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Big data: A Potential Asset for Development and Economic Growth in Africa

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Abstract
The advent of the Information Age and Fourth Industrial Revolution has led to the involvement of innovative technologies in virtually all aspects of our lives, including commerce, shopping, transportation, education, and healthcare and even in our very homes. The use of these technologies creates or leaves behind traces of digital information (data) which range from information about our surrounding geographical (climate, temperature, humidity), and social conditions to information about where we have been, what we do, what we consume as food, goods or services, what we watch on television or even the websites we visit. All these data, generated in excessively huge amounts, represent an extensively vast variety of accurate facts about our lifestyle and preferences. Contemporary trends by governments, big enterprises and other institutions include gathering, analysing and aggregating these data (data analytics) and using the results to make administrative, political and especially business decisions. Big data has become a highly valuable economic asset, so much that it has sometimes been considered "the new oil". This colossal amount of available data (big data), especially data relating to individuals (personal data) is employed in Europe and in the United States of America to promote good governance, facilitate online business, create jobs and hence foster economic growth, and is also at the base of innovative developmental projects. It is the view of this paper that the same is possible for Africa. Data relating to African citizens could be generated, harnessed and exploited to facilitate administration, promote good governance, generate wealth and promote economic growth across the continent. This will entail a great deal of investment and socio-political strategising by both public and private sectors. By developing certain key areas and promoting the online presence of African citizens at national and international level, big data could very well serve as both a factor of production and a valuable developmental tool for Africa. Online commercial platforms (like, for example, a Digital Single Market to cap the African Union's proposed Continental Free Trade Area) could, if well managed, greatly contribute to Africa's economic growth. All of which will be even more reliable if accompanied by solid, precise and concise personal data protection policies which guarantee the security and privacy of users of these online platforms or who otherwise create, generate or share data online.
Keywords: Big Data, Africa, Data Protection, Economic Growth

Introduction

A Digital Explosion:

"Data is rapidly becoming the lifeblood of the global economy. It represents a key new type of economic asset. Those that know how to use it have a decisive competitive advantage in this interconnected world, through raising performance, offering more user-centric products and services, fostering innovation – often leaving decades-old competitors behind."

European Political Strategy Centre (2017)

Big data refers to the conglomerate of datasets whose size is beyond typical database software's ability to capture, store, manage, and analyze (Manyika et al., 2011), generated from practically everywhere; i.e., social media sites (Facebook, Twitter, Linked-in), digital pictures and videos, e-mails, purchase transaction records, cell phone, global positioning system (GPS) signals (Al Khouri, 2014). It is involved in almost all our activities, and

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influences decisions made regarding us. The 21st Century has witnessed a huge upsurge in information technology penetration and usage, the consequence being an increasingly enormous consumption of services which are run on information technology platforms and across computer networks. We are moving towards a "Web of the world", a Fourth Industrial Revolution, in which mobile communications, social technologies and sensors are connecting people, the Internet and the physical world into one interconnected network (Schwab et al, 2011). The Internet of Things has enabled interconnections between web applications, medical devices, cars, parking meters, cardiac monitors, point-of-sale machines, and even electronic household appliances to keep generating unprecedented volumes of data as they become ever so involved in our daily lives. Electronic commerce is also the order of the day: according to a study by the Pew Research Centre, roughly 8 in 10 Americans shop online, with 15% on a daily basis (Smith & Anderson, 2016) while 68 % of internet users in the European Union shopped online in 2017 (Eurostat, 2018). In fact, over one-sixth of the world's population is expected to be involved in electronic commerce by 2020 (www.statista.com).

The proliferation of modern technologies and smart devices in addition to the popularity of social networking is generating unprecedented amounts of data, both in structured and unstructured forms, whether it be text, audio, video, or other forms (Mayer-Schonberger and Cukier, 2013). The employment of services which entail exploitation of these online activities or use of connected devices always involves the generation, storage and sharing of big data ranging from information about users of the said service to information about demographics, the weather, geography, highway traffic, or the sales performance of a given product in the market. The sheer number of bytes generated daily is overwhelming. According to a report from IBM Marketing Cloud titled "*10 Key Marketing Trends For 2017*," 90% of the data in the world today has been created in the last two years alone, at 2.5 quintillion bytes of data a day! Experts indicate that the world is in a digital explosion era (Liebowitz, 2013; Minelli et al., 2013). This huge, unprecedented and ever-increasing amount of big data (also referred to as big data) represent a massive source of information on almost all aspects of human and non-human activity, and which can be exploited by a variety of actors for a variety of goals, ranging from marketing, business modelling and economic development to name a few.

Importance of big data in today's interactions

Data, and eventually Big Data, is generated from practically everywhere; i.e., social media sites (Facebook, Instagram,Twitter, Linkedin), digital pictures and videos, e-mails, purchase transaction records, cell phone, global positioning system (GPS) signals, smart household appliances, meteorological sensors, to name a few. And it is not just about size, but about the sheer number of data sources available, its different formats, and the fact that most of it is user generated: 70% of the digital universe is actually generated by all of us through email, Facebook, Twitter, LinkedIn, YouTube. Add to that the growing number of publicly available data sources from state, and local government agencies, academic and research institutions, geospatial data, economic data, census data; and so on (Craig & Ludloff, 2011). There are now countless digital sensors worldwide in industrial equipment, automobiles, and electrical metres.

Erik Brynjolfsson, an economist at Massachusetts Institute of Technology's Sloan School of Management, advanced that in order to grasp the potential impact of Big Data, one should refer to the microscope. Invented four centuries ago, this device allowed people to see and measure things as never before — at the cellular level. It was a revolution in

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measurement. Data measurement, Professor Brynjolfsson explains, is the modern equivalent of the microscope. Google searches, Facebook posts and Twitter messages, for example, make it possible to measure behaviour and sentiment in fine detail and as it happens. In business, economics and other fields, decisions will increasingly be based on data and analysis rather than on experience and intuition (Craig & Ludloff, 2011). Today, retail companies analyse data on sales, pricing and economic, demographic and weather conditions to tailor product selections at particular local stores and determine the timing of price discounts. Shipping companies mine and analyse data on truck delivery times and traffic patterns to fine-tune routing. Online dating services constantly sift through their Web listings of personal characteristics, reactions and communications to improve the algorithms for matching men and women on dates. Police departments (in developed countries) use computerised mapping and analysis of variables like historical arrest patterns, paydays, sporting events, rainfall and holidays to try to predict likely crime "hot spots" and deploy officers there in advance (Craig & Ludloff, 2011). Data has indeed had a huge impact on how institutions managed their affairs; it has practically become the fuel of management and administration of both private and public enterprises.

The above chapter illustrates the general importance of big data in today's economy. As huge amounts of data keep getting produced and used to serve the general public, re-created in the process and re-used again, this fosters the creation of new jobs, industries and products. All these make up what has been termed "the digital economy": an economy based on digital technologies (sometimes called the internet economy). Increasingly the digital economy has become intertwined with the traditional economy making differences between them less clear (European Commission, 2013). Big data, being the driving force behind the digital economy, automatically contributes hugely to economic growth and development. The following section briefly examines various ways in which the digital explosion has influenced or impacted development or economic growth in the US and Europe.

Big data benefits in the USA

The USA apparently stands out as the economy which benefits (or at least could benefit) from the exploitation of big data much better than any economy in the world. Big data exploitation could generate an additional $3 trillion in value globally every year, and of this, $1.3 trillion would benefit the United States (Manyika et al, 2011).

Health: As regards the health sector, it is estimated that the potential value which could be extracted from the exploitation of big data could be more than $300 billion every year, two-thirds of which would be in the form of reducing national health care expenditures by about 8% (Manyika et al, 2011). The US has made significant use of patients' medical data through EHR (Electronic Health Records) or EMR (Electronic Medical Records): the collection and storage of patient and population health information in digital format (Gunter & Terry, 2005). The United States Department of Veterans Affairs (VA), for example, runs a health system which generally outperforms the private sector in following recommended processes for patient care, adhering to clinical guidelines, and achieving greater rates of evidence-based drug therapy. Achievements made largely possible because of the VA's performance-based accountability framework and disease-management practices enabled by EHR/EMR and other health information technology and patient monitoring programs (Manyika et al, 2011).

Commerce: Commerce in the USA has also undergone significant revolution since the arrival of big data. Top retailers are mining customer data to inform decisions they make about

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managing their supply chain to merchandising and pricing. Wal-Mart's detailed and cost-efficient customer tracking, for example, gives the retailer the ability to mine and exploit data on customer preferences and buying behaviour, and thereby win important pricing and distribution concessions from consumer product goods companies. Retailers across the industry are becoming more sophisticated in aggregating big data they collect from multiple sales channels, catalogs, stores, and online interactions (Manyinka et al., 2011). E-commerce companies like Amazon.com use special software to analyse cookies and clickstreams on consumer's browsers, so they can identify patterns in consumers' shopping habit and hence can provide them with customised offers, advertisements and discounts (Manyinka et al., 2011).

Big data benefits in Europe

Public sector: Research has shown that the public sector in Europe, by optimising big data levers such as increasing transparency and applying advanced data analytics, presents itself with a variety of powerful strategies and techniques for boosting productivity. Accordingly, Europe's public sector could potentially reduce the costs of administrative activities by 15 to 20%, creating the equivalent of €150 billion to €300 billion ($223 billion to $446 billion) — or even higher — in new value. These levers could also accelerate annual productivity growth by up to 0.5% between 2011 to 2021 (Manyinka et al., 2011). Also, by filtering big data, then segmenting and tailoring government services to individuals and population cohorts therefrom, the public sector can increase effectiveness, efficiency, and citizen satisfaction. For example, the *Bundesagentur für Arbeit* (German Federal Labour Agency, or BA for short) analyzed its huge amount of historical data on its customers, including histories of unemployed workers, the interventions that it took, and outcomes including data on how long it took people to find a job. The idea was to develop a segmentation based on this analysis so that the agency could tailor its interventions for unemployed workers. This process, along with other initiatives applied over three years, allowed the agency to reduce its spending by €10 billion ($14.9 billion) annually at the same time as cutting the amount of time that unemployed workers took to find employment, and increasing satisfaction among users of its services.(Manyinka et al, 2011)

Health sector: To curb rising challenges in the region's health sector, the European Health Parliament (EHP) was formed in 2014, and its *Big Data in Healthcare* Committee came up with the proposal of leveraging health data through the creation of a Europe-wide and connected Electronic Health Records Organization (EHRO) to enable the effective collection and usage of patients' health data across Member states, revolutionising healthcare and ultimately leading to better health outcomes for patients and European citizens irrespective of national borders. This could create value for patients as well as health practitioners and governments. Patients would be able to receive treatment across Member states by sharing personal health information with any physician in the EU (conditional on the patient's consent) and avoiding unnecessary medical fees and administrative burdens (such as duplication of medical analyses). They would possess a centralized, up-to-date and easily accessible health "database", while retaining ownership and ensuring appropriate use of their data. In addition, healthcare practitioners would have a comprehensive view of the patient's medical background and history over time, thereby enabling them to offer the most appropriate treatment (Stril et al., 2017). The challenge here, however, is that big data is not on the health agenda of all EU member states, as well as the issue of privacy.

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All in all, big data is considered to have a huge impact on all sectors, providing endless arrays of new opportunities for transforming decision-making; discovering new insights; optimizing businesses; and, innovating their industries (Al-Khouri, 2014). This has proven to be true in the USA and Europe, as illustrated above. Africa could also follow suit; target investments and implement strategies to boost big data generation and management for economic growth and better standards of living. The following section shall examine the potential role which big data can play in fostering development and economic growth in Africa.

Digital technology and ICT growth in Africa: An overview

Africa is no stranger to digital technology or ICTs. Sub-Sahara Africa remains the fastest growing mobile telecommunication market in the world, with 420 million unique mobile subscribers in Sub-Saharan Africa, equivalent to a penetration rate of 43%. The region will have more than half a billion unique mobile subscribers by 2020, by which time around half the population will be subscribed to a mobile service (GSMA, 2017).

However, while mobile connectivity is well-advanced, internet availability still lags behind. According to PWC 2017 report titled *Disrupting Africa: Riding the wave of the digital revolution,* less than 30% of African people have access to mobile broadband (compared to 43% in Asia) and only 15% have internet at home. The continent also remains the region with the lowest internet population penetration rate as compared to other continents in the world, with 34.2% (www.internetworldstats.com). There is also the issue of high costs: most people cannot afford to pay for higher bandwidth access, and are usually on pay-as-you-go plans – downloading a movie can cost several days' pay. Nevertheless, Africa is not at all adamant towards embracing the 4th Industrial Revolution, perhaps the most important component of which is wide-range and reliable internet connectivity. This has been on the agenda of a good number of high level projects by or directed towards African countries. Examples include the Program Infrastructure Development for Africa (PIDA), Agenda 2063 of the African Union, as well as the UN-adopted 2030 Agenda for Sustainable Development. These projects all include improving the digital economy of Africa by ensuring affordable and dependable internet connectivity for most African citizens. African governments also realise the need for a structural transformation of the African economy by making some changes in the structure and drivers of economic growth in order to improve productivity and quality of life (UNECA, 2017).

Big data could very well be one very valuable economic driver which African states, nationally and regionally, could focus on leveraging. Moreover, it is believed that 90% of new jobs in Africa in the next few years are going to be in areas that either are related to digital technologies or involve the use of digital technologies (UNECA, 2017). Advancements or increase in the use of digital technologies by the public and private sector as well as individuals will generate great amounts of big data which could be "recycled" and reused for further growth and development. The following section examines possible strategies which could be implemented in favour of the optimal use of big data in Africa.

Strategies for optimal use of big data in Africa

Promoting maximal use of e-commerce in and among African states:

According to the e-Marketer 2016 report, e-commerce was valued at US$1.195 trillion in 2016, accounting for 8.7% of the total global retail spending, and is expected to reach over US$4 trillion in 2020, which shall be 14.6% of the total spending that year. It therefore is a very important driver of economic growth. E-commerce however, is still in its embryonic

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stages in Africa, with the continent having the lowest number of online retailers or persons in possession of a credit card or other means of online purchase. A significant number of startups based on or using e-commerce platforms are springing up nevertheless (264 startups year-on-year), but success is quite limited, with less than 30% of these startups making any profits by 2017, reasons ranging from lack of funds, lack of trust in online commercial platforms as well as insufficient funding (Mulligan, 2017). The concentration of the African e-commerce market itself can hardly be said to be evenly spread, with 40% of the startups based in Nigeria alone. (Mulligan, 2017).

E-commerce is arguably the highest generator of big data, especially personal data. Online purchases usually necessitate consumers submitting aspects of their personal information in digital format to the retailer or service provider, and the latter is usually entitled to store and process this data to render the service or further marketing purposes, like customized advertising for example (usually required to be consented to by the consumer). Promoting and funding e-commerce startups at national and regional level while ensuring trustworthy online platforms in terms of cybersecurity and personal data protection, coupled with the initiation public/private sector ventures to provide African citizens with means of online payments (like credit cards or online payment accounts) will encourage them to make more transactions online. These transactions in turn represent a huge source of personal information (consumer location concentration, consumption preferences, spending capacity of the population) which could be gathered, studied and aggregated by these startups to enable further customisation of their services. Such data could, within specific limitations in terms of safeguarding consumers against privacy invasions, also be made available to public institutions for analysis in order to make informed administrative/governance decisions.

Also, the (proposed) advent of an African Economic Community (AEC), a Continental Free Trade Area (CFTA) coupled with the emergence of the African Union Protocol relating to the free movement of persons present a favourable breeding ground for electronic transactions, with consumers (at least in theory) not having to worry about geoblocking, and trans-border retailers not bothered about restrictive custom duties. The creation of a Digital Single Market for Africa could therefore not be too far-fetched, which shall facilitate (or necessitate) the free flow of big data between African states. Allowing public or private bodies to store and exploit big data (personal as well as non-personal) anywhere within an African Economic Community shall create more value in terms of competition between providers of online goods and services, creation of digital technology jobs, and will ease the prevention and investigation of online commercial fraud.

Improved access to information: open data initiatives:

Another important means of creating value through digital information is through open data — the release of information by governments and private institutions and the sharing of private data to enable insights across industries (Manyika et al, 2013). Information gathered by government institutions or privately-run organisations on a wide range of domains (demographics, population census, weather, urban development, transport, health-related statistics etc) could be made easily available to the public and in digital format easily accessible to everyone. This could then be put to use by technology startups or other companies, through computing and data analytics, in developing efficient strategies for providing goods and services to the general public, hence ameliorating the living standards of individuals, create jobs and generate wealth. In the USA, for example, a startup known as Climate Corp, acquired for almost US$1 billion in 2013 made considerable value by collecting 30 years of weather data, 60 years of crop yield data, and 14 terabytes of soil data,

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all from government agencies, for such uses as research and pricing crop insurance (Manyika et al, 2013).

It should be mentioned that open data initiatives have already kicked off in Africa, and the private sector has been quite active in it. In the domain of urban transport, for example, South African startup *WhereismyTransport* in 2017 mapped out the urban transport routes of the city of Cape Town, incorporating trains, minibuses and taxi routes, and made this information available on their website (Stinson, 2017). Development design firm Groupshot, together with researchers from MIT and the University of Nairobi designed and manage the Digital Matatus Project, under which researchers rode on or followed Nairobi's thousands of minibuses and, using smartphones and GPS units, assembled a database of the most predictable routes. The data was then uploaded online for free access and exploitation for the general public; a valuable source of better urban transport management and a base for government or other companies on which to come up with further transport development innovations. Such initiatives could be promoted or carried out by African governments and other organisations in other domains like health, education, demographics etc, and the data gathered and made available in easily-accessible digital formats for exploitation by researchers, policy makers or local tech startups.

"Give-back" initiatives directed towards data collection giants

As illustrated in the first part of this paper, the economic value of big data cannot be over-emphasized. And big companies are investing heavily in collecting, storing and aggregating big data from virtually everywhere there is potential for market shares, for marketing purposes and making other streamlined business decisions. Given the huge value attached to data aggregation, in terms of profits realised from making business decisions from analyzing raw data, it may not be far-fetched to require that companies which collect massive amounts of data from certain data sources "give back" something to the communities from whence the data was collected, particularly as part of their corporate social responsibility scheme. Or initiate strategies to enable such companies to contribute to the development of these communities.

With a total population of 1.2 billion people expected to reach 2.5 billion people by 2050, spread over a total land area of 29,648,481km² (according to World Meters website), about 2000 different languages and cultures (Daily Nation, 2018), and a prospective continental free trade area, Africa represents an endlessly vast horizon suitable for high-scale business investments. And a good base on which to build business ideas and targets today, as seen above, is through gathering and analysing raw big data. It follows that data relating to African citizens (personal data) or Africa (non-personal data like demographics, population census, urban development plans etc) could well be of great value to potential business investors, and so strategies and policies could be put in place at national and regional levels to ensure that big data-harvesting companies who realise a lot of benefits from collecting such data contribute directly or indirectly to the economic and developmental progress of the relevant community.

Yet this is not easily applicable in practice, especially considering the fact that open data (hence free data) is being advocated for in most countries, and personal data is usually given up freely by consumers to service providers. It therefore seems illogical to place a "price" on big data collected by any company. Also, there is the ongoing global debate as to whether big data can actually be "owned" (Ravenscraft, 2014; Koops, 2014), or whether it can be said to "belong" to a certain country or region, especially considering that data creation and generation involves more than one party. Nevertheless, considering the huge sums of

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profit realised from exploiting pieces of digital information relating to persons and regions, it appears only fair that some responsibility regarding the economic growth of the concerned community should be made to fall on the data harvesters.

Treating data as labour, subject to contractual compensation

Closely related to the above point is the movement in recent times by Western scholars who warn against the dangers of what is termed "free online"; that is, the contemporary trend where users of online services are not paid for their data contributions to digital services nor pay directly for the value they receive from these services (Lanier, 2013; Autor, 2015). While free data for free services appears to be a fair enough barter, Lanier (2013) argues that it skews distribution of financial returns from the data economy: users provide data giant companies with raw data (in exchange for free services), and the companies use this data as capital to generate huge amounts of income with nothing reverting back to the users, who provide the raw capital. To counter this one-way, feudal system of financial gains, he advocates for data users to be proportionally compensated for the data they give to these companies. Ibarra et al. (2017) talk of a Data as Labour concept, with personal data (regarded as labour input) being treated as user possessions that should primarily benefit their owners. They also point out that data-centric giants such as Facebook and Google make huge profits but employ comparatively less workers than other companies (mostly because most of the workload is taken care of by machines which in turn are fueled by the data generated by users), which calls for some intervention to create an income balance between these companies and users of their services.

African policy makers could take steps to realise this theory as a means of generating income from data generated by African citizens. Ibarra et al. (2017) suggest that laws could be adjusted to accommodate data as labour input, civil law statutes granting more ownership rights to personal data may be initiated, or the "data labour syndicates" could be formed among internet platform users which could take common stands and coerce data collection giants to consider distributing their profits proportionately to those whose data they make use of. So far, existing literature does not suggest how this can be implemented in practice, but the theory is a rather interesting one which may be considered by African governments and policy makers in terms of reducing the huge income distribution gap between data-centric companies and their users.

Solid continental personal data protection regime

In the digitally-run world we find ourselves in today, law and policy makers are faced with a two-edged challenge: ensuring the continuous, unhindered flow of big data in order to create economic value, while at the same time ensuring the security of data relating to our online identities or intimacy. As has been observed, as companies customarily collect billions of details about nearly every connected individual, the world will [most likely] reach a state where people will lose control of their privacy and identities at any moment (O'Harrow, 2006). With dangers such as identity theft or online fraud a reality in the digital world, it is essential to seriously consider measures to protect online service users.

From an African perspective, privacy in general has been said not to have received so much attention as other legal domains principally because it has always been regarded as a preserve of Western societies (Makulilo, 2016). However, the cybersecurity concerns which accompanied the digital revolution raised concern within African government's vis-à-vis the security and privacy of data shared on their online platforms. As a result, 18 African states so far have actually adopted domestic personal data protection laws. However, though these laws

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uphold similar personal data protection principles (like guaranteeing the confidentiality, integrity and accessibility of personal data), they differ in a number of details as regards registration (of data processing companies) with the national Data Protection Authority, regulation of cross-border data transfers, data breach notification, or appointment of a Data Protection Authority (Rich, 2015). This fragmentation of personal data protection mechanisms across states presents prospective and significant hurdles in regulating cross-border data flows, which could seriously discourage related investments. Protecting African's personal data shall therefore require the establishment of a uniform body of laws enforceable in, and guaranteeing the same level of protection across all African states, in the same way as the General Data Protection Regulation is for the European Union.

It is worth mentioning that at sub-regional level, there have been some attempts to harmonise data protection laws amongst African states: the Economic Community of West African States (ECOWAS) adopted regional treaty entitled the Supplementary Act A/SA.1/01/10 Personal Data Protection within the ECOWAS (ECOWAS Data Protection Act), which imposes explicit obligations on Member States to establish laws protecting personal data (Article 2 of the Act). Also, in partnership with the EU and the International Telecommunications Union (ITU), the South African Development Community (SADC) came up, in 2011, with a SADC Model Law on Data Protection. Though both legislations similarly promote the protection of personal data, the main drawback they both share is that none of them directly apply on Member States. While the ECOWAS Data Protection Act at least imposes the establishment of national data protection laws and proposes related substantive rules, the SADC Model Law represents only a set of non-binding rules which Member States may adopt totally at their own discretion.

Establishing a solid African data protection regime (similar to that of the European Union) may not be too far-fetched, but there is still a long way to go in terms of political will of African leaders and institutional organisation at the level of the African Union (AU). In the first place, the inexistence of an "African Union system of law" (as one will talk of EU law, for example), stemming from the inability of the African Union organs to produce mainstream laws directly binding on member states hinders the adoption of a solid legal regime of any sort. Contrary to its European counterpart, the African Union is likened to an interstate organisation (with focus on the nation state and regarding regionalism simply as an arena for international politics) rather than a supranational organisation, hence the inability to adopt enforceable decisions which prevents the establishment of a regional legal system through institutional action (Olivier, 2015). Interestingly enough, Article 3 of the Constitutive Act of the AU states the Union's commitment to accelerate political and socio-economic integration, but is silent about legal integration as an objective. The same Act is also silent as regards the binding status of legislation adopted by the AU organs, as opposed to the Treaty of the Functioning of the European Union, which states in its Article 288 that EU Regulations are directly binding on member states and supersede domestic law. National application of AU legislation is therefore subject to further ratification under state domestic law, inherently watering down the legal force of subsequent AU legislative texts including the 2014 African Union Convention on Cyber Security and Personal Data Protection. This Convention, even more so, needs to be ratified by at least 15 AU member states for it to come into effect (Article 38). So far (March 2018), only one member state, Senegal, has ratified the Convention.

Also, there is presently no overarching, supranational court system in charge of interpreting AU treaties and hence setting a solid base for the existence of an African Union legal tradition. The existence of the African Court on Human and People's Rights does not

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really help matters because its function is limited to providing advisory opinions on matters referred to it by member states, the AU or any African organization recognized by the AU regarding the interpretation of the African Charter on Human and People's Rights or any other human rights instrument (Olivier 2015). In 2003, the AU adopted a Protocol of the Court of Justice of the African Union to establish a Court of Justice of the African Union which was intended to be the "principal judicial organ" of the African Union (Article 2(2)) and was supposed to be in charged with the "interpretation, application or validity of Union treaties, and all subsidiary legal instruments adopted within the framework of the Union" (Article 19(1)(b)). This Court, however, never came into existence, as the Union decided in 2008 to merge it with the African Court on Human and People's Rights to form the African Court of Justice and Human Rights. The Protocol of the Statute of the African Court of Justice and Human Rights was adopted in 2008, and will become enforced following ratification of at least 15 member states (as per its Article 9). By February 2018, however, only 6 member states had ratified the Protocol.

In the absence of some legal regulation measure expressly and automatically subjecting states to AU treaties, coupled with the absence of a functioning supranational judicial system to enforce and ensure such compliance, it is difficult to establish a solid, continentally-binding personal data protection regime necessary for ensuring unhindered flow of data between states, as all personal data-related issues in all states will be subject to one and the same body of rules. This will facilitate interstate cooperation between data flow regulation authorities and encourage investments. With the advent of the Continental Free Trade Area and possibly a single digital market, a single personal data protection regime binding all states shall be a crucial step to solving any future disagreements arising from personal data transfer or management as well as gaining the trust of current and potential online platform users and related investors. To achieve this, the status of the AU as a law-making authority should be revised to enable the latter, through its organs, to establish a uniform, nationally-binding body of laws on certain aspects including personal data protection. This will ensure the same level of compliance of data-collector companies vis-à-vis personal data security and privacy throughout the African continent.

Conclusion

The mastery of new and innovative technology has always been a tool for developmental advancement and a means of leverage over other communities. Just as the 19th Century Industrial Revolution brought about striking changes in the way people lived and worked, the digital revolution of the 21st Century and the accompanying advent of big data has brought about drastic changes in human interactions, business/commercial processes and even public administration. Big data suddenly presents unprecedented opportunities for innovation, which the West has seized and still continues to seize, with results pointing at even more efficient business practices and public administration/governance strategies in the future years. As potential consumers of ICT products and with an increasingly high number of internet users, African citizens generate a huge amount of big data, and the continent can come up with strategies at regional or national level aimed at harvesting this data, studying then reusing it for improving various sectors of the African economy. To realise a data-driven African economy, there has to be unbridled and consistent flow of big data between African states, especially personal data and with regard to the dawn of the Continental Free Trade Area. This in turn brings about the need to secure online platforms against data misuse or privacy violations applicable throughout the continent, hence the need for the establishment of a

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uniform body of rules geared towards protecting African internet users vis-à-vis the data they generate.

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