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Assessing Digitalization and Data Governance Issues in Africa

Idris Ademuyiwa and Adedeji Adeniran



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Acronyms and Abbreviations

AfCFTA	African Continental Free Trade Area
APEC	Asia-Pacific Economic Cooperation
ATAF	African Tax Administration Forum
AU-CCPP	African Union Convention on Cyber Security and Personal Data Protection
BEPS	Base Erosion and Profit Shifting
DPI	digital preparedness index
DST	digital services tax
GDPR	General Data Protection Regulation
ICRICT	Independent Commission for the Reform of International Corporate Tax
ICT	information and communications technology
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
UNCTAD	United Nations Conference on Trade and Development
WEF	World Economic Forum
WJP	World Justice Project

Executive Summary

In the past decade, digitalization and digital technology adoption have become increasingly pervasive in most African countries. These developments promise life-changing benefits for consumers, businesses and governments, and enormous gains in terms of the much-needed structural transformation and diversification of these economies. However, the actualization of these benefits is not guaranteed. The digital market is characteristically imperfect, and value creation in the market is globally uneven, with African countries having negligible contributions. Economies of scale and scope, network effects and other characteristics of global digital platforms drive the market toward a winner-takes-most scenario. Also, recent events have accentuated concerns about personal data protection and cyber security, especially in the absence of adequate legal frameworks. Therefore, there is uneasiness in developing countries, especially African countries, about how to optimize the gains from digitalization.

Addressing the foregoing concerns lies in balancing the opportunities and challenges from the digital economy. This requires having sound data governance frameworks built on up-to-date information about the digital markets and data value chains. Such frameworks should incentivize the development of efficient domestic digital ecosystems while proactively situating the digital aspirations of African countries within their existing economic transformation agendas.

This paper investigates selected data governance issues across African countries. It reveals that while many African countries acknowledged and responded to the need for appropriate data protection and privacy laws, most of the existing laws require significant revisions to make them suitable to the dynamics of the digital market. The paper further highlights recent trends and provides some policy options for African countries in terms of competition and taxation policies in the digital economy and policies for promoting domestic digital enterprises. The authors' approach in this paper takes Africa not as a homogenous unit, but as disparate entities with individual social objectives and institutional frameworks.

Introduction

The digital economy is shaping and remodelling national and global economies in many fundamental ways.¹ Recent exponential growth in computing power and developments in digital technology have created incentives for the collection of data hitherto considered unusable, led to their conversion into machine-readable formats, and facilitated the manipulation and analysis of a variety of data to produce high-value intelligence and new monetizable products. At the heart of these developments are digital platforms and platform-based enterprises. These companies are now dominant players in the global economy, constituting about 40 percent of the world's 20 largest companies by market capitalization, while the digital economy contributed about 4.5 percent of global GDP in 2018 (United Nations Conference on Trade and Development [UNCTAD] 2019).

There is no gain in highlighting the efficiency and productivity-enhancing benefits of digitalization on the global economy, but some of the key strategic advantages for African countries are worth reiterating. Apart from facilitating the belated formalization of the largely informal private sector in African countries and other potential benefits, digitalization can serve as a medium to finally integrate African firms (especially small and medium-sized enterprises) into global markets while leveraging global platforms to develop domestic digital ecosystems. Similarly, individual consumers' quality of life will be improved through access to a variety of both new and improved quality goods and services at lower prices, available quickly and conveniently. For African governments, in addition to improving their capacity to provide efficient and targeted public services and significantly improve policy development processes, digitalization can aid their structural transformation and economic diversification efforts. Put simply, many of the benefits of digitalization for African countries are already apparent; there are many more that will be holistic — potentially life-changing — but are currently unexploited.

¹ Throughout this paper, by "digital economy" or "digitalization" the authors mean economic activities derived from digital technologies, specifically those relying on internet, mobile and sensor networks.

Yet the actualization of these benefits is neither guaranteed nor will happen inadvertently. This is mainly because the digital market is characteristically imperfect, the dominant players in the market are unevenly distributed globally and African countries have negligible contributions. Most gains from the digital economy are largely concentrated in the United States and China (ibid.). In terms of characteristics, dominant firms (and first-movers) in the digital market enjoy huge economies of scale, partly because they incur a near-zero marginal cost of servicing additional customers, and mainly because network effects and the multi-sided nature of their businesses often lock in their customers. These firms also enjoy economies of scope, stemming from their exclusive control and ownership of huge and continuously growing customer data sets and their expertise in using sophisticated machine learning and artificial intelligence algorithms to extract data intelligence. Furthermore, the digital or easily digitalized nature of their business models makes internationalization and global expansion much easier and faster than typical bricks-and-mortar businesses. Also, these firms engage in other activities such as merger and acquisitions practices, political lobbying and expansion to other sectors that further entrench their dominance and the monopolistic tendency of the market.

For developing countries, especially African countries, there is uneasiness that these market imperfections could limit the potential gains from the digital economy, widen the already vast global inequality and make them the digitalized poor (Basu, Hickok and Chawla 2019). The winner-takes-most nature of the digital economy could widen the gap between the leading edge of the Global North and the trailing edge of the Global South by creating more technology dependency. The Global South may end up merely serving as suppliers of data and importers of the digital products developed from such data and remain stuck in the lower end of the data value chain. Furthermore, unlike the Industrial Age where mass production, diverse supply chains and positive foreign direct investment spillovers to the Global South occurred as firms sought least-cost production models, the digital economy is not likely to create diverse global digital supply chains but rather to engender exploitative foreign investments (Ciuriak 2018).

The challenges posed by the digital economy for African countries is not limited to its

market structure. Other concerns include the need to protect and secure the integrity of personal data and digital data storage systems as disinformation, privacy infringements and cyber attacks are becoming widespread. Also, the digital economy has some peculiarities that conventional legal frameworks are inadequate at addressing. For example, neither existing antitrust and competition laws nor global taxation principles are deemed appropriate for the digital economy. More importantly, given the huge and growing youth population in African countries, there are concerns about what the net effect of digitalization on labour market outcomes will be.

Effectively addressing the foregoing concerns relies on balancing the opportunities and challenges of the digital economy. The immense opportunities the digital economy offers African countries for tackling their enormous developmental problems and leapfrogging some of their structural challenges will only materialize if appropriate policies and regulations are implemented (Aaronson 2019). Therefore, building effective data governance frameworks and data strategies is crucial for African countries to be successful in managing the digital economy. Such frameworks should be designed based on up-to-date information about the digital markets and proper understanding of the data value chains. These frameworks should be targeted at incentivizing the development of efficient domestic digital sectors that can adapt to and address local challenges while enhancing the digitalization of other sectors of the economy. With sound data governance frameworks in place, countries can more proactively situate their digital aspirations within their existing economic transformation agendas and leverage them for development.

In this paper, the authors attempt to provide succinct, but comprehensive, initial discussions on some of the key data governance issues in the context of African countries. This type of analysis on Africa and data governance remains sparse. In the first and second sections (entitled “Assessing Data Protection and Privacy in Africa” and “Finding Appropriate Policies for Cross-border Data Flows for Africa,” respectively), the authors explore emerging issues related to data protection and privacy laws in African countries and discuss the need for appropriate cross-border data flow and localization. In the third and fourth sections (entitled “Making Competition and Antitrust Regulations Work for Africa” and “Adapting

African Taxation Systems to the Digital Economy,” respectively), the authors discuss and highlight policy options for implementing competition regulations and tailoring African taxation systems for the digital economy. In the fifth section, “Policies for Promoting Digital Enterprise and Entrepreneurship in Africa,” the authors conduct a similar analysis for domestic digital enterprise and entrepreneurship policies, followed by a conclusion. In the Appendix, the authors discuss digital preparedness in Africa and derive an eclectic measure (the digital preparedness index) to compare across selected countries based on five key indicators, followed by a discussion of results.

Assessing Data Protection and Privacy in Africa

Globally, there has been a growing momentum toward the enactment of stronger personal data protection and privacy laws. Some of the drivers of this trend include increased public outcry and scrutiny of social media platforms’ notoriety in terms of data privacy infringements, widespread cases of data breaches and the quest by countries to align their existing laws with international standards or best practices. Since the turn of the decade, more than 50 countries have enacted new laws, while the total number of countries with existing data protection laws is expected to rise to about 137 by the end of 2020 (Greenleaf 2019). African countries have also witnessed this proliferation as the number of countries with data protection laws has more than tripled from around eight in 2012 to about 26 in 2019 (Greenleaf 2019). Yet this remains the lowest percentage among continents across the world. Furthermore, enactment of data protection laws is not a sufficient condition for data protection and privacy. This is particularly noteworthy for African countries where legislation is sometimes inappropriate in terms of scope and relevance, and where regulatory and enforcement mechanisms are weak. There are numerous cases of state surveillance, most often against constitutional dictates. But in order to instill confidence and trust in users as digitalization develops in Africa, appropriate legal frameworks must be developed.

While the right to privacy is usually a constitutionally guaranteed right, data protection and privacy laws are needed to provide specific regulations that protect private or personal data and regulate the processes and actors involved in collecting, processing, transferring and disclosing such data. Currently, there is no one appropriate data protection law for the global digital market as even the market itself is always evolving, but the European Union’s General Data Protection Regulation (GDPR) seems broadly popular. Although the GDPR remains largely imperfect, it has become a regulatory standard or yardstick since its adoption in 2018 and has served as the basis for subsequent revisions and drafting of new data protection laws across the world.² The GDPR sets out seven key principles and eight data subject rights, with provisions imposing obligations on data controllers and processors. It includes regulatory, accountability and governance measures, and also covers rules on transfer of personal data across borders, among others.³ Here, the authors attempt to provide a generic assessment of selected data protection laws in African countries by juxtaposing them with the GDPR. The authors review the data protection laws in 20 of 26 jurisdictions where such laws exist, thereby excluding the few countries whose current laws or recently revised legislation is not assessable (see Appendix, Table 1).

Generally, existing data protection laws in African countries contain provisions covering the major principles and data subject rights as in the GDPR. For example, most of these laws have detailed provisions on the data subject’s consent, lawfulness of processing, and data minimization and storage limitations, among others. However, many of these laws (except for the recently enacted laws in Benin, Kenya and Mauritius) are not as comprehensive as the GDPR, and they often exclude the right to data portability and key accountability measures such as documentation of data-processing requirements. The documentation

2 Jeanette Herrle and Jesse Hirsh (2019) provide a detailed opinion on some of the challenges and areas of improvement for the GDPR after its first year of adoption.

3 The seven key principles of the GDPR are lawfulness, fairness and transparency; purpose limitation; data minimization; accuracy; storage limitation; integrity and confidentiality; and accountability. The eight data subject’s rights are the right to be informed; the right to access; the right to rectification; the right to erasure; the right to restrict processing; the right to data portability; the right to object; and the right related to automated decision making. See <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1528874672298&uri=CELEX:02016R0679-20160504> for the full GDPR text.

provision is essential for monitoring the activities of data controllers and processors, especially when processing poses a high risk to the data subject's rights and freedom. In this case, the GDPR further requires an impact assessment report from the data controller, which only the laws in Kenya and Mauritius mandate. Moreover, unlike the GDPR, most data protection laws in African countries do not require the designation of an in-house data protection officer by data controllers. Given the network effects present in the digital market, the right to data portability is vital for maintaining competition in the market. The absence of this right in most African laws also limits data subjects' ability to exercise their right to choose among or change service providers by easily moving their personal data across them. This is an essential feature that every modern data protection law should contain, considering the increasing concentration of the digital market. Finally, one of the major requisites of a good law is that it must be reasonably enforceable. The prevalence of non-comprehensive data protection and privacy laws in many African countries will make enforcement difficult, create loopholes for data controllers and processors to exploit, and, ultimately, compromise the objective of enacting the laws.

Another important issue, especially for African countries, is the independence or autonomy of the data protection authorities. All the data protection laws reviewed establish or mandate at least one agency with the power to enforce the laws. Most of these agencies have de jure autonomy bestowed by the laws, although they are often expected to report to a minister or member of the executive arm. The laws give ministers discretionary powers, including the power to revise regulations, grant exemptions, decide on enforcement of rules and review penalties. This makes the regulatory agency prone to political interference and regulatory capture. The desirable framework is one that grants the agency legal, financial and administrative autonomy, and in which the agency only reports to Parliament, as is the case in Mauritius and South Africa. Algeria's law presents an alternative approach to autonomy. It requires representatives of the three arms of government (executive, legislative and judicial) and seasoned technocrats to be on the agency's board. This requirement provides some guarantee that one arm of government cannot exert excessive influence on the activities of the agency. Notwithstanding, most of the regulatory agencies in Africa have been arguably passive,

while others are not yet operational or are in their nascent stages, as is the case in Algeria, Kenya, Seychelles and South Africa. These limitations affect the ability of the agency to effectively protect citizens' personal data against malpractices in the private sector and state surveillance.

While data protection by default is a basic responsibility of data controllers and processors, it is equally important to have robust data breach detection, investigation and reporting mechanisms for when breaches inadvertently occur. As shown in the appendix (Table 1), less than half of the African data protection laws reviewed mandate the reporting of data breaches to the data protection authority. However, the GDPR not only requires data controllers and processors to keep records of all data breaches (both minor and major), it mandates them to report major breaches to relevant authorities within 72 hours after they are detected. This provision is very important because as digitalization progresses, and with advancements in the Internet of Things, consumers will have more confidence in the digital sector if they are sure that there is adequate security and low risk of data compromise and that regulators are proactive in taking measures to protect them from possible harm. Another measure that can further reassure users of the security, integrity and confidentiality of their personal data is the availability of proportionate and dissuasive deterrents in terms of administrative fines, penalties and imprisonments for infringements and non-compliance. Data protection laws in African countries contain provisions for fines and penalties and require authorities to make case-by-case decisions. This is laudable; however, the deterrence measures are arguably not dissuasive enough, considering the size of digital firms (especially foreign-owned firms) operating in many of these jurisdictions. For example, the maximum fine permissible by the laws varies from a low of US\$1,500 in Uganda to about US\$10,500 in Ghana, to the highest fine of about US\$50,000 in Kenya. By contrast, the GDPR permits a maximum administrative fine of up to the higher of 20 million

euros or four percent of an undertaking's total global annual turnover in the preceding year.⁴

Finally, the authors address the question of how effective data protection authorities in African countries are in terms of both their actual activities and *ex ante* expectations, based on the strength of regulatory enforcement systems. A full and holistic assessment of the actual enforcement activities of these agencies is marred by insufficient data, as many African government agencies do not share this information. Notwithstanding, accessible information suggests that the data protection agencies in countries such as Ghana, Mali, Mauritius, South Africa and Tunisia have been reasonably active. For example, Ghana's Data Protection Commission initiated legal actions and published a list of about 177 non-compliant companies in 2017 (Data Protection Commission 2017). In 2019, the Office of the Attorney General created a fast-track court for the commission to hasten prosecutions of non-adhering institutions and companies. In the same year, the commission issued an ultimatum to the Ghanaian electoral body to provide details on its supply of voters' personal data to a foreign software company that allegedly sold the data to financial service providers. In Mauritius, the Data Protection Office has published on its website the decisions of investigations into more than 60 complaints it has received since 2011.⁵

Similarly, South Africa's Information Regulator, which has not commenced full operations, has responded to major cases of data breaches by requesting further information from companies such as Facebook. The foregoing suggests only modest success in enforcement of data protection and privacy laws in Africa, despite the growth of digital platforms and digitalization on the continent. To gain insight into the status of regulatory enforcement and rule of law on the continent more broadly (and their potential to effectively enforce data protection laws in the near future), the authors discuss in the appendix the World Justice Project's (WJP's) measure of

regulatory enforcement scores and the rule-of-law rankings for selected African countries (see Table 1, last column).⁶ This score typically ranges from zero (the worst) to one (the best) (the ranking was done for 126 countries). As shown in the table, there is a strong correlation between the regulatory enforcement scores and the rule-of-law ranking across the countries. Only a few of the countries reviewed rank among the top half of countries in terms of efficacy of their rule of law (i.e., Ghana, Mauritius, Senegal, South Africa and Tunisia). These findings reiterate the authors' earlier observations.

In sum, many African countries have acknowledged and responded to the need to have modern and appropriate data protection and privacy laws that provide adequate protection to their citizens and incentivize them to adopt digital technology without fear of harm. Nevertheless, the authors' assessment of existing laws relative to the GDPR reveals that many of them require significant revisions to make them suitable to the dynamics of the digital market and to achieve their primary objectives. Countries without data protection laws must enact them as soon as possible, while those with proposed legislation, such as Eswatini, Nigeria, Tanzania and Zambia, must ensure they are up-to-date and hasten to pass them into law. Also, there is a need to strengthen enforcement authorities to be able to implement these laws in the best possible way and to encourage inactive or non-operational authorities to be proactive.

Finding Appropriate Policies for Cross-border Data Flows for Africa

There is no doubt that data is salient for the development of the digital market, and the ability of firms in the digital sector to access and control users' data outside their source countries confers huge benefits toward their internationalization

4 It is, however, interesting to note that some of the laws in African countries have unnecessarily harsh imprisonment terms as alternatives to their maximum fines. For example, both Ghana and Uganda have a maximum sentence of 10 years. Kenya's data protection law appears to be the closest to the GDPR in terms of dissuasive deterrents, as it has the highest penalty amount among the countries reviewed and it also provides for a maximum fine of one percent of annual turnover of non-compliant companies.

5 See <http://dataprotection.govmu.org/>.

6 The WJP's rule-of-law index captures experts' (more than 300 local experts per country) experiences and perceptions of the rule of law in their everyday life, while the regulatory enforcement score captures their perception of the extent to which regulations are fairly and effectively implemented and enforced. See <https://worldjusticeproject.org/our-work/wjp-rule-law-index> for more details.

goals. Yet every responsible country is obliged to extend the protection of the personal data of its citizens beyond its borders by ensuring that they are given, at minimum, commensurate treatment in foreign countries, thus the inclusion of provisions on cross-border data flows in data protection and privacy laws. As shown in the appendix (Table 1), virtually all the African laws reviewed have provisions restricting the transfer of personal data to other countries. As is the case with the GDPR, exemptions are only granted in cases where there is the data subject's consent, contractual obligations and binding corporate rules, enforceable safeguards or equivalent data protection and privacy laws.

There are a few variations in the laws across African countries. For example, the laws in Ghana and Seychelles do not explicitly restrict cross-border data flows, but they have provisions requiring that similar conditions as the foregoing be met. The case of Ghana is also unique in that the law protects foreigners' private data being processed in Ghana through outsourcing provisions. This mandates data controllers and processors in Ghana to apply foreign countries' data protection laws when processing foreign citizens' personal data. Kenya and Nigeria have localization restrictions for the processing of certain sensitive data, while Algeria requires authentication from the authorities before cross-border transfers are permitted. Mauritius requires data controllers processing citizens' personal data abroad to have some local presence or representative, while Gabon publishes the list of countries it considers as having enough protection for cross-border data transfer (just as the GDPR has a list of countries that fulfill these adequacy provisions). In reality, given the tendency of data subjects to agree to all terms and conditions without scrutiny, the effectiveness of these laws remains to be seen, especially for the protection of online transactions.

The question of whether cross-border data restriction is desirable has become very contentious and salient. Currently, like the majority of countries around the world, most African countries have adopted the conditional data flow regime in which cross-border transfer of data related to a few sectors or institutions is restricted (Ferracane 2018). This restriction is driven by concerns about privacy and data protection, national security and domestic law enforcement needs, protecting domestic firms from foreign competition, levelling the playing field between incumbents in certain

sectors and their digital disruptors, and sometimes the need to avoid "data colonialism" and protect information sovereignty (Meltzer and Lovelock 2018; Basu, Hickok and Chawla 2019). However, recent empirical evidence suggests that these concerns are hardly addressed by imposing cross-border data restrictions; rather, they are driven by incomplete information and misconceptions. In fact, it is suggested that the economic losses due to cross-border data flow restrictions are overwhelmingly borne by domestic consumers and local businesses while benefiting only a few data-processing firms (see, for example, Bauer, Ferracane and Van der Marel 2016; Bauer et al. 2013). Therefore, what is the best approach for African countries?

Unfortunately, there is no one-size-fits-all approach to cross-border data flows. Domestically, countries must adopt the best regulatory framework needed to shape their digital economies in ways that best serve the interests of their populations. This requires considering the diverging views and conflicting interests of consumers, understanding how the digital economy works and carefully getting feedback from all stakeholders before policies are designed. In addition to individual country nuances, a strong case can be made for harmonization of cross-border data flow policies of African countries under the umbrella of the 2014 African Union Convention on Cyber Security and Personal Data Protection (AU-CCPP). While this convention has been marred by its slow pace of ratification (only five countries have ratified it as of January 2020) and absence of effective regional coordination, with appropriate efforts, it may still serve as a viable framework for harmonization (Orji 2018). Therefore, taking insights from the Asia-Pacific Economic Cooperation's (APEC's) Cross-Border Privacy Rules, African countries can use the AU-CCPP to both harmonize their rules and possibly negotiate interoperability agreements with other jurisdictions such as the European Union and APEC. Ultimately, in order to optimize the gains from cross-border data flows, African countries must have a clear, collective and well-articulated strategy on cross-border data flows. The authors' preferred framework is one that facilitates unrestricted data flows within the continent and has only reasonable conditional data flow restrictions with countries outside the continent.

Making Competition and Antitrust Regulations Work for Africa

Digital markets are characterized by substantial upfront investment costs; network externalities (i.e., the value of usage for all consumers increases as the number of users increases); economies of scale (i.e., the marginal cost of including additional users is insignificant); economies of scope in data (i.e., the control of big data and use of machine learning, algorithms and analytics generates enormous digital intelligence for the data controller); and minimal cost of global diffusion and expansion. These characteristics confer incumbency advantages, create huge barriers to entry and drive the market toward concentration. Apart from the markets' characteristics, the entry barriers are also reinforced by consumers' behaviours, especially their preferences for default and top digital platform brands and single-homing practices. Put simply, these features drive the digital market toward competition for the market rather than competition in the market (Stigler Center for the Study of the Economy and the State 2019). The actual tipping of the global digital market toward such a winner-takes-all scenario has been a major source of concern for regulators.

Ideally, antitrust and competition laws should address these concerns. However, current antitrust regulations and competition laws alone cannot upend the natural economics that drive the digital market today (Kimmelman 2019). In fact, it is fair to say these regulations were not designed for the specificities of the market. For example, most antitrust policies that focus on the benefits or harms to consumers by evaluating short-term price effects are not appropriate for a digital market where users get "free" services or are charged predatory prices through bundling of services. Also, many network effects, the major source of market power, are not captured by competition laws and authorities (Bourreau, de Streel and Graef 2017). There is a need for new legislation and forward-looking measures that do not merely maintain existing competition levels but adapt to the characteristics of the digital market and create competition by encouraging new entrants. Similarly, the multi-sided nature of the market, the complexity of the activities

therein and the fast-paced nature of technology itself put individual regulators at a disadvantage and underscore the need for both evolving and collaborative approaches to monitoring and enforcement in the digital market.

Recent Proposals

In recent years, a few proposals aimed at promoting competition in the digital market have been made. These proposals primarily centre around improving existing antitrust and competition laws, establishing digital market-focused competition regulators (the so-called digital authorities), and deploying regulations, measures and tools targeted at correcting some of the anomalies of the market (see, for example, Stigler Center for the Study of the Economy and the State 2019; Crémer, de Montjoye and Schweitzer 2019; UNCTAD 2019; Digital Competition Expert Panel 2019).⁷ Antitrust and competition laws should be refined to discourage anti-competitive strategies and manipulations while remaining complementary to consumer and data protection laws. Merger and acquisition reviews, especially those involving nascent firms, should extend beyond their current size and market share thresholds to considerations such as the network effects, concentration of data control and other future competitiveness impacts. These reviews should be case-specific, and the acquiring or merging firms should bear the burden of proving their pro-competition and welfare-enhancing benefits. Specific measures to minimize unhealthy network effects must address the need to promote data portability and mobility across platforms, as well as the interoperability of standards, especially for equipment and appliances. Also, there is a need to prevent dominant platforms with bottleneck powers from discriminating against their clients and potential rivals and engaging in vertical integrations that create anti-competitive conflicts of interest.⁸

7 There is some consensus that regulators can either accept digital platforms as inherently monopolistic or oligopolistic firms and enforce regulations on them, or consider them to be firms with anti-competitive features requiring appropriate measures to curb the negative effects of such features.

8 Major digital platforms can have bottleneck powers if they provide critical intermediaries with infrastructure and services for other firms, or their clients primarily single-home and rely solely on them. Examples include Google's search-engine services and Amazon's e-commerce services.

Situating the African Digital Market

How does the foregoing fit the African context? In the past decade, many African countries have witnessed growth in their digital markets due to increasing technology adoption and a boom in digital enterprises. However, as described in earlier sections, there remains a stark digital divide and unevenness within the continent and across countries. Only a few, mostly foreign-owned and well-funded digital firms and platforms, have regional or continental reach and enjoy some of the characteristics highlighted above.⁹ The majority of digital platforms and firms in Africa are restricted to providing digital products and services within their local markets, relying on incomplete and fragmented infrastructure, which forces them to run costly asset-heavy business models and limits their ability to enjoy economies of scale (UNCTAD 2019; Friederici, Wahome and Graham, forthcoming 2020). Also, most of the major domestic platforms are concentrated in the hands of a few investors (David-West and Evans 2016). This paints a picture of a market that may be tipping toward the winner-takes-all scenario with foreign-controlled or a few domestic platforms dominating. Therefore, many of the proposals discussed above are applicable to African countries in order to incentivize and sustain competition in their digital market. Moreover, there is no better time to inculcate competition values than when the market is just developing. But first, what is the state of competition regulation and enforcement in African countries and what additional steps are required to instill sustainable pro-competition practices in the digital market?

Although there has been a significant increase in the enactment of antitrust and competition laws (including new amendments) in many African countries, more than half of them have neither competition laws in place nor appropriate regulatory authorities established (see Baker McKenzie 2019). In many countries where these laws exist, they are mostly dated with passive or non-operational regulators. Yet there is already a high prevalence of imperfect market structures (especially monopolies, duopolies and oligopolies) across key sectors in many African countries, even after considering market size (World Bank Group 2016). These limitations notwithstanding, the situation presents an

opportunity for African policy makers to do things differently with the newly emerging digital markets and learn from the mistakes of the front-runners (advanced economies). The seemingly obvious next step is adoption of the proposals above. However, considering the current dismal state of regulatory frameworks and enforcements in most African countries, their approach to reform must be more pragmatic, relying heavily on cross-country harmonization, cooperation and collaborations. International and development partners on the continent can also provide additional assistance in this regard.

Policy Options

First, the basic institutional minimum of having up-to-date antitrust and competition laws that establish a competition regulatory agency is a desirable start for African countries. Such a regulator should at least have a well-staffed digital markets unit or department with the expertise and capacity to research and analyze contemporary competition issues in both domestic and global digital markets. The regulator must be well funded, well staffed and shielded from political interference (including ministerial veto) and regulatory capture through the enactment of appropriate legislation. Similarly, the regulator should be granted enough operational and decision-making autonomy, especially in its ability to adopt and modify regulations, codes of conduct and other measures or tools deemed necessary to ensure a timely response to the evolving digital ecosystem. Competition authorities in countries such as Egypt, South Africa and Tunisia are arguably some of the leading examples in taking proactive enforcement measures. Hopefully, they will maintain this momentum for regulating their digital markets.

Second, given the fragmented and small market size of many African economies, it is expected that more digital firms and platforms will aspire to expand their operations across regions and the continent. Ordinarily, on the one hand, this growth creates opportunities to increase domestic competition, provide diverse consumer choices, and promote innovation and investment in receiving countries. On the other hand, such expansion may pose risks to domestic markets if new entrants engage in anti-competitive practices or if they are discriminated against through market-distorting domestic government interventions. Therefore, there is a need for policy coordination

⁹ Examples include Expedia, Taxify, Uber, Fiverr, Workana, Airbnb, Voyable, Booking.com, Hotels.com and Jumia (the latter being the only major one from Nigeria).

and convergence of basic principles among relevant competition regulators across African countries to address these and other challenges associated with intracontinental activities of digital firms. At the minimum, the free trade agreement presently being negotiated among African countries needs to cover trade in digital goods and services, with no barriers to free movement of labour and capital around digital enterprises.

Third, although many of the successes of digital markets in Africa are attributable to their reliance on global digital platforms and technologies, the latter still pose a threat to local platforms by competing with them directly in domestic markets, thereby forcing domestic platforms out of lucrative markets. While competition is generally desirable, it cannot be attained by setting up nascent domestic platforms against huge global platforms. And while this may not be of immediate concern, the increasing role of foreign-owned platforms in Africa shows that it is a legitimate medium-term concern. To create a level playing field, regulatory authorities must obtain appropriate competition-enhancing commitments from global platforms before allowing them into domestic markets.¹⁰ African countries will have more bargaining power if this is done at the regional or continental level so that smaller countries are not exploited.

Fourth, regulators differ in staff expertise, financial resources and experiences, especially given the inequality in digital firms' distribution across the continent. Yet, in a "borderless" digital market, no country or regulator can afford to be left behind. Therefore, there is a need for some mechanisms for formal knowledge sharing and cross-learning to maximize and expand the benefits of the digital sector. In this respect, regulators can leverage the existence of regional competition authorities (such as the Common Market for Eastern and Southern Africa Competition Commission, the Economic Community of West African States Competition Authority and the East African Community Competition Authority) and informal continental networks (such as the African Competition Forum). Harnessing the private sector, civil societies and consumer interest groups' participation is also critical to the success of competition frameworks. While these organizations have focused on different

sectors, albeit with varying levels of effectiveness, they will be more helpful if they dedicate more energy and resources to digital markets.

Finally, improving and sustaining competition is merely one part of a complex and multi-dimensional approach required to promote the digital sector in African countries. Therefore, competition laws should not be designed in isolation, but rather made complementary with other data governance policies, including digital sector taxation, consumer protection laws, data protection and privacy laws, cross-border data flows and data localization measures, and digital entrepreneurship and digital skills development programs.

Adapting African Taxation Systems to the Digital Economy

Even before the digitalization of many economic activities, developing economies (especially African countries) were already struggling with the negative cross-country spillovers of deficiencies in international corporate taxation rules and systems.¹¹ Now, as digitalization becomes pervasive and becomes one of the focal points of global debates on the appropriateness of current international tax rules, another layer of concern has emerged for African countries. Dealing with the corporate tax implications of digitalization and the new business models is highly contentious, both politically and intellectually (Carrière-Swallow and Haksar 2019). The primary source of the problem is the disconnect between the features of the digital market and current international taxation rules and principles. Digital firms are characterized by their ability to scale across borders without heavy reliance on intangible assets and high levels of user participation (Organisation for Economic Co-operation and Development [OECD]

10 A good example of this is the case of the Egyptian Competition Authority's conditions on Uber's acquisition of Careem (the major Middle Eastern and North African ride-hailing and sharing platform) (see Wahba 2019).

11 In addition to their structural limitations, African countries are still dealing with the effects of aggressive tax avoidance and optimization practices of multinational enterprises, especially profit shifting to low-tax jurisdictions and the effects of harmful tax competitions and illicit financial flows on their drive to mobilize much-needed resources for development (Carrière-Swallow and Haksar 2019; UNCTAD 2019).

2019). In other words, they provide services and facilitate transactions across jurisdictions without necessarily having a physical presence there, and they run physical asset-light business models that make them highly mobile and enable them to minimize their tax liabilities. Also, the constantly evolving nature of their activities (for example, social media and multi-sided platforms, online marketplaces, search engines and their “free” services) makes them challenging to understand, whereas both the nexus rule and the arm’s-length principle that are at the heart of international corporate taxation rules make the imposition of fair and effective tax on digital firms very difficult.

The nexus rule permits jurisdictions to tax only the profits of foreign companies with a taxable physical presence in their purview, thereby impeding the establishment of taxing rights over the profits of digital firms that only conduct their cross-border transactions online (such as e-commerce and digital platforms). Similarly, the arm’s-length principle allows transactions between different parts of a multinational to be priced as if they were between independent entities, often leading to erosion of the tax base, as these multinationals allot more profits to tax havens than to their market jurisdictions. This second challenge is worse in the digital market, given firms’ high dependency on intangibles such as software, algorithms, analytics and data processing, and the tendency to allocate more value to these inputs and activities (claiming they are more valuable functions than data generation), which are often based in low-tax jurisdictions. Notwithstanding the aforementioned mismatches, as domestic pressure builds, governments are obliged to level the playing field for domestic firms and fulfill their obligation of mobilizing all available resources for development by making the big digital multinationals pay their fair share.¹² Therefore, there is a near-global consensus on the need to update current international corporate taxation rules and principles, although there remains a lack of agreement as to what changes should be made. Hence, there are a few multilateral proposals and a growing number of unilateral measures.

12 Moreover, global digital technology companies have become increasingly notorious for their data privacy laxes and related abuses and have thus recently attracted a wave of “techlash.”

Proposals

To situate African countries, it is important to highlight the major proposals and their progress. The OECD remains the major multilateral standard-setting body for taxation, although there is no entity with truly global legitimacy.¹³ Following the modest success of the OECD/Group of Twenty Base Erosion and Profit Shifting (BEPS) Project, the Inclusive Framework on BEPS was established in 2016 and accommodates more non-OECD countries. So far, it delivered an interim report in 2018 that set out the direction of work on digitalization and international taxation rules through the end of 2020 when a final report on consensus-based solutions is expected. While the OECD BEPS 2015 *Final Reports*¹⁴ included actions related to the digital sector, specifically Actions 1, 3, 7 and 8 to 10, they fail to adequately address the key problems of nexus, profit allocation and transfer pricing (see Hadzhieva 2019; Independent Commission for the Reform of International Corporate Tax [ICRICT] 2019).¹⁵ Moreover, none of the options proffered were ultimately recommended, as the OECD agreed instead to continue monitoring developments in the digital economy. Currently, the more than 135 members of the Inclusive Framework appear to broadly agree that the first two features of the digital market (i.e., scale without mass and reliance on intangible assets) matter for tax purposes. However, a major sticking point remains the disagreement over the value created by users through data and content generation for digital firms. These have broader implications for the big users’ markets, especially in developing countries, as the Inclusive Framework on BEPS is debating how to revise the profit allocation and nexus rules to expand the rights of market jurisdictions. Hopefully, if resolved, international consensus can be reached by the end of 2020.

In the meantime, while awaiting the OECD’s long-term solutions, the European Commission adopted two proposals in March 2018, including a proposed interim three percent digital services tax (DST) on the revenue of firms in which users are

13 The only other supranational body is the UN Committee of Experts on International Cooperation in Tax Matters (or simply the UN Tax Committee). However, arguably more progress has been made with the OECD BEPS Project, and it is often argued that it is better to stick with this approach to avoid duplication of efforts.

14 See www.oecd.org/ctp/beeps-2015-final-reports.htm.

15 Specifically, Actions 7, 8 to 10 and 3 are on permanent establishment, transfer pricing and controlled foreign corporation rules, respectively.

deemed to play a major role in value creation. The second proposal includes longer-term corporate tax rules for firms with significant digital presence.¹⁶ Apart from the OECD and the European Union, the ICRICT prefers a formulary apportionment approach where multinationals are taxed as a single unit and countries obtain fiscal revenues from them based on real economic activities that take place in their territories. Generally, most recent proposals can be grouped into destination-based taxation systems (including sale-based and allocation of residual profits) and formulary apportionment systems, although the former appear to be broadly preferred (see Carrière-Swallow and Haksar 2019; Hadzhiyeva 2019). Several countries have also initiated unilateral measures, mostly along the lines of a DST.

For African countries, their approach to the foregoing should go beyond just ensuring that ongoing reforms of the international taxation laws are favourable to them in terms of mobilizing much-needed financial resources. They must adopt options that consider their structural challenges and the need to promote their nascent domestic digital sector. The following policy options are thus recommended.

Policy Options

First, in order to have consistent and predictable tax laws that can help reduce the current illicit financial flows out of the continent, African countries must align with the multilateral approach to resolving international taxation problems. Moreover, they must take advantage of the International Framework on BEPS' objective of being more inclusive to push for equal voice, better participation and active contribution to the ongoing tax reform process. African countries need a common voice and stronger collective bargaining power to advocate changes that will favour them collectively. After all, many small countries in the region neither have sufficient capacity and resources nor prioritize these issues enough to adequately represent themselves

¹⁶ For both proposals, there are thresholds for the size of the firms in terms of global revenue, EU revenue, and number of users and business contracts involved. See https://ec.europa.eu/taxation_customs/business/company-tax/fair-taxation-digital-economy_en for details. Despite broad support, the European Council has not reached an agreement on the DST and thus has resolved to wait for the OECD.

individually.¹⁷ Therefore, there is a need to strengthen regional and continental consultation and knowledge and information sharing, and to increase support for regional taxation organizations such as the African Tax Administration Forum (ATAF), which is a major representative in the International Framework on BEPS.

Second, in terms of the substantive negotiations going on within the International Framework on BEPS, African countries should primarily support measures that recognize the specificities of their markets. These include allocation of taxing rights in favour of market or source jurisdictions (based on sales), and measures that minimize or eliminate the profit-shifting strategies of multinational enterprises. Many scholars posit that the more favourable approach for African countries is the residual profit-allocation method, together with rules setting minimum taxes on outbound and inbound investments to curb tax competition (Carrière-Swallow and Haksar 2019; ATAF 2019). Also, African countries should avoid support for ring-fencing measures, as the realities on the ground show that digitalization is very pervasive, spreading to sectors such as agriculture and mining that have long been the mainstay of most of them.

Third, one of the major continual challenges of most African countries is inadequate technical capacity and expertise on tax policy design, administration and enforcement. This is especially the case for the low-income and least-developed countries on the continent, indicating a correlation with resource adequacy. Yet digitalization promises to further complicate this problem by resulting in more complex tax systems, with countries having to deal with the greater expertise of multinational digital firms. Therefore, while it is natural that African countries insist on simpler and cleaner tax rules with minimal loopholes from the International Framework on BEPS, it is also salient to have mechanisms in place to provide cross-country support, information sharing and learning, especially at the level of tax administrators. Similarly, smaller countries can gain more when regional giants such as Egypt, Kenya, Nigeria and South Africa play more active roles in regional and continental bodies such as the ATAF, Centre de Rencontres et d'Études des Dirigeants des Administrations Fiscales and the West African Tax

¹⁷ As of January 2020, only about 24 of the 54 African countries were members of the Inclusive Framework on BEPS.

Administration Forum. Continued targeted supports from bilateral partners and multilateral institutions such as the IMF, the World Bank and the African Development Bank in the form of capacity building and technical assistance will also be invaluable.

Fourth, in addition to resource mobilization, one of the major priorities for African countries must be the promotion of their domestic digital sectors, with their taxation policies, among others, reflecting this priority. Digital taxes are generally efficient when they are levied on rents of digital firms and inefficient when levied on the use of digital services that promote business transactions and economic activities. The latter approach is not only inefficient but counterproductive for a continent where digital penetration is still relatively low (compared to the rest of the world) and where users are just getting comfortable with digitalization. Therefore, the ongoing practice in some African countries of taxing the use of internet and internet applications must be strongly discouraged. Countries must understand that the potential revenue and efficiency gains from increased adoption of digital services, including those associated with formalizing their largely informal enterprise-dominated economies, far outweigh the tentative gains from taxing digital activities, which discourages technology adoption. Even when taxing domestic digital firms, certain sales and revenue thresholds must be imposed to promote investment by small and medium-scale firms in the sector and provide them with a level playing field with foreign competitors.¹⁸ Put simply, taxation should be used as one of the incentives to grow the domestic digital sector.

Finally, the success of policy and policy implementation in African countries is often contingent on political will. While it is expected that generating more revenue is a desirable objective for every government, irrespective of its primary motivation or utility, the experiences of African countries have shown that political will can be misdirected to lesser priorities. Therefore, it is salient for non-governmental organizations, civil societies, media and development partners to always nudge African governments toward prioritizing the need for fair, efficient and effective taxation rules and their resource-mobilization goals.

¹⁸ For example, Nigeria's recently signed Finance Act, 2019, exempts early-stage start-ups with revenue below 25 million naira from paying company income tax and only requires those with revenues above 100 million naira to pay the standard rate of 30 percent.

Policies to Promote Digital Enterprise and Entrepreneurship in Africa

Africa has a booming digital market. The number of internet users has increased by more than 100-fold over the last two decades (2000–2019) and the contribution of information and communications technology (ICT) to economies has been impressive. In Nigeria, the ICT sector contributed about 14 percent of GDP in 2019, which is more than both the oil and gas sector (8.8 percent) and manufacturing sector (8 percent). The World Bank (2018) noted that Sub-Saharan Africa has the highest percentage of mobile money users in any region, indicating the enormous opportunities for leapfrogging through digitalization. While domestic digital enterprises play a substantial role in this growth, the major drivers and gainers have been the international ICT firms. Facebook's and Google's initiatives such as internet.org and Android Go have ensured access to internet-connected phones for millions of people in developing countries (Pisa and Polcari 2019). These organizations, through their software, are the gateway to the internet in Africa, while Chinese firms have also benefited on the hardware side.

Domestic digital enterprises operate mostly at the low and middle spectrum of the digital market. One of the business models is replicating products in sectors untapped by the multinational technological firms. For example, e-commerce platforms such as Jumia (Nigeria) and Kilimall (Kenya) are equivalent to Amazon and Alibaba in their respective countries. Richard Boateng et al. (2017) also identified other notable areas in which African digital firms are thriving, including telecommunications, information services and digital service developers. One of the greatest success stories out of the African digital market is M-Pesa in Kenya. M-Pesa is a mobile-based technology that enables anyone with a mobile phone to participate in the formal financial sector through the deposit, transfer and withdrawal of cash. Financial inclusion in Kenya rose from 14 percent in 2006, prior to the introduction of MPESA, to 83 percent in 2019 (Reuters 2019).

However, the progress of the digital enterprise market in Africa is still constrained by largely

macroeconomic and microeconomic conditions and infrastructural challenges. Only a few governments are investing in digital infrastructure, services, skills and entrepreneurship (World Bank 2019). In a few cases, governments invest in technological hubs and incubation centres to nurture domestic digital markets and entrepreneurs with key supports in infrastructure, capital and mentorships. Despite government support, digital enterprises in Africa are still constrained by the absence of a skilled workforce, inadequate entrepreneurial skills and limited access to finance needed to scale up (UNCTAD 2019). Digital enterprises require huge upfront investment and profit making can take considerable time. Government investment could be unsustainable in this instance, given the tight fiscal space that many African countries operate within and competition for resources from many sectors of the economy. The domestic private sector is unable to fill this role, as it faces challenges in terms of capitalization, inability of many start-ups to meet the necessary collateral requirements and high investment risk.

The growth potential of digital enterprises in Africa is further limited by the prevailing toxic economic conditions. As the World Bank Group's *Doing Business 2020* report has shown, the business environment in Africa is weak and not conducive for business development (World Bank Group 2020). In 2019, only three African countries ranked among the top 50 countries for ease of doing business, and the majority of countries in the bottom 20 percent are from the region. Access to electricity in the region takes about 31 percent of income per capita, and businesses spent about 96 hours to comply with documentary requirements to import goods (World Bank 2019). Owing to these factors, Africa has a higher business discontinuation rate than other regions, with only 13 percent of enterprises surviving beyond 42 months after inception (Boateng et al. 2018). Digital enterprises are not insulated from these challenging business environments and therefore will benefit from economic reforms.

Another crucial limitation for digital enterprises in Africa is the size of their immediate market. The whole economy of Africa (US\$1.71 trillion in 2018) dwarfs the total market capitalization of the two biggest technological companies in the world.¹⁹

¹⁹ See <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD?locations=ZG>.

Moreover, most African businesses operate in informal markets that are yet to be digitalized. More than 41 percent of Africa's population live on less than US\$1.25 per day (Addison et al. 2019). The attractiveness of the African market is based more on its population than on its capacity and willingness to pay. For multilateral digital enterprises, it is possible to diversify their portfolio between developed and developing countries, in view of long-term gains. African digital entrepreneurs face a less favourable option, as barriers to entry are steeper in developed countries' markets. The progress of African digital enterprises is therefore linked to larger macroeconomic conditions and economic development.

Policy Options

Developing digital enterprises around innovation hubs is a crucial first step that many African countries are already experimenting with. For example, the Co-Creation Hub, which started in Nigeria in 2011, has incubated more than 50 start-ups and expanded to two other African countries. These hubs enable better social network building and peer learning for business development. In the absence of skilled labour and adequate infrastructure, these hubs have strategic advantages, as they provide avenues for sharing human and physical capital. However, in the long term, there is no alternative to addressing the structural and local systemic issues that are affecting the competitiveness of domestic digital enterprises. UNCTAD (2019) observes that entrepreneurs in Africa face higher costs than elsewhere because the continent's bandwidth is the poorest globally and the technological capacity of their customers and employees is low. These bottlenecks are not restricted to the digital sector and will feed into broader economic reforms.

Regarding the small and fragmented markets that African entrepreneurs operate within, the solution will require a more regional approach. This will involve integrating African markets and lowering the regulatory barriers to movement of production factors across the continent. This approach will allow firms to enjoy economies of scale and lead to the creation of more domestic regional and continental technology platforms. Interestingly, the framework to implement this strategy already exists, with the African Continental Free Trade Area's (AfCFTA's) planned commencement in July 2020. With the AfCFTA, the continent becomes

a single market, thereby eliminating concerns around market size and fragmentation.

Government interventions in the digital economy should be targeted at addressing the major challenges facing digital enterprises. For example, tax exemptions can be granted to small digital start-ups, as is the case with Nigeria's recent Finance Act, 2019. In addition to encouraging commercial banks, venture capitalists and angel investors to invest in the digital sector, governments can expand their enterprise finance programs to early start-ups that fulfill well-articulated conditions. Preferably, these start-ups can be managed by non-governmental and private sector-driven innovation hubs and accelerator programs. In fact, public universities around the world have recorded significant success with this approach, which may be replicated by African universities. Another crucial area of investment for government is around local infrastructure that supports the digital entrepreneurial ecosystem. Africa remains the region with the least mobile penetration and broadband connectivity (ibid.). The government's role will be crucial in building infrastructure, as this is considered a non-rivalrous good in which the private sector has little incentive to invest.

To address the problem of inadequate demand for some services and products of digital enterprises in African countries, there is a need to enhance digitalization of enterprises in other sectors of the economy and digital adoption by both the public and private sectors in general. Without necessarily choosing winners or inhibiting market competition, governments can use their procurement processes to foster domestic digital enterprises and develop digital ecosystems. For example, governments can transparently encourage procurements from digital enterprises whose primary focus has been addressing local challenges or creating digital solutions for enterprises in other sectors of the economy.

Conclusion

This paper assesses selected data governance issues in Africa. It examines the status of data protection and privacy laws and the appropriateness of cross-border data flow and localization policies. The paper further highlights recent trends

and provides some policy options for African countries in terms of competition and taxation in the digital economy and challenges associated with promoting domestic digital enterprises.

African governments have not responded appropriately to the challenges posed by the digital economy. In the authors' cross-country review of the existing data governance frameworks, many countries still do not have laws and institutional frameworks for digital data protection and security. In the handful of countries with functional frameworks, they are either not operating effectively or remain far behind the global standard necessary to ensure transformative digital development. The tension between the rapidly developing digital economy and the nature of public institutions is widespread and not unique to Africa. However, the problem may be more profound and the development implication more enduring where existing structural bottlenecks and weak technical capacity in the public and private sectors limit the ability to adequately mitigate the negative impacts of digital governance. The power imbalance between mostly small and low-income African countries and big multinational platform firms further increases the risks of digital transformation.

The paper suggests a number of proposals to address the data governance issues discussed, with some common themes among them. First, every country needs autonomous regulatory institutions to coordinate data governance strategies. This will enable countries to develop appropriate laws for data protection, anti-competition and antitrust, taxation and other aspects of the digital economy. However, optimal institutional frameworks will vary across countries according to the existing political and economic realities and the level of development of the domestic digital industry. This is why flexibility and peer learning are required to create the right institutional frameworks. Second, there is a need to address major barriers to the development of domestic digital enterprises. Investment in infrastructure to fast-track digitalization and create incentives for players in the sector is crucial. Lastly, it is important to recognize that an individual country cannot effectively regulate the digital sector. Building broad partnerships internally and externally, at the continental level, will be important for African countries to annex the digital economy for economic transformation and to attain elusive economic development for the continent.

Appendix

Table 1: Summary of Data Privacy and Protection Laws in Africa

	Law and Year (Enacted or Amended)	Data Protection Authority
Algeria	Loi relative à la protection des personnes physiques dans le traitement des données à caractère personnel (2018)	Autorité Nationale de Protection des Données
Angola	Lei da Protecção de Dados Pessoais (2011)	Agência da Protecção de Dados
Benin	Code du Numérique (2017)	Autorité de Protection des Données à Caractère Personnelles
Burkina Faso	Loi Portant Protection des Données à Caractère Personnel (2004)	Data Processing and Liberties Commission
Cape Verde	Regime Jurídico Geral de Protecção de Dados Pessoais a Pessoas Singulares (2013)	Commissio Nacional de Protecção de Dados
Chad	Loi Portant Protection des Données à Caractère Personnel (2015)	Agence Nationale pour la sécurité de l'information et certification électronique
Côte d'Ivoire	Loi relative à la Protection des Données Personnelles (2013)	Autorité de régulation des télécommunications et des TIC
Equatorial Guinea	Ley de Protección de Datos Personales (2016)	Organo Rector de Protección de Datos Personales
Gabon	Loi relative à la protection des données personnelles (2011)	La Commission nationale pour la protection des données personnelles
Ghana	Data Protection Act (2012)	Data Protection Commission
Kenya	Data Protection Act (2019)	Office of the Data Protection Commissioner
Madagascar	Loi relative à la Protection des Données Personnelles (2014)	Commission Malagasy sur l'Informatique et les Libertés
Mali	Loi Portant Protection des Données à Caractère Personnel (2013)	Autorité de Protection des Données à Caractère Personnel
Mauritius	Data Protection Act (2017)	Data Protection Office of Mauritius
Morocco	Loi relative à la protection des personnes physiques à l'égard du traitement des données à caractère personnel (2009)	Commission nationale de contrôle et de protection des données personnelles
Senegal	Loi sur la Protection des Données à Caractère Personnel (2008)	La Commission de Protection des Données Personnelles
Seychelles	Data Protection Act (2003)	Data Protection Commissioner
South Africa	Protection of Personal Information Act (2013)	Information Regulator
Tunisia	Loi Portant sur la protection des Données à Caractère Personnel (2017)	Autorité nationale de protection des données personnelles
Uganda	Data Protection and Privacy Act (2019)	Personal Data Protection Office

Source: Greenleaf (2019); World Legal Information Institute, "National Data Privacy Legislation" (www.worldlii.org/int/other/NDPrivLegis/).

Cross-border Data Flow Restrictions	Data Breach Notification Required	Regulatory Enforcement Index (WJP Rule of Law Rank)
Yes (some transfers require prior authorization from the Data Protection Authority).	Yes	0.52 (72 of 126)
Yes	No	0.42 (111)
Yes	Yes	0.51 (79)
Yes	No	0.46 (73)
Yes	No	n/a
Yes	Yes	n/a
Yes	No	0.52 (93)
Yes	No	n/a
Yes	No	n/a
No, however, its distinct outsourcing provisions protect foreigners' personal data processed in Ghana.	Yes	0.55 (48)
Yes	Yes	0.46 (101)
Yes	No	0.35 (107)
Yes	No	0.54 (103)
Yes	Yes	0.63 (37)
Yes	No	0.54 (74)
Yes	No	0.55 (52)
No	No	n/a
Yes	Yes	0.55 (47)
Yes	No	0.53 (61)
No	Yes	0.42 (113)

The Digital Preparedness Index

In this section, the authors derive a measure of digital preparedness of African countries and provide a succinct summary of the main trend across five major dimensions that is a requisite for optimizing the benefits of the digital economy.

The authors define digital preparedness as the set of enablers that facilitate a country's adoption, use and local development of digital technologies. These factors include soft and hard digital infrastructure such as broadband internet, telecommunication infrastructure, social and economic amenities, broader macroeconomic conditions, business environment, and legal and institutional frameworks guiding business operations. It is difficult to develop an indicator that truly captures different aspects of digital preparedness in African countries, largely due to inadequate government openness and the general lack of data to track recent developments. Therefore, this exercise is only intended to be a back-of-the-envelope eclectic approach that seeks to provide a fair assessment and a good basis for comparison across the continent. As much as possible, the authors use forward-looking indicators from existing established sources that are largely comparable across countries, rather than just measures of the current state of affairs. These indicators cover five vital prerequisites briefly discussed below.

- **Education and skills:** This indicator captures the quality of the skill sets of the current workforce, including the skills of graduates, quality of vocational training, digital and critical thinking skills of the active population, ease of finding skilled workers and the quality of teachers. It also includes measures of the innovative capacity and innovation outputs of the existing workforce and the quality of research and development activities.
- **Infrastructural readiness:** This indicator captures the availability and efficiency of physical infrastructure such as roads, railways, airports, seaports, electrical grids and water supply systems. It includes measures of the level of adoption and subscription to ICT infrastructure, including mobile phones, internet usage and broadband subscriptions. It also includes an indicator measuring the level of government presence online to proxy for the availability and accessibility

of public data, a major prerequisite in the digital economy (see Aaronson 2019).

- **Business dynamism and environment:** This indicator captures the major factors facilitating the ease of doing business across countries in addition to entrepreneurial culture and attitude toward risk and innovation. These are particularly important prerequisites in the digital economy where new ideas continuously emerge and disrupt traditional business models.
- **Regulatory framework and government effectiveness:** This indicator captures the existence of a coherent data governance framework (or at least a data protection and privacy law). It also includes future orientation of the government in terms of its responsiveness to change, adaptability of its legal framework to new business models and, more broadly, government effectiveness across countries.
- **Macroeconomic fundamentals:** This indicator captures the economic size and macroeconomic stability of African countries. This is a salient factor, considering that most countries in the region are small, low- to middle-income monocultural economies, which makes them susceptible to economic shocks.

Table 2 provides more details about the indicators, including the sub-components and sources. In terms of method of construction, the authors normalize the scores for the sub-indicators to one and use their arithmetic mean to derive the score for each main indicator. To account for differences in the importance of the indicators, the authors adopt a simple weighing system to compute the final digital readiness score. The authors give higher, but equal, weights to the first three indicators mentioned above (i.e., a weight of 0.25 each), while the remaining two indicators were given lower weights (i.e., a weight of 0.125 each). One advantage of this measure is that it provides a clear picture and a simple basis for comparison of digital

preparedness among African countries. The authors are not aware of any similar measures. However, by design, this eclectic measure may suffer from some of the problems associated with the data sources. The authors acknowledge this and hope that the merits compensate for such limitations.

By construction, the final score ranges from zero to one. Based on the composite scores, the authors rank the 38 African countries for which they have complete data. Figure 1 provides initial insights on the cross-country digital preparedness of African countries. Table 3 provides details on scores and rankings for both the digital preparedness index (DPI) and the three major indicators.

Table 2: Measure and Components of Digital Preparedness Index

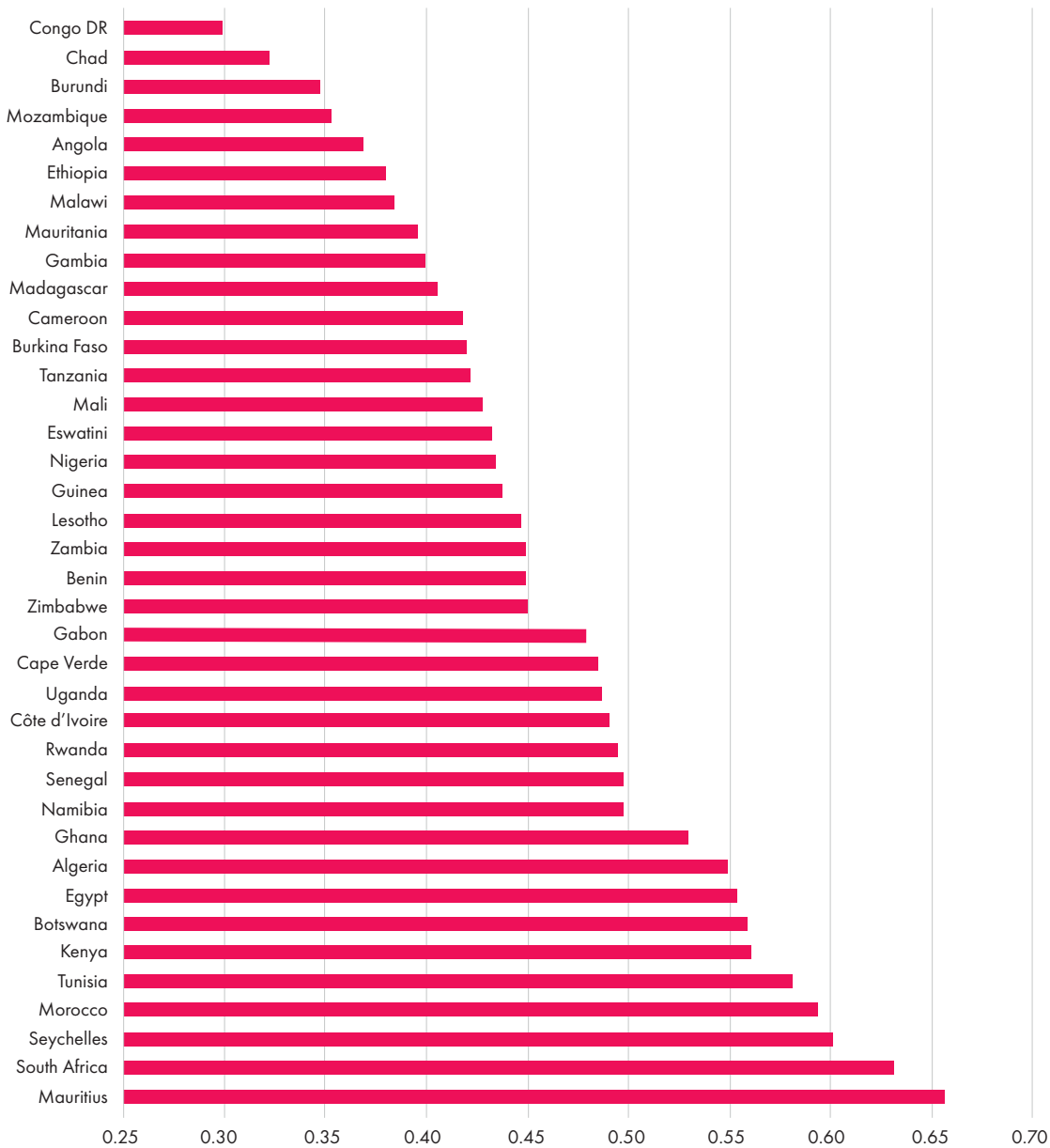
Measure	Components	Source
Education and Skills	Skill Pillar	<i>The Global Competitiveness Report 2019</i> (World Economic Forum [WEF] 2019)
	Innovation Capability Pillar	Ibid
Infrastructural Readiness	Infrastructure Pillar	<i>The Global Competitiveness Report 2019</i> (WEF 2019)
	ICT Adoption Pillar	Ibid
	UN E-Government Development Index	<i>United Nations E-Government Survey 2018</i> (UN 2018)
Business Dynamism and Environment	Business Dynamism Pillar	<i>The Global Competitiveness Report 2019</i> (WEF 2019)
	Ease of Doing Business Measure	<i>Doing Business 2020</i> (World Bank Group 2020)
Regulatory Framework and Government Effectiveness	Data Protection and Privacy Laws Indicator	Authors' computation from various sources
	Future Orientation of Government (Sub-pillar: Government Effectiveness Measure)	<i>The Global Competitiveness Report 2019</i> (WEF 2019)
		"Worldwide Governance Indicators" (World Bank 2018)
Macroeconomic Fundamentals	Market-size Pillar	<i>The Global Competitiveness Report 2019</i> (WEF 2019)
	Macroeconomic Stability Pillar	Ibid

Results and Discussion

Two main conclusions are inferable from observing the DPI across countries. First, the index reveals that most African countries are not adequately prepared for the digitalization spreading across the world. This predicament is worse in terms of the two arguably most important prerequisites in the authors' measure, namely infrastructural readiness, and education and skills. For almost all the

countries included, the scores on these indicators are below 0.5. While it is possible for some infrastructural challenges to be leapfrogged through technology, there are no substitutes for skilled labour. A shortage of skilled workers may limit the ability of African countries to optimize the gains from digitalization in the near future. Furthermore, this limitation may exacerbate the income distribution-related problems (especially poverty and inequality) that are already commonplace.

Figure 1: Digital Preparedness Index for Selected African Countries

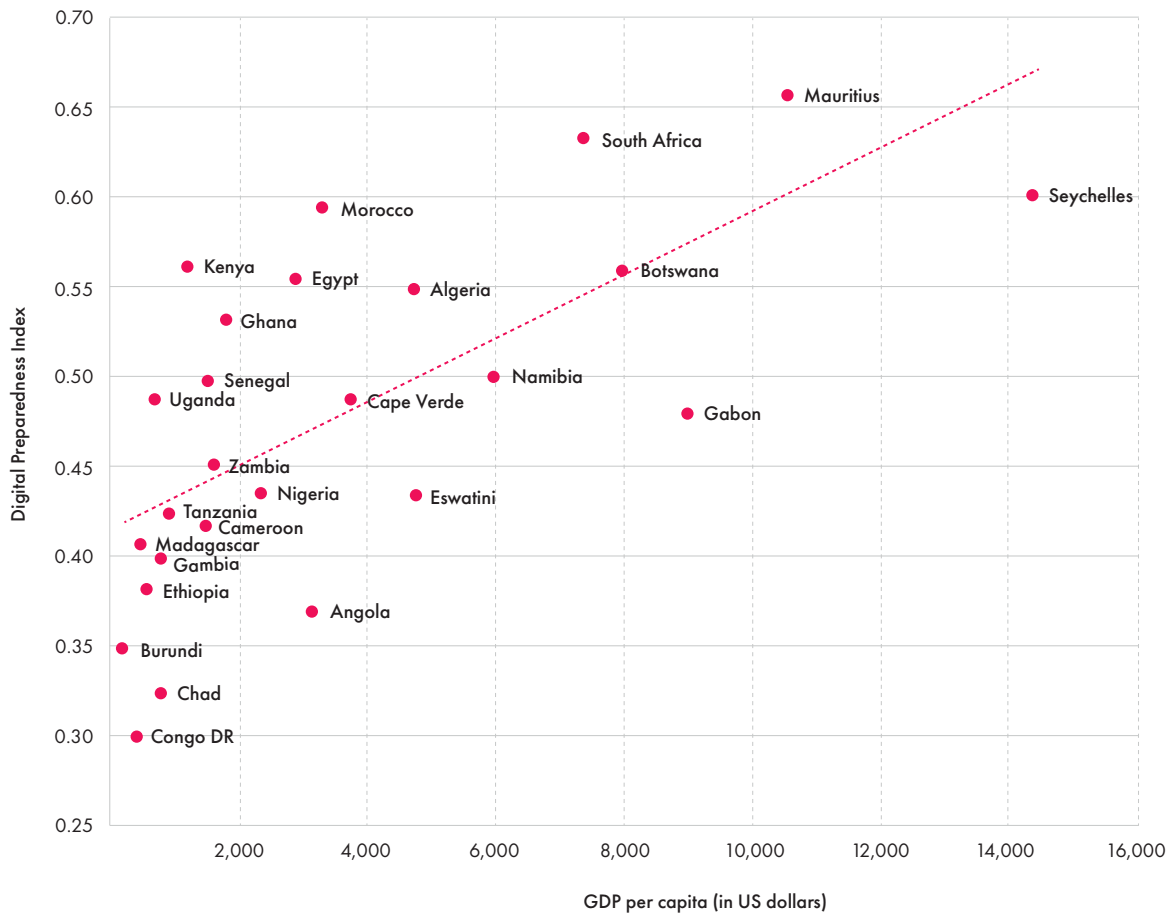


Source: Authors.

Second, as observed in Figure 1, preparedness for digitalization in African countries is largely uneven and skewed toward only a few relatively well-off countries. In Figure 2, the authors use a scatter plot to show the relationship between the DPI and the GDP per capita of African countries. The authors' cursory observation is confirmed by the strong positive relationship displayed in the plot. Unfortunately, the authors observe that digital technology adoption and the boom in digital entrepreneurship on the

continent are already biased in favour of many of the countries in the top 10 of the DPI.²⁰ This observation implies that as digitalization proceeds, many African countries risk missing out on the full benefits of digitalization, or they risk getting stuck in low value-added activities of the digital sector while serving as markets for finished products. This missed opportunity may result in a repeat of Africa's experience with the industrialization phase of the twentieth century.

Figure 2: Relationship between Digital Preparedness and Income Levels



Source: Authors.

²⁰ The only obvious exemption to this case is Nigeria, which is the most populous and largest economy on the continent. Therefore, despite Nigeria's structural challenges, it remains a major market in Africa.

Table 3: Digital Preparedness Rankings (and Major Indicators) of African Countries

Rank	Country	DPI Score	Rank	Country	Education and Skills Score
1	Mauritius	0.656	1	Seychelles	0.589
2	South Africa	0.632	2	South Africa	0.517
3	Seychelles	0.600	3	Mauritius	0.494
4	Morocco	0.593	4	Egypt	0.469
5	Tunisia	0.581	5	Algeria	0.468
6	Kenya	0.560	6	Kenya	0.463
7	Botswana	0.558	7	Tunisia	0.461
8	Egypt	0.553	8	Namibia	0.451
9	Algeria	0.548	9	Botswana	0.441
10	Ghana	0.530	10	Ghana	0.426
11	Namibia	0.498	11	Morocco	0.419
12	Senegal	0.497	12	Gabon	0.401
13	Rwanda	0.494	13	Cameroon	0.393
14	Côte d'Ivoire	0.491	14	Cape Verde	0.390
15	Uganda	0.487	15	Eswatini	0.386
16	Cape Verde	0.485	16	Zambia	0.381
17	Gabon	0.479	17	Zimbabwe	0.380
18	Zimbabwe	0.450	18	Gambia	0.378
19	Benin	0.450	19	Senegal	0.365
20	Zambia	0.449	20	Nigeria	0.362
21	Lesotho	0.447	21	Guinea	0.359
22	Guinea	0.438	22	Uganda	0.359
23	Nigeria	0.435	23	Benin	0.359
24	Eswatini	0.433	24	Côte d'Ivoire	0.357
25	Mali	0.427	25	Rwanda	0.355
26	Tanzania	0.422	26	Lesotho	0.351
27	Burkina Faso	0.420	27	Tanzania	0.342
28	Cameroon	0.418	28	Malawi	0.326
29	Madagascar	0.405	29	Madagascar	0.319
30	Gambia	0.400	30	Mali	0.309
31	Mauritania	0.396	31	Mauritania	0.306
32	Malawi	0.385	32	Burundi	0.305
33	Ethiopia	0.380	33	Ethiopia	0.304
34	Angola	0.369	34	Congo DR	0.302
35	Mozambique	0.353	35	Mozambique	0.289
36	Burundi	0.347	36	Burkina Faso	0.282
37	Chad	0.323	37	Chad	0.259
38	Congo DR	0.299	38	Angola	0.240

Source: Authors.

Rank	Country	Infrastructural Readiness Score	Rank	Country	Business Dynamism and Environment Score
1	Mauritius	0.680	1	Mauritius	0.738
2	South Africa	0.613	2	Rwanda	0.711
3	Seychelles	0.612	3	Kenya	0.686
4	Tunisia	0.589	4	Morocco	0.666
5	Morocco	0.569	5	South Africa	0.645
6	Egypt	0.542	6	Tunisia	0.639
7	Algeria	0.528	7	Zambia	0.617
8	Namibia	0.509	8	Seychelles	0.616
9	Ghana	0.499	9	Botswana	0.600
10	Cape Verde	0.495	10	Côte d'Ivoire	0.592
11	Botswana	0.474	11	Uganda	0.582
12	Gabon	0.467	12	Egypt	0.581
13	Rwanda	0.452	13	Nigeria	0.577
14	Kenya	0.448	14	Senegal	0.575
15	Eswatini	0.417	15	Ghana	0.571
16	Senegal	0.407	16	Namibia	0.563
17	Zambia	0.395	17	Eswatini	0.551
18	Uganda	0.394	18	Malawi	0.549
19	Côte d'Ivoire	0.391	19	Lesotho	0.548
20	Zimbabwe	0.381	20	Tanzania	0.539
21	Nigeria	0.370	21	Guinea	0.538
22	Gambia	0.363	22	Benin	0.531
23	Tanzania	0.359	23	Algeria	0.524
24	Lesotho	0.354	24	Mali	0.524
25	Cameroon	0.350	25	Mozambique	0.509
26	Angola	0.349	26	Burkina Faso	0.507
27	Ethiopia	0.328	27	Gambia	0.507
28	Benin	0.322	28	Burundi	0.503
29	Mali	0.319	29	Zimbabwe	0.502
30	Guinea	0.311	30	Cape Verde	0.495
31	Mauritania	0.306	31	Madagascar	0.495
32	Burkina Faso	0.305	32	Cameroon	0.493
33	Mozambique	0.301	33	Ethiopia	0.467
34	Malawi	0.293	34	Gabon	0.457
35	Burundi	0.280	35	Mauritania	0.450
36	Madagascar	0.270	36	Angola	0.390
37	Congo DR	0.248	37	Congo DR	0.384
38	Chad	0.181	38	Chad	0.333

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