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Panel Discussion – African Business Day

On

Fostering the African Private Sector in Harnessing Big Data in Health and Energy Sectors

Concept Note

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1. Background

The modern world is rapidly changing with people, objects and connections supported by emerging technologies are producing an avalanche of data, both actively and passively. New tools and applications are being used for data capturing, data analysis, visualisation, storage and sharing. This phenomenon not only creates large volumes of data but also distinctive streams of data that have been termed 'big data'. Big data is characterised by the five 'Vs', namely, the *volume* that represent the amount of data generated or data intensity that must be ingested, analyzed and managed to make decisions based on complete data analysis, the *variety* and complexity of datasets that originates from both individuals and institutions at multiple points in the data value chain, and the *velocity* of data streaming in and out of the systems in real time including the speed at which data is being produced and changed and the speed which data is transformed into insight, the *veracity* of data that reflects the uncertainty due to bias, noise or abnormality in data, and finally the *value* of data which refers to the added value that the collected data can bring to the intended process, activity or predictive analysis/hypothesis.

Companies traditionally gather and store data as part of their transactions which they use for tracking or forecasting the future. Currently, this data has grown at unprecedented rate that it requires implementation of new processes, technologies and mechanisms called Big Data. In general, Big Data is a term commonly used to describe the exponential growth of data, particularly the data flowing from ubiquitous mobile phones, satellites, ground sensors, vehicles and social media. It also refers to the rise of the computing technologies and algorithms that harness big data for valuable insights and decision-making. Indeed, many of these are referred to as 'Big Data', requiring different data analysis tools and skills, whose potential for public good is seemingly unlimited. The main concern has therefore been with the appropriate use of the data which led to the emergence of the 'responsible data' use movement that debates on issues of guidelines and frameworks to ensure ethical principles for data sharing.

By 2020, every person will be expected to generate 1.7 megabytes in just a second. On the other hand, Gartner reports that there are 14.2 billion connected things in use in 2019. It also projects that there will be 25 billion connected things by 2025. These devices are there to measure, sense, generate and communicate data of some size and structure. By 2021, mobile data traffic will exceed 48 exabytes (EB) worldwide per month, a sevenfold increase from

2016, according to Cisco's Visual Networking Index (VNI)[1]. ITU estimates that there are almost 7 billion mobile-cellular subscriptions worldwide, and each of them is both a data creator and consumer. Currently over half of the world's population use the Internet and mobile-broadband subscriptions. Each of these users contribute to the data revolution, with SMS, calls, photos, videos and messages posted on social media sites, e-mails, searches, clicks on links and ads, online shopping and mobile payments, or location traces left from GPS-enabled smart phones and WiFi network logins. Big data has therefore become a billion dollars industry in itself with the global big data and business analytics revenues reaching USD$ 189.1 billion in 2019.

Studies show that there are several benefits associated with Big Data initiatives particularly in the context of private sector ranging from better, fact-based and fast decision making to improved customer experience, increased sales, new product innovations, reduced risk, more efficient operation and higher quality products and services. As in the case of business intelligence (BI) initiatives, Big Data systems have been used for two purposes, namely, human decision support and decision automation. In this regard, the private sector holds data with a potential impact many times that of government data. Retailers, financial organisations, telecommunications companies, social network providers and other online platforms (such as search engines) hold much bigger, diverse and deeper datasets.

Furthermore, the benefits associated with Big Data can be further elaborated through the following five ways of how Big Data create value, according to the McKinsey Global Institute (2011), accordingly:

- ➢ It can create transparency by being more widely available to the new potential;
- ➢ It enables companies to set up experiments. For example experiments for process changes, they can create and analyze large amounts of data from these experiments to identify possible performance improvements.
- ➢ Big Data can be used to create a more detailed segmentation of customers to customize actions and prepare specific services.
- ➢ Analysis of Big Data can support human decision making by pointing to hidden correlations or some hidden risks. An example can be a risk or fraud analysis engines for insurance companies. Low decision making can be even automated to those engines in some cases.
- ➢ Data can also enable new business models, products and services or can improve the existing ones. Data about how products and services are used can be used to develop and improve new versions of the product.

1.1   The status of Big Data in Africa

In Most African countries Big Data:-are not produced on time, are frequently produced but lacks proper handling, are of poor quality, are not accurate, lacks proper management and handling, are not shared among sectors, are not even given due consideration. This makes it

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[1] https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-738429.html

difficult to make data driven decisions that will contribute for socio-economic development of the continent.

While improvements in Internet connectivity is considered an important driver for Big Data in Africa, since the connectivity in Africa is still not up to the global standards seen in emerging and more developed markers, this also acts as a restraint to the full realisation of Big Data's benefits.

While there has been a lack of an entrenched culture of data use across the continent in the past which slowed the adoption of big data, recently, there are encouraging signs of a culture shift where businesses and governments across Africa have focused on the potential value of data-driven processes. Several initiatives demonstrate the evolving adoption of big data. Visualise No Malaria (VNM), an initiative in Zambia is already using smart data gathered from digital tools to reduce malaria-related deaths. M-kopa is supplying solar energy instruments to rural East Africa and using IoT and cloud technology to generate data, manage its solar panel devices and upsell to customers. The World Bank's Open Data Impact Map[2] lists over 38 open data driven businesses and startups across Africa that are using big data to provide information on how farmers either grow or sell produce. One example of such businesses is the Ghanian based Farmerline[3] which provides best practice information to farmers on managing farms and increasing yield. Another use case implemented in Senegal and Cote d'Ivoire is Flowminder[4] which is using anonymised call data records to create likely paths of disease spread. Its maps were used to check the Ebola epidemic. In this regard, the use of data collected by the private sector for the public is being practiced. For instance, Orange's 'D4D challenge' using real CDR data (mobile phone Call Detail Records) from Cote d'Ivoire and Senegal demonstrate how CDR could be used in a range of sectors such as agriculture (4 use cases), energy (1), health (12), national statistics (9), transportation and urbanization (22) and eight other use cases.

Furthermore, there are also data-driven start-ups that are beginning to grow over the growing tech hubs across the continent. Banks and financial firms are also racing to use the data generated by their customers. Around 85% of African banks surveyed by PricewaterhouseCoopers are using big data to improve their security, whereas 77% are using it to improve their customer service[5]. Revenue from big data and analytics will increase by 11% this year in Africa and the Middle East to reach USD$ 2 Billion, according to estimates by International Data Corporation (IDC-2019). It also forecasts that growth will continue to remain at about the same rate for the next few years.

These are just few examples to showcase the rich rewards that can be reaped from harnessing big data. As African economies getting more and more sophisticated and complex the amount of data generated increases rapidly which in turn needs to process and understand increasing volumes of data. In this regard, the private sector in Africa has been the first to embrace big data with the bigger African firms more likely to have big data projects. For instance, in Nigeria

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[2] https://www.weforum.org/agenda/2014/12/how-the-developing-world-is-using-open-data/
[3] https://farmerline.co/
[4] https://www.flowminder.org/
[5] https://www.pwc.co.za/en/assets/pdf/african-banking-survey-banking-in-africa-matters.pdf

and Kenya at least 40 per cent of businesses are in the planning stages of a big data project compared with the global average of 51 per cent while only 24 per cent of medium companies in the two countries are planning big data projects.

1.2   *How Big Data could fuel the African economy?*

Data, and especially Big data of good quality, are essential for national governments and institutions to accurately plan, fund and evaluate development activities, Improved public health, Improved Public safety, National security, Improved Weather prediction, Efficient Urban and community planning, Forecasting natural disasters, Improved agricultural products, Development and poverty reduction, Good Governance, Quality education, Conservation and environmental protection. In all of the above cases, data provides critical insights into human actions, practices, behaviors, and impacts. This makes closing the data divide affecting underserved and disadvantaged communities a social imperative.

However, in order for the potential benefits of big data to become a reality, Africa needs specialists who are proficient in big data techniques. In this regard, there are some initiatives, such as the IBM-supported research facilities which aim to conduct research in collaboration with academia and offer education (through online learning platform offering free skills development programs on topics such as big data analytics and cloud computing) and internship opportunities to talented students. However, universities on the continent need to introduce programmes in big data fields and start teaching how big data can be used to find solutions to social, economic and scientific problems.

1.3   *Challenges facing the uptake of big data in Africa*

The Big data evolution has the potential to bring myriad positive changes in sectors such as: health care, finance, transportation, logistics, education, energy sectors, etc. However, there are challenges that need to be addressed to realise the development and adoption of big data in Africa. Among others, these include the following:

- *Lack of Government support and awareness:* -The government has little awareness on the use of Big Data implementation and providing no or little support for some of the startup Big Data projects in Africa.
- *Partnership:* -There are no binding guidelines and rules among the private sectors, government offices and institutions to work in collaboration for sharing Big data for common goals
- *Legal and regulatory issues*: while call records data play a key role in containing the spread of diseases, etc. the challenge of privacy and ownership of data is a key concern to address, breach of personal data, or decisions based on inconsistent or incomplete datasets, etc. are just few of the issues to be addressed by policymakers, regulators, industry and consumers to benefit from the full potential of big data;
- *Data protection, privacy, confidentiality and cybersecurity*: big data facilitates the tracking of people's movements, behaviours and preferences and contains large

amounts of sensitive and personal information that may be exposed to privacy, confidentiality, and cybersecurity risks. If not adequately protected, data/information can be vulnerable to cyberattacks, used to profile individuals, and sold to third parties. To this end, assurances must be given that personal data will be used appropriately, in the context of the intended uses and abiding by the relevant laws.

- *Access to big data*: - to access, experiment with, and use big data effectively, users need to enter into agreements with private data owners, while maintaining their independence, and ensure a legal environment that addresses both privacy and confidentiality.

- *Building big data capability*: that big data needs to be clean, accurate and transparent which also needs to be stored, analysed and shared appropriately which all require the capabilities to do that in turn need to make the required investment.

- *Skilled manpower and technologies* . The lack of human resources and expertise represents another major barrier to the adoption of big data across the continent. Data scientists are both in short supply and expensive to employ. Most of the top Big Data companies are from the developed world and developing competitive indigenous companies in the big data area is not an easy undertaking in Africa like many other developing countries.

- *Standards and big data* – the interworking of multiple systems and technologies, legacy and new are key issues in relation to technology integration that demand for standards to facilitate interoperability among the components of the big data value chain.

- *Platform interoperability*: As African private sector strive to accelerate adoption of big data, the issue of platform interoperability should be considered in order to address concerns related to communications protocols, gateways and data integration platforms alike, etc. so that vendor lock-ins that deny consumers the use of the latest data-driven third party applications, for example, to reduce energy consumption, are used without problem.

- *Enhancing access to open data* - African private sector use of open data available from the public sector has been a source of innovation and business opportunity. As a producer of data, government produce millions of datasets ranging from tax returns and unemployment data to hospital funding and energy use. Access to this data should be facilitated by the government and made openly available which in many countries is not the case.

- *Infrastructure and services* – availability and access to high-speed and high-bandwidth connectivity which is a key challenge in Africa is of paramount importance for effective use of big data. While broadband infrastructure, applications and services offer important opportunities for enhancing communications, among others, affordable access and availability of broadband service still a challenge across the continent.

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2. Objectives

The main objective of the panel is to facilitate discussion and raise awareness on the role and opportunities offered by big data to the business environment and overall economy and to promote the uptake and adoption of big data by private sector across the continent with a focus on the role of Big Data in the health and energy sectors. The panel also examines the extent to which the current/new form of digital divide is associated with and facilitated by the pattern of Big Data diffusion and its effective use

The following are the specific objectives:

a) Examine the potential of Big Data in transforming the African private sector towards the digital economy
b) Review the status and challenges (technical, financial, skills and legal/regulatory, etc.) in the uptake of big data across the continent with particular focus in the health and energy sectors.
c) Gather inputs, lessons and approaches towards developing guidance materials for use by enterprises in realising big data implementation.
d) Provide policy recommendations for consideration by African policy- and decision-makers in embracing Big Data towards the achievement of the 2030 UN Agenda for Sustainable Development Goals and the AU Agenda 2063;

3. Outputs

The outputs of the panel are as follows:

3.1 Increased adaption of big data by African private sector in the active collection, storage, generation, analysis and usage of big data towards enhancing the digital economy in the continent with a particular focus on health and energy sectors;
3.2 Active participation of the African Private Sector in data-driven businesses and entrepreneurship to enhance the share of the continent in the growing global Big Data market.
3.3 Preparation of resource document as a step-by-step guidance for African enterprises in the adoption of big data strategies;
3.4 The panel discussion report and policy brief on the potential of Big Data in enhancing the digital economy in Africa
3.5 Develop a guideline / framework for identifying the levels of trust, transparency, and control that citizens, businesses and governments can accept to ensure ethical principles for sharing data for public good.
3.6 Encourage governments to embrace open-data policies that enable open-data driven innovation and entrepreneurship for enhancing the big data ecosystem.
3.7 Building on existing initiatives, mapping the Big Data Ecosystem in Africa and creating or promoting a platform of partnership for international development and humanitarian actors, private sector, government and other stakeholders to develop a roadmap for developing the ecosystem.

4. Expected Outcomes of the Panel

The key expected outcomes of the panel are as follows:

a) Improved understanding of the role of Big Data in realizing competitive advantages of African enterprises both within the national economy and enhance their participation at the global level.

b) Created awareness on the potential of Big Data applications to stimulate tech hubs to promote new growth for start-ups across the region particularly in health and energy sectors;

c) A resource document produced to provide a step by step guidance on the uptake and use of big data by African enterprises and other stakeholders.

d) A set of policy recommendations (produced and shared) for consideration and adoption by Governments of Africa, Africa's continental and regional organizations, the private sector and other stakeholders in Africa's development that promote an early adoption and use of Big Data among the private sector in particular and other government and development organisations in general.

5. Target Audience

The meeting will be attended by private sector (including national and international big data-focused technology companies), policymakers, ICT and finance experts, representatives of regional economic communities and intergovernmental organizations, representatives of regional and international organizations; also included are telecommunications operators, individuals representing Central Banks; and individuals representing the private sector and tech bubs / start-ups, the civil society, academic and research institutions.

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