# Data Governance Index– Description and Methodology Note

## Introduction

Digitalisation is rapidly gaining ground across African countries, with transformative benefits already manifesting in different sectors such as agriculture, mining, finance, research and development. These developments promise significant gains for consumers, firms, and governments, and offer new avenues for structural transformation and economic diversification.[1] However, the realisation of these benefits is not guaranteed, as the success of digital uptake critically depends on the existence of a comprehensive data governance framework that ensures trust, accountability and equitable access. Achieving a vibrant, inclusive and secure digital economy requires a comprehensive approach that considers the entire ecosystem, integrating additional foundational elements to complement infrastructure. [2]

Many African countries continue to face structural and infrastructural challenges that hinder digital development and adoption. As a result, the potential benefit of digitalisation remains concentrated in a few relatively better-off countries, exacerbating the continent's digital divide. This digital divide is worth examining and understanding so as to prevent African countries from falling behind in terms of economic progress in this digital age. Addressing this divide requires a comprehensive understanding of various indicators of data governance and how they can be leveraged for the public good.

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[1] DE4A-newsletter-Spring-2021-spread-Final.pdf
[2] https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf

Here, we present a framework for measuring the digital uptake of African countries through the ***Data Governance Index (DGI),*** a multidimensional tool designed to assess the enabling environment for digital transformation across the continent. The index comprises three interrelated measures: **Digital Preparedness Index**, which evaluates infrastructure and human capital; ***Digital Development Indicators****,* which measure the availability and quality of digital public services; and ***Data Regulation Indicators,*** which encompasses a broad set of legal, institutional, and regulatory components essential for effective data governance.

By focusing on African countries, the Data Governance Index attempts to provide a comparative lens to identify strengths, gaps, and opportunities for reform. It aligns with continental initiatives such as the African Union's Digital Transformation Strategy (2020–2030)[3] and supports efforts to build inclusive, rights-based, and innovation-friendly digital ecosystems. Without strong data governance, digital uptake will remain fragmented and fragile.

[3] https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf

# Digital Preparedness Index

The Digital Preparedness Index (DPI) measures the extent to which a country has the structural, institutional, and economic enablers necessary for the adoption, effective use, and local development of digital technologies. It includes five indicators that are interrelated as follows: Education and Skills, Infrastructural Readiness, Business

Dynamism and Environment, Regulatory Framework and Government Effectiveness, and Macroeconomic Fundamentals. Together, these indicators provide a forward-looking assessment of a country's readiness to take advantage of digital change, making it possible to compare African countries in a systematic way. It is difficult to develop an index that truly captures different aspects of digital preparedness in African countries largely due to challenges such as 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 components from existing established sources which are largely comparable across countries rather than just measures of the status quo. The index covers five vital indicators briefly discussed below.

**(a) Education and skills -** This component reflects the quality of a country's human capital. It encompasses the skillsets of the current workforce, including the skills of graduates, quality of vocational training and digital and critical thinking skills among the active population, ease of finding skilled workers and the quality of teachers. It also includes measures of the innovative capacity and the strength of research and development activities, and integration into global innovation and economic networks. Sub-components like the ***Human Development Index (HDI)***, which summarises average achievements in health, education, and living standards, alongside the ***Innovation and Economic Integration Index*** that assesses a nation's technological innovation capacity and openness to global economic interaction, together illustrate the dynamism of a nation's education and skills ecosystem.

**(b) Infrastructural Readiness -** This component evaluates the availability, accessibility, and efficiency of ICT systems, including subscription to ICT infrastructure, which facilitates participation in the digital economy. It also includes a component measuring the level of government presence online to proxy for the availability and accessibility of public data, a major prerequisite in the digital economy that fosters transparency, innovation, and inclusive service delivery. [4]
Sub-components consist of the ***Digital Infrastructure Index*** which assesses digital connectivity and the development of public digital platforms; AI Preparedness Index, which gauges national readiness for AI integration; and the UN ***E-Government Development Index,*** which measures the effectiveness of ICT utilisation in delivering public services. Collectively, these components offer a comprehensive assessment of a nation's infrastructural readiness.

**(c) Business Dynamism and Environment -** This component reflects how well a country's financial systems support entrepreneurship, innovation, and efficient market activity. It captures how easy it is for individuals to establish, operate, a)and run businesses free from excessive regulatory burdens ***(Business Freedom)*** and how well financial institutions provide accessible, competitive, and transparent services that encourage people to take risks and invest ***(Financial Freedom)***. Together, these components show how conducive a country's environment is for fostering entrepreneurship activity and sustaining a dynamic digital economy.

**(d) Regulatory Framework and Government Effectiveness -** This component examines how effectively governments design, implement, and enforce policies that support private sector growth while ensuring accountability and the rule of law. This components includes sub-components like ***regulatory quality,*** which evaluates the government's ability to create sound policies and regulations that promote business innovation; ***government effectiveness*** which measures public service quality, civil service competence, and policy consistency and the ***Data Protection and Privacy Laws Component,*** which examines legal frameworks for safeguarding personal data. Together, these sub-components capture the coherence, transparency, and reliability of regulatory environments.

**(e) Macroeconomic Fundamentals -** This component captures how stable, resilient, and productive economic capacity is in African countries and assesses their ability to generate sustainable growth, maintain fiscal discipline, and attract investment.

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[4] https://www.cigionline.org/static/documents/documents/paper%20no.223.pdf

***Gross Domestic Product (GDP) purchasing power parity (PPP)*** measures the real size and purchasing power of an economy by measuring the total value of goods and services produced, adjusted for cost-of-living differences. It shows how well resources are used to create economic output and welfare. ***Credit Rating,*** on the other hand, assesses the credibility and solvency of a country by evaluating its capacity to meet debt obligations and handle macro-fiscal risks. These measures show the overall strength of the economy. GDP purchasing power parity shows how much and how efficiently people produce and consume goods and services, while Credit Rating shows how trustworthy and risky financial institcountry (as a debtor) are seen in global markets.

# Digital Preparedness Index Methodology


*We adopt a simple, easy to understand and replicable method for constructing the Digital Preparedness Index. We input the scores to each of the five indicators and sub-components based on information derived from various sources* ***(see Table 1).***

*Next, we normalise the scores for the sub-components in each indicator to a 0–1 scale using the Min-Max normalisation (Normalised Value = (Value − Min Value)/ (Max Value−Min Value)) method to ensure comparability across components expressed in different units.*

*For the Data Protection and Privacy Laws Component, which is presented as binary variables, we assigned values as follows: Yes = 1, Draft/Partial = 0.5 and No = 0.*
*For credit ratings, the process begins with standardising sovereign credit ratings from the three leading agencies like Moody's, Standard & Poor's (S&P), and Fitch to create a uniform, comparable measure of creditworthiness across African countries. Because some countries not covered by one rating agency were covered by the other, Moody's ratings (e.g., Aaa, B3, Caa1) were converted into S&P/Fitch equivalents (e.g., AAA, B-, CCC+) for uniformity which leave us with 22 unique ratings hierarchy from AAA to D for consistent comparison.*

*A two-stage normalisation process was then applied - To make the ratings analytically comparable for index computation, the categorical ratings are converted into a continuous numerical scale ranging from 1 (AAA) to 0 (D).*

A two-stage normalisation process was then applied - To make the ratings analytically comparable for index computation, the categorical ratings are converted into a continuous numerical scale ranging from 1 (AAA) to 0 (D). The conversion assumes a linear relationship between adjacent ratings, meaning the decline in creditworthiness from one level to the next is uniform.

To achieve this, the total range (1–0 = 1) is divided evenly across 21 intervals (since there are 22 rating points).

The step size is therefore calculated as (1 /[(unique number of rating) -1]) given as 0.0476. This ensures that every downgrade from one rating to the next (e.g., AAA → AA+, AA+ → AA, etc.) represents an equal, incremental decline in perceived credit quality.

Since African countries occupy only a narrower range of credit ratings (from BBB+ = 0.667 to CC = 0.095), of the full rating range, a second normalisation was conducted using the min–max method to fully utilize the 0–1 scale within the African sample. This adjustment ensures that the lowest-rated African country equals 0 and the highest-rated equals 1, with other countries proportionally scaled between them.

After normalisation, each component within an indicator was aggregated to produce a single composite score representing that indicator. The component score was calculated as the arithmetic mean of its normalised constituent dimensions. For example, Education and Skills Score = (Normalised HDI + Normalised Innovation Index)/2. The approach also applies to the four other indicators.

Informed by the literature on the pre-requisites for successful digital adoption[5], we adopt a simple weighing system to compute the final digital preparedness score. We assign a higher weight of 0.25 to Education and Skills, Infrastructural Readiness, and Macroeconomic Fundamentals because they represent the core structural enablers of digital uptake. They ensure that countries possess a skilled workforce, resilient digital infrastructure, and a stable macroeconomic base to drive participation in and expansion of the digital economy. The other two indicators, Business Dynamism and Regulatory Frameworks, 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 across the continent.

Following the computation of overall DPI scores, countries were grouped into three categories of digital preparedness to facilitate interpretation and comparative analysis. The classification thresholds were established as follows: High Digital Preparedness: DPI ≥ 0.60, Medium Digital Preparedness: 0.30 ≥ DPI < 0.60 and Low Digital Preparedness: DPI < 0.30.

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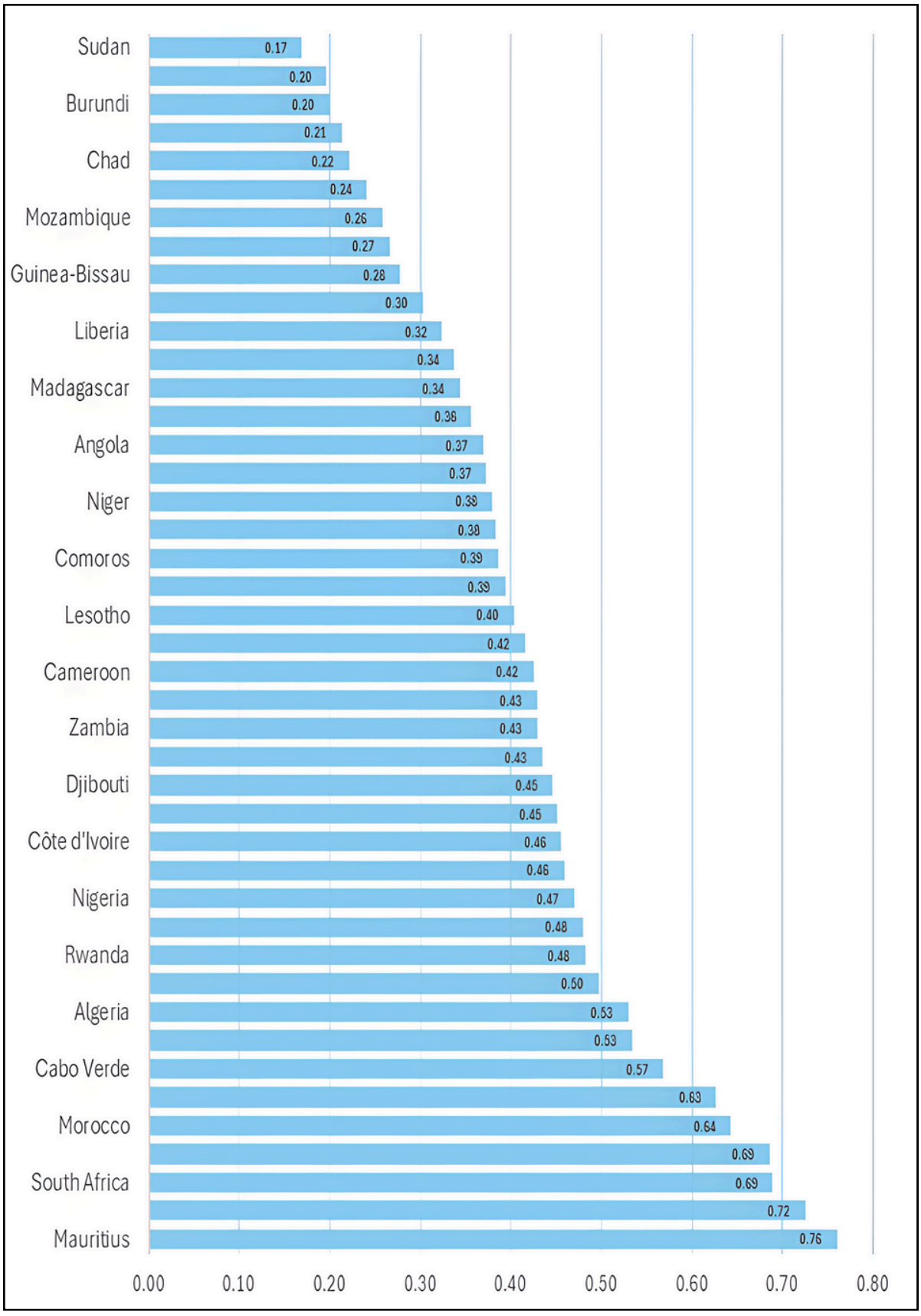
[5] https://pubsonline.informs.org/doi/10.1287/serv.2022.0305

While we are not aware of any existing measure that fully captures the multifaceted nature of digital preparedness as our index aims to, it is important to acknowledge potential limitations inherent in such an eclectic measure. Specifically, the index may be influenced by the quality and limitations of the underlying data sources. Nonetheless, we believe that the strengths and insights provided by the index outweigh these limitations and offer a valuable tool for assessing digital readiness.

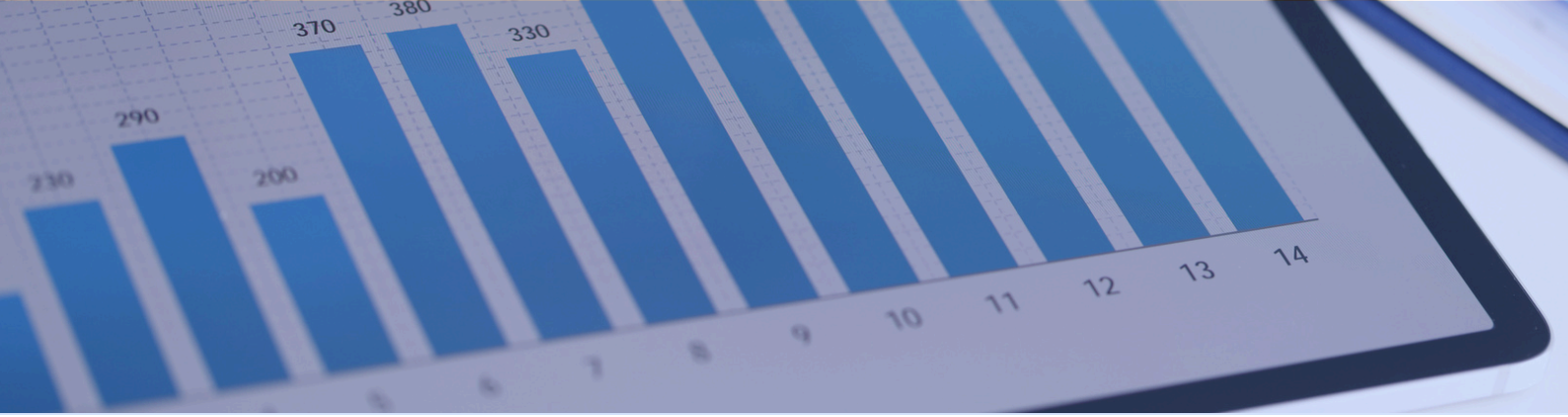
***Table 1: Sources for Indicators and components of the Digital Preparedness Index***

| Indicators | Components | Source |
|---|---|---|
| **Education and Skills** | Human Development | **UNDP** |
| | Innovation and Economic Integration Index | **IMF** |
| **Infrastructural Readiness** | Digital Infrastructure Index | **IMF** |
| | AI Preparedness index | **IMF** |
| | UN E-Governance Development Index | **UN E-Government Survey, 2022** |
| **Business Dynamism and Environment** | Financial Freedom | **Index of Economic Freedom** |
| | Business Freedom | **Index of Economic Freedom** |
| **Regulatory Framework and government effectiveness** | Data Protection and Privacy Laws Indicator | **Data Protection Africa** |
| | Regulatory Quality | **World Bank World Governance Indicators** |
| | Government Effectiveness Measure | **World Bank World Governance Indicators** |
| **Macroeconomic Fundamentals** | Market Size Pillar | **World Bank GDP PPP** |
| | Macroeconomic Stability Pillar | **Credit ratings** |

***Figure 1: The Digital Preparedness Index for Selected African Countries***




***Source: CSEA Computation, 2025***




# Digital Development Indicators

While we are not aware of any existing measure that fully captures the multifaceted nature of digital preparedness as our index aims to, it is important to acknowledge potential limitations inherent in such an eclectic measure. Specifically, the index may be influenced by the quality and limitations of the underlying data sources. Nonetheless, we believe that the strengths and insights provided by the index outweigh these limitations and offer a valuable tool for assessing digital readiness.

***(a) Human Capital Index*** *- Measures the amount of capital a country builds through improvements in its citizens' health and education.*

***(b) Internet Network Coverage (% of Population)*** *- Shows the percentage of people with access to internet infrastructure or within the physical range of an internet network.*

***(c) Internet Users (% Population) -*** *Percentage of the total population that uses the internet from any location in the country.*

***(d) Fixed-telephone Subscriptions (per 100 persons) -*** *This refers to the sum of active number of analogue fixed telephone lines, voice-over-IP (VoIP) subscriptions, fixed wireless local loop (WLL) subscriptions, ISDN voice-channel equivalents and fixed public payphones per 100 people.*

***(e) Mobile-cellular Subscriptions (per 100 persons) -*** *This refers to thenumber of subscriptions to a mobile telephone service with access to the main telephone network per 100 people.*

***(f) International Internet Bandwidth (Bit/s per Internet User) -*** *This refers to the total used capacity of international Internet bandwidth, in megabits per second (Mbit/s), measured per internet user in the country.*

***(g) Facebook Users -*** *The total number of people in the country who are active users of Facebook.*

***(h) Households with Computers (% of Population) -*** *The percentage of households in a country that are equipped with a personal computer.*

***(g) Facebook Users -*** *The total number of people in the country who are active users of Facebook.*

***(h) Households with Computers (% of Population) -*** *The percentage of households in a country that are equipped with a personal computer.*

***(i) Quality of Internet Bandwidth Speed -*** *Measures how fast data IS successfully transmitted over an internet connection.*

***(j) Households with Internet (%) -*** *The percentage of households in the country that have access to the internet.*

***(k) Internet Speed (KBps) -*** *This measures the performance of an internet connection, which is based on the number of bytes per second that data travels from the user's device to the Internet (upload) and from the Internet (download).*

***(l) ICT Development Index -*** *A composite indicator that assesses a country's overall level of ICT access, use, and skills, allowing comparison within and across countries.*

***(m) Global Cybersecurity Index -*** *This indicator measures the commitment of countries to cybersecurity at a global level.*

***(n) E-Government Index -*** *The indicator measures three important dimensions of e-government, namely: provision of online services, telecommunication connectivity and human capacity.*

***(o) E-Participation Index -*** *This indicator assesses, on a 0-to-1 (best) scale, the quality, relevance, and usefulness of government websites in providing online information and participatory tools and services to their citizens.*

## *Table 2: Sources for Indicators of Digital Development*

| Indicator | Source |
|---|---|
| Human Capital index | **Data Centre** |
| Internet network coverage (% of population) | **Dataset Detail \| Prosperity Data360 \| Prosperity Data360** |
| Internet Users (% Population) | **https://datahub.itu.int/data/?e=1&i=11624** |
| Fixed-telephone subscriptions (per 100 person) | **Facts and Figures 2024** |
| Mobile-cellular subscriptions (per 100 person) | **Facts and Figures 2024** |
| International Internet bandwidth (Bit/s per Internet user) | **Facts and Figures 2024** |
| Facebook Users | **Facebook-users-by-country** |
| Households with computer (% of Population) | **https://datahub.itu.int/data/?e=1&i=12046** |
| Quality of Internet Bandwidth Speed | **Digital Quality of Life Index - Surfshark** |
| Households with Internet (%) | **Facts and Figures 2024** |
| Internet Speed (KBps) | **Speedtest-global** |
| ICT Development Index | **Facts and Figures 2024** |
| Global Cybersecurity Index | **Global Cybersecurity Index 2024** |
| E-Government Index | **Data Centre** |
| E-Participation Index | **Data Centre** |

# Data Regulation Indicators

While we are not aware of any existing measure that fully captures the multifaceted nature of digital preparedness as our index aims to, it is important to acknowledge potential limitations inherent in such an eclectic measure. Specifically, the index may be influenced by the quality and limitations of the underlying data sources. Nonetheless, we believe that the strengths and insights provided by the index outweigh these limitations and offer a valuable tool for assessing digital readiness.

***(a) Status of Malabo Convention Implementation -*** *This indicator outlines the status of respective African countries that have signed or ratified the AU convention at Malabo on Cybersecurity and Personal Data Protection - which tend to set out essential rules for establishing a credible digital environment (cyber space) and address the gaps affecting the regulation and legal recognition of electronic communications and electronic signature.*

***(b) Cyber Crime -*** *This indicator shows the existence of legislation on laws related to computer crimes, internet crimes, information crimes, communications crimes, and technology crimes among various African economies.*

***(c) Consumer Protection Law -*** *This highlights countries that have laws that promote best practice for safeguarding buyers of goods and services, and the public, against unfair practices in the business environment.*

***(d) Electronic Transaction Regulation -*** *This indicates the presence of laws that recognize the legal equivalence between paper-based and electronic forms of exchange in the African economy.*

***(e) Privacy and Data Protection -*** *This indicates the presence of legislation that governs data access, usage and provides tools and policies to protect the rights of data owners.*

***(f) Institution -*** *This indicates the presence of data governance institutions in the countries of interest.*

***(g) Government Effectiveness -*** *This indicator measures the quality of public services, the quality of policy formulation and implementation, and the credibility of the government's commitment to its stated policies.*

***(h) Regulatory Quality –*** *This indicator captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.*

***(i) Cross-border Data Flow Restrictions -*** *This measures the presence of restrictions to the movement of data across borders.*

***(j) Data Breach Notification -*** *This measures the presence of legal obligations for organizations to inform affected individuals, regulators, and sometimes the public when a data breach occurs.*

***(k) Online Privacy Status -*** *This measures the presence of laws and policies that govern how personal data is collected, stored, shared, and used on the internet.*

### *Table 3: Sources for Data Regulation Indicators*

| Indicator | Source |
|---|---|
| Status of Malabo Convention Implementation | **Data Centre** |
| Cyber Crime | **UNCTAD** |
| Consumer Protection Law | **UNCTAD** |
| Electronic Transaction Regulation | **UNCTAD** |
| Privacy and Data Protection | **Data Protection Law in the World** |
| Data Protection Authority/Institution | **Worldwide Governance Indicator** |
| Government Effectiveness | **Worldwide Governance Indicator** |
| Cross-border Data Flow Restrictions | **DLA Piper** |
| Data Breach Notification | **DLA Piper** |
| Online Privacy Status | **DLA Piper** |