Digital Preparedness Index – Description and methodology note

Introduction

Like other parts of the world, digitalisation is becoming widespread in African countries with some of its benefits already manifesting in different sectors including the traditional mainstays of agriculture and mining sectors. This promises life changing benefits for consumers, firms and governments, and enormous gains in term of the much-needed structural transformation and diversification of these economies. However, the actualization of these benefits is not guaranteed, especially where the key requirement for digital uptake is lacking.

Since many African countries still struggle with structural and infrastructural problems that inhibit digital development and adoption, the potential gains accruable from digitization remains lop-sided – concentrated in only a few relatively better-off countries. This digital divide is worth examining and understanding in order to avoid leaving many countries in Africa behind in terms of economic progress in the new digital age. A good first step is to understand the level of digital preparedness across major dimensions among African countries in order to design appropriate policy and institutional responses. Here, we attempt to design a measure of digital preparedness of African countries.

The Index

We define digital preparedness as the set of enablers that facilitate a country's adoption, use and local development of digital technologies. This includes soft and hard digital infrastructure like broadband internets, 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 aspect 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-envelope eclectic approach that seeks to provide a fair assessment and a good basis for comparison across the continent. As much as possible, we use forward-looking indicators from existing established sources which are largely comparable across countries rather than just measures of the status quo. The indicators cover five vital dimensions briefly discussed below.

   a. Education and skills – this indicator captures the quality of the skillsets of the current workforce including the skills of graduates, quality of vocational trainings and digital and critical thinking skills among active population, ease of finding skilled workers and the quality of teachers. It also includes measures of the innovative capacity and

innovation outputs of existing workforce, and the quality of research and development activities.

b. Infrastructural readiness – this indicator captures the availability and efficiency of physical infrastructure like road, rail, airports, seaports, electricity, and water. It includes measures of level of adoption and subscription to ICT infrastructure including mobile-cellular telephones, internet use and broadband subscriptions. It also includes an indicator measuring the level of government presence online to proxy for availability and accessibility of public data, a major prerequisite in the digital economy (see Aaronson, 2019[1]).

c. 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 towards risk and innovation. These are particularly important pre-requisite in the digital economy where disruptive ideas continuously emerge to challenge traditional business models.

d. Regulatory framework and government effectiveness – this indicator captures the existence of coherent data governance framework (or at least a data protection and privacy law), future orientation of government in terms of its responsiveness to change, adaptability of its legal framework to new business models and broadly government effectiveness across countries.

e. Macroeconomic fundamentals - this indicator captures the economic size and macroeconomic stability in 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.

The Methodology

We adopt a simple, easy to understand and replicable method for constructing the DPI. We assign scores to each of the five dimensions aforementioned based on information derived our sources (see Table 1). Next, we normalize the scores for the sub-indicators in each dimension to one and compute their arithmetic means to arrive at the score for the main indicators. To account for differences in the importance of the indicators to digital readiness, we adopt a simple weighing system to compute the final digital preparedness score. Informed by the literature on the pre-requisites for successful digital adoption and development, we assign a higher weight of 0.25 each to the first three dimensions (i.e., education and skills, infrastructural readiness and the business dynamism and environment indicators). The other two dimensions (regulatory framework and effectiveness, and macroeconomic

---

[1] Aaronson S.A. (2019). Data is a development issue. CIGI Papers No. 223. Centre for International Governance Innovation, Waterloo, ON.

fundamentals) were assigned 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. We are not aware of any similar measure. However, by design, one plausible limitation of such an eclectic measure is that the index may suffer from some of the problems associated with the data sources. We acknowledge this and hope that the merits compensate for such limitations.

By construction, the final score ranges from zero to 1 – where 0 indicate the least prepared country and 1 indicates the most digitally prepared country. Based on the composite scores, we rank the 38 African countries for which we have complete data. Figure 1 provides initial insights on the cross-country digital preparedness of African countries.

Table 1: Measure and components of Digital Preparedness Index

Measure	Components	Source
Education and Skills	Skill Pillar	WEF, Global Competitiveness Report, 2019
	Innovation Capability Pillar	WEF, Global Competitiveness Report, 2019
Infrastructural Readiness	Infrastructure Pillar	WEF, Global Competitiveness Report, 2019
	ICT Adoption Pillar	WEF, Global Competitiveness Report, 2019
	UN E-Governance Development Index	UN E-Government Survey, 2018
Business dynamism and environment	Business Dynamism Pillar	WEF, Global Competitiveness Report, 2019
	Ease of Doing Business Measure	World Bank Doing Business Report, 2020
Regulatory Framework and government effectiveness	Data Protection and Privacy Laws Indicator	Author's computation from different sources
	Future Orientation of Government - Sub-Pillar	WEF, Global Competitiveness Report, 2019
	Government Effectiveness Measure	World Bank World Governance Indicators, 2018
Macroeconomic Fundamentals	Market Size Pillar	WEF, Global Competitiveness Report, 2019
	Macroeconomic Stability Pillar	WEF, Global Competitiveness Report, 2019

Figure 1: The Digital Preparedness Index for Selected African Countries