

# POLICY BRIEF

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## Towards A Data-driven Agenda among Indigenous Businesses in Africa

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### Highlights

African indigenous businesses (AIBs) are in the nascent stages of becoming data-driven and innovative through data analytics. The data-driven agenda looks promising in industries like manufacturing (distribution), health, agriculture, and online platforms like social media, with enterprises deriving economic and symbolic value from descriptive, diagnostic, and predictive analytics. These data-driven activities tend to be often directly or indirectly enabled by the quest of multinational companies, who as business partners or collaborators of AIBs seek to mutually maximise value-generating activities. Thus, these multinational companies play a key role in creating awareness of the value of data and providing the motivation, and sometimes the technical and human resources, to enable AIBs to develop data analytics capabilities.

Concerning constraints, there is generally a lack of awareness regarding the value of data. AIBs are challenged in providing auxiliary resources and processes for a data-driven agenda (i.e., recruiting the right skillsets, acquiring logistics, paying for software licenses, and meeting regulatory standards, among others). Further, some are yet to scale above existing digitalisation barriers.

In this respect, recommendations to drive a data-driven agenda among AIBs are:

1. **Awareness** (educational curriculum development, academia and industry collaboration, and enhancing women's participation in the data economy);
2. **Accessibility** (incentivising stakeholders to collaborate and integrate efforts and establishing common open data banks within countries and across countries); and
3. **Adoption** (institutionalising a data culture).

Governments in these countries are also burdened with IT regulation, especially with new digital technologies (4G,

### Data-Driven Enterprises in Africa

Developing trends in the twenty-first century have shaped data production, analysis, and management for significant and long-term corporate growth [1]. These have been underpinned by the tremendous diffusion rate of digital tools and technologies, coupled with the increased speed in internet connection and penetration across the African sub-region [2]. Meanwhile, an assessment of the enterprises in Africa's status-quo in terms of efforts to ensure proper data governance while deriving value from it has largely been ignored by focusing solely on value outcomes. We define data governance as *the standards and rules that regulate data collection and consumption to manage data availability, accessibility, integrity, and security in an organisation's information systems* [3]. Thus, data governance sets the rules of engagement that management will follow as the organisation uses data [4].

Arguably, only a few developing countries in the African sub-region have made a conscious effort to monitor and regulate the huge amount of data that firms harvest, leaving room for the possible exploitation of such data [5]. National efforts and domestic legal frameworks on data governance are gradually increasing in Africa, although rather slowly, as there are still significant policy gaps [5]. While the magnitude of the data policy gaps varies across different member countries, African countries have largely been unable to match the pace of change in the new data-driven global economy [5].

There is also a lack of uniformity in policy approaches being adopted by member states [5]. An equally disturbing observation is the inadequacy of implementation strategies in place; there is a general deficit in institutional capacity to support a well-functioning data governance environment in Africa [5]. Countries such as Nigeria, Kenya, Cote d'Ivoire, and Ghana are among the countries in this group with scarce data on which to gauge development.

5G, and the Internet of Things), post-COVID-19 challenges, and cybercrime, while still working to narrow the digital

divide and ensure digital inclusion. As the world moves inexorably towards the Fourth Industrial Revolution and a knowledge society based on the data economy, Africa cannot afford to fall behind. Continuing with business-as-usual means that Africa's economy will miss the wave, and the gap with economies that effectively use the value of data will widen [6].

In view of the above, examining the status quo of data analytics in African indigenous businesses (AIBs) is a critical step towards a data-driven enterprise agenda in Africa. Data-Driven enterprises refer to, broadly speaking, firms that adopt a business approach of using insights from data analysis to create business value or improve processes. Research by the authors echoes that data analytics in African indigenous firms is in its nascent stages. Hence, it would be far-fetched to state that one industry or sector has taken a differential leadership. It looks promising in sectors like manufacturing (distribution), health, agriculture, and online platforms like social media, with enterprises deriving economic and symbolic value from data analytics.

For example, in the agricultural sector, Solidaridad Network, an international civil society organisation with over 50 years of experience in developing solutions to make communities more resilient, works with smallholder farmers in West Africa. In Nigeria, the organisation collects farmers' data under a project dubbed the "National Initiatives for Sustainable and Climate-Smart Oil Palm Smallholders (NISCOPS)" programme. The farmer data is collected from project communities using the Open Data Toolkit (ODK) by the Programme Monitoring, Evaluation and Learning (PMEL) team. A form is designed and programmed on an android mobile device using the ODK tool for input by the selected enumerators on the field offline. The data collected are aggregated on the ODK aggregate server for analysis, reporting and decision-making purposes.

Currently, four states, namely, Akwa Ibom, Cross River, Enugu, and Kogi, are benefiting from the programme. The project is a climate-smart programme targeted toward oil palm farmers in Nigeria. The data collected is primarily in two parts. Foremost, the bio-data of farmers (first name, surname, farm location, etc.) are necessary to uniquely identify a farmer. Second, the programme intervention data on the farmer (how often fertilizer is applied, how timely harvesting is done, etc.) are relevant to identify the gaps in the farmer's activities to create a work plan for improvement in oil palm practices, subsequently resulting in increased productivity and sustainability of the farming business.

Another example, Rx Health Info Systems (Rx Health) provides health analytics services to organisations in the healthcare and health insurance sectors in three African countries, namely, Ghana, Nigeria, and Angola — with plans to expand to 15 other African countries. The

enterprise's core business entails reducing health insurance fraud by providing tools for processing health insurance claims.

The Ghanaian firm was born out of an engagement to collect health-related data for an international organisation, IQVIA. IQVIA engaged Rx Health to collect and collate health insurance data. However, the data was difficult to collect since they were primarily available on paper and embedded in informal processes in health care institutions. Rx Health developed Rx Claims Solutions to streamline health insurance claims at health care institutions and pharmacies.

Rx Claims Solutions has four modules. First, there is an application for medical insurance providers (Payer solution) that enables claim data to be collected from health facilities that participate in the scheme of an insurer. Second, health facilities can use a hospital management system to manage all operations. These applications collect health-related information such as data on drug prescriptions, drug consumption, medical diagnosis, disease patterns, and laboratory reports. Third, a mobile application (patient solution) enables patients to manage their health insurance and book appointments with health facilities. Fourth, a data warehouse is updated once a day with information from all the health facilities and insurance companies. The data warehouse is used to develop descriptive and prescriptive analytics for insurance companies and health facilities. For example, there is the capability to determine (descriptive analytics) the top 10 diseases that cause patients to report to healthcare facilities. Similarly, insurance companies can choose how to price their packages based on historical data and trends in treatment data. Also, patients can get descriptive analytics concerning their usage of insurance policies.

Per the above examples, these data-driven activities tend to be often directly or indirectly enabled by the quest of multinational companies, who as business partners or collaborators of AIBs seek to mutually maximise value-generating activities. Thus, these multinational companies play a key role in creating awareness of the value of data and providing the motivation, and sometimes the technical and human resources, to enable AIBs to develop data analytics capabilities. Then again, the growing need to innovate around data in these industries and the proliferation of automated tools and applications have made data analytics more friendly to AIBs. Technically, a combination of proprietary (e.g., Salesforce), open-source applications (ODK), bespoke applications (Rx Insurance), and social media analytic applications are used in data-driven activities among indigenous firms in Africa. However, despite the promise, this growth is stifled by the scarcity of skilled personnel and expertise, coupled with a missing link in collaboration between industry and academia, limited formal educational training opportunities, lack of a proper enabling environment for the practice of data analytics, lack of awareness or limited knowledge on the value of data analytics in these firms and

governments, weaknesses in data governance institutions (not much done in monitoring and advocacy), generally limited resources to IT investment in indigenous firms, and lack of a national drive for data analytics in many countries of the Africa Sub-region. As a result, the convenience and way data are collected and handled leave room for possible exploitation.

Additionally, while national data governance strategy and regulatory frameworks are increasingly developing across Africa, they have primarily been slow due to considerable policy gaps. The fact is that AIBs are still struggling to manage resources to invest in basic IT infrastructure. Hence data analytics adoption, which requires both human personnel and technical infrastructure, is often yet to be strategically considered, shelved for the future, or even when outsourced, it is often poorly managed and under-resourced. Others are also driven by the visibility and immediacy of results or value, which is not a characteristic of data analytics. Data analytics often requires a more intentional strategic alignment to business processes; otherwise, its value may not be realised. Further, for innovation to occur, data analytics processes must be sustainable. It is often a long-term value realisation activity, which many AIBs tend to shy away from due to limited resources and understanding.

In effect, there is a need to enhance data analytics use at the national and regional levels. This policy brief proposes fifteen recommendations for creating an all-inclusive enabling environment for indigenous businesses (Table 1). These recommendations are categorised into three 'A's': **Awareness, Accessibility, and Adoption.**

## Policy Recommendations

### Awareness

1. Educational Curriculum Development
2. Academia and Industry Collaboration
3. Enhancing Women's Participation in the Data Economy

To utilise data through analytics, businesses require human capital with some sense of technical capabilities in data analytics to take up analytics. These technical capabilities include individuals' unique abilities in statistics, extensive data mining, and mastery of visualisation tools that can be acquired through training and learning. Therefore, academic and training institutions have a role to play in making this possible. Existing curriculums and policies in African academic and training institutions need revisions that promote the awareness of data as the "new oil" and the urgent need to uptake skills in the area. Further, as the popular adage goes, "catch them young and they shall be yours forever" Thus, there is a need for a regional agenda to encourage educational institutions in the sub-region to introduce the youth at the pre-tertiary level to data-related academic programmes. Importantly, with the appropriate resources, African academia can champion the

development of open-source learning platforms for data analytics and data governance to train the African youth, especially unemployed graduates from high school and tertiary institutions. They can partner with indigenous companies to obtain internship opportunities for the youth and also curate and leverage local data to ensure that contextually relevant knowledge and skills are gained by the youth. Academia and industry collaboration can be extended to the creation of data analytics/science clubs and hubs in local communities; thus, learning from the reading, robotics, sports, and development clubs and centres of learning created through private sector initiatives (see MTN Foundation activities across Africa [7]).

In addition, regional efforts are needed on women's participation in the data economy. This can be done by creating awareness and supporting training programmes for women at the pre-tertiary levels to women-owned businesses. Affirmative action can be modelled as grants or tax incentives for employers and institutions whose female employment or enrolment in the data economy is above a specific rate or comparable ratio to men. These actions can be extended to promote intentional efforts by employers and institutions to upskill women for the data economy.

### Accessibility

1. Incentivising Stakeholders to Collaborate and Integrate Efforts
2. Establishing Common Open Data Banks within Countries and across Countries

One of the factors contributing to accessibility issues stems from the apparent political interference in access to data and the unavailability of open-source data banks within and without countries in the sub-region.

"Largely when you need data, it's either the data is not available or the data is sitting on someone's computer without any form of aggregation that can make it accessible to others...and even when it is aggregated, some agency will find a crummy excuse not to make it available to you" (Microsoft Certified Azure Data Scientist, Owarikids).

This situation is compounded by language barriers which hamper the development of common platforms for accessing and analysing data across countries in the sub-region.

African governments, the private sector, and development agencies need to champion the implementation of policies and initiatives that can make data more open to businesses and organisations that need them. A starting point is to create a common platform where experts from different countries can collaborate and access shared local data from public or government agencies, especially in the sub-region. This could begin with a regional effort to incentivise African research institutions and governments to share data on an African open data platform for government,

industry, and academia. African research institutions are already sharing the data on global research data platforms like Mendeley Data (<https://data.mendeley.com/>). Some governments are also sharing some data through open government data initiatives, which, though public, seem to be idle and lacking engagement with relevant stakeholders (including the media and researchers) whose activities centre on the use of government data [8].

In precis, there is a consensus on the need to share data. Still, there is a lack of integration between stakeholders who produce or share the data and those that can effectively use the data to innovate for society and better inform citizens and 'police' governments. Technology is necessary but not more important than the people and the processes which make it relevant. Open data platforms may remain largely idle and less impactful without conscious involvement or engagement with stakeholders. The data culture is also at its nascent stages in the continent; hence continuous advocacy to engage stakeholders is prime. The media (as agents of information channel and dissemination), academia, and startups (as agents of innovation) should be incentivised on their appropriate use of open national data. Incentives may span national recognition, innovation grants, and capacity development scholarships and opportunities.

Regional efforts to circumvent national politics should collaborate with professional networks or associations to establish sector-specific open data platforms that encourage knowledge-sharing, networking, and collaboration to innovate to benefit the entire continent (see data-related lessons from Ebola epidemics [9]). The benefits of an active sector-specific open data platform (targeted at professionals/practitioners) include rapid data sharing, co-creation of value/solutions, visibility of solutions developed through the shared data, the prompt and informed response by regulators and government, understanding of trends and prediction of future occurrences in the industry.

## Adoption

### 1. Institutionalising a Data Culture

There should be a conscious regional effort to create an enabling environment for data uptake by indigenous businesses in the sub-region. Regional efforts can be modelled as grants and tax incentives for employers and indigenous businesses that embrace data governance practices and innovatively use data to transform their business and create value for consumers, government, and society. These actions can be extended to promote intentional efforts by employers and institutions to share data for public good and innovation in industry and society.

Further, data from selected public and government agencies must be considered a "public good" to enable

both public and private institutions to address developmental challenges and inform the emergency response. However, data sharing across countries requires stakeholders (i.e., African governments, the private sector, and development agencies) to strengthen institutions that regulate data enterprises and create the right or appropriate technical model for channelling and sharing data within agreed ethical principles and legal mechanisms. Thus, rather than having several non-uniform independent country-level regulations and policies, the standardisation of data governance policies and regulations at the regional levels is prime [10].

The institutionalisation of cross-border trade organisations such as the African Continental Free Trade Agreement (AfCFTA) is a good starting point. However, there are emerging questions of concern on AfCFTA - are indigenous businesses aware of these agreements, what are the benefits to African businesses or multinationals (in Africa) who have already gained mileage in trading across Africa pre-AfCFTA, and what is the level of big data readiness or digital trade readiness across the African countries, and how appealing is AfCFTA to indigenous business vis-a-vis its resource readiness and idiosyncratic institutional and infrastructural barriers?

Critically, the regulation of digital markets and data economy in African countries is still in its infancy. Some countries have general laws not particularly intended for a digital era, and some laws or policies are being reviewed [10] or currently being developed for digital transactions for specific sectors (e.g., Ghana National ePharmacy Policy, [11]). Largely, some laws or policies have loopholes engendering opportunities for cybercrime [12, 13]. Some countries are also introducing taxes for digital transactions and social media ([e-levy in Ghana, [14]; internet in Uganda, [15]; Foreign Digital-Services tax in Nigeria, [16]). These barriers and emerging trends collectively tend to limit consumer trust, increase uncertainty for businesses and increase costs for digital businesses.

Regional efforts are prime, but some indicators caution African governments, the private sector, and development agencies to be realistic and measured in seeking a data-driven agenda since it could take more time and effort to achieve substantial gains across the entire continent.

## Download the Research Report on Data Enterprises in Africa:

<https://cseaafrica.org/data-driven-enterprises-in-africa/>

Table 1 Framework of Recommendations for the Data-Driven Agenda among African Indigenous Businesses		
Pillar	Sub-pillar	Recommendations
Awareness	Educational curriculum development	<ol style="list-style-type: none"> <li>1. Expanding educational curriculum to pre-tertiary education level to include data analytics - the curriculum should have a blend between theory and application.</li> <li>2. Taking technology and data education to lower levels of the educational ladder</li> </ol>
	Academia and industry collaboration	<ol style="list-style-type: none"> <li>3. Sensitising indigenous businesses (including SMEs) on the value of data.</li> <li>4. Academia and Industry need to collaborate to advance data analytics research, stimulate innovation in industry and create a skilled and contextually relevant workforce.</li> <li>5. Development of open-source learning platforms for data analytics and data governance to train the African youth (students, dropouts, and employed).</li> <li>6. Establishing and resourcing community training/learning hubs and ICT centres of learning to include data analytics/science. Thereby making data awareness and data-led solutions more accessible and closer to the youth and indigenous businesses in inaccessible and deprived communities.</li> </ol>
	Enhancing women's participation in the data economy	<ol style="list-style-type: none"> <li>7. Creating awareness and supporting training programmes for women at the pre-tertiary levels all through to women-owned businesses.</li> <li>8. Modelling affirmative action as grants or tax incentives for employers and institutions who promote female employment and career development in the data economy.</li> </ol>
Accessibility	Incentivising stakeholders to collaborate and integrate efforts	<ol style="list-style-type: none"> <li>9. Establish mechanisms for continuous and frequent engagement between stakeholders who produce or share the data and those that can effectively use the data.</li> <li>10. Media (as agents of information channel and dissemination) and academia and startups (as agents of innovation) should be incentivised on their appropriate use of open national data.</li> </ol>
	Establishing common open data banks within countries and across countries	<ol style="list-style-type: none"> <li>11. Avoid political interference in the collation and use of open data for open government initiatives.</li> <li>12. Collaborate with professional networks or associations to establish sector-specific open data platforms that will encourage knowledge-sharing, networking, and collaboration to innovate and benefit the entire continent.</li> </ol>
Adoption	Institutionalising a data culture	<ol style="list-style-type: none"> <li>13. Modelling regional efforts as grants tax incentives for employers and indigenous businesses that embrace data governance practices and innovatively use data to transform their business and create value for consumers, government, and society.</li> <li>14. Regional efforts to encourage governments to institutionalise data from selected public and government agencies as a "public good" enable both public and private institutions to address development challenges and inform the emergency response.</li> <li>15. Strengthening institutions that regulate data enterprises and establishing the right or appropriate technical model for channelling and sharing data within agreed ethical principles and legal mechanisms.</li> </ol>

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