System.** The existing traffic and transport information management system is being updated in order to modernize and harmonize services, which include services on driver licensing, vehicle registration, and vehicle inspection. In parallel the Road Accident Data Management System is being developed, which aims to offer a superior platform for recording and reporting accidents in order to enable the development of programs and policies for improved road safety in Lesotho.

Digital Citizen Engagement and Feedback Platforms. The use of digital citizen engagement and feedback platforms in Lesotho has not yet begun. Citizen feedback mechanisms in general are few and there is no centralized avenue for gathering citizen feedback. This is reflected in Lesotho’s ranking as 185th (out of 195) in the world on the E-Participation Index (EPI). The Office of Prime Minister (OPM), Public Sector Effectiveness Unit, with support from the World Bank Public Sector Modernization Project, is completing a scoping exercise for a pilot digital citizen feedback mechanism. While this activity is in the very early planning stages, the platform would include: web-based data entry/collection, SMS communication, response analysis and reporting application, an SMS gateway connected to a long/short code for connectivity, and a couple of phones for making voice calls to service beneficiaries. Initially, piloting will focus on a single service in a priority sector such as education, health or transportation. Future phases of support for e-governance may scale up the system across sectors. There also has been a proposal by the government to establish a national, one stop call center in the OPM, to allow citizens to call in for complaints and the OPM to monitor service delivery across ministries. The Ministry of Health is in the process of establishing an in-house contact center to facilitate the logging and resolution of complaints as well. If these contact centers are approved and established, then citizen feedback mechanisms will be run using these systems and only one additional layer for response analysis may be required. The consolidation of contact centers into a single, centrally managed center would be ideal, helping to clarify the responsibilities involved in its procurement, maintenance and use across government.

Box 2: Lack of interoperability framework

Most public sector platforms in Lesotho are developed independently by government line ministries—mostly without using standardization protocols—and were not designed to be linked to any other platforms or a shared services system. MDAs have worked with numerous vendors from a wide range of international firms to develop their platforms and thus their interoperability mechanisms, such as Application Programming Interfaces (API), will have to be designed individually. Furthermore, there is no coordination or centralized knowledge base for digital platforms.

Some MDAs and private sector entities are also using interoperability as a means of cost recovery. The MoHA, LPB, and various mobile money providers will charge per hit for the use of their respective APIs to authenticate identity and issue pension payments, for example. While this method of cost recovery is not atypical, it has delayed progress in creating interoperability across key platforms, and many potential users do not want to pay for authentication services.

As a standards' promoter, MCST has attempted to set guidelines to facilitate interoperability among public sector platforms and with private sector platforms. The use of common hardware and software across government has been promoted. Now, MCST is pursuing opensource, open architecture, and open interface requirements for all IT vendors in contracts with the Government of Lesotho. The Ministry has developed protocols for interfacing the different platforms said to be used for the IFMIS platform and MTI's Business Registry. However, most MDAs interviewed were unaware of these standards.

Enhancing the interoperability of platforms for service delivery will encourage their use and increase demand for Internet and digital services, especially in rural areas. This should be taken into account in future financing and technical support for e-Government in Lesotho.

Open Data Platforms. In Lesotho, there is an emerging Open Data Initiative being introduced by civil society and academia but there is no apparent buy-in from high-level public or private sector actors. Furthermore, many key public records and datasets have not been fully digitized, such as the company registry, land registry, procurement data, and climate data, and there is not yet an electronic document management system for the government. The assessment revealed that there is a perception, especially among parastatals, that government data do not need to be widely shared. This perception is a significant disincentive to developing platforms for data sharing. Stakeholders indicated that the lack of publicly available data slows innovation and creates hesitation on the part of potential foreign investors. There is significant room for Lesotho to leverage digital platforms to increase accessibility to data, perhaps giving priority to types of data that would facilitate investments in the economy and innovation.

Social Media Platforms. While Internet use in Lesotho is still relatively low (see chapter on digital infrastructure), social media use is growing, providing an opportunity to increase access to information about goods and services. While there are no robust statistics available about how Basotho use different social media platforms, about 86 percent of Internet users access social media, primarily through mobile connections. Usage of Facebook is known to be only 22.6 users per 100 inhabitants on average, however.⁷⁴ Lesotho has not reached the point where MDAs and businesses are leveraging social media to support information-sharing and marketing.

CONSTRAINTS TO DIGITAL PLATFORMS DEVELOPMENT

The enabling environment—particularly the legal framework, interoperability framework, capacity, and change management—is the major obstacle to greater development of the digital platforms in Lesotho.

⁷⁴ Gillwald, A., M. Deen-Swarrray, and Mothobi. O.(2017)

The center of government does not have and/or has not conveyed a strong drive to foster an enabling environment for Lesotho's digital economy. This lack of drive has contributed to a digital platforms' landscape where public and private sector digital platforms are few, exist mainly in isolation of each other, and are most often present where there is strong leadership and, also, a relatively high level of digital skills. The key constraints to digital platforms' development are discussed below.

Lesotho's policy and legal framework for digital platforms is underdeveloped and is part and parcel of the major constraints affecting the advancement of public and private sector digital platforms. Several significant legislative gaps are to be filled, as is further detailed above in Section 2.1. In order to increase the amount of attention and the degree of capacity needed to address ICT issues more effectively in parliament, an e-Government subcommittee has been established. It first convened in May 2019. It is envisioned that MCST's ICT department would become the *de facto* e-Government authority reporting to the subcommittee.

There is a lack of government strategy to guide policymaking for e-Government. As a result, the definition of roles and mandates of various government entities, as well as the allocation of resources and capacities across government entities, remain unclear. MCST, which acts *de facto* as the lead agency for e-Government, is not well positioned to provide strategic guidance across multiple institutions that have different needs and priorities, and coordination between MCST and other MDAs does not function optimally.

A range of technical skills and capacities exist and could support digital platforms; however, by-and-large, they are not present or retained in the public sector. Government capacity is viewed as weak, with a perceived flight of talent from the public sector to the private sector and often to outside of Lesotho. This results in more reliance on international technical expertise. The issue of public sector digital skills is explored in more detail in the digital skills chapter below.

The state of institutional readiness for digital platforms is low, both in the public and private sector, particularly with respect to being Internet/mobile platform savvy and ability to reach sustainability for ICT projects. For example, there are no Lesotho-based dedicated apps for the delivery of commercial or public services, and organizations did not indicate plans to roll out such mobile platforms in the near future. There are multiple donor efforts to support the development of digital platforms, but the government has no coordinated means to sustain them after donor funds are exhausted.

Change management is not embedded in MDAs, something that hampers the adoption of digital platforms and decreases likelihood of their sustained use. Stakeholders cited instances of passive resistance to the increased transparency, accountability and efficiency that digital platforms could bring, as, for example, digital platforms may reduce opportunities to interact outside the protocols. Outsourcing ICT expertise also slows organizational adoption.

Lesotho's digital platforms landscape is highly fragmented and not designed in a way that supports the development of an interoperability framework. As discussed above, there are numerous platforms housed in individual MDAs or private entities, developed separately, mostly without utilizing standardization protocols or considering linkages with any external platforms.

Lesotho is not yet able to leverage shared services to deliver platforms across MDAs or to decentralize to rural areas. While MCST manages the existing government network and aims to centralize the hosting of IT systems and data,⁷⁵ at present, many MDAs have their own servers or infrastructure. MDAs interviewed complained that the central data center's connectivity is too slow, and that downtime can last as long as a

⁷⁵ There is a centralized Tier 2 data center in Maseru, and new Tier 3 data center 130km from Maseru is being built for disaster recovery. This infrastructure supports the government's e-services portal and will be used for the government email system that is under development. A combination of physical and cloud storage is used. However, informed protocols are missing about which data should be stored where, e.g., whether sensitive identity data should be stored on the cloud.

day. The MDA-specific data centers are not designed to ensure data security, data archiving and digital preservation, increasing risks to government data.

The distinct advantage that digitization provides to increasing access in rural and hard-to-reach areas has not yet been realized. Improved shared services, matched with interoperability, will create demand for improved connectivity and digital services.

RECOMMENDATIONS

While there are myriad reasons why the development of digital platforms in Lesotho is characterized by nascency and disjointedness, the critical constraint is the current enabling environment. Bolstering the enabling environment for digital platforms in Lesotho is thus the key to unlocking their growth and development. The recommendations below seek to enhance the enabling environment and develop foundational digital platforms and platforms for service delivery and citizen feedback.

R9. Improve government leadership, coordination and the capacity for digital platforms. A whole-of-government approach, enacted by strong leadership and coordination, would support the development and maintenance of platforms, digital integration, and the enhancement of digital skills within the public sector. Developing a national approach to e-Government, in combination with strong leadership, is critical for creating an authorizing environment that would enable success. This could be achieved by: a) clearly delineated roles, responsibilities and lines of accountability, and clear reporting on digital platforms as part of the digital economy; b) building internal capacity to improve standardization, develop software and interfaces for interoperability, basic maintenance, vendor and contract management, and reduce reliance on external support; and c) systematically instituting change management and training programs prior to and after the launch of new public sector platforms, building on lessons learned from the roll out of larger platforms such as IFMIS and HRMIS.

R11. Expand the accessibility, interoperability, quality and functionality of existing public digital service delivery platforms. Given the expansive landscape of MDAs individually developing service delivery platforms, the Government of Lesotho should focus on optimizing their existing platforms prior to rolling out new platforms. The NID or national identity platform presents a strong use case for interoperability that could be further developed and from which lessons learned could be shared across government. Further opportunities to link up with digital payment systems should be leveraged, to the extent possible (see recommendation 17). Having a robust, shared services and enterprise architecture could result in large efficiency gains for the government. Introducing more platforms into a highly diffuse landscape which already has wide variation in the quality of platforms and weak adherence to standardization protocols could contribute to challenges with interoperability and potentially increase costs to government because of poor contract and/or vendor management. Therefore the government should establish an interoperability framework and set goals for service quality and monitor progress therein. Ideally, public sector platforms would operate on common digital infrastructure, software, information systems and services, which can be re-used by any MDA. There would also be common IT standards, and interoperability would be enforced.

R12. Develop citizen-facing digital public services to drive demand, access and efficiencies. The approach to digital transformation should revolve around user-centered design that places the needs and desires of citizens at the forefront to drive demand. A survey of existing platforms, their level of performance, and basic demographic information about their users would be critical to measuring the impact of these activities. Incentives would need to be in place that would encourage compliance with these standards. In addition to monitoring and evaluations, developing robust citizen feedback mechanisms would enhance the quality of services delivered. The government should formulate conscious and targeted CivicTech strategies within a whole-of-government approach, which focuses on developing dedicated platforms for citizens to engage with government beyond information sharing and social media, e.g., in terms of user satisfaction, accountability, e-consultation and e-decision making.

R13. Boost the creation of private sector platforms, notably by improving public-private cooperation. The government should explore incentives, such as including tailored access to finance, to encourage the development of local private sector platforms. Moving towards the progressive digitization of government data (or open data) would also create an enabling environment for data-driven innovation. However, incentives should be carefully crafted and avoid mandatory local sourcing, which would be likely to distort the market. The government should increase private sector developers' ability to integrate government data directly into their platforms to offer new application and services, e.g., through open APIs. However, as discussed above, the Government of Lesotho has no policy stance or active initiatives on open data. Lack of access to data stifles the development of private sector platforms that rely on such data for market research and product development. The government could consider developing an open data platform and incentive mechanisms that encourage MDAs to collect and publish their datasets on a routine and continual basis.

2.4. DIGITAL FINANCIAL SERVICES

THE IMPORTANCE OF DIGITAL FINANCIAL SERVICES

Digital financial services (DFS) are a critical enabler of a digital economy. They comprise a broad range of financial products and services, such as payments, transfers, savings, credit, insurance, securities, financial planning, and account statements, that are delivered via digital/electronic technology, including through a payment card, online, or via a mobile phone⁷⁶. The digital financial service ecosystem consists of banks and non-bank financial institutions (NBFIs), e.g. money transfers operators (MTOs) and MNOs, and is usually superintended by central banks as the leading regulatory authority.

Digital technologies offer an opportunity to provide financial services at a much lower cost and enable significant productivity gains across the economy. DFS can provide *individuals and households* with convenient and affordable channels through which to receive payments, pay for services and buy utilities, as well as to save and borrow. *Firms* can leverage DFS to more easily transact with their customers and suppliers, thereby deepening the prospects for an enlarged e-commerce ecosystem, as well as to build digital credit histories and seek financing. *Governments* can use DFS to increase efficiency and accountability in various payment streams, including for disbursement of social transfers and receipt of tax payments.

Lesotho aims to harness the opportunities presented by efficient and affordable DFS to foster financial inclusion, increase access for Micro, Small and Medium Enterprises (MSME) to finance, and broaden prospects for job creation. By offering the possibility of reaching more people, e.g., in rural areas, and at a lower cost, than traditional banking services based on a brick and mortar service delivery model, DFS make it easier for populations previously excluded from accessing financial services to leapfrog into the financial services ecosystem. The government has positioned financial inclusion as a critical component of development in the **NSDP II**, the **2014 Financial Sector Development Strategy (FSDS)**, and the **National Payment Systems (NPS) Vision and Strategy Document**, which recognize that advancing financial inclusion in Lesotho will largely depend on leveraging innovative financial services, with an emphasis on mobile money services and digital banking services. A diverse, sound, efficient and low risk digital financial services delivery model would also improve the quality of financial services available and help create a transactional history of users, including the credit history valuable in helping financial service providers make decisions on users, especially borrowers. Digital financial services are set to be enhanced by their integration with the national ID system that is being rolled out (see chapter on digital platforms).

DFS are also crucial for Lesotho in the transmission of remittances, notably from South Africa, that play a vital role in many Basotho livelihoods. Inward remittances contribute 17 percent to the country's GDP⁷⁷ and surpass other forms of inflows, including portfolio investments, official development aid (ODA) and

⁷⁶ Alliance for Financial Inclusion (2016)

⁷⁷ CIA (2019)

foreign direct investment (FDI)⁷⁸. Although inward remittances declined from a peak of US\$600m in 2006 to about US\$326 in 2016 due to changing labor patterns, they remain significant, with opportunities to create digital disruption and increase financial inclusion.

Box 3: Overview of the financial sector in Lesotho

Lesotho's financial sector mostly comprises actors in the banking and insurance sector, MNOs providing mobile money services, and some informal financial service providers (FSP):

- **Banks:** The banking sector consists of three South African banks (Standard Bank, Nedbank and the First National Bank of Lesotho (FNB)) and LPB, the only locally owned bank.
- **Insurance companies:** The insurance sector in Lesotho is relatively well developed in comparison to Sub-Saharan Africa (SSA) averages and is expanding more rapidly than the rest of the economy due to the high uptake of funeral insurance.
- **MNOs:** MNOs, namely Econet and Vodacom, facilitate wallet-based transactions and transfers through mobile wallets, EcoCash (since 2012) and M-Pesa (since 2013), for each of the MNOs respectively.
- **MTOs:** Four international MTOs currently operate in Lesotho (Western Union, Moneygram, Mukuru and World Remit). Retail shops are also involved in the remittances space; for instance, Shoprite's money transfer system allows individuals to send money from Shoprite stores in South Africa to corresponding Shoprite stores in Lesotho. Other players include the Lesotho Post Office and TEBA¹.
- **Other FSPs:** Other FSPs available on the market include NGOs, Savings and Credit Cooperatives (SACCOs), Village Savings and Loan Associations (VSLA), Rural Savings and Credit Groups, and unregistered money lenders (*Machonisas*).

Lesotho has made significant progress in the modernization of its payment system⁷⁹, which provides a solid foundation on which to anchor innovative developments in digital financial services. The financial sector is dominated by banks and MNOs that are fast embracing payments digitization in their product offerings; however, digitization in savings, lending, and insurance is yet to gain traction. Hence this chapter mainly focuses on the *payments segment* of digital financial services.

THE STATE OF DIGITAL FINANCIAL SERVICES IN LESOTHO

Impact of DFS on Financial Inclusion

Overall, 46 percent of Basotho adults (aged +15) had a formal financial account in 2017⁸⁰. Although this is slightly higher than the average account ownership for SSA that stands at 43 percent, it is much lower than the 58 percent for lower middle-income countries. Compared to regional peers, Lesotho is on par with Zambia but lags behind Namibia and South Africa by a wide margin (see Figure 9, left). Account ownership varies depending on socio-demographic factors: young adults (aged +15 to 34), rural residents, adults belonging to the poorest 40 percent of the population, and females are less likely to own an account.

Financial inclusion has been growing fast, driven by an increase in mobile money penetration. In 2017, 28 percent of the adult population owned a mobile money account, compared to the 33 percent that owned

⁷⁸ Alliance for Financial Inclusion (2018)

⁷⁹ Notable achievements include the implementation of the Lesotho Wire (Real Time Gross Settlement (RTGS) system), the ACH with cheque imaging and electronic funds transfers, central securities depository for government securities, and the promulgation of the NPS Act.

⁸⁰ World Bank (2017b).

a bank account⁸¹. Overall, account ownership by Basotho adults increased from 18 percent in 2011 to 46 percent in 2017 (see Figure 9 - right). On closer inspection, account ownership at a financial institution only increased by 15 percentage points, which reveals that mobile money allowed 13 more percent of the adult population to become financially included.

Figure 9: Transaction account ownership and financial inclusion in Lesotho, 2017 (Data: Findex)

Account usage, however, remains low, especially among younger adults, revealing the critical role that DFS could play to enhance and diversify financial behaviors in Lesotho. For instance, only 47 percent of those who have a financial account reported having made a withdrawal from the account over the past year. Eight percent of financial institution accounts are dormant with only 51 percent having had money deposited in them. The main reasons cited for this are that financial institutions are expensive, branches are far away, and potential account holders have insufficient funds. Formal borrowing practices remain limited; only 5 percent of adults had accessed credit from financial institutions.

DFS Practices

Despite reported increases in the use of digital payments, a lot remains to be done to boost DFS in the country. Digital payments are slowly but increasingly being used in Lesotho, with 38 percent of adults having made or received a digital payment in the previous year, compared to 10 percent who used a debit card, as of 2017 (see Figure 10)⁸². Similarly, payments for utility bills using mobile phones have surpassed bill payments through a financial institution account or in cash: of all adults having paid utility bills in 2017, 59 percent paid by mobile phone, compared to the 19 percent who used bank accounts, and the 26 percent who used cash. By contrast, usage of other digital financial services remains limited:

- Confirming diagnostic findings outlined in the chapter on digital platforms, e-commerce is still at a very nascent stage in Lesotho since only 1 percent of the population had bought something online over the previous year.
- The use of mobile and web banking remains limited, as only 9 percent of adults had accessed their bank accounts using online and mobile platforms. It is much lower in rural areas, with only 25 percent of account holders having used mobile banking.
- Only 3 percent of adults received wages through a mobile account (compared to the 8 percent who received wages into a bank account).

Lesotho remains a cash economy and significant efforts are needed to kickstart Lesotho's digital financial transformation. About 10 percent of all adults earn their wages in cash and most purchases are cash-based. The economy is mostly agriculture-based and payments for agricultural produce are mainly made through

⁸¹ The Global Findex Database 2017: <https://globalfindex.worldbank.org/>

⁸² The Global Findex Database 2017: <https://globalfindex.worldbank.org/>

cash, a miniscule 2 percent of these payments being made through a bank account, and 3 percent through a mobile phone. Concerted efforts aimed at empowering consumers to be financially literate and aware of DFS are thus necessary. Unless embraced by an informed population, the benefits derived from accessible and affordable DFS are valueless.

Figure 10: Lesotho digital payments, 2017

Source: Global Findex Survey, 2017

Role of the Different Actors in Provision of DFS

Banks. As the dominant providers of financial services, banks in Lesotho are fast embracing digitalization and are pushing aggressively for digital financial service delivery designed to give way to Internet and mobile-based frontline service provision. All commercial banks have a deliberate digitization strategy to deliver services using mobile and web platforms and have plans to remodel services delivery at branches—from traditional services to digital, self-service, and use branches as consulting centers. Generally, banks in Lesotho are perceived by the public, corporates and SMEs as providing product offerings and services at a high cost for the size of the country. There is general recognition that the provision of services must be broader than banks. In this context, banks are realizing that the entry of MNOs in the payment services space provides an opportunity to build symbiotic partnerships that can benefit both parties in providing services at reasonable costs.

The CBL and all commercial banks are participating in the SADC regional cross border payment system, the SADC Integrated Regional Electronic Settlement System (SIRESS). A low value credit scheme that will allow for bank-to-bank, bank-to-non-bank and non-bank-to-non-bank transfers is currently being implemented on the backbone of the SIRESS. Apart from widening the options for sending cross-border remittances to Lesotho and across the region, the scheme will create opportunities for digitalizing remittances as more players compete in the provision of services. Ultimately, this is expected to reduce costs.

MNOs. EcoNet and Vodacom play a critical role in the retail payments space. Their marketing strategy was based on aggressive promotion, e.g. based on reduced retail prices for airtime, to ramp up numbers fast to get a critical mass of mobile money users and then switch to encourage transactions. Large sums of money are now transacted across the platforms despite the general perception that the mobile money service was formulated for small amounts of money. In 2016, both MNOs collectively processed transactions worth about M4.21 billion (CBL, 2016). However, with the two MNOs only providing basic mobile money wallet services for domestic and cross-border transfers, there is scope for expanding services provided in this regard.

Fintechs. The growth of the fintech industry in Lesotho has remained subdued with Vodacom's M-Pesa and Econet's EcoCash currently being the only two disruptors in the provision of financial services. Innovative mobile payments apps like Zapper, Snapscan, and other QR code-enabled systems are yet to find their way into Lesotho's market. The low levels of innovation have kept the costs of DFS high, and uptake of services and competition low, leading to continued over-reliance on traditional banking delivery channels. Yet, there is potential for growth as evidenced by two fintechs, Cassava Smartech and Sapro, both currently seeking licenses from the Central Bank. The absence of explicit provisions in the current regulations in support of such developments can lead to delays, as regulators seek clarity and certainty. The lack of venture capital and lack of locally based funds for supporting innovative entrepreneurs in Lesotho restricts the growth of local fintechs, an area discussed in more detail under the entrepreneurship chapter of this report.

Regulatory and Policy Environment

The authorities in Lesotho recognize the importance of an enabling legal and regulatory environment, robust financial infrastructures and low-cost delivery channels to allow market entry and innovation in the digital financial services ecosystem. In this context, there have been concerted efforts to reform the NPS or payments system and review the legal and regulatory framework. Plans are underway to allow non-bank service providers to connect to the payments system. These plans, if achieved, will facilitate full interoperability, improve access, and ultimately boost financial inclusion, inter alia.

The CBL Act of 2000 constitutes the main piece of legislation governing the CBL's powers as the monetary authority of the country. The foundational instrument of regulatory legislation is the Financial Institutions Act of 2012, which establishes the CBL as the regulator of banks and NBFIs. The Payments Systems Act (2014) empowers the CBL to exercise oversight over payment systems, clearing houses and securities settlement systems. Other pieces of legislation under the purview of the CBL are the Data Protection Act of 2011 and the Credit Reporting Act of 2012, with the Credit Reporting Regulations of 2014 paving the way for the establishment of the credit bureau.

The Financial Institutions (Agent Banking) Regulations of 2016 provide a framework within which banks can engage agents to act on their behalf in the provision of financial services. However, in their current format the regulations appear to apply to banks only and thus exclude other financial institutions such as Micro-Finance Institutions (MFIs). While banking agent regulations allow for exclusivity, the agents engaged by MNOs are governed by a different set of rules that explicitly forbid exclusivity arrangements. Thus, the possibility of regulatory arbitrage exists in the engagement of agents by payment service providers.

The Financial Intelligence Unit (FIU) superintends issues related to money laundering and proceeds of crimes, drawing its authority from the Money Laundering and Proceeds of Crime Act of 2008. FIU requires the mandatory reporting of information from accountable institutions on issues related to money laundering, financing of terrorism, suspicious transactions and those above stipulated thresholds.

The Issuers of Electronic Payments Instruments Regulations of 2017, issued in accordance with the NPS Law, constitutes the main legal instrument covering innovative developments in financial services. However, in their current form, the regulations appear inadequate to sufficiently support such developments, particularly where fintechs (other than MNOs) are concerned. For instance, from a legal perspective, the provision of digital credit is currently not possible, since digital signatures are not

authorized, although there are plans by some institutions to offer this. The ongoing review of the legal and regulatory framework governing payments and digital financial services is expected to address this gap.

Infrastructure Retail and Credit

Retail payment infrastructure is well developed with an Automated Clearing House (ACH) comprising the Maseru Image Automated Clearing House (MIACH) and the Electronic Funds Transfer (EFT) system constituting the main retail payments infrastructure. However, only commercial banks have direct access to the ACH. The three banks headquartered in South Africa use card switching in South Africa while Lesotho Postbank uses its own local network. Currently there is no interoperability between the mobile money wallets provided by the two MNOs. With no central infrastructure that supports retail payments interoperability amongst commercial banks and across different types of financial service providers, interoperability will continue to be restricted.

CBL is using the services of Compuscan, a private Credit Reference Bureau (CRB), to which all credit providers regulated by the CBL are mandated to connect. The CBL is exploring ways of consolidating the data collected by the CRB to develop credit scoring by 2020, as well as to facilitate systems that will make it possible to generate credit reports via mobile phones. The use of alternate data is gaining traction and could help in access to credit for MSMEs, particularly in the informal sector.

Currently the collateral registry has not been operationalized. The e-Collateral Registry is fully functional, but not launched because the requisite legal updates are still pending in parliament, as discussed in Section 2.1. Once the Bill is passed into Law, it will pave the way for the implementation of the e-collateral registry.

Remittances

MNOs, MTOs, retailers and bureau de change have progressively partnered in the provision of services, significantly easing access to remittances in Lesotho. Econet Telecom Lesotho has partnered with WorldRemit and Flash South Africa in providing inbound remittances services using its Ecocash mobile wallet. Likewise, Vodacom has partnered with Mukuru in providing services through its mobile network and M-Pesa agents. When it comes to domestic transfers, although most are still transmitted through a financial institution account (for the 48 percent of adults who either received or sent money domestically over a period of a year), domestic transfers through mobile phones are rising, as 23 percent of adults used mobile accounts.

However, despite the entry of non-bank financial service providers in the remittances space, gaps in innovation and outreach remain, as evidenced by the fact that most of these remittances are not digitalized and are often cashed out at the respective providers' outlets. MNOs, MTOs and retail stores, such as Shoprite, provide a rich network of non-bank financial service providers who, with technological developments, can significantly improve the DFS landscape and provide affordable remittances services. Reducing remittance costs would be beneficial to the poor. Reducing barriers would encourage new entrants in the remittances market, and the competition would likely drive down the cost of sending money across borders⁸³.

Leveraging Government Payments

The Government of Lesotho has an elaborate social protection program to cushion the vulnerable and elderly from the effects of poverty, which could be further leveraged to boost DFS adoption. The OAP, a universal, non-contributory social pension administered by the Ministry of Finance, is the largest safety net program in the country. As discussed in Section 2.3, despite its wide coverage, benefiting all Basothos age 70 years and above (approximately over 83,000 persons), all benefits are currently disbursed in cash⁸⁴. With more than 4 percent of its population above 70 years old receiving a monthly pension equivalent to about US\$40 per month, digitizing this program would help to boost account ownership numbers. Furthermore,

⁸³ World Bank Poverty Assessment: Lesotho (2019) Forthcoming

⁸⁴ As discussed in Section 2.3., a new system leveraging digital payments should be piloted in the next months and rolled out in 2020.

the use of cash for the OAP adds to the expenses the government incurs in administering the program—given the number of beneficiaries involved, the geographic configuration of the country, the extra work induced by cash handling, and the physical transfer of cash in transit vehicles and the associated security details.

CONSTRAINTS TO DIGITAL FINANCIAL SERVICES DEVELOPMENT

The uptake and usage of DFS in Lesotho is hampered by various challenges, most of which relate to the legal and regulatory framework and to market development issues.

- **The legal and regulatory framework is inadequate to address the legal issues associated with DFS:**
 - The current framework does not provide enough incentive to facilitate the entry and growth of fintechs, able to bring innovation into the market.
 - The absence of an electronic payments law means that digital signatures as a method of verifying transactions cannot be used, reducing opportunities for the provision of DFS, such as digital credit.
 - As discussed above (see chapter on the policy and legal landscape), a lack of legal instruments to regulate cybersecurity causes severe risks to the sector.
 - Similarly, legislation on consumer protection is insufficient, while a robust consumer protection regime is key to building trust in DFS.
- **The lack of interoperability among banks on card-based transactions, between MNO mobile money wallets, and from mobile money wallets to bank accounts across all providers, creates inefficiencies, poses inconveniences to customers, and is a significant constraint to achieving wider penetration of DFS.** Inefficient interoperability arrangements limit the ability to move money through different providers. As discussed above, plans by CBL to implement a national switch and make a change in this direction are underway. The national switch will facilitate interoperability in retail payments by allowing seamless transactions across various payment streams, including mobile payment services.
- **Customer-oriented KYC and CDD requirements are considered constraining and onerous.** The daily transactions limits are deemed low and discourage customers who may wish to send higher amounts than allowed. Moreover, banks are required to do KYC on existing customers annually, a situation that is viewed as stringent. Lastly, on cross-border remittances, while South Africa relaxed documentation required to send money, some banks and MTOs have not incorporated the changes into their systems, and Basotho immigrants who do not have an ID are unable to send money.
- **While banks can do agent banking in accordance with the relevant regulations, the reach of these agents continues to be limited and constrained by exclusivity arrangements.** This constitutes a missed opportunity for the banking sector to reach more people, especially in rural areas.
- **Agent liquidity management issues prevent greater uptake of digital payments.** Customers get discouraged from using mobile money when they repeatedly experience situations where agents cannot provide cash-out facilities. Although the MNOs are working on addressing this situation, it is expected that some hard-to-reach areas will continue to experience challenges.
- **The current over-reliance on cash for government-to-person (G2P) transfers limits the usage of digital financial services.** The public sector has a role to play in the promotion of mobile payments, and G2P disbursements can be a strong driver to facilitate rapid adoption of DFS.
- **The cost of sending cross-border remittances from South Africa to Lesotho is high and acts as a barrier to the use of formal channels for sending money.** Because of the high costs, migrants are forced to use informal means, using trucks, buses or migrants themselves carrying the cash across the border. An opportunity is therefore lost for using formal channels for sending remittances and digitizing them to increase financial inclusion.

- **Low levels of digital skills, both in the private sector and the general population (see the chapter on digital skills), hinders the development of DFS. Low levels of financial literacy pose yet another barrier to the development of DFS.** Despite efforts by the government, as well as by banks and other organizations to promote financial literacy, these levels remain low, particularly in rural areas. Overall, about 75 percent of low-income earners do not have the necessary skills and knowledge needed to make informed financial decisions⁸⁵.

RECOMMENDATIONS

Enabling conditions exist for a DFS ecosystem to expand in Lesotho are but they could be greatly enhanced by a stronger regulatory framework, the expansion of digital infrastructure and of platforms available to consumers, and the increased engagement of key stakeholders, both private and public, in the use of DFS. Below are some key recommendations, which if implemented, will result in a DFS ecosystem in Lesotho that mirrors global developments.

R14. Stimulate the DFS market by improving market entry and interoperability. The ongoing review of the legal and regulatory framework is commendable and should be accelerated to facilitate entry of fintechs in the DFS ecosystem. An increase in the number of players and fintech startups in the market will enable faster development of the whole DFS ecosystem. **Additionally, implementation of the switch to promote interoperability in digital financial transactions should be accelerated.** Achieving full interoperability between MNO mobile wallets, and wallets and bank accounts, can greatly enhance the uptake and use of DFS in Lesotho. Agent interoperability should also be enhanced through measures that support the provision of multiple services, competition amongst providers and wider choice for customers.

R15. Increase the use of the credit registry and complete the establishment of a collateral registry. Public registries, such as a collateral registry, integrated with the national ID system, can help foster traceability and digital footprints of consumers. They are useful in creating information for specific individual consumers that can be used by DFS providers to make decisions varying from credit suitability to eligibility for receiving social grants. They can also reduce information asymmetry among financial service providers related to individual consumers and entities. Such benefits result in the acceleration of DFS uptake, reduce the cost of delivery, and broaden outreach.

R16. Allow simplified customer-oriented KYC and risk-based CDD requirements for low-value bank customers. Simplified KYC requirements for low-value bank customers, as is the case with mobile operators' KYC standards, will enable banks to reach the mass market, reduce the costs of regulatory compliance, and deepen financial inclusion. The CBL has developed an internal risk-based framework for the application of KYC requirements by banks on a case by case basis.

R17. Reduce overreliance on cash by the public sector by adopting digital payments. There is a real need to get government MDAs to use plastic and mobile money in collecting fees and revenues. A mass DFS uptake by government will result in more and more people using digital methods, e.g. to make tax payments or to receive social transfers. A cost benefit analysis⁸⁶, conducted by the United Nations Development Program (UNDP) in 2018 to identify and measure the benefits of transforming G2P social grant payments and LRA collections from cash to electronic means revealed that the government and other relevant stakeholders would benefit immensely through cost savings. While developing systems to leverage digital payments in all programs, the government should also devise a strategy to improve the uptake of e-payments by beneficiaries, for instance by developing confidence among old age pensioners in the use of digital tools.

R18. Make efforts to lower costs for remittances together with the private sector. There is need to engage MTOs and banks to lower costs for remittances, both for cross-border and domestic transfers, as the cost

⁸⁵ IFES, 2014

⁸⁶ This was conducted on the Child Grant Programme and the Lesotho Revenue Authority E-Tax Project

of remitting has been increasing in the recent past. Given Lesotho's reliance on remittances, this sector should be prioritized for the development of innovative DFS business models that could reduce costs.

R19. Strengthen the supervisory and oversight capacity of the CBL and foster cooperation amongst regulators. Technological developments always bring additional pressure for central banks to react with appropriate policies and regulatory measures in order to prudently manage risks arising from such developments. The CBL could benefit from capacity-building to help it respond to developments in digital financial services. There is also scope for strengthening the cooperative framework amongst regulators, including the CBL, the FIU and the LTA. This would benefit both the regulated entities and the regulators, prevent regulatory arbitrage, promote information sharing and remove any impediments that may hinder exchange of information.

2.5. DIGITAL SKILLS PILLAR

THE IMPORTANCE OF DIGITAL SKILLS

ICTs are transforming life and work experiences, and are associated with significant productivity gains, the development of new markets, and innovation in products and services. Central to these developments are digital skills, which are important enablers of transforming economies. Ensuring the availability of digitally literate citizens and a digitally competent workforce will enable economies to reap the benefits that a digital society brings. For Lesotho, a country that needs innovative ways to stimulate economic growth, empowering its citizens with digital skills could have a significant impact on the country's growth and development as part of a broader digital economy.

Lesotho subscribes to the aims of the African Union to lay the foundations for a vibrant digital economy by 2030 and recognizes that digital skills are a critical component of the digital economy. This is exemplified in Lesotho's *NSDP II*, which emphasizes the importance of digital skills development to facilitate economic development. Over the past 15 years, several, strategic, government documents have been developed indicating a commitment to developing the digital skills of the people of Lesotho. Some key policy documents include: the *ICT Policy for Lesotho*, developed in 2005, which laid the foundation for developing a society that is ICT literate and capable of producing local ICT products and services. The *Curriculum and Assessment Policy* of 2008 references ICT as a contributing subject to creativity and entrepreneurial skills, and advocates the development of a knowledge-based society and competition at the global level in areas including technological development.⁸⁷ In more recent years, the *NSDP I* was developed as a poverty reduction strategy that guides policy decision making and resource allocation. One of the strategic objectives articulated in the plan is to attain a well-developed human resource base to produce world-class skills and expand access to ICT.⁸⁸ The new *NSDP II* includes strengthening human capital as one of its key performance areas, with the aim of developing enhanced skills for employment. Digital skills are needed to achieve this outcome. The objectives related to the development of ICT infrastructure and use (see Figure 16 in the annexes) include demand-side measures, such as the promotion of ICT literacy. *The Medium-Term Education Sector Plan for 2016–2026* commits to supporting the development of bridging programs for school leavers to ensure that they attain the desired level of skills in mathematics, science, ICT, and the English language.⁸⁹ Currently, a *National ICT in Education Policy* is being drafted and is envisaged to provide specific clarity and strategic direction in terms of digital skills.

Underpinning the development of digital skills are basic foundational skills that include literacy and numeracy. Digital competences, apart from the most basic (such as using a mobile phone for voice calls or

⁸⁷ Ministry of Education and Training (MET, 2008)

⁸⁸ Government of Lesotho (2012)

⁸⁹ MET (2016b)

simple messages) cannot be developed without foundational literacy and numeracy skills. In 2017, Lesotho ranked 159th out of 189 countries on the Human Development Index, placing it in the low human development category. Lesotho scores 0.37 on the World Bank's 2018 HCI and is ranked 143 out of 157 countries. Children can expect to complete 8.7 years of pre-primary to secondary school by age 18. However, when years of schooling are adjusted for quality of learning, this is only equivalent to 5.5 years, resulting in a learning gap of 3.2 years (Figure 11). Lesotho's quality of basic literacy education negatively impacts foundational skills essential for post-secondary studies and the labor market. Workplace demands in the 21st century require foundational skill sets that enable employees to work collaboratively, think critically, communicate effectively, and function in diverse settings. There is a need to learn how to use modern technology quickly, solve complex problems, understand how to learn, and understand complicated systems. Furthermore, the ability to read, write, perform arithmetic and mathematical operations, listen, and speak are crucial.

However, the current education system in Lesotho does not adequately prepare its learners to access these skills. Although the general literacy rate is higher than the average for Sub-Saharan Africa, the performance of grade 6 learners in literacy and in numeracy is very poor; junior secondary learners show poor performance in mathematics and science, and high school leavers perform poorly in leaving examinations.⁹⁰

Figure 119: Learning gap (years) based on the World Bank's HCI for Lesotho⁹¹

Digital skills exist on a spectrum of various levels of complexity. In this report, a digital skills pyramid is applied as a framework to analyze the current state of digital skills development in Lesotho. It is premised on the principle that digital skills exist on a spectrum from basic to advanced levels of complexity. Basic digital skills refer to the foundational ability to operate information and communications equipment and make effective use of various software applications, such as word processing, spreadsheets, Internet searches, and so on. At the next level, digital specialist skills refer to the ability to design, develop, and maintain digital tools, carrying out tasks such as web design, programming, and managing ICT systems. At the advanced level are e-business skills, which refer to a more complex range of abilities to apply, create, and invent new business models, products, and services using digital technologies. Figure 12 illustrates the digital skills pyramid.

⁹⁰ MET (2016a)

⁹¹ Source: World Bank

Figure 10: Digital skills proficiencies⁹²

THE STATE OF DIGITAL SKILLS IN LESOTHO

Basic Digital Skills

Basic digital skills are developed mainly through the formal education system, and to a lesser extent through employer-led training, private training companies, and non-state actors. Basic digital skills are introduced into the formal curriculum at grade 4 level; however, challenges such as a lack of electricity⁹³, unavailability of ICT equipment, and the inadequacy of teachers' ICT skills hinder effective implementation. Secondary schooling offers some prospect of digital skills development (see Box 4), and attendance at higher education institutions (HEI) presents a greater likelihood of digital skill attainment, since these institutions routinely teach basic digital literacy. The secondary education enrolment rate of 53.8 percent⁹⁴ and HEI enrolment rate of 9.8 percent⁹⁵ suggest that a high percentage of the population might not have basic digital skills. Out of all mobile phone owners in 2016, 44.5 percent owned an Internet enabled device and 32.45 percent⁹⁶ of the whole population used smartphones to access the Internet, demonstrating some level of basic digital literacy.⁹⁷ These figures suggest that a significant proportion of the population does not have basic digital skills and that the skills gap can at worst be estimated to be at around 2/3 of the population.

⁹² Source: Entrepreneurship in the Digital Economy Report, 2017

⁹³ Lesotho ranks 157th out of 190 countries for the ease of getting electricity. Source: World Bank (2019a)

⁹⁴ Source: UNESCO <http://uis.unesco.org/en/country/lesotho#slideoutsearch>

⁹⁵ Gillwald, A., M. Deen-Swarrray, and Mothobi. O.(2017)

⁹⁶ Ibid.

⁹⁷ Ibid.

Some well-established and well-resourced private primary and secondary schools have computer laboratories that are used to teach basic digital literacy. However, these schools are few and afforded mainly by parents at the upper end of the income bracket. Most primary schools do not have electricity, and only 174 out of 335 secondary schools have access to power. Limited resources and implementation capacity, difficult terrain, and challenging climate are factors that have contributed to shortages of adequate classrooms.⁹⁸ Efforts, such as the initiative by the LCA to equip 40 schools with computers, have been helpful in addressing some of the challenges faced in bridging the gap in basic digital skills development. The World Bank-financed Education Quality for Equality project is also providing connectivity and supporting the provision of equipment, such as computers and iPads in some schools. For out-of-school youth, non-formal education programs are provided through various entities to teach literacy, numeracy, and life skills, as well as some junior and secondary-level courses. However, there are no clearly articulated strategies to teach digital skills to this population.

Private digital skills training providers and informal ICT skills providers offer opportunities for basic digital skills development. A few ICT training companies operate in Lesotho and they primarily offer courses that develop skills in using office tools such as Microsoft Office, electronic communications, accounting software, and similar software packages. Skills development hubs are an avenue through which digital skills are nurtured in the country. For example, The Hub in Morija is a creative technology laboratory that provides affordable Internet access, online resources, and digital skills workshops to the local community. The training provided includes basic digital literacy, film, photography, animation, video editing, and writing. Other avenues through which basic ICT skills are developed include community skills development hubs, such as Basali Tech and the Girl Coding Academy, and initiatives such as Africa Code Week, which teach digital literacy and coding skills to teachers and school-age children.

Box 4: Progressive Mathematics Initiative and Progressive Science Initiative (PMI-PSI)

The Ministry of Education and Training (MET) is piloting a new approach of teaching and learning mathematics and science through technology in 17 public junior secondary schools. The approach, called *Progressive Mathematics Initiative and Progressive Science Initiative* (PMI-PSI), uses open source materials aligned with the national curriculum. Interactive board and polling devices are utilized in the classroom to allow instant feedback from students and formative assessment by the teachers. The classroom setting was modified to allow group work and to enable social constructivism among students. Grade 8 to Grade 10 teachers and MET trainers were trained three times a year from 2017 onwards to cover the curriculum. This enhanced pedagogy has improved not only teachers' in-classroom practice but also their content knowledge in the subject they are teaching. The impact on student learning achievement will be known after the completion of secondary (high) school exit exams.

⁹⁸ Lesotho Review (2018).

Box 5: The Girls Coding Academy

The Girls Coding Academy is a start-up movement founded by seven women who formed part of the 2017 Africa Code Week trainer cohort. This experience inspired them to share their knowledge through educating, mentoring, and equipping young women and girls with technological skills, and through innovating. The Academy aims to reduce the gender gap by encouraging young women and girls to participate in science, technology, engineering, and mathematics (STEM) fields through offering a range of coding programs in different forms. Examples include summer/winter coding camps, computer skills development for women, and school coding clubs.

Digital Specialist and Advanced Skills

Specialist and advanced digital skills are developed mainly through higher education degree programs, such as computer science, information systems, business information technology, and mobile computing. Three universities in the country offer degree programs in: Computer Science, Engineering in Computer Systems and Networks, Information Systems, Business Information Technology, Mobile Computing, and others. More recently, the National University of Lesotho (NUL) began providing courses in Artificial Intelligence and Data Science and has introduced a postgraduate program in

Cybersecurity and Digital Forensics. To enhance its digital skills' offering, it also provides students preparatory programs for professional certifications, such as CISCO networking. A list of ICT Courses offered by Lesotho's tertiary institutions is attached in Annex 7. Lesotho does not currently have a National Research and Education Network (NREN) (Box 6), which would allow research and education institutions better access to fast Internet bandwidth, educational resources and support international cooperation. Establishing one could support improving the quality of higher education and help improve the institutions' attractiveness.

Box 6: The absence of a dedicated National Research and Education Network (NREN)

Lesotho does not currently have a dedicated NREN in place, although it has expressed the intention to establish one as part of the NSDP II. This risks uneven, expensive and unreliable access to Internet facilities by research and education institutions. A dedicated NREN could also enhance international cooperation in education and research and provide the means to enhance pedagogical approaches by facilitating access to the education and research resources of all its members, as well as to global resources. A good example of a well-functioning REN is the SANREN, South Africa's National Research and Education Network, comprised of a national backbone, several metropolitan rings, and dedicated long-haul circuits to reach institutions and campuses. Currently it connects 1,031 sites and is operated by TENET (the Tertiary Education and Research Network of South Africa) on a non-profit basis.

There is a chronically low enrollment rate in ICT-related fields and a high attrition rate over the course of three- or four-year degree programs, resulting in low graduation rates and low numbers of professionals with digital specialist skills. For example, NUL data show that few university students major in ICT-related fields; in 2018, the university had only 18 graduates in computer science from a cohort that began with 40 students. Figure 13 shows the enrollment trends by field of study. **Although more females than males are enrolled in university education in Lesotho,** very few females enroll in ICT-related programs at HEIs—and of those, even fewer choose computer science as their specialization.⁹⁹

⁹⁹ Interview by authors: National University of Lesotho

Figure 11: Enrolment trends per field of study, 2012/2013 (number of students)

Source: Bureau of Statistics 2015

Employers also play a role in the development of digital specialist skills. While employers have positive perceptions regarding the quality of specialist and advanced digital skills development in the country, graduate development programs are often needed to enhance the performance of new employees. These programs are provided through in-house training interventions or are contracted to external IT training companies. The availability of specialist and advanced digital skills is negatively impacted by a history of brain drain from Lesotho to South Africa and other countries¹⁰⁰. South African employers struggle to find ICT professionals and many of Lesotho's ICT graduates and skilled workers migrate mainly to South Africa or elsewhere in search of better employment opportunities, more competitive wages, and a more sophisticated digital sector.¹⁰¹ On the other hand, Basotho digital professionals working outside the country create important networks that can be leveraged for tapping into regional knowledge and markets.

Skills migration presents an opportunity for Lesotho to contribute to the growing demand for digital skills in the region, but unless matched by inflow and an increased ability to recruit talent from abroad, this migration will make it more difficult to meet the need for skilled professionals in Lesotho. According to 2016 census data, there are just over 179,000 Basotho household members residing outside the country. In addition to low-skilled emigrants, Lesotho experiences structural emigration of highly skilled workers towards South Africa and to OECD countries. While reasonable by international comparison for a landlocked country, this has impact on highly skilled sectors of the economy. The 2017 IOM Labour Migration Assessment¹⁰² recognized the problem and recommended a number of actions to address the outward migration of highly-skilled individuals, including streamlining work and immigration permit processes, encouraging Basotho nationals to come back to Lesotho for managerial or other short-term positions, and tying the supply of graduates in highly skilled sectors more closely together with demand side information.

E-Business Skills

Entrepreneurial activity in ICT-related fields tends to be focused on software development, IT systems installation and maintenance, and training. E-business activities, in the sense of creating new business opportunities or devising new ways of doing existing business are limited. As mentioned in a World Bank report focusing on apparel, horticulture, and ICT,¹⁰³ the Business Registry, which is the main source of business demographic information,¹⁰⁴ indicates that in 2018 there were only 10 firms (collectively employing

¹⁰⁰ Even though most migration between Lesotho and South Africa concerns unskilled labor, the smaller numbers of skilled workers migrating constitute an important subset from the point of view of the digital economy (IOM 2017).

¹⁰¹ UNDP (2018).

¹⁰² IOM (2017)

¹⁰³ World Bank Group (2018). The actual number of firms operating in the ICT sector can be higher.

¹⁰⁴ Bureau of Statistics (2018)

84 workers) that provided computer programming, IT consultancy, and related services. The Vodacom Innovation Park, based in Maseru, offers computer equipment, business training, and mentorship. It also links local financial investors to selected entrepreneurs aged 18–35, including, but not limited to, digital entrepreneurs.

Digital Skills Demand

Employer demand for basic digital skills is high. It has become commonplace for many employers to require that potential employees have basic digital skills. Small and medium businesses, as well as large corporations, collectively indicate that there is a much higher demand for skilled ICT professionals than available supply. In the education sector, the need for teachers with specialist knowledge sufficient to teach core ICT skills, integrate ICT in their teaching practice, and provide basic technical support is reportedly high. There is concern that, while Lesotho has focused on increasing school enrollment, the quality of education and its relevance to the labor market has been neglected, and the country lags other SACU countries in terms of the quantity and quality of ICT skills, level of training, and the education and skills needed for tomorrow's workforce.¹⁰⁵

Lesotho's economy is dominated by the public sector, which remains the formal economy's largest employer, on which even the private sector contractors are dependent. The current and envisaged rollout of e-Government services has substantial demand for specialist and advanced digital skills in terms of technical management and support. Stakeholders cited numerous technical skills needs for improving and expanding digital platforms in Lesotho, ranging from skills to maintain ICT infrastructure to skills to code and develop the platforms themselves. These include challenges related to:

- digital infrastructure, including administering data center, configuring network security, and installing digital infrastructure in hard-to-reach areas;
- system design and implementation, including designing technical specifications and quality controls, and accessing hard-to-reach areas for digitization of analog documents;
- procurement and contract management, such as negotiating with software and hardware vendors, determining appropriate budgetary allocations, defining realistic timelines for procurement, and moving procurements forward when authorizing agents lack familiarity with technical issues; and
- performance management, such as coordinating between different ministries, increasing the reliability of reporting, establishing baselines, and ensuring the attendance of high-level officials in necessary trainings.

The LCCI, which represents private sector entities ranging from small and medium enterprises to large corporations, also indicates that there is a much higher demand for highly skilled ICT professionals than is available. Large private sector companies, such as Vodacom Lesotho, Econet Telecom Lesotho, and Standard Bank are among the largest employers of professionals with advanced digital skills. Additionally, new projects, such as the second phase of the Lesotho Highlands Water Project, the second compact from the Millennium Challenge Corporation, and increased diamond mining collectively require a workforce with specialist and advanced digital skills. Although the quality of IT specialists is perceived as high, the number of graduates entering the workforce annually is inadequate for the number of positions available. A compounding phenomenon is the high turnover rate of staff with advanced digital skills. Although IT specialists are quickly absorbed into the labor market, they tend to stay for short periods in their positions—which might reflect the growing competitiveness of such skills within and beyond the country's borders.

CONSTRAINTS TO DIGITAL SKILLS DEVELOPMENT

The insufficient availability of digital skills is holding back the potential for a vibrant digital economy in Lesotho. There is a much higher demand for digital skills, at all skill levels, than the current supply can satisfy. Several challenges constrain effective digital skills development in Lesotho:

¹⁰⁵ AfDB (2018)

- **Specific policy guidance for conceptualization and development of different levels of digital skills is lacking.** While there are several national policies directly or indirectly recognizing the need for digital skills development, there is no clear national conceptualization of what digital skills entail, or how they should be developed. Currently, decisions on which programs higher education institutions offer are based largely on individual decisions or anecdotal observations, rather than a systematic nation-wide strategy.
- **Digital skills development in Lesotho is hampered by the low level of basic literacy and numeracy skills.** The quality of primary and secondary science and mathematics education, and limited enrollments and graduates in STEM or ICT-related higher education programs are concerns. This problem is underpinned by weak foundational skills in literacy and numeracy.
- **Basic ICT infrastructure and technical support are insufficient.** Although ICT is included in the school curriculum beginning at grade 4, many schools have no electricity, computers, and other basic requirements for digital skills development. Furthermore, where such structures exist, the technical support for teachers and administrators, as well as maintenance of ICT equipment, is often inadequate.
- **Funding for digital skills development is inadequate.** Education is allocated an average of 23.3 percent of Lesotho's annual government budget, which translates to 9.2 percent of GDP.¹⁰⁶ Even though this is significantly higher than other countries in the region, the amount allocated does not adequately cover digital skills' development needs relating to infrastructure, human resource development in ICT skills, or digital content access and development. Related to this is the digital skills development of teachers. Teachers are expected to facilitate the learning of digital skills; however, most in-service teachers do not have ICT skills, and pre-service training only provides digital skills development at an elementary level.
- **Deliberate linkages between digital skills development activities and the needs of the labor market are not apparent.** Reliable data regarding the number of existing jobs, envisioned jobs, and the digital skills required to perform in those jobs are not available. Data about the digital skills requirements by the labor market, and the extent to which the demand is supplied, would be helpful for manpower planning purposes.
- **Availability of specialist and advanced digital skills is negatively impacted by a long history of constant brain drain from Lesotho to South Africa and other countries.** South African employers struggle to find ICT professionals, and many of Lesotho's ICT graduates and skilled workers migrate mainly to South Africa or elsewhere in search of better employment opportunities, more competitive wages, and a more sophisticated digital sector.
- **Cross-border talent recruitment costs and procedures are not optimized.** The NSDP I states the government's objective of developing strategies to attract and build core skills.¹⁰⁷ However, several structural problems appear to block or frustrate the entry of skilled personnel from other countries into the Lesotho labor market. For instance, obtaining work permits in cases where ICT skills are in short supply is a lengthy and challenging process¹⁰⁸.

RECOMMENDATIONS

Lesotho stands to benefit from economic gains by moving toward developing a digital economy and putting in place strategies to meet its Digital Moonshot target relating to digital skills development by 2030. Strengthening the education system, in particular in rural areas, and increasing the number of ICT graduates that Lesotho produces yearly, will support technology adoption by citizens and businesses, promote a more dynamic digital public sector, and help reduce the digital divide. The recommendations below seek to enhance digital skills in Lesotho, focusing on activities that would likely bring concrete and

¹⁰⁶ <https://www.globalpartnership.org/country/lesotho>

¹⁰⁷ Ministry of Planning and Development (2012)

¹⁰⁸ The work permit system is considered obsolete in terms of administrative efficiency and policy alignment and is needed of modernization. IOM (2017).

visible results. A combined list of digital skills gaps and identified means of addressing them can be found in Annex 8.

R20. Create a strategic focus for digital skills development, operationalized by the development of a digital skills framework and strategy. This effort should be underpinned by improving digital skills data collection and research, providing reliable and timely data that provides an accurate picture of skills supply and demand. Several policy documents reference digital skills development, but Lesotho would greatly benefit from the development of a consolidated strategic policy framework, including measures to monitor implementation progress. This work should be preceded by development of a digital skills framework¹⁰⁹ defining and describing each of the digital skills levels which correspond to the current and anticipated demand for these skills. A synchronized response that identifies labor market needs, analyses the national digital skills gap, and coordinates strategies for skills development from basic to advanced skills would optimize yields of efforts and resources. To plan effectively, concrete data is required pertaining to the national digital skills gap in terms of skills demand and supply. Future activities could include a systematic national digital skills gap analysis and a comprehensive digital skills development strategy. Lastly, it would be beneficial to convene stakeholders in digital skills conversations to create buy-in for the strategy.

R21. Improve physical infrastructure and human resource development in the education sector, including establishing an NREN. A functional e-learning ecosystem has elements related to physical infrastructure, learning content, and facilitators of learning processes. In Lesotho many schools lack electricity, connectivity, ICT equipment, educational content, and teacher training. In order to concentrate and optimize the few available resources, government may consider a targeted response that focuses ICT only on certain grades within the school system (such as grade 7, grade 10, and grade 12 classrooms)¹¹⁰. ICT teacher training and support also needs to be scaled up. A Schools ICT Support Center that provides technical support to teachers and school administrators could be established, possibly staffed by IT professionals within universities, government ministries, and students undertaking ICT degree programs. **Establishing an NREN could have a significant positive impact on the quality of higher education and research in Lesotho.** An NREN could provide sustainable and affordable access to broadband connectivity to Basotho universities, research and other tertiary education institutions, but also potentially to Technical and Vocational Education and Training (TVET) institutes, and Teacher Training Colleges. The GoL could support the establishment, and later recognition of the NREN, through ICT or education laws and through waivers of operator license fees, for example.

R22. Standardize curriculum, assessment, and pedagogy to 21st century workplace demands. Adopting 21st century learning standards for secondary school completion and establishing pre-service and in-service teacher development that strengthens teachers' pedagogical skills would be helpful in enabling Lesotho to be competitive in the global economy. Twenty-first century skills, such as skill sets relating to thinking skills (e.g., thinking creatively, making decisions, solving problems) and personal qualities (e.g., responsibility, sociability, self-management) are foundational to employability and entrepreneurship. Additionally, curricula could be expanded to include topics such as financial literacy, including making payments electronically, digital entrepreneurship and an introduction to digital media in civics education. Equipping teachers with strategies to develop these skills is a vital component of preparing learners for the modern labor market.

R23. Strengthen foundational literacy, mathematics, and science achievement. Increasing primary, secondary, and post-school education participation, retention, and attainment rates are crucial to build the basic foundational skills underpinning digital skills. In particular, pursuing ICT-related degree programs requires a solid foundational knowledge of mathematics and science. Significant efforts are in place in an

¹⁰⁹ Such a framework should be based on internationally recognized frameworks such as the EU's DigComp and UNESCO-UIS's Digital Literacy Global Framework

¹¹⁰ Special consideration is required to include learners in mountainous rural areas, who are most likely to be excluded from acquiring digital skills because of a lack of infrastructure and resources.

attempt to address some challenges contributing to the poor quality of education, such as the Education Quality for Equality Project. More investment is, however, needed. The government needs to consider taking deliberate steps to improve learner attainment by equipping subject teachers with adequate content knowledge.

R24. Expand partnerships between industry and education, including opportunities to develop ICT careers. The private sector and all levels of education should partner to create a more demand-driven curriculum, enhance digital skills and foster Lesotho's competitiveness in response to rapid technological change. Industry engagement could apply to all levels of education, helping to shape digital skills curricula in order that school graduates become empowered consumers and creators of digital products and services. Lesotho should benchmark promising models in Africa for bridging industry and education for advanced digital skills development, including Andela (andela.com), Refactory (refactory.id) and the Meltwater Entrepreneurial School of Technology (meltwater.org and Box 7 below). Pathways between school and post-school curricula need to be created or strengthened for learners to pursue ICT careers. Options might include mandatory service on the completion of bursary-funded programs, or work-based learning arrangements between higher education institutions and industry, with the possibility of appointing students after graduation. Another strategy to develop ICT capacity is to streamline work permit processing for expatriates, while also developing local expertise.

2.6. DIGITAL ENTREPRENEURSHIP PILLAR

THE IMPORTANCE OF DIGITAL ENTREPRENEURSHIP

Digital entrepreneurship is a key pillar of a digital economy and is linked to continued economic growth, wealth creation and higher standards of living¹¹¹. Digital entrepreneurship, seen to encompass the launch of new ventures in the digital sector^{112, 113}, also including digital private sector platforms, brings the digital economy to life. Digital ventures offer new products and services, leverage new technology and business models, and open new markets. They can contribute to net employment growth and help enhance the competitiveness and productivity of the economy.

The NSDP II envisions targeted efforts to promote digital entrepreneurship in Lesotho. It is based on the premise that technology and innovation hold the potential to generate inclusive growth and help the country transition to an information-oriented society. Furthermore, it hypothesizes that growth of MSMEs into viable business ventures will largely depend on a sound innovation ecosystem and strong support system for entrepreneurs¹¹⁴.

Vibrant digital entrepreneurship ecosystems are needed to help digital entrepreneurs flourish. They encompass support organizations (such as incubators, accelerators, innovation hubs and co-working spaces) and early stage financing (such as seed, angel, impact investment, venture capital, and grants). Furthermore, vibrant ecosystems require specific skills (both technical and business ones), access to markets, and an overall conducive business environment that motivates the creation and use of novel digital technologies. This diagnostic thus looks into six factors that constitute a digital entrepreneurship ecosystem¹¹⁵ and that

¹¹¹ World Intellectual Property Organization (WIPO), 2018.

¹¹² The term 'Digital Entrepreneurship' most commonly refers to the process of creating a new— or novel —Internet enabled/delivered business, product or service. The definition used here includes startups that bring new digital product or service to market. Welsum, v. D., World Bank Group, "Enabling Digital Entrepreneurs" 2016.

¹¹³ These are typically defined as young (under 5 years) firms that are pursuing growth.

¹¹⁴ Government of Lesotho (2019)

¹¹⁵ The chapter's methodology and analytical process is based on the Babson Entrepreneurship Ecosystem model. This model captures the most widely held understanding of entrepreneurial ecosystems, including the factors that constitute them and how they work.

influence the creation and success of digital ventures, namely: policy, finance, support organizations, culture and human capital, and markets.

Figure 12: Six pillars of Babson's ecosystem framework, applied to digital entrepreneurship

THE STATE OF DIGITAL ENTREPRENEURSHIP IN LESOTHO

Lesotho's digital entrepreneurship ecosystem is considered nascent, especially in comparison to the known markets of South Africa, Kenya, and Nigeria, and to similarly sized markets of The Gambia, Eswatini, and Mozambique. Lesotho is further disadvantaged by its small market size and high Internet cost, and this is further compounded by brain drain to South Africa, viewed as a more opportunistic market. According to the 2018 Global Entrepreneurship Index (GEI)¹¹⁶, Botswana and South Africa are ranked the highest within Sub-Saharan Africa, with Botswana's overall GEI ranking as 52 and South Africa's overall GEI ranking as 57, out of 137 countries benchmarked. While Lesotho is not included in the rankings, its market size is comparable to The Gambia ranked at 117, Mozambique ranked at 124, and Eswatini, which is more highly ranked at 86¹¹⁷.

There are a limited number of IT firms operating in Lesotho and they face constrained firm growth due to a limited customer base. Additionally, many of these firms do not consider themselves digital startups since they largely provide networking and hardware services to private clients and the Lesotho government. More specifically, they view themselves as provisioning IT services versus developing innovative solutions. There are a limited number of nascent and emerging digital startups, such as Technify¹¹⁸ and Enigma IT¹¹⁹.

A clear distinction between growth entrepreneurship programs and youth employment/TVET and other active labor market policies (ALMP) is required. There are a plethora of programs loosely described as supporting youth entrepreneurship and youth employment with overlapping objectives and without a clear distinction between: (a) livelihood support for disadvantaged groups including youths; (b) support for unskilled or semi-skilled youth employment; and, (c) technical and vocational education (TVET) programs. This has led to a fragmentation of mandates, roles and responsibilities with overlapping and duplicating

¹¹⁶ <https://thegedi.org/>

¹¹⁷ According to the Index, the Eswatini, formerly Swaziland, ecosystem's area of strength is risk capital, which refers to availability of capital from individual and institutional investors.

¹¹⁸ For more information, visit <http://technifyls.com/>.

¹¹⁹ For more information, visit <http://www.enigma.co.ls/>.

ALMP activities across at least nine government ministries/agencies. The quality of these programs is unclear, as is their relevance, as there does not appear to be any systematic tracking and reporting of outputs and results.

Policy Framework and Business Environment for Digital Entrepreneurs

Overall, the Government of Lesotho is committed to improving the regulatory and business environment. Supported by the WBG’s Private Sector Development Competitiveness project and the AfDB’s Economic Diversification Support Program, Lesotho has made gains in the WBG’s *Ease of Doing Business* rankings. Lesotho currently ranks 120 out of 190 on the overall *Ease of Doing Business* rankings and 84 for starting a business¹²⁰¹²¹. The figure below compares Lesotho’s Ease of Starting a Business ranking to Southern African peer countries. Improvements in Lesotho’s regulatory environment are well-documented in the WBG’s “Unlocking the Potential of Lesotho’s Private Sector: A Focus on Apparel, Horticulture, and ICT” report¹²².

Figure 13: Lesotho’s 2020 Ease of Starting a Business Score

Note: The ranking of economies on the ease of starting a business is determined by sorting their scores for starting a business. These scores are the simple average of the scores for each of the component indicators.

Several positive developments were recorded in recent years, including the opening of the One-Stop Business Facilitation Center and the establishment of the Credit Bureau. Furthermore, the process of obtaining construction permits was streamlined with the introduction of electronic systems in August 2017¹²³. The PIU¹²⁴ is committed to Ease of Doing Business reforms on starting a business, resolving insolvency, getting credit, and trading across borders.

In Lesotho, the realities of running a digital company or IT firm are no different than the reality of running a (M)SME: firm size is constrained due to their focus on the (small) local market and lack of access to financing for scale. Firm growth of Basotho digital startups is constrained by the population’s lack of trust in online systems, low level of Internet access by the population, minimal technology adoption by firms, and weak IT skills across the overall population. During stakeholder consultations, it was implicitly understood that opening and running a business was not the most significant hurdle.

Despite the National Strategic Develop Plan’s (NDSP) stated commitment to improving the digital entrepreneurship environment¹²⁵ more specifically, there is a lack of a clear government counterpart for these initiatives. There is a lack of clarity on which ministry or governing body will champion the initiatives

¹²⁰ <http://www.doingbusiness.org/content/dam/doingBusiness/country/l/lesotho/LSO.pdf>

¹²¹ For additional comparison, South Africa, viewed as a regional and continental leader for digital entrepreneurship, ranks 134th for starting a business.

¹²² The full report can be found here: <http://documents.worldbank.org/curated/en/832751537465818570/128075-WP-REVISED-P164862-PUBLIC.pdf>.

¹²³ World Bank (2018a)

¹²⁴ There is a long-running PIU established to manage two projects: the WBG Private Sector Development Competitiveness project and the African Development Bank’s Economic Diversification Support program.

¹²⁵ See figure 5, linked to outcomes 1.7 and 1.8 of the NDSP II.

relating to digital entrepreneurship under NSDP II. There is also a lack of clarity on mandates which ministry or governing body regulates e-commerce and online transactions.

Digital entrepreneurs interviewed perceived governance and regulatory frameworks as weak. The two examples with high importance include the Electronic Transactions and Electronic Commerce Bill and the Computer Crime and Cybercrime Bill, which have not yet been adopted, although drafting has been ongoing for several years, and legislation on intellectual property, which is seen as outdated and difficult to enforce.

Lack of a sound and robust legal and regulatory environment is constraining the emergence and growth of e-commerce. Lesotho's current legal and regulatory frameworks lack the necessary laws and regulations to ensure the correct functioning of e-commerce related services. Bills are being prepared to cover Consumer Protection and Competition, but political instability has delayed consideration of the bills. This has also resulted in the population's lack of trust in online transactions and the fear of being scammed through e-commerce channels. Linked to the national ID system, the use of electronic and digital signatures can mitigate this and ensure online and high assurance transactions.

Concerted action from key public and private sector actors is required to address critical gaps in the entrepreneurship ecosystem in five intersecting areas: (i) strengthening the policy and regulatory environment and institutional capacity and coordination; (ii) expanding access to early stage finance; (iii) building an entrepreneurial culture, developing skills, and a talent pipeline; (iv) helping entrepreneurs access new market opportunities; and, (v) enhancing the capacity and quality of business support services.

Further to small market size, limited broadband penetration in Lesotho is constraining opportunities for Basotho digital startups. Wide availability of affordable and quality Internet, the backbone of enabling the digital economy, will be instrumental to bringing more people and businesses online and thus creating a more thriving ecosystem for digital entrepreneurs. Increasing Internet penetration is also associated with higher private sector productivity. Research indicates that firms that adopt digital technologies are 26 percent more profitable than their competitors who do not. There is evidence that improving Internet penetration in developing countries will promote service industries and increase exports¹²⁶.

Support Organizations

There are 12 main active entrepreneurship support programs currently in Lesotho that could be considered as programs providing support to growth entrepreneurs, that is, skilled entrepreneurs motivated by pull factors to turn their innovative ideas into successful ventures (as opposed to necessity or livelihood entrepreneurs driven by push factors). These programs are all relatively recent, small in terms of investment size and beneficiaries, primarily concentrated in Maseru, and (in their current form) of limited scope, impact and scalability, as well as not fully leveraging the considerable resources that are available in the regional entrepreneurship ecosystem, especially in neighboring South Africa. None of the programs has a robust result monitoring system to track and report outcomes and impact, and most programs provide rudimentary training and very limited follow on technical or financial support.

Existing institutions and public sector support programs that provide support to MSMEs include: The Ministry of Gender and Youth, Sports and Recreation's Social Compact and Youth Entrepreneurship Program, which offers seed capital of 40,000 Maloti (approximately US\$2,500)¹²⁷ to micro-businesses. Basotho Enterprise Development Corporation (BEDCO), a parastatal agency within the Ministry of Small Business, Co-operatives and Marketing (MSBCM), provides business support services to MSMEs, primarily in the garment, carpentry, and light manufacturing sectors. In partnership with the Lesotho Revenue Authority and Standard Lesotho Bank, BEDCO runs the BACHA Entrepreneurial project designed for youths, graduates, and individuals that focus on providing business management skills and mentorship. The government has launched the Pemandu Economic Labs to encourage FDI and job creation in the agriculture,

¹²⁶ Clarke, George R. G. 2008. "Has the Internet increased exports for firms from low- and middle-income countries?". Information Economics and Policy, Elsevier, Vol. 20, No. 1, pp16-37. <https://ideas.repec.org/a/eee/iepoli/v20y2008i1p16-37.html>.

¹²⁷ The Ministry of Gender and Youth, Sports and Recreation provisions assets on behalf of the micro businesses, up to 40,000 Maloti.

manufacturing, and technology and innovation sectors. The National University of Lesotho's Innovation Hub has been selected as a priority project under the lab, but implementation is still in its early stages.

Additionally, BEDCO is involved in at least five of the programs in various roles based on its mandate to support growth entrepreneurship. However, capacity and resource challenges hinder its ability to provide the required strategic direction, focused support and policy coordination to strengthen the ecosystem. The designation of a lead government agency to champion the growth entrepreneurship agenda will facilitate improved public sector coordination and collaboration. Support from development partners could also be better harmonized. There are opportunities to strengthen collaboration amongst the various development partner initiatives and benefit from the collective experience of the various programs.

Due to small market size, public sector support programs to MSMEs, such as the Social Compact and BEDCO's BACHA,¹²⁸ are sector agnostic, with few MSMEs categorized as digital or digitally enabled enterprises. Use of technology amongst BEDCO supported MSMEs is notably limited. Existing programs primarily provide business management training (such as accounting and HR). Digital entrepreneurs and startups, on the other hand, require technical training, access to equipment (such as laptops, mobile phones), in addition to business management support. Additionally, none of these programs focus on linking entrepreneurs to existing funding sources, such as grant-funding mechanisms or angel investors, who typically fund idea, prototype, and seed-stage companies.

Out of the existing entrepreneurship support programs, there are a limited number of institutions that provide targeted business support services to digital entrepreneurs. Notably, these include Vodacom's Innovation Park, located in Maseru, and the Innovation Hub at the National University of Lesotho (NUL), located in Roma. Both institutions were established within the last few years and the curriculum is still evolving. Moreover, NUL's Innovation Hub primarily supports hardware prototyping in more traditional sectors such as concrete production, agriculture, food production, and other light manufacturing services. Limkokwing University, a private undergraduate institution, runs the Limkokwing Entrepreneurship Acceleration Platform (LEAP)¹²⁹ that provides a year-long entrepreneurship training to final year students; however, very few project teams are focused on ICT.

The quality of existing program and services is seen as inadequate for supporting the growth of idea-stage and early-stage entrepreneurs. In the case of Lesotho, business support services to digital entrepreneurs are considered at incubation stage, which refers to training activities that support idea and prototype stage entrepreneurs or startups. Typically, startups receive incubation support for a period of two to three years. During this period, they are matched with mentors and receive support on securing pre-seed or seed funding. In Vodacom's Innovation Park program, which supports six startups per cohort, beneficiaries receive up to a year's worth of services but can continue to access the Innovation Park workspace, including private conference room, computer equipment, and Internet. Since its establishment in 2015, Vodacom has supported 24 Basotho startups, and feedback from its program alumni is mixed. Entrepreneurs from the first intake stated that the program was unstructured and provided inadequate support. An entrepreneur from the second intake noted Vodacom had incorporated this feedback to improve the quality of its program for the second intake. Currently, there are no active acceleration programs¹³⁰ in Lesotho.

Business incubation programs for ICT companies were recently introduced into the ecosystem. As a result, more established IT firms, firms that have been operating for at least five years, did not cite an affiliation with a business support program or familiarity with startup topics such as building a financial model, access

¹²⁸ BACHA is the only public MSME support program. The GoL has implemented youth employment programs that overlaps with entrepreneurship support programs.

¹²⁹ There are two enterprise support programs that use the same acronym, LEAP. In the case of Limkokwing University's LEAP program, this is separate from BEDCO's BACHA program. It introduces entrepreneurship as a possible career pathway where as BEDCO's program targets existing MSMEs.

¹³⁰ In contrast to incubation programs, acceleration programs are shorter in length, typically six months, designed to support the scale-up of growth-oriented startups. This is accomplished through targeted business advisory support and rapidly matching startups to mentors and sources of early-stage capital.

to new markets, and hiring for growth. The newness of this concept contributes to a lack of awareness on viable pan-African networks that provide grant or seed funding.

There are very limited opportunities currently for networking, information sharing and interactions amongst entrepreneurs. The Entrepreneurs Network (TEN) is very promising and beginning to establish linkages to the southern African ecosystem and has the potential to develop into a full-fledged, ecosystem networking hub. Examples of collaboration amongst the various programs are few; most programs appear fragmented, and there are missed opportunities for establishing linkages as well as for sharing experiences and resources. The limited opportunities for networking amongst the various service providers and the absence of a coordinating entity hinder collaboration.

Critical ecosystem building initiatives are underway. GrindNation, a Maseru based co-working space, aims to launch activities to grow the ecosystem, including the establishment of a fund that will provide targeted business advisory support to its portfolio. It currently provides limited incubation support to ICT teams from Limkokwing's LEAP program. The Hookup Dinner¹³¹, a network anchored in South Africa, offers enterprise development support to Basotho MSMEs and digital startups. Additionally, the Hub Morija, located 40 kilometers outside of Maseru, offers digital skills training to youth, especially girls. While the Hub is a member of the AfriLabs' innovation network¹³², it is categorized as a digital skills provider, with an emphasis on photography, animation, and creative services, and a secondary focus on entrepreneurship.

The Meltwater Entrepreneurial School of Technology (MEST), an Accra-based institution, is actively recruiting young Basotho for its entrepreneurial training program. MEST, which initially targeted Ghanaian youths, is now open to participants from across Africa. For the 2019–2020 intake, six out of 100 accepted applicants are Basotho, and the program plans to recruit more for future cohorts¹³³. See Box 7 below for more information about MEST's program and approaches.

Box 7: Meltwater Entrepreneurial School of Technology

MEST was launched by The Meltwater Foundation, the not-for-profit arm of Meltwater, in 2008. The MEST Training Program is a 12-month, full time, fully sponsored program in which the cohort, known as Entrepreneurs-in-Training (EITs), complete a graduate-level course in software development, business and communications, with a focus on practical implementation. It is taught by a staff of global experts and practitioners from Europe and the US.

The MEST program provides rigorous entrepreneurial training and extensive hands-on project work designed to ensure EITs master industry-proven methodologies for developing startups. This coursework is supplemented by guest lecturers, bringing in the experiences and insights of internationally recognized executives and successful entrepreneurs.

The course culminates in an investor pitch and the chance to receive seed funding and enter the MEST incubator, with a goal of scaling up across African markets. In addition to the Accra headquarters, MEST has opened incubators in Lagos, Nairobi, and more recently, Cape Town. To date, MEST has invested in over 50 startups across industries from Software as a Service (SaaS) and consumer Internet, to e-commerce, digital media, agri-tech, fintech, and healthcare IT.

The MEST methodology is widely viewed as providing rigorous digital skills training and digital entrepreneurship support.

Source: MEST Website

¹³¹ For more information, visit <http://maseru.thehookupdinner.com/services/>.

¹³² AfriLabs is a pan-African network of over 150 innovation centers, which consist primarily incubators and accelerators, across 45 African countries. AfriLabs members receive access to train-the-trainer services, content is adapted from the WBG's infoDev program's Business Incubation Management training, designed for hub managers.

¹³³ According to Ashwin Ravichandran, Managing Director at MEST.

Financial Capital

Access to finance in Lesotho primarily refers to receiving loans from commercial banks, which is better suited to MSMEs and ill-adapted for digital startups. Aspiring Basotho digital entrepreneurs raised the concern that commercial banks do not lend to digital startups. This limited ability to raise additional funds is constraining the growth of small firms. In more developed or emerging ecosystems, idea- and early-stage entrepreneurs also seek grants or launch crowdfunding campaigns, in addition to bootstrapping or receiving “love money” (more colloquially referred to “friends, family, and fools”).

Access to early-stage finance is very limited due to lack of angel investors, limited grant-funding mechanisms, and also because entrepreneurs do not have information about nor access to existing financing opportunities in the region. During stakeholder consultations, the Lesotho Enterprise Assistance Program (LEAP), a government fund executed through the WBG’s Second Private Sector Competitiveness and Economic Diversification Project, was the only funding opportunity mentioned. Unfortunately, the GoL has failed to provide funds for two consecutive years, and the PIU proposed extraordinary measures to use funding from the WBG project in order to keep this activity operational and to prevent entrepreneurs/beneficiaries going into insolvency. The future of LEAP is largely unclear due to a lack of support from the GoL. All stakeholders interviewed mentioned starting their business through self-funding or love money. Many were unaware of grant funds, and loans from commercial banks were identified as the primary source of expansion capital due to their lack of awareness on sources of early-stage capital, linkages to early-stage financiers, and how to secure funds from these sources. It is unclear if the Paemandu Economic Labs initiative will succeed in attracting FDI for new innovative projects, or what the sources of investment capital will be. The efforts from the Lesotho National Development Corporation (LNDC), are primarily concentrated on investment promotion.

The GoL does have two, competing, partial credit guarantee fund programs (PCGF): one run by LNDC, focusing on export oriented larger firms, and one run by MSBCM, targeting MSMEs. The latter has not been particularly successful due to limited uptake by the financial institutions and limited capacity of the PCGF to fulfill its mandate. The World Bank has helped redesign the guarantee program to enhance the leverage of public funds and, if the new design can be operationalized, this could boost the availability of financing for MSMEs in Lesotho. The guarantee fund could include specific categories to also fund digital enterprises.

There are untapped opportunities to leverage resources from angel investors, the Basotho diaspora, and venture capital funds which are active in South Africa. However, the absence of a healthy pipeline of investible ventures is a key constraint for potential investors and there is potential for the government to partner with private investors in setting up seed funding facilities.

To address this critical financing gap, the Vodacom Trust which funds the Innovation Park, is exploring the establishment of a seed fund. There is an opportunity for the GoL to partner with Vodacom on the implementation of the seed fund.

Markets

Lesotho’s domestic digital market is small and there is a need to enable companies to access international digital markets. Aside from a small domestic market, there is low acceptance of ICT technology, which is also reflected in the low level of ICT graduates at university (see chapter on digital skills). Only 35 percent of the country’s population knows how to use the Internet, and 15 percent asserts it does not believe it need it. Thus, there is an imperative to internationalize services in order to achieve greater scale. For example, in Madagascar, which also has a small domestic market for ICT services, many Malagasy firms serve international clients.

Despite eagerness to access to other international markets, digital startups lack networks, startup capital, and knowledge on how to achieve cross-border expansion. This is attributed to weak intermediaries, or innovation hubs, which currently provide limited support on market expansion.

Basotho entrepreneurs also expressed a desire to maximize opportunities within the existing domestic market, which is currently reliant on South African imports. Entrepreneurs and local industry players felt that initiatives, such as developing the local value-chain, would allow them to penetrate the local consumer market. This primarily refers to the manufacturing, agriculture, textiles, and service sectors.

The general population of Lesotho is reluctant to make orders online despite the availability and usage of mobile payment systems such as Vodacom’s M-Pesa and Econet’s EcoCash. Only one-third of the population made a digital payment in 2018 and only 10 percent of the population has a debit card. See the Digital Financial Services chapter for more details.

Stakeholders also cited limited ICT usage beyond mobile banking and mobile money transactions. For instance, only 15 percent of formal firms have a website and only 45 percent use email, which is much lower than the average for Sub-Saharan Africa. This is based on a variety of factors, including the high cost of the Internet, limited access to equipment (see chapter on digital infrastructure), and a lack of online trust due to scams, including forex trading scams. This is reflected in the limited uptake for e-commerce (see chapter on digital platforms). Most startups receive cash payments due to the inoperability of mobile money payment systems and commercial banks.

While women’s participation in the labor force is on par with their male counterparts, the team did not encounter any established women-led IT firms. The NUL also stated the low numbers of women matriculating in ICT-related studies. However, during a startup roundtable organized as part of the stakeholder consultation, there was an equal representation of emerging female and male startup¹³⁴ founders. While this is promising, the quality and type of support these startups receive will be critical and linked to recent global efforts to further customize support to women entrepreneurs (for example through initiatives funded by the Women’s Finance facility), and to efforts to promote gender-lens investing.

Government efforts to adopt digital technologies are currently not seen as an attractive opportunity by existing IT firms. Confirming diagnostic findings discussed in the chapter on digital platforms, several IT firms cited the main challenges as limited willingness to utilize digital technologies in public service delivery, and a lack of digital skills and capacity in government. The MCST is widely viewed as a key champion to drive ICT procurement, but there has been little interest or uptake in light of the forthcoming AfDB infrastructure project. The government procurement framework also suffers from a lack of transparency, which could be mitigated with the introduction of an electronic procurement system. The limited number of Basotho IT firms providing services to various ministries and agencies referred to the lack of timely payment, often 90 days or longer, as a key operating constraint highly detrimental to small firms with limited cash reserves.

Entrepreneurship Culture and Talent

The presence of new and young firms (age five years or younger) is perceived to be a result of job scarcity rather than a vibrant entrepreneurship culture. Digital startups are commonly viewed as opportunity entrepreneurs. In contrast, many Basotho entrepreneurs are considered necessity entrepreneurs. WBG Enterprise Survey and the Lesotho Bureau of Statistics Business Register data also reveals that many of these firms do not grow. Micro- and small firms account for 97 percent of all firms in the country; yet over half of employment is in large firms.

The previous chapter discussed in length the low digital literacy and low ICT skills among the general population. Additionally, as noted above, data from NUL show that few university students major in ICT-related fields, and even fewer ICT students are women.

Similar to other markets, digitally skilled individuals tend to pursue traditional employment opportunities versus launching digital startups. Given the constrained access to finance environment, and limited market size, many individuals seek traditional jobs because it offers financial stability. As discussed in the above

¹³⁴ Many of the roundtable startup participants had launched their enterprise within the last two years and are categorized as early stage.

chapter on digital skills, many of Lesotho's ICT graduates end up being absorbed by the South African labor market, which offers more competitive wages and a more developed digital sector.

CONSTRAINTS TO DIGITAL ENTREPRENEURSHIP DEVELOPMENT

Limited broadband penetration across the country and the high cost of Internet and Internet-enabled devices (see the chapter on digital infrastructure), low uptake of digital technology and of platforms beyond mobile banking and mobile money transactions (see the chapter on digital platforms), and insufficient availability of digital skills at all skill levels (see the chapter on digital skills), constrain local market opportunities and hamper the growth of digital entrepreneurship in Lesotho. With Lesotho's market for IT and ICT services being small, firms struggle to scale up their operations, which subsequently hinders their ability to enter international markets.

Several other pressing gaps in key inputs and regulations are holding the country's digital entrepreneurs back:

- **The lack of angel investors and the limited number of local grant-funding mechanisms leave startups with limited access to early-stage finance.** Awareness of regional and pan-African financing opportunities is also limited.
- **The legal and regulatory framework is not optimized to foster entrepreneurship.** Remaining regulatory gaps (see the chapter on the policy and legal landscape) and the lack of faith in regulating bodies are critical constraints to the development of a vibrant ecosystem for digital entrepreneurship.
- **The small domestic market for digital services constrained by still low uptake of the Internet restricts the growth potential of innovative companies.** Digital entrepreneurs would thus benefit from better connectivity to regional/international markets.
- **Growth entrepreneurship support programs and initiatives are in short supply, and their quality remains limited.** There is only a handful of institutions providing targeted business support services to *digital* entrepreneurs. Furthermore, these services require further structure and development, notably to include more systematic access to mentors, either from the local business community or to established programs in South Africa, and linkages to sources of startup capital.
- **Overall, diversity and inclusivity in the sector are insufficient.** The underrepresentation of women in digital startups is a missed opportunity, reflecting the lack of incentives for individuals and organizations to invest in women-owned startups and the absence of gender-lens crowdfunding and impact investments.

RECOMMENDATIONS

A number of priority actions could be undertaken in partnership with the public and private sectors to further facilitate the development of digital entrepreneurship, which can in turn help create opportunities, find solutions to development problems, and generate much needed jobs.

R25. Identify a public sector entity to coordinate digital entrepreneurship activities. The Government of Lesotho should identify a public sector actor to coordinate digital entrepreneurship activities, specifically to facilitate links to related initiatives implemented by various ministries and to engage in policy dialogue with regulatory authorities. In markets such as Nigeria and Kenya, this falls under the purview of the Ministry of Communications or a national ICT authority. In Nigeria, the National Innovation Technology Development Agency (NITDA), established a subsidiary, the Office for ICT Innovation and Entrepreneurship (OIIE), to specialize in cultivating and expanding Nigeria's ICT and entrepreneurship activities across the country. More recently, the Government of Senegal established an agency responsible for digital economy

initiatives, the Délégation Générale à l'Entreprenariat Rapide (DER). In the case of Lesotho, the MTI, or the MSBCM, could be empowered as the coordinating body in close coordination with the LCA and MCST.

R26. Catalyze existing private sector champions. Private sector actors, such as Vodacom Trust, are well-positioned to champion the growth of Lesotho's nascent digital entrepreneurship ecosystem. Corporate actors can fast track new initiatives for early-stage and growth-stage startups. In Lesotho's nascent ecosystem, corporates are well-positioned because of their multi-country business networks and can further link emerging digital entrepreneurs to established regional networks and provide access to education, skills, and funding, vis-à-vis an Open Innovation program.

R27. Increase awareness and deepen linkages to regional and pan-African digital entrepreneurship support programs. Both the WBG's 2018 private sector diagnostic in Lesotho and the DE4A assessment revealed that local entrepreneurs are unaware of regional and pan-African digital entrepreneurship support opportunities. Programs such as Finland's Southern African Innovation Support (SAIS) program and the WBG's XL Africa (Annex 8) demonstrate a need for a viable, regional approach that successfully supports the scale-up of growth-oriented digital entrepreneurs, especially those sourced from smaller markets. Given Lesotho's small market size and its landlocked position within South Africa, many Basotho are already looking for opportunities beyond Lesotho.

R28. Provide technical assistance and capacity building to existing innovation hubs, with an emphasis on linkages to early-stage financing and mentorship. Train-the-trainer programs for local innovation hubs, with an emphasis on cross-border expansion, mentorship, and access to finance would be critical to growing the local entrepreneurship ecosystem. The quality of services currently offered by business development services providers needs to be improved to better serve emerging and growing digital startups. Like other African markets, the culture of mentorship is also underdeveloped and access to finance presents an especially acute challenge. In the absence of an emerging investment culture, linkages to more developed regional hubs (such as Cape Town, Nairobi, Lagos) will be critical, especially since Lesotho enterprises will need to expand to new markets to achieve profitability and growth. Improved business advisory support should also cover topics of how to achieve cross-border expansion, including how to navigate regulatory environments and the resources available to achieve this, and should be emphasized as part of the business skills programming offered by business development service providers.

R29. Incentivize early-stage investments from the private sector. The Government of Lesotho could incentivize private investors to invest in local startups. Given the nascency of the ecosystem, angel investors would provide much needed financing to emerging and existing digital enterprises that are likely to be seeking modest sizes of investment. Since there is a small pipeline of investment-worthy digital enterprises, this should be broadened to include investments into SMEs operating in other sectors. Incentives should also be specifically crafted to promote investment in women-owned startups.

R30. Introduce digital entrepreneurship curricula into secondary and tertiary education. Digital entrepreneurship curricula emphasize the development of technical and business management skills, identified as critical skills gaps among Basotho youth. To date, youth employment programs in Lesotho have limited efficacy due to ineffective program design, overlap with other initiatives, and lack of financial sustainability¹³⁵. These can be addressed by introducing digital entrepreneurship programming into Lesotho's education curriculum. Encouraging self-employment in high-productivity sectors can drive Lesotho's economic diversification agenda and create high-value jobs for its population.

¹³⁵ This is based on a WBG 2016 assessment of Youth Employment Programs in Lesotho that reviewed 16 programs including programs sponsored by the Government of Lesotho, international donors, and private-sector actors.

3. CONCLUSION: A WAY FORWARD

The digital economy has globally become an important driver of economic growth, innovation, and improved service delivery. Digitalization is fast changing the fundamental patterns of economic and social activity in our societies: how we learn, work, do business, and communicate with one another. Internet users worldwide grew from 1 billion in 2005 to about 4 billion by 2018. The contribution of the digital economy is expected to grow from 15.5 percent to a quarter of global GDP between 2016 and 2026. Every dollar invested in ICT infrastructure between 2016 and 2018 could yield US\$5 by 2025. Closing the infrastructure gap in Africa, complemented by strengthening other foundational pillars, can yield clear economic benefits, create much needed jobs, and lead to better services for consumers.

The diagnostic findings in Lesotho show that this potential is still very much underutilized. Lesotho has been able to expand access to digital infrastructure and services, but domestic demand remains modest. The telecommunications regulatory environment is in many ways sound, but regulation could be more effective to promote more competition and consumer benefits. This report puts forward a number of recommendations to this end, to advance affordability and promote infrastructure sharing and consumer demand. The government may consider ways of reducing its role in the market and of keeping its levies and taxes reasonable.

A holistic approach to digital economy development is necessary to maximize Lesotho's chance for attaining its digital potential. Rather than implementing multiple, fragmented interventions, a coordinated and high-level cross-boundary approach that maximizes complementarities is needed for building an inclusive digital economy. To advance towards an inclusive digital economy that can foster Lesotho's potential, a set of recommendations are proposed with actions aimed at solving the challenges identified across its foundations. A summary list of all recommendations is provided in Annex 1.

Digital government platforms are an area that could drive both demand for Internet access as well as enable a more efficient and citizen-centric public sector, but a lack of coordination and capacity hamper the government's efforts in this field. A strategic government-wide approach is needed, combined with improved focus on quality, accessibility and the interoperability of existing systems. Steps towards a more data-driven and citizen centric approach are recommended.

Mobile money has successfully driven financial inclusion in Lesotho, but the enabling environment is still quite rigid and needs more flexibility to support further innovation in digital financial services. The government could demonstrate leadership in this field by moving to use and accept electronic payments. While promoting innovation, focus should also be on improving interoperability and consumer protection.

Digital skills constitute a clear bottleneck for Lesotho and an area where policy and institutional reforms are needed. Measures to improve digital skills need to be backed up by a strategic focus and improved data. Many of the key challenges relate to the formal education system and require a renewed focus on learning infrastructure, curricula, pedagogy and the upgrading of teachers' competences. Partnerships with the private sector could be advanced to promote innovation in digital skills development. Targeted policies that boost entrepreneurship and promote skills development programs would increase skilled labor supply, boost labor productivity and reduce poverty¹³⁶.

Private digital platforms have not yet found a proper footing in Lesotho and very few locally developed platform-based, business models exist. The ability to integrate government data directly into private platforms and services through open APIs would benefit the ecosystem. Digital entrepreneurship is still nascent in Lesotho and could be helped by raising the quality of support organizations, improving access to funding, and leveraging regional networks for access to expertise and markets.

The findings suggest that there is a need to shift the emphasis from supply to demand-side measures in Lesotho. The digital services market is relatively underdeveloped and actions to develop better digital

¹³⁶ World Bank Poverty Assessment: Lesotho (2019) Forthcoming.

government services and local content and improve digital skills could encourage technology's adoption and use among the population. Looking beyond Lesotho's borders is also necessary for the digital economy to flourish. As a small landlocked country and market, Lesotho's dependence on its neighbors, most notably South Africa, is high. But regional digital integration could provide major benefits by promoting access to regional infrastructure and digital products and services, and opening markets for Basotho entrepreneurs.

Based on the analysis, three broad priority areas emerge as opportunities for Lesotho, illustrating where both public and private efforts are needed to accelerate the digital economy. The full list of detailed recommendations is included in Annex 1, and all recommendations are elaborated fully under individual chapters of the report.

Priority 1: Improve the enabling environment for the digital economy

The priority area focuses on addressing noted policy, legal, and regulatory gaps, and stimulating the enabling environment for digital technology adoption and use. The measures outlined under this priority can assist Lesotho in increasing Internet adoption, as well as in improving the use of its digital infrastructure and advancing the development and use of its digital platforms and financial services. The foundational pillars of digital development are linked to this priority concern with digital infrastructure and digital financial services. The interventions recommended under this priority include the following:

- **Enhancing policy direction for the development of the digital economy in Lesotho, by building upon the draft national broadband strategy to guide the deployment of digital infrastructure deployment and bridge the digital divide.** The policy should be designed and drafted by the Ministry of Communication, Science and Technology (MCST) in cooperation with public and private sector stakeholders.
- **Improving the legal and regulatory environment for the digital economy by addressing identified gaps in legislation, with immediate priority given to passing the bills on cybersecurity and e-transactions,** for which the ministry responsible is MCST. Other important areas to address include data protection, consumer protection, and intellectual property.
- **Consider reducing the role of the state in digital infrastructure development and identify ways to leverage state-owned digital infrastructure in more strategically.** Priority should be given to divesting state-owned shares in the West Indian Ocean Cable Company (WIOCC) and considering how the fiber optic assets of the Lesotho Electricity Company (LEC) could be used more effectively for improving national broadband connectivity. This recommendation should be taken forward by the Ministry of Finance (MoF) and MCST.
- **Improving the regulatory environment for digital financial services,** including simplifying Know-Your-Customer (KYC) and Customer Due Diligence (CDD) requirements, lowering costs for remittances, improving market entry and interoperability, establishing a collateral registry and strengthening the regulatory institutions. The party responsible for taking these recommendations forward is in most cases the Central Bank of Lesotho (CBL).

Priority 2: Drive digital transformation and demand by strengthening public sector platforms and infrastructure

The priority area focuses on improving the public sector's ability to guide digital transformation in Lesotho, both by: a) improving the leadership and coordination of digital government transformation; b) enhancing the infrastructure and shared digital platforms that the ministries and agencies can use; and, c) enhancing citizen-facing digital service delivery. Recommended interventions under this priority include the following:

- **Building upon the National Strategic Development Plan II, deepen the approaches to digitization in the identified sectoral and thematic priority areas. These approaches may be used as key components of more comprehensive, whole-of-government approach to government in Lesotho.** Such an approach would define the roles, responsibilities, and coordination mechanisms between relevant ministries and agencies, and guide investments in skills and capacity development within key ministries and government entities driving digital policies.

- **Ensuring that government has the necessary infrastructure and connectivity and that these are widely used.** Specific measures for government infrastructure can include: purchasing Internet bandwidth in bulk for the government's own use; investing in shared services and enterprise systems; protecting and storing government data, including cybersecurity and data rescue and recovery facilities; enforcing standards; and providing technical support for the operation and maintenance of government systems. The MCST has a coordinating function within this agenda.
- **Increasing interoperability between platforms for increased efficiency and service delivery by leveraging experiences from the national identity system and enhancing the digital payment infrastructure.** A well-developed digital identity system can offer a platform for authenticating and verifying services, which should be used consistently where needed. Digital payments can introduce significant efficiencies and offer new ways to transact with the government. The government should take gradual steps to adopt digital payment options across the various services it offers, including paying taxes and fees, and receiving social grants. Increased collaboration between MCST, the Ministry of Home Affairs (MoHA), and CBL may further support the advancement of interoperability between critical platforms.
- **Developing citizen-facing digital public services to drive demand, access, and efficiencies.** Digital government transformation should be based on a user-centered approach that responds to citizens' needs. To enhance the quality of the services delivered, it would be beneficial to develop monitoring and evaluation tools for citizen-facing platforms and for robust citizen feedback mechanisms. Moving towards the progressive digitization of government data would improve the ability to innovate for service delivery in the private sector. Given that there are relatively few existing digital public services in Lesotho, the government may want to consider how the agenda should be coordinated among the responsible ministries.

Priority 3: Strengthen the digital ecosystem through digital skills and entrepreneurship

The priority area focuses on efforts needed in Lesotho for improving the digital skills of the population, ranging from basic entry-level skills to advanced digital talent and know-how. In addition, key actions are outlined for improving the conditions and support mechanisms for Basotho entrepreneurs to develop digital products and services for local and international markets. Both areas offer significant potential for public-private cooperation. Recommended interventions include:

- **Developing a strategy and defining the implementation mechanisms for digital skills development in Lesotho.** These efforts should be underpinned by a new digital skills framework and improved ways to monitor and collect data about existing skills. The education system should prioritize a) expanding partnerships between industry and education; b) standardizing curriculum, assessment and pedagogy; and, c) improving achievement in foundational literacy. The responsible ministry for these actions is The Ministry of Education and Training.
- **Improving digital infrastructure and connectivity in research and educational institutions by establishing a National Research and Education Network in Lesotho,** resulting in lower costs for Internet bandwidth and improved access to educational resources. The commitment for establishing the National Research and Education Network (NREN) is already stated in the NSDP II.
- **Improve the coordination and implementation of the digital entrepreneurship agenda,** among others, by identifying a public sector entity to coordinate activities and catalyze private sector champions to support entrepreneurship programs, improving access to finance, developing the capacity of existing innovation hubs, and making sure Basotho entrepreneurs can benefit from regional and pan-African support programs. The Ministry of Trade and Industry (MTI) should take responsibility over most of the activities.

ANNEXES

ANNEX 1. TABLE OF RECOMMENDATIONS

Recommendations are grouped under the three identified priority areas and classified by level of priority:

(i) quick-wins, for improvement actions with immediate benefit that can be delivered quickly with results; (ii) high-priority, for critical recommendations that cannot be relegated; and, (iii) long-term, for actions that focus on consolidating results while building the policy framework, infrastructure, systems and capacity needed to achieve goals, and, therefore, the implementation of which span a wider timeframe.

<i># in report</i>	<i>Recommendation</i>	<i>Priority</i>	<i>Proposed institutional coordination</i>	<i>Foundational pillar</i>
	Priority 1: Improve the enabling environment for the Digital Economy			
R2	Develop a strategy to bridge the digital divide and guide broadband deployment	Quick-win	MCST	Digital infrastructure
R6	Set up and implement a coordinated approach to digital infrastructure build-out with the private sector	Quick-win	MCST, LCA	Digital infrastructure
R16	Allow simplified KYC and risk-based CDD requirements for low-value bank customers	Quick-win	CBL	Digital financial services
R1	Address identified gaps in legislation with priority given to cybersecurity and e-transactions	Quick-win	Sectoral ministries, CBL, FIU, LTA, Investment Climate Steering Committee	Transversal
R3	Reduce the role of the state in the ICT sector and leverage state-owned digital infrastructure assets in a more strategic way	Quick-win	MoF, MCST, LCA	Digital infrastructure
R18	Make efforts to lower costs for remittances together with the private sector.	High-priority	CBL	Digital financial services
R5	Encourage the development of the wholesale broadband market	High-priority	MCST, LCA	Digital infrastructure
R7	Promote affordability of broadband-enabled devices and consider widening opportunities for individual access through device subsidies	High-priority	MCST, LCA	Digital infrastructure
R14	Stimulate the DSF market by improving market entry and interoperability.	High-priority	CBL	Digital financial services
R15	Increase the use of the credit registry and complete the establishment of a collateral registry	High-priority	MoF, CBL, E-credit Bureau	Digital financial services
R4	Strengthen Lesotho's independent communications regulator while keeping costs reasonable	High-priority	MCST, LCA	Digital Infrastructure
R18	Make efforts to lower costs for remittances together with the private sector	Long-term	CBL	Digital financial services
R19	Strengthen the supervisory and oversight capacity of the CBL and foster cooperation amongst regulators.	Long-term	CBL, FIU, LTA	Digital financial services

Priority 2: Drive digital transformation and demand by strengthening public sector platforms and infrastructure

R9	Improve government leadership and coordination for digital platforms	High-priority	MCST, e-Government parliamentary subcommittee	Digital platforms
R8	Purchase bulk Internet capacity for the government in order to achieve scale in the market	High-priority	MCST, MoF	Digital infrastructure
R10	Enhance skills for digital platforms through capacity building and change management in the public sector	High-priority	MET, MCST	Digital platforms
R17	Reduce overreliance on cash by the public sector by adopting digital payments	High-priority	OPM	Digital financial services
R12	Develop citizen-facing digital public services to drive demand, access and efficiencies	Long-term	MCST, Sectoral ministries	Digital Platforms
R11	Expand accessibility, interoperability, quality and functionality of existing public digital service delivery platforms	High-priority	MCST, other MDAs (MoHA, MoF, MTI, LRA, LAA, OBFC, etc.)	Digital platforms
R13	Boost creation of private sector platforms notably by improving public-private cooperation and data sharing	High-priority	MCST, MTI, MSBSM	Digital platforms

Priority 3: Strengthen the digital ecosystem through digital skills and entrepreneurship

R20	Create a strategic focus for digital skills development, operationalized by the development of a digital skills framework and strategy	Quick-win	MET	Digital skills
R25	Identify a public sector entity to coordinate digital entrepreneurship activities	Quick-win	MTI, MSBCM, LCA, MCST	Digital entrepreneurship
R27	Increase awareness and linkages to regional and pan-African digital entrepreneurship support programs	Quick-win	MTI, MSBCM	Digital entrepreneurship
R29	Incentivize early-stage investments from the private sector.	Quick-win	MTI	Digital entrepreneurship
R24	Expand partnerships between industry and education, including opportunities to develop ICT careers.	Quick-win	MET	Digital skills
R26	Catalyze existing private sector champions to support skills and entrepreneurship development	High-priority	MTI	Digital entrepreneurship

R21	Improve physical infrastructure and human resource development in the education sector, including establishing an NREN for enhanced access to Internet bandwidth and online resources	High-priority	MET	Digital skills
R22	Standardize curriculum, assessment, and pedagogy to twenty-first century workplace demands	High-priority	MET	Digital skills
R23	Strengthen foundational literacy, mathematics, and science achievement	Long-term	MET	Digital skills
R28	Provide technical assistance and capacity building to existing innovation hubs, with an emphasis on linkages to early-stage financing and mentorship	Long-term	MTI	Digital entrepreneurship
R30	Introduce digital entrepreneurship curricular into secondary and tertiary education	Long-term	MET, MCST	Digital skills, digital entrepreneurship

ANNEX 2: ICT SECTOR PRIORITIES IN THE LESOTHO NSDP II (INTERMEDIATE OUTCOME 3.4: ECONOMIC-FRIENDLY ICT INFRASTRUCTURE AND INCREASED USE OF ICT)

Strategic Objectives	Interventions
1. Improve ICT Access and Use	<ul style="list-style-type: none"> Facilitate build-out and sharing of strategic ICT infrastructure. Facilitate conducive environment to attract more market players to encourage competition in ICT market. Invest in extension of LEC's optical fibre network to strategic areas to promote competition in retail internet access services. Improve penetration, price, and quality performance of FBB market.
2. Improve Regulation in ICT Sector	<ul style="list-style-type: none"> Develop competition policy to regulate anti-competitive behaviours in telecommunication market and digital financial services market. Review interconnection arrangements to promote sectoral competition, including facilitating entrance for virtual mobile network operators. Remove barriers to market entry or effective competition by existing players. Promote competition in retail internet market by removing regulatory and financial barriers for small payers. Develop necessary legal and institutional frameworks for establishment of broadcasting signal distributor out of existing assets. Develop guidelines and rules for facility leasing to ensure market players have cost-based access to existing facilities.
3. Enhance e-Government Services	<ul style="list-style-type: none"> Develop appropriate institutional framework for e-governance. Improve coordination and cost-efficiency in procurement of technologies to enhance e-governance. Support establishment of Research and Education Network to enable access to internet-based resources globally on affordable terms.
4. Improve Digital Economy Uptake	<ul style="list-style-type: none"> Develop national digital policy and implementation strategy. Integrate digital skills in national curricula, from early childhood care and development to tertiary level. Stimulate demand to drive broadband up-take. Promote ICT literacy and lifelong learning of citizens through e-learning and awareness programmes and reduce digital divide. Establish data centres or hubs to attract data locally and internationally. Establish international call centre to promote youth employment. Facilitate smooth migration from analogue to digital.
5. Improve Governance of ICT Sector	<ul style="list-style-type: none"> Develop framework for divesting GoL stake in different parastatals including in Econet Telecom Lesotho and West Indian Ocean Cable Company. Develop data centre infrastructure. Develop cyber security strategy and enact relevant laws to protect data and information for online users from cyber security attacks. Promote research and development in ICT sector.

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ANNEX 3: MOBILE COVERAGE MAPS FOR LESOTHO AS OF MARCH 2018 (SOURCE: LCA ANNUAL REPORT 2018)

ETL GUL COVERAGE MAP 20180423

Vodacom Lesotho Coverage Map

ANNEX 4: ETL AND LECC BACKBONE NETWORK MAPS

ETL backbone network

ECC backbone network

ANNEX 5: PRIVATE DIGITAL PLATFORMS IN LESOTHO

Digital Commerce and Marketplaces Platforms Available in Lesotho

Doorstep Deliveries – Food delivery service

Events Lesotho – Travel and information directory page

Events Point – Tourism guide app

Lesotho Online Market Facebook Page – Platform advertising local products and services

Lesotho-info.co.za – Travel and information directory page

Lunch Box – Food delivery service

Mokotla.co.la – Platform advertising local products and services

Music Box – Platform to listen to music

Selibeng – Job search website

Service Box – Platform referencing basic services, such as Automated Teller Machine (ATM) locations, health facilities, police stations, etc.

SpaApp – Platform providing information on opportunities, jobs, tenders and scholarships.

Transapp – Booking platform for shipment/transport

Zcom.co.ls – Online store for IT equipment

Note: Information was gathered through stakeholder consultations as it was not otherwise available. Upon testing several of these sites and apps were found to be non-functional.

Non-government Digital Service Platforms Available in Lesotho

Education

Learners Friend – E-learning platform

Tsebolearning – E-learning platform

Basalitech – Platform to provide girls with science and technology training and mentoring

Girls coding academy - Platform to provide girls with science and technology training and mentoring

Health

PEMS Health – Platform to request ambulance services

Note: Information was gathered through stakeholder consultations as it was not otherwise available. Upon testing several of these sites and apps were found to be non-functional.

ANNEX 6: UNITED NATIONS E-GOVERNMENT DEVELOPMENT INDEX SCORES

	<i>EDGI 2018</i>	<i>Online services</i>	<i>Global ranking</i>	<i>Comparison Point</i>
<i>Africa</i>	0.34	0.36	-	Continental Average
<i>Lesotho</i>	0.30	0.11	167	SACU, Landlocked
<i>Botswana</i>	0.43	0.21	127	SACU, Landlocked
<i>Cabo Verde</i>	0.49	0.48	112	SIDS
<i>eSwatini</i>	0.38	0.38	141	SACU, SADC, Landlocked
<i>Ethiopia</i>	0.34	0.63	151	Landlocked
<i>Ghana</i>	0.53	0.69	101	Upper-middle income
<i>Mauritius</i>	0.66	0.72	66	SADC, SIDS
<i>Namibia</i>	0.45	0.45	121	SACU, SADC, Upper-middle income
<i>Rwanda</i>	0.45	0.72	120	Landlocked
<i>Seychelles</i>	0.61	0.61	83	SADC, SIDS
<i>South Africa</i>	0.66	0.83	68	SACU, SADC, Upper-middle income
<i>Uganda</i>	0.40	0.56	135	Landlocked
<i>Zambia</i>	0.41	0.48	133	SADC, Landlocked
<i>Zimbabwe</i>	0.37	0.33	146	SACD, Landlocked

Source: UN

ANNEX 7: ICT COURSES IN LESOTHO'S TERTIARY INSTITUTIONS 2018

<i>Institution</i>	<i>Courses offered</i>	<i>Length of Program</i>	<i>Typical profile of graduates</i>
<i>National University of Lesotho</i>	BSc Computer Science	4 years	<ul style="list-style-type: none"> • Computer Networks Professionals • Analyst Programs • Web Developers • ICT Trainers • Database Systems Administrators • ICT Security • ICT Managers • Library Technicians
	Bachelor of Engineering in Computer Systems and Networks	4 years	
	Bachelor of Science and Information Systems	4 years	
<i>Lesotho College of Education</i>	ICT for Primary School Teachers Diploma at 1st and 3rd year	Semester courses	<ul style="list-style-type: none"> • ICT Teacher Trainers • ICT Support Technicians
	Computer Awareness and Skills Diploma at 1st and 3rd year	Semester courses	
	Computer Awareness and Skills Certificate at 1st year	Semester courses	
<i>Lerotholi Polytechnic</i>	Computer Systems Engineering Diploma at 2nd and 3 year	Year course	<ul style="list-style-type: none"> • ICT Business and Systems Analysts • Software and Application Developers • ICT Support Technicians • Telecommunications Technical Specialists
<i>Limkokwing University of Creative Technology</i>	Associate Degree in Business Information Technology	3 years	<ul style="list-style-type: none"> • ICT Sales Professionals • ICT Support Technicians • Systems Administrators • Sales Assistants • ICT Test Engineers • Multimedia Specialists and Web Developers • Network Professionals • Telemarketers • Gallery, Library and Museum Technicians
	Associate Degree in Multimedia and Software Engineering	3 years	
	Associate Degree in Information Technology	3 years	
	BSc Honors in Information Technology	4 years	
	BSc Honors in Software Engineering with Multimedia	4 years	

<i>Botho University</i>	BSc Honors in Business Information Technology	4 years	<ul style="list-style-type: none"> • Health Information Systems Managers • Telecommunications Trades Workers • Media Equipment Operators • ICT Sales Professionals • ICT Business and Systems Analysts
	BSc Honors in Computing	4 years	
	BSc Honors in Health Information Management	4 years	
	BSc Honors in Mobile Computing	4 years	

ANNEX 8: SYNTHESIS OF DIGITAL SKILLS GAPS AND MEANS TO ADDRESS THEM

<i>Skills</i>	<i>Skills</i>				<i>Means to address the skill gaps</i>		
	<i>Institutions</i>	<i>Demand</i>	<i>Supply</i>	<i>Skill Gaps</i>	<i>Infrastructure</i>	<i>Programs</i>	<i>Teacher training</i>
<i>Advanced and specialist digital skills</i>	Higher education institutions	High	Low	Low	Fair. More equipment is needed; up to date programs and software; connectivity challenges	Programs are of high quality but low enrollment	Good quality of IT teachers, but few are retained in the system
<i>Basic digital skills</i>	Primary, secondary schools, higher education institutions	High	Low	High	Highly insufficient. ICT is included from Grade 4, but equipment is lacking	Insufficient	Teachers in primary and secondary schools need to be equipped to cater to IT in curriculum
<i>Foundational skills: literacy, numeracy, socio-emotional skills</i>	Primary, secondary schools	High	Low	High		Curriculum includes these skills throughout schooling	Teacher content knowledge needs to be enriched

ANNEX 9: XL AFRICA AND L'AFRIQUE EXCELLE

The World Bank Group's (WBG) XL Africa (<https://www.xl-africa.com>) program piloted a pan-African startup acceleration approach that provided critical support to 20 high-growth companies seeking to raise Series A financing defined as \$250,000 to \$1.5M, considered the "Valley of Death" for African startups. Despite the proliferation of acceleration programs in Sub-Saharan Africa (SSA), a WBG study on venture acceleration found that many of these programs under-delivered on two critical offerings that differentiate these programs from incubation activities: mentorship and access to early-stage financing.

The WBG's International Finance Corporation (IFC) Ventures Group invests in startups raising a minimum of \$5M, but to reach this scale young startups must receive critical business advisory support and growth capital. These can be provided by acceleration programs, but the overhead costs necessary to operate programs such as XL Africa are prohibitive for business enablers and investors.

To bridge these gaps, XL Africa sought the involvement of investors and corporate partners throughout program implementation, especially during the outreach and selection process. This was critical for entrepreneurs because the program did not take equity in these companies but offered early exposure and tailored programming to increase the likelihood of crowding-in investments into these innovative technology startups. For investors, XL Africa lowered the transaction costs of operating an investment readiness program for promising startups. Following a highly competitive selection process juried by major investor groups, including IFC Ventures, 20 African companies—from a pool over 900 applicants (a 2.2 percent acceptance rate)—were selected to participate in this bespoke acceleration program that included: virtual and in-person mentorship from a global and local mentor; access to the XL Academy, an online investment readiness curriculum designed specifically for African entrepreneurs; a two-week residency in Cape Town, South Africa, that included learning tours, peer-to-peer learning sessions, and pitching sessions at three prominent industry events, AfricArena (French Tech conference), Africa Com (the largest tech, media, and telecom conference in SSA), and the African Early-Stage Investor Summit, to source additional partners and investors; and affiliation with the WBG's brand.

XL Africa Entrepreneurs

XL Africa generated strong interest across the continent. The team observed signals of a nascent pipeline that requires support beyond the traditional hotspots of Nigeria, Kenya, and South Africa. The 20 XL Africa companies represent eight SSA countries, have created over 500 highly skilled jobs and have over 700,000 users. In Silicon Valley, four percent of startups have a female cofounder. By comparison, three XL Africa companies have a female co-founder (15 percent) and six companies (30 percent) nominated a woman from their management team to participate in the Cape Town Residency.

While the program selection criteria and scoring focused on scalability, many XL Africa companies could also be categorized as for-profit social enterprises. The cohort comprised companies in transportation and logistics, education, agriculture, HR, data analytics, energy, SME services, and health.

ANNEX 10: RESULTS OF THE CYBER SECURITY MATURITY MODEL (CMM) ASSESSMENT

The WBG supported the LCA to conduct a cyber security maturity model (CMM) assessment in March 2019 in collaboration with the Oxford University Global Center for Cyber Security Capacity. Several major weaknesses were identified as part of this exercise.

- According to the government, critical infrastructure sectors/assets have been identified, but this information has not been disclosed publicly. There is no legislation on Critical Infrastructure (CI) Protection in Lesotho.
- MCST manages the government's Critical Information Infrastructure (CII) assets, including the main data center which serves all the ministries. Not all government agencies have the financial and human resources to protect their CII, so they rely on the technical support provided by MCST. In addition, there is a lack of communication and coordination between MCST and the other agencies on CII's matters. CII operators and government have established channels of communication to address CII vulnerabilities and other related topics, but they are ad-hoc.
- There are a lack of skilled people in the cybersecurity field in Lesotho. The public and private sectors are facing challenges finding highly skilled professionals in the country to handle cybersecurity protection within their organizations. Yet, there is a high demand for cybersecurity education in the country. Whereas public and private universities are offering programs in cybersecurity and the National University of Lesotho has established a center for cybersecurity research, no Masters' degree programs are available.
- Professional certifications such **ISACA, ISO, COBIT** are not offered in Lesotho, so students and professionals often travel to South Africa to obtain cyber related certifications. The National University of Lesotho is trying to establish an examination center for internationally recognized professional certifications, probably ISO certifications.
- Lesotho has not signed either of the two main conventions for cybercrime, namely the Budapest Convention and the Malabo Convention which set out international and formal cooperation mechanisms to combat cybercrime and protect personal data. There are domestic cooperation mechanisms, as the banking sector often cooperates with law enforcement agencies in the investigation of cybercrime cases. This collaboration is informal as there is no formal arrangement nor information sharing platform currently in place. Other sectors, such as the telecommunications sector, require a court order prior to releasing any information related to cybercrime.
- SADC member states, Lesotho included, have agreed to establish a national Computer Readiness Response Team (CIRT) by the end of 2019. Despite an ITU-led process to develop a plan for establishing a national CIRT in 2012, to date this has not happened, and the government does not have a central registry created to track cyber incidents at the national level. According to a SADC meeting in 2018, Lesotho is one of the countries that is actually awaiting the enactment of appropriate legislation to operationalize the national CIRT.

ANNEX 11: REGULATORY FEES BENCHMARKING

Country	Annual Non-Spectrum Related Fees	USF Contribution Fee	Sum
<i>Botswana</i>	3% of annual net operating income + fixed fee, depending on type of license	1% of annual net operating income	4% of annual net operating revenue + fixed fees
<i>ESwatini</i>	5% of annual net operating income	0.5% of annual net operating income	5.5% of annual net operating income
<i>Ghana</i>	1% of annual net operating income + fixed fee, depending on type of license	1% of annual net operating income	2% of annual net operating income + fixed fees
<i>Kenya</i>	0.4% of annual gross revenue or fixed fee, whichever is higher. Fixed fee depends on type of license (e.g., KSH 4M for Tier 1 National Network Facilities Providers)	Up to 1% of annual gross revenue	Depends on annual gross revenue. If annual gross revenue is higher than fixed fee, up to 1.4% of annual gross revenue
Lesotho	4% of annual net operating income	1.5% of annual net operating income in 2018. Can go up to 2% of annual net operating income	5.5%–6% of annual net operating income
<i>Mauritius</i>	Fixed fee, depending on type of license (e.g., Rs 1,000,000 for national networking services provider)	5% of annual gross revenue generated by operator from provision of international roaming service and US\$0.025 on every minute of international calls terminated by operator	5% of annual gross revenue generated by operator from provision of international roaming service and US\$0.025 on every minute of international calls terminated by operator + fixed fees
<i>Mozambique</i>	2% of annual gross revenue	1% of annual gross revenue	3% of annual gross revenue
<i>Namibia</i>	Fixed fee N\$10,000.00	0.5% of annual gross turnover	0.5% of annual gross turnover + fixed fee
<i>Nigeria</i>	2.5% of annual net revenue	Part of recurring regulatory fees. 40% is allocated to the USF	2.5% of annual net revenue
<i>Rwanda</i>	1% of annual gross turnover	Up to 2.5% of annual gross turnover	Up to 3.5% of annual gross turnover
<i>South Africa</i>	Only application and renewal fees, no recurring fees	0.2% of annual gross turnover	0.2% of annual gross turnover

<i>Tanzania</i>	1% of annual gross turnover or fixed fee, whichever is higher. Fixed fee depends on type of license (e.g., US\$3,000 for National Network Facilities Providers)	0.3% of gross operating revenue	Depends on annual gross revenue. If annual gross revenue is higher than fixed fee, 1.3% of annual gross revenue
<i>Togo</i>	3% of annual net revenue	Part of recurring regulatory fees. 66.7% is allocated to the USF	3% of annual net revenue
<i>Uganda</i>	2% of annual gross revenue + fixed fee, depending on the type of license (e.g., US\$30,000 for public infrastructure provider license)	2% of annual gross revenue	4% of annual gross revenue + fixed fee
<i>Zimbabwe</i>	2% of annual gross turnover or fixed fee, whichever is higher. Fixed fee depends on type of license (e.g., US\$100,000 for Internet Access Provider Class A)	1.5% of annual gross turnover	Depends on annual gross revenue. If annual gross revenue is higher than fixed fee, 3.5% of annual gross revenue

Sources: Regulators' websites; ICT Regulation Toolkit; GSMA, Sub-Saharan Africa – Universal Service Fund study, 2014. Some of the information on the table can be outdated.

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