Accelerating Digital Transformation in Zambia
Table of Contents

ACKNOWLEDGMENTS 9
EXECUTIVE SUMMARY 11
CHAPTER 5 DIGITAL PLATFORMS 17
  Definitions and Analytical Framework 17
  The State of Digital Platforms in Zambia 19
  Cornerstone Public Sector Platforms 20
  Building Block Platforms for the Delivery of Goods and Services 23
  Interoperability Framework and Shared Services 27
  Enabling Environment 27
  Recommendations 31
  References 33
Acknowledgments

This report was prepared by a team from the World Bank Group, in close collaboration with a team from the government of Zambia.

The World Bank Group team included Ellen Olafsen (Sr. Private Sector Specialist and Task Team Leader), Ajai Nair (Sr. Financial Sector Specialist), Kirstin Conti (Sr. Governance Specialist), Nalin Jana (Sr. Education Specialist), Yoko Nagashima (Sr. Education Specialist), Mpuwaliyawa (Education Specialist), Krishna Pidatala (Sr. Operations Officer), Ida S. Mboob (ICT Specialist), Wale Ayeni (Sr. Investment Officer), Chiijoke Gbolahan Egejuru (Investment Officer), Laura Quiceno Hernandez (Associate Investment Officer), Lesley Danes (Program Manager), Margareta O. Biallas (Sr. Operations Officer), Radwa Elsharkawi (Investment Officer), Neil Butcher (Education Consultant), Mutale K. Moyo (Education Consultant), Henry Sichembe (Private Sector Consultant), Christoph Stork (Digital Infrastructure Consultant), and Marcella Willis (Financial Sector Consultant). The team benefited from the support of Namuchana Muyawa (Team Assistant) and Musopa Kalenga (Intern).

The government of Zambia team included representatives of the Cabinet Office (coordinating partner for the diagnostic process); the Bank of Zambia; the Ministry of Commerce, Trade and Industry; the Ministry of General Education; the Ministry of Finance; the Ministry of Higher Education; the Ministry of Home Affairs; the Ministry of National Development Planning; and the Ministry of Transport and Communication.

The team would like to thank Sahr Kpundeh (Country Manager for Zambia, World Bank) and Niraj Verma (Practice Manager for the Finance, Competitiveness and Innovation Global Practice of the World Bank Group) for their strategic guidance. Thanks also go to the reviewers for this report for their valuable feedback: Eva Clemente Miranda (Sr. Private Sector Specialist), Isabella Hayward (Digital Development Specialist), Jana Kunicova (Sr. Public Sector Specialist), and Juni Tingting Zhu (Private Sector Specialist). The team would also like to acknowledge the contributions of Steven Dimitriyev (Lead Private Sector Specialist), Rama Krishnan Venkateswaran (Lead Financial Management Specialist), and Samson Chabuka Kwalingana (Country Economist).

Comprehensive national stakeholder consultations—engaging both the private and public sectors—were undertaken in preparing and finalizing this document.
Executive Summary

Zambia’s 7th National Development Plan (7NDP) sets ambitious targets for economic growth and poverty reduction. Technology can play an important role as Zambia advances this vision for economic transformation.

Recent evidence tells us that reaching the goal of universal and affordable internet coverage can raise growth per capita by 2 percentage points per year and reduce the poverty headcount by 1 percentage point per year. When internet coverage is complemented by human capital investments, growth per capita increases by approximately 5 percentage points and the poverty headcount falls by 2.5 percentage points per year. These contributions to growth are mainly due to growth in productivity across economic sectors; digital transformation is thus part and parcel of economic transformation.

The introduction of digital systems can also have a transformative effect on government. It is estimated that developing countries could collectively save 0.9 to 1.1 percent of GDP, equivalent to $220 billion to $330 billion annually (IMF 2017), by introducing digital systems in government that increase efficiency and reduce the potential for leakages to occur. Additionally, significant effectiveness gains can be realized by equipping government officials responsible for public service delivery with access to better data and tools.

Improved access to digital technologies and effective use of data and digital systems can thus be powerful tools in the quest to increase private sector productivity, enhance public sector efficiency and effectiveness, and improve the accountability of both the public and private sectors. Indeed, 7NDP includes several digital transformation strategies for these reasons.
This digital economy diagnostic assesses Zambia’s strengths and weaknesses with respect to five pillars that together form the foundation upon which the benefits of digital transformation can be realized. These pillars are Digital Infrastructure, Digital Skills, Digital Entrepreneurship, Digital Platforms, and Digital Financial Services. As discussed in the 2016 World Development Report (World Bank 2016), progress in these areas—combined with “analog complements,” that is, a favorable business environment, strong human capital, and good governance—can enable and accelerate development returns.

This digital economy diagnostic was carried out by a multidisciplinary World Bank Group team in close collaboration with a multiministerial working group, led by the Cabinet Office. More than 100 stakeholders from the public and private sectors were engaged in interviews, focus groups, and workshops to derive, triangulate, and validate the findings.

In summary, this analysis finds that Zambia has made significant strides on its path to digital transformation over the past few years. Progress is particularly evident in digital infrastructure, digital financial services, and digital platforms, while more significant gaps remain in digital skills and digital entrepreneurship.

With respect to digital infrastructure, all provincial centers are now linked to the fiber backbone, and the country has a state-of-the-art data center that can be leveraged for government and commercial use. International benchmarks for affordability of broadband have also been met, and the use of mobile phones has increased significantly, reaching 15.5 million mobile subscriptions in 2019, out of which 63.5 percent use broadband. The digital infrastructure foundation has thus been built to now focus on the use of the infrastructure, as well as on ensuring the reliability and security of the infrastructure that is in place. However, last mile connectivity remains a gap, preventing greater use of digital systems in more sparsely populated areas where access to services and markets is more limited, and where digital systems could help reduce transaction costs associated with serving smaller populations. The cost of connectivity also imposes a barrier to greater citizen and business take-up caused by low income levels, calling for measures to reduce connectivity costs.

Despite these remaining connectivity challenges, the take-up of digital financial services (DFS) has increased significantly since 2016. This illustrates that Zambia does not have to wait to deliver more services via mobile; a two-pronged strategy can be pursued that enables more mobile-based service delivery while steps are taken to promote greater last mile connectivity in secondary towns and rural areas.

With regard to DFS specifically, Zambia has had a strong commitment to financial inclusion over the course of the past several years. The country recognized early on that DFS can make financial inclusion less costly for financial services providers and consumers, and it was among the first set of countries to allow nonbank payment service providers. Access to financial accounts more than doubled from 21 percent in 2011 to 46 percent in 2017, and increased access to mobile money providers has been driving the bulk of this growth since 2016. The private sector clearly sees the provision of DFS as an opportunity; the DFS market now includes 10 banks, 3 mobile network operators, and 5 third-party providers, including financial technology companies. In June 2019, the national payment switch enabled the interoperability of all domestic transactions. This functionality was expected to be available for all point-of-sale and mobile money transactions by the mid-2020. This step would further increase convenience and reduce costs for citizens and businesses.

Substantial progress is also reported to have been made to digitize government salary and pension payments; some gains have been made in government-to-business and government-to-government payments; and early efforts have been made to digitize receipts from businesses and individuals. Early indications are that important results are being achieved: preliminary data from the digitization of government pay slips show that transaction costs decreased by 85 percent and several “ghost” workers were identified and removed. Similarly, when the pension authorities introduced a mobile-enabled module, contributions increased substantially.

These early results demonstrate the promise of greater use of digital payment systems in Zambia. However, several payment systems have just initiated their digitization journey, and most government payments for social cash transfers and subsidies are not yet digitized. Opportunities therefore exist to initiate or expand the digitization of such government payments for the purpose of efficiency gains and increasing the resilience of vulnerable and often unbanked populations (for example, smallholder farmers and social cash recipients). With the advancement of DFS, the need to develop adequate consumer protection measures is also pressing.

Payment systems is only one of several areas in which the Zambian government can—and is—taking steps to use digital tools to increase the efficiency of government services. With respect to digital platforms, the 7NDP sets specific targets for providing government services online, and Zambia is now among the top 10 in the least developed countries category of the E-Government Development Index published by the United Nations. The government has launched internal systems for internal government administration, and government-to-person and government-to-business services are increasingly digitized. However, interoperability between systems is often lacking, thus reducing their benefit to citizens, businesses, and government; usage and usability are not consistently monitored, and some systems suffer from a limited scale of implementation or from deterioration.
Furthermore, the ability to authenticate that people are who they say they are is fundamental to financial and public services delivery. The current identification system has several weaknesses in this regard, and the Zambian government has determined that a biometric national ID system would be the optimal approach for Zambia. Investments in a modernized ID system can result in significant fiscal returns, but it can also involve a significant fiscal outlay, thus requiring careful consideration.

To enable Zambia to make greater use of digital technologies as a transformation tool, individuals, businesses, and government must also have the requisite digital skills. This is an area in which Zambia has made less progress. The 7NDP Implementation Plan aims to have information and communications technologies (ICT) mainstreamed in schools, and the new competency-based national curriculum has made ICT a compulsory subject. In practice, however, most schools are not connected to the internet, they do not have adequate access to devices, and teachers have limited knowledge of how to use ICT in teaching and learning. Furthermore, the quality of general education is of serious concern; for example, fewer than one-third of learners pass their grade 12 examination.

Zambia will not realize the full benefits of digital transformation—nor will it meet its 7NDP goal of facilitating “innovative technologies skills development”—unless it also ensures that learners going through the school system are equipped with foundational numeracy and literacy skills. However, there is still room to better leverage digital tools for teacher training and access to up-to-date educational materials, as well as for education policy planning and monitoring and evaluation. With regard to government capacity in digital skills, important gaps remain to ensure the ability across ministries and government offices to systematically develop, maintain, and use digital systems.

The requisite digital and entrepreneurial skills are also needed to advance digital entrepreneurship: it is digital entrepreneurs who will derive innovative solutions to public and private sector challenges that can be resolved through the application of technology. Zambia has seen an increase in the registration of ICT-related firms between 2016 and 2019, and entrepreneurs are initiating innovative digital solutions in a wide array of sectors, including financial services, education, tourism, and agriculture. Although a handful of entrepreneurs are now delivering solutions at scale, most digital enterprises in Zambia are at the very initial stages of development.

Zambia’s Global Entrepreneurship Index scores in Startup Skills, Technology Absorption, and Risk Capital are very low, and entrepreneurial confidence is declining. Concerns about these four areas were also expressed repeatedly in the consultations for the diagnostic. Zambia is, however, fortunate to have a range of nascent private entrepreneurship initiatives that, coupled with increasing corporate interest, can lend themselves to public-private partnerships that make public funds stretch further. The public-private dialogue during the diagnostic process also indicated recognition of the challenge associated with regulating digital innovation and the importance of engaging in continued dialogue to ensure that regulators provide clarity and strike the difficult balance between enabling innovation and ensuring that citizens are protected.

Surprisingly, a relatively large proportion of start-ups focus on e-commerce. This is remarkable given the significant obstacles to e-commerce in Zambia; only a small proportion of the population has a home address, and goods ordered online can therefore not always be efficiently and reliably delivered to the buyer. Long distances and high logistics costs also affect the viability of both domestic and cross-border trade. Considerable improvements in addressing and logistics will therefore be needed before e-commerce significantly benefits Zambia. The government has recognized this obstacle and has recently embarked on the development of a new national logistics strategy.

All in all, Zambia has made important strides in initiating a digital transformation process, but there is still a long way to go. As was acknowledged by H.E. President Lungu in a speech to the National Assembly in September 2019, Zambia’s fiscal space is limited, and there is a need to “achieve economic stability, sustainable growth and development, within the spirit of ‘doing more with less.’”

The authors recommend that the government of Zambia develop a digital transformation strategy with a dual focus on meeting the 7NDP targets and improving the country’s fiscal space. This recommendation is closely aligned with the “doing more with less” mantra introduced by H.E. President Lungu, and it emphasizes the use of digital technology to improve (1) public sector efficiency and effectiveness, (2) private sector productivity, and (3) accountability across both the public and private sectors.

Against this background, this report suggests that the digital transformation strategy include four strategic themes (figure ES.1): (1) promoting greater use of digital technologies in the economy, (2) reducing government transaction costs and reducing the cost of doing business through digitally optimized government systems, (3) improving the adoption of innovative digital solutions by enabling entrepreneurship, and (4) leveraging data and digital systems to improve sector-specific outcomes in secondary towns and rural areas.

**Promoting greater use of digital technologies in the economy.** Enhanced broadband usage alone contributes significantly to growth and poverty reduction. Additionally, initiatives undertaken under this theme are foundational to greater adoption of digital technologies by citizens, businesses, and government. The probability of success
of initiatives launched under the other strategic themes will thus be limited without progress under this theme. Priority activities suggested under this theme include (1) streamlining compliance costs for connectivity providers; (2) strengthening government capacity in cybersecurity, data privacy, and consumer protection; (3) developing a road map and implementation plan for the rollout of digital ID that carefully considers the costs and benefits of the vast array of design options; and (4) partnering with the private sector to map and fill the digital skills needs for government to successfully design and implement priority digital transformation activities.

Reducing government transaction costs and the cost of doing business through digitally optimized government systems. Initiatives undertaken under this theme will have the most immediate and direct budgetary impact while also promoting private sector activity without much additional fiscal outlay. Priority activities suggested under this theme include (1) developing a government-wide implementation approach to advancing and scaling up digitization of major government payment flows (such as social cash, fertilizer subsidies, school fees, taxes, customs, and licenses), and (2) optimizing and scaling up the e-border management, e-licenses, and public e-procurement systems.

Improving adoption of innovative digital solutions by enabling entrepreneurship. Initiatives undertaken under this theme will ensure that the private sector has the capacity to develop innovative solutions to resolve public and private sector challenges. Priority activities suggested under this theme include (1) conducting a regulatory review assessing how tax, labor, and other pertinent regulations affect enterprises at the start-up stage, and developing a regulatory sandbox for digital innovation that provides digital entrepreneurs with a clearer mechanism for navigating regulatory requirements for innovative products and services; and (2) developing a start-up strategy that includes attention to technology entrepreneurship and that leverages the competency and resources of the Ministries of Higher Education and Commerce, Trade and Industry as well as the private sector and the continental entrepreneurship ecosystem.

Leveraging data and digital systems to improve sector-specific outcomes in secondary towns and rural areas. Initiatives undertaken under this theme would focus on the digital transformation of a sector (such as agriculture, education, or health) with the purpose of increasing the effectiveness of public service delivery or increasing productivity and reducing vulnerability. This theme will necessarily draw upon the other three themes, and should be planned spatially to ensure economies of scale and thus increased attractiveness for private sector participation.

While this report provides a suggested prioritization of digital transformation activities, it is recommended that the government create a Digital Transformation Steering Committee to lead the articulation of the digital transformation strategy and implementation matrix. Given that this agenda cannot be achieved by one ministry alone, the committee should have representation from multiple ministries. Relatedly, a dedicated public-private Digital Transformation Advisory Council may be advisable to ensure that the expertise of nongovernmental actors is leveraged in the articulation of the strategy and implementation matrix and to optimize the likelihood that the private sector buys into, and therefore contributes to, implementation.
### PRIORITY DIGITAL TRANSFORMATION ACTIONS

1. **Promote greater use of digital technologies in the economy.**
   - Streamline compliance costs for connectivity providers, and develop a framework for **PPP investments** in last mile connectivity.
   - Strengthen the institutional capacity of government to **protect consumers, data, and critical digital infrastructure**.
   - Develop a detailed implementation road map for the **modernization of the ID system**, and implement the same.
   - Map **data and skills needs to support evidence-based policy planning**; integrate data collection, accessibility, and analysis into digital government systems planning, and partner with the private sector to implement.

2. **Reduce government transaction costs and the cost of doing business through digitally optimized systems**
   - Develop a government-wide implementation approach to **digitize major government payment flows** (social cash, fertilizer subsidies, school fees, tax, customs, and licenses).
   - Optimize and scale the **e-border management, e-licenses, and public e-procurement systems**.
   - Enable **data sharing** and compatibility between core government systems starting with enforcing interoperability standards and publishing the API road map.

3. **Improve adoption of innovative solutions by enabling digital entrepreneurship.**
   - Conduct a **regulatory review** related to start-ups and develop a regulatory sandbox for digital innovation.
   - Develop a **start-up strategy**, including explicit attention to technology entrepreneurship.
   - **Invest in PPPs** to seed and scale up programs that build start-up skills, provide startup financing, and link entrepreneurs to regional markets.

4. **Leverage data and digital systems to improve sector-specific outcomes in secondary towns and rural areas**
   - Identify two to three priority **sectors for transformation**, agriculture, education, and health.
   - Based on current national strategies derive priority challenges to address, engage the digital entrepreneurship community to identify innovative digital transformation solutions that work, and partner with the private sector to replicate and scale them.
   - **Plan spatially** such that economies of scale are achieved, using an integrated approach that takes into account the connectivity, skills, and systems required.

### EXPECTED OUTCOMES

- **Reduced Development Inequality**
- **Enhanced Human Development**
- **Diversified Economy**
- **Reduced Poverty and Vulnerability**
- **Conducive Governance**
- **Improved Fiscal Space**

---

**Note:** 7NDP = 7th National Development Plan; API = application programming interface; PPP = public-private partnership.

**REFERENCES**

Digital Platforms

Definitions and Analytical Framework

Digital platforms can be defined as digital systems and interfaces (for example, web- and mobile-based sites, applications, and software) that facilitate communications, transactions, and service delivery for government, people, and business through digital channels. Digital public sector platforms are often part of wider e-government systems that are designed to leverage information and communications technology (ICT) to enhance transparency, accountability, and efficiency in public administration and services delivery. Digital private sector platforms support a business environment in which producers and consumers or users create value through digital interaction. Digital platforms can thus serve people, businesses, and government agencies in all aspects of life, including health care, education, commerce, transportation, and public benefits.

Figure 5.1 serves as a conceptual framework for this chapter’s discussion of digital platforms, and the status of each conceptual area in Zambia is discussed in turn.

16. “Government as a platform” thus commonly features in many countries’ e-government strategies; see https://gds.blog.gov.uk/category/government-as-a-platform/.
## FIGURE 5.1: FOUNDATIONS AND BUILDING BLOCKS FOR DIGITAL PLATFORMS

### BUILDING BLOCKS FOR DIGITAL PLATFORMS

<table>
<thead>
<tr>
<th>Key systems leveraging cornerstone platforms</th>
<th>Additional platforms and functionalities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enabling Environment</strong></td>
<td><strong>Enabling Environment</strong></td>
</tr>
<tr>
<td>Policy and legal framework</td>
<td>Policy and legal framework</td>
</tr>
<tr>
<td>Oversight, standards, and monitoring and evaluation</td>
<td>Oversight, standards, and monitoring and evaluation</td>
</tr>
<tr>
<td>Technical skills and capacity</td>
<td>Technical skills and capacity</td>
</tr>
<tr>
<td>Institutional readiness and change management</td>
<td>Institutional readiness and change management</td>
</tr>
<tr>
<td>Interoperability for digital financial services</td>
<td>Interoperability for service delivery and efficiency</td>
</tr>
<tr>
<td>Cornerstone Private Sector Platforms</td>
<td>Global digital platforms</td>
</tr>
<tr>
<td></td>
<td>Digital payments</td>
</tr>
<tr>
<td></td>
<td>Digital commerce and marketplaces</td>
</tr>
<tr>
<td></td>
<td>Social media</td>
</tr>
</tbody>
</table>

*Source: Original figure for this publication.*
The State of Digital Platforms in Zambia

The SMART Zambia e-Government Master Plan sets a target of having 180 government services online by 2021. According to the SMART Zambia Institute, the target has already been achieved; 212 government services were online by the end of 2019.

Zambia is among the top 10 of the least developed countries for e-government, yet still underperforms with respect to regional comparators on several standardized indexes (table 5.1). The United Nations’ E-Government Development Index (EGDI) ranks Zambia among the highest performers in Africa (15th of 54 countries) and as a midlevel performer among Southern African Development Community countries (6th of 15 countries). Zambia is outperformed by three (Ghana, Kenya, and Rwanda) of the four benchmark countries, but it performs better than Côte d’Ivoire. The EGDI is produced every two years, and an updated version will be published in 2020. Any improvements made by Zambia between 2017 and 2019 will only be captured in the 2020 Index.

### Table 5.1: Key Indicators for Zambia’s Digital Platforms

<table>
<thead>
<tr>
<th>Assessment dimensions and measures or indicators</th>
<th>Zambia</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PUBLIC SECTOR PLATFORMS</strong></td>
<td></td>
</tr>
<tr>
<td>2018 UN E-Government Development Indexa</td>
<td>0.4111 on a scale from 0 to 1, where the world average is 0.55</td>
</tr>
<tr>
<td>Online Service Indexb within the 2018 UN E-Government Development Index</td>
<td>0.4792 on a scale from 0 to 1</td>
</tr>
<tr>
<td>Open Data Implementation Score within the 2016/2017 Global Open Data Indexc</td>
<td>19 percent on a scale from 0 to 100</td>
</tr>
<tr>
<td><strong>PRIVATE SECTOR PLATFORMS</strong></td>
<td></td>
</tr>
<tr>
<td>UNCTAD 2018 B2Cd E-Commerce Index</td>
<td>27 on a scale from 1 to 100</td>
</tr>
<tr>
<td>WEF 2016 Executive Opinion Survey: ICT Use for Business-to-Business Transactions</td>
<td>4.67 on a scale of 1–7, where 7 is best</td>
</tr>
<tr>
<td>WEF 2016 Executive Opinion Survey: B2C Internet Use</td>
<td>3.94 on a scale of 1–7, where 7 is best</td>
</tr>
</tbody>
</table>

Source: Compilation for this publication.
Note: EGDI = E-Government Development Index; ICT = information and communications technology; n.a. = not applicable; WEF = World Economic Forum.
a. The EGDI is produced by the UN Department of Economic and Social Affairs (UNDESA) every two years. The EGDI score is a weighted average of three normalized scores on three dimensions of e-government—scope and quality of online services (Online Service Index), development status of telecommunication infrastructure (Telecommunication Infrastructure Index), and inherent human capital (Human Capital Index).
b. The Online Service Index is based on data collected from an independent survey questionnaire, conducted by UNDESA, which assesses a number of features related to online service delivery, including whole-of-government approaches, open government data, e-participation, multichannel service delivery, mobile services, usage uptake, digital divide, as well as innovative partnerships through the use of information and communications technologies.
c. The Global Open Data Index assesses the extent to which national government data in key categories are openly available. These categories include the national government budget, spending, procurement, election results, company register, land ownership, national maps, administrative boundaries, locations, national statistics, draft legislation, national law, air quality, and water quality (https://index.okfn.org/).
d. Also known as “e-commerce,” 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. The index is calculated as the average of four indicators using data for 2017 or the latest available:
   - Account ownership at a financial institution or with a mobile-money-service provider (percent of population ages 15 and older)
   - Individuals using the internet (percent of population)
   - Postal Reliability Index
   - Secure internet servers (per 1 million people)
Cornerstone Public Sector Platforms

Zambia has several cornerstone public sector platforms in place, although the level of development of their functionality varies. Stakeholders pinpointed delays in the rollout of a National ID (identification) system as a critical missing piece. They also noted that the absence of an ID with a unique identifier is an impediment to service delivery. Stakeholder consultations also showed that there is an appetite for increased offerings of government-to-citizen services and for overall improvement of the accuracy of information citizens will receive. However, key limitations include infrastructure, particularly in rural areas and in the northern part of the country (see chapter 2 on Digital Infrastructure); leakages within government systems, including digital platforms; and limited interoperability with financial institutions, including mobile money providers (see chapter 6 on Digital Financial Services). Each cornerstone platform is discussed below.

DIGITAL IDENTIFICATION SYSTEMS

Zambia has National ID and civil registry systems under the auspices of the Ministry of Home Affairs. An estimated 85 percent of the population has a National ID (National Registration Card [NRC]). High enrollment is attributed to the ID system being linked to the electoral registration system. The NRC is a widely accepted form of identification in Zambia. For example, commercial banks request some combination of an NRC, driver’s license, and passport to provide financial services to consumers. The civil registry is an analog system that is decentralized to the district level, and an estimated 15 percent of the population is enrolled. Authentication is performed via letters issued to ID holders. Previously, the civil registry was digitized and managed by the Ministry of Finance. National Planning Data Centre Unit. However, operators lost their jobs during the digitization and eventually the digital database fell into disrepair.

Stakeholders expressed renewed interest in digitizing the National IDs and Civil Registry to ensure identity authentication and to integrate it with birth, marriage, and death registration; biometric details (photo, fingerprints); and passport data. This interest is motivated by a need to better understand which citizens are receiving services and to account for the leakage resulting from the misuse of funds designated for such services. There is also increasing concern about the duplication of effort when collecting citizen data. In the absence of a centralized and unified National ID, several line ministries have launched efforts to create fit-for-purpose IDs that would provide authentication for the recipients of their specific services. In addition, the quest for unique citizen authentication has been affected by delays in decision-making and variable political support over time.

As illustrated in Clark (2018), a modernized ID system can result in significant fiscal benefits. For example, in Thailand the national ID number was used by a cash transfer program to crosscheck the eligibility of beneficiaries against tax, occupational, and other databases, saving between $29.7 million and $59.4 million; in India’s state of Andhra Pradesh, biometric smart cards reduced leakage in social wage benefits by approximately 10.8 percentage points, and in pension benefits by approximately 2.9 percentage points; in Malawi, integration between the national ID and voter registration eliminated the need for a separate voter ID card, saving approximately $44 million ahead of the 2019 elections; and in Argentina, integration between tax databases and other registers via a unique ID improved tax audits, generating approximately $44 million in additional revenue from a reduction in tax fraud.

Since 2015, significant investments have been made on the part of the government of Zambia and its cooperating partners in moving toward a digitized National ID system. During that time, the initial architecture for the Integrated National Registration Information System (INRIS) was defined and partially built, although the government does not yet have the source code from the vendor. Furthermore, use cases within the country for functional service-specific ID systems (for example, pensions) were developed. Updates to the regulatory framework are already underway. The adoption of Statutory Instrument No. 34 of 2019 will allow for biometric enrollment of citizens in the form of an e-ID. The Central Statistical Office will also include questions on birth and death registration and the possession of a National ID in the upcoming census. However, some stakeholders noted that some citizens have privacy concerns, for example, that by citizens’ confirming their identity the government may use the ID as a means of surveillance. If this concern does arise, a significant effort will be required to encourage citizens to enroll in the system.

In 2019, the government put in place a government-wide implementation arrangement for digitization of the National ID. A project steering committee chaired by the Cabinet Office oversees implementation, while a project management committee led by the Ministry of Home Affairs coordinates rollout, and the project implementation team is led by the National Pension Scheme Authority (NAPSA). Various technical working groups also report into the project implementation team structure.
The intent of INRIS is to ensure that the new ID can be used by citizens to benefit from a wide range of government services. According to a statement issued by the Minister of Home Affairs in December 2019, INRIS will be linked to a smart ID with biometrics and a mobile money wallet that can connect to the national payment switch. Additionally, application programming interfaces (APIs) will be developed to connect INRIS with major public and private service providers. NAPSA has set a target for smart ID enrollment to begin by the second quarter of 2020 with a kickoff by the President. Costing has been done to enroll all Zambians ages 16 and older by October 2020; others will be added incrementally with newborns added at birth. Because the ID cards the government previously procured will not be able to support the key functions NAPSA envisions, NAPSA is considering using them for the older populations that are less likely to access the sophisticated features. The appropriate cards would still need to be procured. Existing NRC data will not be integrated into the INRIS system, and a new database will be constructed using decentralized recruiting agents to enroll people into the system. NAPSA has requested an extension of the upcoming census questionnaire to include biometric data collection and geo-location tagging, so that the results can be visualized with interactive maps. Three legislative updates are required to support the Smart ID rollout and have been submitted to the Ministry of Justice: (1) Statutory Instrument No. 34 to allow a nominal know-your-customer fee to be charged, (2) updating the National Registration Act to define what the term “biometric data” includes and to give the Registrar General the power to delegate civil registrations to agents (civil servants), and (3) updating electoral registration regulations to allow voting by fingerprint.

**FINANCIAL MANAGEMENT SYSTEMS**

An Integrated Financial Management Information System (IFMIS) is provided to all line ministries by the Ministry of Finance. The government’s IFMIS platform has been running since 2010. It was originally introduced as government-wide financial reform, but is now more broadly positioned as part of the country’s e-governance agenda. When it was rolled out, it was considered a major breakthrough in digitization and government-to-government services. At the time, government funding for information technology (IT) infrastructure was low and donor financing was then used to establish local area connectivity and data centers. This financing facilitated the creation of the government wide area network, which was needed to connect the relevant ministries to the IFMIS. The provincial governments were later brought online.

Given that it was one of Zambia’s first digitized government systems, the IFMIS was also a landmark platform. It allowed better planning and accounting for financial resources through the country’s treasury single account. Use of the IFMIS and the treasury single account has also allowed online payments for services and account reconciliation to occur in real time. There is even short message service notification available to payment recipients. In 2019, the government IFMIS team completed a needs assessment that provided an overview of possible improvements to the existing modules of the platform and additional processes that could easily be digitized. The assessment showed that the system is performing well with respect to expenditures because of the requirement to use the treasury single account. However, the link with the Bank of Zambia is not automated and analog processes are still required to complete expenditure transactions. The payroll and e-procurement systems still require the development of middleware for automation and integration.

IFMIS users from other ministries noted that several improvements are needed to make the system leakage-proof and to create an audit trail. Revenue collection occurs mostly outside of the system. Further integration priorities are revenue streams generated by the Zambia Revenue Authority (ZRA), immigration by Home Affairs, land administration, and the Road Traffic and Safety Agency (for payments related to vehicle registration, fines from traffic violations, and so on). Integration with ZRA will use shared services, and development of the functionality is 90 percent complete. The interoperability with the immigration e-Visa platform is already working but a user interface needs to be built. These improvements include a payment confirmation function (especially for ZRA input taxes), notations for vendors that identify the source of payments, improved functionally and detail of access logs, and immediate reconciliation of payments and accounts.

Although the IFMIS is one of the longest-running e-government platforms in Zambia, it faces challenges with uptake and sustainability. Stakeholders noted that the original rollout of the system was slow, primarily because of challenges with change management. The system still needs to be connected with central government agencies, interface with the ZRA platform to account for revenues, and complete decentralization to local governments. The IFMIS technical team also has a 90 percent service-level agreement with the ministries, but there are challenges with downtime, often due to connectivity issues. Several system upgrades are needed, although major milestones for upgrades and expansions are generally only met with donor funding.
HUMAN RESOURCE MANAGEMENT
Since 2010, the government has used a Payroll Management and Establishment Control System (PMEC) to manage the size and structure of the civil service and its payroll. The PMEC platform is a Systems, Applications, and Products in Data Processing (SAP)-based system that was initially planned to only link the civil service establishment with the government payroll. PMEC will eventually be fully integrated with the IFMIS platform, which will run the accounting processes of payroll operations. The system uses employee IDs as unique identifiers and is linked with financial institutions for the disbursement of funds. Furthermore, the PMEC system has designed digitized portions of the recruitment and performance processes as well as producing electronic pay slips; however these are yet to be launched for staff use. Thus far, the digitization of pay slips through a standalone system has resulted in an estimated 85 percent reduction in transaction costs. Digitizing the payroll also helped identify “ghost workers” and government employees whose duty station or ministry was incorrectly entered into the system. Eventually, PMEC, via the IFMIS, will be connected to the national payment switch to enable fully electronic transactions, and will have automated human resource and document management functions (for example, recruitment and performance appraisal). Additional interfaces with local governments, the electronic procurement system (discussed below), and the ZRA e-tax system for automatic tax deductions are envisaged.

DIGITAL PROCUREMENT SYSTEMS
Zambia’s electronic procurement system (e-GP) is managed by the Zambia Public Procurement Agency (ZPPA) and is used to track government agencies’ procurement processes for the full life cycle of the transactions. At present, the system has established interfaces with more agencies than are actively using the system. Currently, 35 agencies in Lusaka have interfaces, 18 are actively using e-GP, and 118 have accounts but are not fully using the functions or are not fully interfaced. ZPPA’s target is to bring all ministries into the system by 2021, eventually connecting 384 central-level entities. Some procuring entities, such as Zamtel, are completing hundreds of transactions per year within e-GP. The IFMIS already manually tracks fund flows within e-GP, but ZPPA also wants to fully link vendors’ bank account information with the IFMIS. The e-GP system is also connected to the national business registry.

Before the rollout of e-GP, the procurement reporting system experienced a high risk of error and perceptions of unfairness and inequities in the procurement process. Since 2015, the decentralization of public procurement and the digitization of the procurement system has allowed ZPPA to take on more of a supervisory than a transactional role. Stakeholders noted that e-GP has the potential to significantly reduce costs for bidders (for example, for travel), increase competition, and increase value for money for the procuring agencies. The platform has also assisted with appeals processes by providing clear procurement records. Improved infrastructure, increased financing, and better change management are needed to expand the use and uptake of e-GP. A major infrastructure challenge is connectivity, especially in the rural areas, because of lack of fiber and equipment needed for backup and recovery. Stakeholders also cited high costs of service-level agreements for maintaining the e-GP software as a challenge. Currently, ZPPA has 17 staff working on the whole system, including for decentralized users. System users have also identified “customer care” as a requirement for further integration with the IFMIS. ZPPA wants to take over the development, operation, and maintenance of the system themselves because of ongoing challenges with the system vendor, so more funding for the platform and for staff with additional technical capacity would be needed. However, funding bottlenecks were identified as a significant challenge.

17 The Government of the Republic of Zambia includes line ministries, legislature, intelligence, judiciary, and police in its civil service. The military is excluded.
PUBLIC SERVICE DELIVERY AND PAYMENT SYSTEMS

Numerous digital platforms designed for public service delivery and government payments are in operation in Zambia. An enterprise service bus, which allows all government entities to access enterprise software from a single online platform, is in place. Shared services architectures are also being developed. However, most service delivery platforms developed independently by government line ministries are not yet interoperable. All of these platforms have the potential to increase efficiency and transparency of government interactions and transactions. The public sector platforms that are interfacing or have the potential to interface with e-payment and mobile money infrastructure are discussed first. Then the public sector platforms that increase efficiency of other government interactions, such as regulations, reporting, and information sharing without a payments component, are discussed.

Platforms Potentially Increasing Efficiency of Government Payments

Domestic Tax Payments. Taxpayers in Zambia are able to pay domestic taxes digitally through the web-based Tax Online and unstructured supplementary data service—enabled Tax on Phone platforms, which allow users to file returns. However, major challenges to tax collection are the large cash economy and large informal sector. Furthermore, interfaces with banks for e-payments or mobile money accounts are not yet available. Although the Tax Online platform is functional, several stakeholders noted that its interface is not user friendly.

Zambia Social Protection Information System (ZSPIS). In 2019, SMART Zambia, with technical assistance from the Food and Agriculture Organization of the United Nations, completed the development of ZSPIS. ZSPIS is designed as an integrated management information system (MIS) with a payments module that can serve social protection programs. ZSPIS will replace the legacy MIS that was used to store data about beneficiaries but had no payment module. The ZSPIS includes a single registry function as well as a payment tracking function and integration with payment service providers. To date, two programs have been integrated into ZSPIS: the government’s Social Cash Transfer program and the Food Security Pack. Together, these programs have more than 700,000 beneficiaries. The system was developed to include three possible beneficiary authentication methods, including through an NRC, a mobile e-code, and biometric details. One of the payment gateways was developed under the World Bank-funded Girl’s Education and Women’s Empowerment and Livelihoods project with integration to five payment service providers, and another was launched via Zoono. All payments will now be through mobile money providers and banks: no cash payments will be made through government employees.

One Stop Shop (OSS) Business Facilitation Centers and the Intellectual Property Automation System (IPAS). The OSS is both a brick-and-mortar center and a web-portal that allows new businesses to access and complete all the procedures required to start a business. The OSS was designed and configured in house by the Patents and Companies Registration Agency (PACRA), which is a semi-autonomous agency of the Ministry of Commerce, Trade and Industry (MCTI). The system was created in 2009 and was decentralized to all the provinces and the cities of Livingstone and Kitwe in 2011. It is an automated business registry service with full online registration facilities, starting from a company name search to final registration after an online payment for the business license. A call center is available for inquiries. Although the proportion of businesses registering online has increased over time, still only 10 percent of all registrations are currently performed online. However, the majority of payments are made online using Visa’s credit and debit card system. An online application can typically be completed in four hours, and then applications are reviewed and either approved or denied by a project team. The platform then uses web services to share the information with other relevant agencies such as ZRA, NAPSA, ZPPA, the Ministry of Finance, the Immigration Department, Workers Compensation and Control, and the Ministry of Lands. The next system upgrades will allow the OSS to receive information from these agencies as well. PACRA also manages IPAS and a digital collateral registry. IPAS allows automated processing for trademarks, patents, designs, and copyrights. The collateral registry is available but is underutilized because many people do not see its usefulness.

Customs and e-Single Window. Zambia uses the Automated System for Customs Data (ASYCUDA) World system, which is a web-based customs system created by the United Nations Conference on Trade and Development (UNCTAD) and managed by in Zambia ZRA. The web-based system was first introduced in 2014, and Zambia upgraded its system to the latest version when it became available from UNCTAD. The platform allows the various transactions required for customs clearance to occur through a single payment platform, thus reducing the time that otherwise would be spent making payments at different offices.

Under the World Trade Organization Trade Facilitation Agreement Article 10.4, countries are required to have a digital “single window” that enables those transiting goods through a border to submit documentation to, or comply with the data requirements of, the relevant authorities through one single system. Zambia is leveraging the ASYCUDA World System to add modules that interact with other noncustoms agencies such that the entity filing the documentation is automatically notified about all relevant permits, clearances, and
documentation requirements needed for the particular product that is being imported or exported. A core feature of this system is a risk management system and automated scanning, which reduce the time it takes for manual inspection of goods. The performance of ASYCUDA and the single window is continuously monitored. Performance measurements were completed in the first quarter of 2020 at the Chirundu border post and at the Kasingula, Victoria Falls, and Kenneth Kaunda International Airport border posts.

Stakeholders cited coordination and interoperability as particular challenges to full implementation of the single window. These challenges result from the numerous legal instruments and agencies involved in border control.

**National Pension Scheme Electronic Portal (e-NAPSA)**. In 2017, NAPSA created a web- and mobile-enabled pensions platform (e-NAPSA) to facilitate enrollment into the national pension scheme and employer payments of pension contributions. Enrollment is available for both formal and informal employment, and NAPSA is making a large push to include the informally employed. The informal employment function was launched in March 2019 and within the first six months, 700 million Zambia kwacha (K) had been contributed by those in the informal sector. This large uptake is partially attributable to e-NAPSA being mobile-money enabled. The e-NAPSA platform has also helped identify fraudulent use of IDs because of the verifications required at the time of registration and when declaring pension beneficiaries.

**Platforms Potentially Increasing Efficiency of Regulations, Reporting, and Information Sharing**

*e-Cabinet*. Materials for Cabinet meetings are now electronically generated. According to SMART Zambia, this has reduced the costs of running Cabinet processes from K 68 million to K 10.2 million per year, saving 60 percent. E-Cabinet has also brought efficiency in that Cabinet ministers have easier access to the relevant documents and make decisions more quickly.

**Zambia Integrated Land Management Information System (ZILMIS)**. The Ministry of Lands launched ZILMIS in 2013. The platform tracks land registration, the deeds and data obtained from land surveys, the surrender of lease rights, and land-related disputes. The data system is based on geographic information system infrastructure, and modules are being installed to define plot boundaries. Currently ZILMIS is a standalone system though it requires information from the National Spatial Data Infrastructure system to complete its processes. ZILMIS is being used to store data as part of the national land audit and national land titling program. The rollout focused only on state land given that legislation does not allow private land titling. Also, land data are decentralized but need to be centralized and digitized to be input into the database.

**National Development Planning Monitoring Management System (MMS)**. The Ministry of National Development Planning uses an MMS to track the progress toward Zambia’s development goals as stated in the 7th National Development Plan (7NDP). Specifically, the system monitors the implementation of programs and the development of indicators, while helping implementing institutions track and analyze information electronically. Each ministry is requested to upload relevant business processes and work plans to the platforms and to update their progress against them. These updates include linking deliverables to the key performance indicators in the 7NDP, associating projects with geographic locations through an interface with Google Earth, reporting on funds received and spent, and indicating the milestones met for project and program delivery. The system is also able to track development indicators not directly related to the 7NDP, such as international obligations on climate change. At present, the MMS is a government-to-government system, but eventually a version of the system with publicly disclosable information may be added. Key challenges for the system are interoperability with other government platforms and the standardization of reporting and tracking processes across ministries.

**Digital Citizen Engagement and Feedback Platforms**

The use of digital citizen engagement and feedback platforms in Zambia has not yet begun. There are no known citizen feedback mechanisms designed to capture citizens’ feedback on specific government services, and there is no centralized avenue for gathering citizens’ feedback. This is reflected in Zambia’s ranking of 132 (out of 195) in the world on the E-Participation Index. No active plans for rolling out such mechanisms were mentioned by stakeholders during consultations.

**Open Data Platforms**

At present there is no national legislation, policy, or initiative covering open data or right to information in Zambia. The availability of data to the public is important for the monitoring and evaluation of systems and programs as well as for evidence-based policy making. Although Zambia does provide data to the International Monetary Fund Dissemination Standards Bulletin Board, it does not participate in the Open Government Partnership. The Global Open Data Index lists 15 key information items or services per country; making these data publicly available is considered international best practice. Of these 15, Zambia makes only 5 available in some form, resulting in the country’s rank of 72 of 94 on the Global Open Data Index (2016/2017). The most open information includes national statistics data, air quality data, and government budget information. Moderately open information includes national laws and draft legislation. The remaining indicators do not have any publicly available information.

---

18. These indicators include procurement, administrative boundaries, national maps, weather forecasts, company register, detailed election results breakdowns, addresses and postcodes, water quality, detailed accounts of government spending, and land ownership (under development).
PRIVATE SECTOR PLATFORMS
Private sector digital platforms can broadly be classified as profit-oriented digital platforms (commercial platforms) and non-profit-oriented digital platforms. Well-known examples of commercial platforms include Amazon, Alibaba, PayPal, Airbnb, and Kickstarter. Non-profit-oriented digital platforms include Wikipedia and other free service, exchange, or donation platforms. Figure 5.2 illustrates the various categories of commercial and nonprofit digital private sector platforms.

Zambia currently has more than 50 active private sector platforms, of which 15 are Zambian owned or operated. However, as discussed in chapter 4 on Digital Entrepreneurship, there is limited support for digital platform start-ups. There is also a lack of access to the robust consumer and industry data needed to design platforms that can resolve public or private sector challenges. Furthermore, the consumer market is limited by the high price and low reliability of internet access, and the potential for e-commerce is limited by slow progress toward physical addressing and poor trade logistics. Combined, these factors have resulted in the slow growth of private sector platforms. Still, primary research carried out for this report illustrates that platform companies constitute a significant proportion of all early-stage digital enterprises in Zambia (see chapter 4 on Digital Entrepreneurship).

Zambian private sector platforms are leaning toward the use of credit cards and PayPal instead of mobile payments. In aggregate, across the private sector platforms operating in Ghana, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia 80 percent accept credit cards, 41 percent accept cash, and 40 percent accept mobile payments. Cash is most prevalent in the transportation sector, while mobile payments are particularly prevalent for platforms operating in the agricultural sector. In Zambia, 87 percent of private sector platforms accept credit cards, 28 percent accept cash, 33 percent accept mobile payments, and 56 percent accept PayPal. In Zambia, it appears that several platforms have shifted to using PayPal as the preferred payment method during the course of 2018.

Zambia is ranked 26th of 44 African countries and 127th of the 151 countries in the 2018 edition of the United Nations Conference on Trade and Development (UNCTAD) Business-to-Consumer E-commerce Index. E-commerce can be divided into “incumbent companies” that sell their own goods or services digitally, and “third-party” providers—also called “multisided platforms”— that derive revenue by facilitating interactions between two or more distinct groups of users (at least a buyer and a seller). According to Chetty (2019), 268 new multisided platforms were launched in Ghana, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Uganda, and Zambia in 2018 alone. These numbers have increased dramatically over the past 13 years. In a 2019 survey undertaken by Insight2Impact (Smit et al 2019), on average, 1.3 percent of adults in Ghana, Kenya, Nigeria, Rwanda, South Africa, Tanzania, and Uganda earned income by participating in such platforms, and slightly more than 50 percent of these participants reported that this source of income was essential for meeting their basic needs. These proportions are similar to those observed in more digitally advanced and higher-income countries.

Zambia is one of the top 10 countries in Africa for individuals shopping online, at 5.1 percent of the population (table 5.2). However, the growth of e-commerce is limited because of weak physical addressing, expensive trade logistics, limited internet use and
smartphone access, low financial inclusion, and poor digital skills (see chapter 2 on Digital Infrastructure, chapter 3 on Digital Skills, and chapter 6 on Digital Financial Services). Additionally, perceived risks from the lack of identity authentication (know-your-customer) requirements hinders platform development and expansion. Nevertheless, reforms are in progress. In 2017, ZamPost joined the Universal Postal Union: Operational Readiness for E-commerce Project for quality-of-service improvements in postal deliveries. According to the eTrade assessment carried out by UNCTAD in 2018, ZamPost is handling an increasing volume of parcels and small packages driven by e-commerce. Furthermore, the Zambia Information and Communication Technology Authority (ZICTA) is aiming to complete physical addressing in all 10 provinces by 2023, and the MCTI is developing new e-commerce and logistics strategies that will provide a blueprint for increasing efficiency and reducing cost in trade.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Online purchase (% of those age 15+) 2017</th>
<th>Online shoppers (thousands)</th>
<th>Online shoppers (thousands) rank in Africa</th>
<th>B2C index rank in Africa</th>
<th>Internet use</th>
<th>Shoppers (% of internet users)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Libya</td>
<td>14.6</td>
<td>629</td>
<td>10</td>
<td>13</td>
<td>20</td>
<td>67</td>
</tr>
<tr>
<td>2</td>
<td>Mauritius</td>
<td>14.4</td>
<td>129</td>
<td>26</td>
<td>1</td>
<td>55</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>Namibia</td>
<td>12.1</td>
<td>184</td>
<td>21</td>
<td>11</td>
<td>31</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>Kenya</td>
<td>9.3</td>
<td>2,614</td>
<td>3</td>
<td>7</td>
<td>39</td>
<td>24</td>
</tr>
<tr>
<td>5</td>
<td>South Africa</td>
<td>7.9</td>
<td>2,929</td>
<td>2</td>
<td>3</td>
<td>59</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>Gabon</td>
<td>6.1</td>
<td>74</td>
<td>29</td>
<td>12</td>
<td>62</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>Tanzania</td>
<td>5.3</td>
<td>1,593</td>
<td>4</td>
<td>16</td>
<td>25</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>Zambia</td>
<td>5.1</td>
<td>459</td>
<td>11</td>
<td>26</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>9</td>
<td>Tunisia</td>
<td>4.7</td>
<td>366</td>
<td>14</td>
<td>4</td>
<td>56</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>Mozambique</td>
<td>4.3</td>
<td>665</td>
<td>9</td>
<td>32</td>
<td>23</td>
<td>19</td>
</tr>
</tbody>
</table>

Source: UNCTAD 2018.
Note: B2C = business-to-consumer.
Interoperability Framework and Shared Services

Zambia’s digital platforms landscape is fragmented, but has several key pieces in place that support the development of an interoperability framework and the use of shared services. Numerous platforms housed in individual government agencies were developed separately (mostly without using standardization protocols), and were not necessarily designed to be linked to any external platforms or a shared services system. However, the introduction of enterprise services and shared systems has facilitated links between several government platforms through the development of standardized APIs and middleware. Also, the introduction of a government wide area network in 2014 and a government data center in 2016 has served to consolidate e-government platforms’ approaches to data storage and rescue.

Government ICT infrastructure design, operation, and maintenance are still mostly dispersed within the ministries. Stakeholders felt that donor influence exacerbated this challenge by promoting specific systems for specific purposes; for example, the Ministry of Health has numerous donor-promoted systems. However, within the past few years, SMART Zambia has been mandated to promote standards for agencies creating new platforms, provide support for operations and maintenance of e-government systems, and build the capacity of government agencies using platforms.

SMART Zambia has set guidelines to facilitate interoperability among public sector platforms, and government-to-business interoperability with private sector platforms, for example, commercial banks. Although enterprise architecture is in place, the government is also scoping open source software, open architecture, and open interface platforms, for example, for rollout of the National ID. Furthermore, provisions of the electronic government bill (discussed in the section titled “Legal and Policy Framework”) will put in place a legal mandate for institutions to follow with regard to platform design.

Nearly all stakeholders consulted discussed challenges with interoperability and lack of connectivity for local government and in rural areas. For example, several agencies (ZRA, ZPPA, PACRA) want to establish or improve links to IFMIS or the national payment switch as part of decentralization efforts. In fact, strengthening local governments’ institutional capacity, accountability, and management of resources, including through their use of digital platforms, is the focus of the World Bank Public Sector Governance for Service Delivery Project.

Enabling Environment

Zambia’s enabling environment for the development and use of digital platforms is defined by its policy and legal framework; oversight, standards, and monitoring and evaluation (M&E); technical skills and capacity; institutional readiness; and integration of change management.

POLICY AND LEGAL FRAMEWORK

Zambia’s policy and legal framework for digital platforms is undergoing reforms designed to lessen constraints affecting the advancement of digital platforms. Experiences from other countries show that a thriving digital economy with digital platforms that are reliable and secure and that create efficiencies for users requires (1) a clear ICT policy and strategy, and an organization with a mandate to implement it, and (2) a legal framework that at a minimum addresses the following issues: competition in the ICT sector, privacy and data security, cybersecurity, e-commerce, intellectual property, data ownership, digital literacy, and open data.

A suite of bills under review by Parliament will update the existing legal framework to address key aspects of the digital economy. ZICTA oversees key parts of the existing legal framework, in particular, the ICT Policy of 2006, a memorandum of understanding (MOU) with the Competition and Consumer Protection Commission regarding ICT (UNCTAD 2012), the ICT Act of 2009, and the Electronic Communications Act of 2009. Although stakeholders feel the existing legal framework is set up well for stimulating private sector competition, several updates are in progress that will make the framework more comprehensive and better aligned with international best practice. The ICT Policy of 2006 is considered overdue for revision. Planning for the updates has begun, but the revisions have not started. The ICT Act of 2009 and the Electronic Communication Act of 2009 were transposed into four bills presented to Parliament in June 2019: (1) an electronic government bill that will fall under the auspices of SMART Zambia and that is in principle agreed on by the Cabinet, (2) an electronic commerce and transactions bill, (3) a data protection bill, and (4) a cybercrime and security bill, which will establish a cybersecurity agency. These bills still need to be passed to come into effect. In addition, the SMART Zambia Master Plan was approved by the Cabinet in 2019.

Cybersecurity emerged as a particularly critical need. Zambia ranks 12th in the African region and 59th globally on the Global Cybersecurity Index (ITU 2018). In addition to the pending legal
updates for cybersecurity, a ZICTA technical committee is charged with setting cybersecurity standards for government platforms. Furthermore, Zambia is establishing a computer emergency response team. Still, the Global Cybersecurity Index recommends that governments lay out a clear cybersecurity strategy, use a cloud for cybersecurity purposes, create child online protection mechanisms, establish benchmarking and metrics for monitoring cybersecurity, enhance public awareness, institute professional cybersecurity specifications, and create education and research programs on cybersecurity. With respect to these topics, Zambia still has significant room for growth and improvement.

Stakeholders also indicated a need for Zambia to update and review several other ICT-related policies. Along with the upcoming ICT bill, a new procurement bill will require government entities to use e-GP. Stakeholders further highlighted the need for a new registry and design act for intellectual property to address digital and web-based intellectual property. The current Trade Marks Act is being repealed and a Service Marks Act is being introduced. There will also be a law on traditional knowledge, expressions of folklore, and bioresources that will protect intellectual property from originating traditional knowledge and communities. However, most implementing policies for these laws are not yet available.

**OVERSIGHT, STANDARDS, AND MONITORING AND EVALUATION (M&E)**

Several agencies have oversight responsibilities to review the design and acquisition of digital public sector platforms, as well as storage and processes for information platforms. The Zambia Bureau of Standards (ZABS) is the overarching regulatory body that sets all industry standards, including for the ICT sector. For ICT, this regulatory mission is carried out under the auspices of a MOU between ZICTA and ZABS. SMART Zambia also plays a role in setting and implementing standards for all public sector platforms. The ICT policy guides agencies procuring these platforms regarding interoperability and provides a checklist of whether the design or maintenance of platforms should be done in house or outsourced. SMART Zambia’s standards unit further supports these agencies and also determines whether outsourcing can occur.

ZICTA convenes five technical committees that examine emerging and existing international standards for ICT and present them to ZICTA for implementation. Newly developed platforms’ compliance with standards is regulated by ZABS. The ZICTA committees address (1) ICT and the Environment; (2) Networks, Technology and Numbering; (3) Quality of Service and Performance; (4) Cybersecurity and Future Networks; and (5) Internet of Things and Multimedia Applications. The committees are composed of 15 to 20 subject-matter experts from academia, technology companies, and regulatory bodies. At present, the technical committees do not meet as frequently as envisioned and face constraints such as funding and long-term sustainability.

Agencies auditing platforms’ information and processes include but are not necessarily limited to the Auditor General, the ZPPA, the Ministry of Finance (MoF), and SMART Zambia. The Auditor General has access to IFMIS content for forensic auditing and the ZPPA plans to train its IT officers in forensic auditing. The ZPPA and MoF have conducted IT audits for their systems, while the ZPPA, in collaboration with SMART Zambia, performed a quality review of the e-GP platform to examine developer and vendor management, provide guidance on web services integration and connectivity improvements, and draft an MOU on vendor working arrangements. Similarly, the MoF’s IT unit has trained auditors to access the records of specialized ministries and has carried out an audit of the IFMIS.

No unified system is in place for the monitoring and evaluation of public platforms’ performance or the requirements for gathering data on efficiencies and costs. While the MoF and ZRA do some tracking, most other agencies indicated they do not yet conduct M&E activities. The MoF tracks cost savings resulting from IFMIS; ZRA does not formally track user experience but relies on user feedback. There is some performance data on the single window, and a program within the ZRA corporate strategy unit is attempting to track and analyze the benefits of implementing the trade platforms. Lack of publicly available M&E data constrains evidence-based policy analysis and generation as well as public participation.

With respect to private sector platforms, the management of the e-commerce agenda falls under the MCTI. The Competition and Consumer Protection Commission is a statutory body established with a dual mandate to protect competition and consumers in Zambia. With the assistance of the World Bank, the government established a Business Regulatory Review Agency as a statutory body under the MCTI. One of the agency’s mandates is to carry out regulatory impact assessments to avoid unnecessarily burdensome regulations for businesses. However, no interministerial or public-private coordination mechanism focuses on e-commerce. UNCTAD suggests that one option for improving interministerial coordination on e-commerce would be to link such discussions to the National Trade Facilitation Committee, such as through the formation of a subcommittee.
TECHNICAL SKILLS AND CAPACITY

A range of technical skills and capacities could support the digital transformation; however, they are difficult to retain in the public sector. Stakeholders noted that adequate technical skills are needed to improve and expand digital platforms in Zambia—ranging from the maintenance of ICT infrastructure to coding and developing the platforms themselves. For example, PACRA has been able to develop in-house capacity sufficient for the development, operations, and maintenance of its own systems (see box 5.1).

Key areas where developing capacity is critical include the following:

- **Digital infrastructure.** Additional infrastructure to implement the retention strategy that requires seven years’ retention of data, expanding the government wide area network, and increasing the rollout of towers, especially to serve schools and hospitals.

- **Design and implementation.** Designing the technical specifications and quality controls for system design and implementation, accessing hard-to-reach areas for the digitization of analog documents, Java skills, and sufficient provisions for a skills handoff with vendors.

- **Procurement and contract management.** Negotiating with software and hardware vendors, allocating the budget appropriately, defining realistic timelines for procurement, and moving procurements forward when authorizing agents lack familiarity with technical issues.

- **Cybersecurity.** Building the capacity of different sectors on cybersecurity issues.

- **Judicial reform for the digital economy.** Enhancing capacity and awareness in the judicial systems: laws are viewed as a means to increase public awareness about the relevant topics but people do not necessarily see the practical implications of the laws and how they will support the development of a robust digital economy.

Several activities are being designed to increase capacity within government and the private sector. SMART Zambia aims to develop a Centre of Excellence at its headquarters to improve the delivery of services to ministries. Additionally, the decentralized SMART Zambia staff supporting the provincial and local administrative levels require more training and a larger workforce. This could also be an area in which the government partners with the private sector to ensure adequate support to ministries and line agencies embarking on digitization.

**BOX 5.1: PACRA USE CASE FOR TECHNICAL SKILLS AND CAPACITY**

Since 2011, the Patents and Companies Registration Agency (PACRA) has steadily built and expanded its internal capacity and now manages its platforms self sufficiently. It has upgraded the data center, developed information technology (IT) systems in house, put in place an automated call center, and digitized human resources and incident management systems. It has networked its satellite offices and shares data real time. Sufficient staffing and the agency culture have been key to PACRA’s achievements. Eight full-time IT staff work at the central office in Lusaka, although it was noted during consultations that more staff would be ideal. The agency actively encourages information sharing, and IT staff have a sense of ownership of the platforms and systems they develop. There is also a test environment where staff can explore, create, and innovate. Furthermore, skills transfer is built into all vendor contracts with PACRA, and the source code for software is handed over if custom systems or software are designed. Because of the in-house expertise that has been built, PACRA has received support requests from other agencies, such as the Department of Cooperation in the Ministry of Commerce, Trade and Industry and the Business Regulatory Review Agency.
INSTITUTIONAL READINESS

The state of institutional readiness for digital platforms is moderate, and there are persistent challenges with donor coordination, the ability to mobilize necessary funds for ICT project sustainability, adapting legal frameworks, and decentralizing access to platforms. Multiple donor efforts support the development of digital platforms, particularly in priority sectors like health and education. However, to date, coordinated efforts have not prevented the proliferation of incompatible platforms or platforms with redundant functionalities. Relevant ministries also have a limited ability to secure the budgetary allocations to sustain these platforms after donor funds are gone. Stakeholders also cited challenges with incentives for institutions to begin using public sector platforms. Decentralization has also presented a major challenge to institutional readiness. Although the main challenge for decentralization is lack of infrastructure in rural areas and for serving local government, there is also a skills issue.

The SMART Zambia Electronic Government Master Plan (Master Plan) approved by the Cabinet in March 2019 guides the policy making and procedures for digital public sector platforms. The goal of the Master Plan (2019) is to provide a clear road map for the acceleration of efforts to “deliver quality and responsive services to citizens, non-citizens, businesses as well as improving collaboration within government.” The Master Plan includes three phases as outlined in table 5.3.

### TABLE 5.3: IMPLEMENTATION SCHEDULE FOR THE E-GOVERNMENT MASTER PLAN

<table>
<thead>
<tr>
<th>Description</th>
<th>Foundation Stage 2018–21</th>
<th>Integration Stage 2022–26</th>
<th>Connected Government Stage 2022–30</th>
</tr>
</thead>
</table>
| Policy, legal, regulatory, and institutional arrangements | • Establishment of policy, legal, and regulatory environment  
• Institutional frameworks  
• Human resources development  
• Development and adoption of ICT standards and guidelines | • Enhancement of the policy, legal, regulatory, and institutional framework | • Review of the policy, legal, regulatory, and institutional framework |
| ICT infrastructure                                | Implementation of  
• Cloud computing national data center  
• National optical fiber broadband backbone  
• Metropolitan area networks  
• Local area networks  
• Information security  
• Universal access mobile communication services | Integration and enhancement of  
• ICT network connectivity infrastructure to unserved and underserved districts  
• Value added services on cloud computing  
• Information security | Enhanced integration of  
• Infrastructure and value added services to unserved and underserved areas  
• Information security |
| E-services (enhancing country competitiveness and social well-being) | Development and adoption of  
• E-applications and online services  
• Core e-government foundational e-applications  
• Common applications  
• Sector-specific applications  
• Multiple channels of electronic service delivery | • Enhanced integration of e-applications to cloud computing environment and more online services on government transactional portal | • Seamless and highly customized interactive systems on the cloud with value added services |


Note: ICT = information and communications technology.

CHANGE MANAGEMENT

Limited evidence suggested concerted change management efforts were used to facilitate the adoption of digital platforms and to increase the likelihood of their sustained use. Stakeholders felt this was partially attributable to prevalent views that ICT is a support function rather than an efficiency function and a core means of doing business. Stakeholders also cited a reluctance caused by the potential for the systems to decrease leakage and the increased transparency, accountability, and efficiency digital platforms could bring. Reducing opportunities to interact outside the protocols and the potential of ICT-related jobs being outsourced have also slowed the uptake of platforms. However, one key counterexample is the IFMIS. Formalized training and change management were used to introduce users to the technology and the treasury single account, although stakeholders felt that there was initially some apprehension about the processes and the paper trail. For the ZPPA, change management for e-GP has been a challenge, and users try to “frustrate” the system.
**Recommendations**

The 7NDP outlines targets for when to provide government services online, and Zambia has made significant progress in this regard. However, significant gaps remain before Zambia can realize the full benefits of digitization in the public sector. The government has launched internal systems for financial management and the payroll, for example, and government-to-person and government-to-business services are increasingly digitized. However, interoperability between systems is often lacking, thus reducing their benefit; usage and usability are not consistently monitored; and some systems suffer from a limited scale of implementation or from deterioration. Emphasis should therefore now be on optimizing, scaling up, and securing systems and services that have already been put on the path toward digital transformation, and relatedly to ensuring proper authentication of users to avoid fraud.

Poor coordination (within the government and among donors) and inconsistent messaging regarding leadership of the digital transformation agenda have been obstacles to faster and more comprehensive progress. Specifically, these challenges have resulted in:

- **Lack of systems’ interoperability** resulting in inefficiencies or the hampering of platform development
- **Inadequate change management**, compounding the interoperability problem by creating avenues for analog processes to run in parallel to or be used instead of automated digital processes
- **Lack of connectivity** at the local level preventing the use of platforms, and in the case of public sector platforms, a commensurate reduction in transparency and accountability
- **Lack of financing** and interest to put in place functionalities that would completely digitize and automate critical platform functions

These challenges combined have resulted in the low penetration of digital services and solutions in the rural areas of Zambia, the siloed development of digital platforms, and internal debates regarding “ownership” and leadership for ongoing and future platform development. Therefore, the ongoing digitization push from the center of government needs to come from an entity with a clear mandate to coordinate across government ministries, departments, and agencies, as well as with the private sector for the purpose of driving digital development. The mandate could include bolstering M&E, facilitating coordination between entities, publicizing road maps for critical platform and infrastructure development, and ensuring change management and financing through the final stages of platforms’ development and interfacing.

The following recommendations focus on activities that are in line with national priorities as set out in the 7NDP. They can also be used to create hubs and themes that crowd in government, donor, and private sector resources around key issues. Approaching the recommendations in phases would improve the likelihood of successful uptake, facilitate mindset shifts around the role and benefits of digital platforms, and build incentive structures so that the development of platforms advances. The recommendations seek to develop and enhance coordination and strengthen leadership while addressing the key technical and policy concerns affecting digital platforms. Activities that would likely bring about concrete and visible results in the medium term (three to five years) require focusing on the following key areas.

**Strengthen the legal and policy environment.** The updates to the ICT legal framework that are awaiting adoption by Parliament must proceed to ensure that clear guidelines are in place as the public and private sectors adopt increased digitization. These updates include the Electronic Commerce and Transaction Bill, the Data Protection Bill, and the Cybercrime and Security Bill. In addition, a government-wide strategy for digital transformation should be developed as a subset of a higher-level economic transformation strategy. The policy framework would include existing documents such as the SMART Zambia Master Plan. As such strategies are developed, wide stakeholder consultation must be undertaken and full transparency in the decisions made and the implementation matrix adopted must be ensured.

**Improve institutional readiness.** In support of the government-wide strategy recommended above, the government should aim to clarify leadership roles for the digital transformation. This process may include establishing an oversight or coordination body at the center of government or instituting new business processes with clear lines of reporting and responsibility, as necessary. Improving oversight and coordination would also require systematizing change management, which could be achieved using dedicated capacity-building programs and performance incentives, which could also be linked to benchmarking. It is also critical to build internal capacity regarding digital skills for civil servants and elected officials, especially in local government.

**Enhance interoperability.** A central concern of public and private sector stakeholders alike was low prevalence of interoperability and automation between platforms as well as accessibility of platforms at the local level. Therefore, it is recommended that the government create, publish, and regularly update an API road map. APIs are digital codes that are at the core of establishing interoperability between
systems. An API road map would allow software developers and other relevant parties to view upcoming opportunities to design these interfaces, coordinate their development, and ensure their adherence to technical standards. Developers could be informed of these opportunities through an industry forum facilitated by government. Ideally, these activities would be supported by a funding pipeline dedicated to “last mile” development.

Enhance functionality and delivery of digital services. Many digital services are currently under development or planned for development in the near future. It is recommended that the government first focus on platforms that contribute to a reduction in expenditures, an increase in revenue collection, or protection of the most vulnerable, then second on platforms that contribute to enhanced private sector productivity and improved human capital. A focused approach will enable targeting of investments and development of use cases from which key lessons can be derived and applied to other service delivery platforms. To best support delivery of these services, cornerstone public sector platforms such as the IFMIS and e-GP would need to be decentralized down to local government (specific recommendations for the e-procurement system are in appendix C). This decentralization would improve accounting for and efficiency of government management of fund flows. Key considerations in developing the approaches for these digital services would be their potential to leverage open data and civic technology. Along these lines, establishing an M&E platform for digital development with benchmarking for infrastructure rollout and service delivery will be critical to ensuring consistent improvements to service delivery.

Lay the foundation for more evidence-based policy planning. Data are a key input for cost-effective policies. Therefore, the central role of government data, both as an input and an output, in steering and informing policy options in Zambia needs to be amplified. Data, technical, and policy know-how are all severely lacking, most notably data that are disaggregated by gender, age, income level, geography, and other key dimensions. Without timely and quality data, institutions will not have an accurate grasp of the gaps and be able to identify the right policy options. As the government embarks on the digitization of services, it has a significant opportunity to include a strategic approach to leveraging data collected to inform policy.

Strive toward unique citizen identity authentication. Key services such as digital financial services, immigration, conditional cash transfers, and agricultural subsidies would become more efficient if unique, digital citizen identification were to become available to all of Zambia’s citizens. Although digital identification can be provided in numerous ways, ideally it would have the minimum capability to link with automated interfaces with key platforms such as social assistance systems and digital banking and payments. Upfront investment would be required to roll out the systems, including investment in the requisite technology and enrolling populations through a decentralized campaign. An increased level of sophistication of the technology used will increase the marginal cost of each ID, which will have to be weighed against the government’s key objectives for having a unique ID system. As of August 2019, the Zambian government had decided to pursue a biometric identification system with specific plans to be delineated by the Cabinet in the future.
REFERENCES


