

9

LEAPFROGGING WITH NEXTGEN FINTECHS AND EMERGING TECH FOR THE GROWTH OF AFRICA

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9.1 AFRICAN CONTEXT

The African continent, which constitutes fifty-five countries and has a population set to reach 2.2 billion people by 2050,¹ is facing unprecedented change with the emergence of the fourth industrial revolution, characterized by a vibrant digital economy that has many transformative digital tools that can change Africa as we know it today. These digital tools are being heralded as game changers for Africa's development, industrialization, growth, and transformation. Growth projections for the continent continue to be positive, with GDP predicted to reach 4.1 percent as of 2020 according to the African Development Bank's "African Economic Outlook 2019."² However, high levels of global uncertainty, rising indebtedness, a slower pace of economic recovery, and poor domestic reforms in some key countries are threatening this level of growth. In addition, the fluctuations of local currencies, rising interest rates, and difficulty in accessing affordable liquidity pose some major challenges for many countries across the continent. This has weakened investor confidence and will hinder further growth if not addressed. External factors including global trade tensions, political turf wars, post-Brexit challenges, and other significant unexpected global issues have further exacerbated the threat to the level of growth. It is important for Africa

to explore and strategically plan for how it can be cushioned from the unexpected consequences of such global challenges. African nations need to be particularly cautious about rising debt levels and unmanageable long-term borrowing, which is squeezing some nations and limiting financial flexibilities that are necessary to diversify economies.

The heavy reliance on foreign exchange and the US dollar further limits accessibility and choice. The lack of diversification around currency, fiat or otherwise, is an important factor—indeed an opportunity for new financial instruments to enter the markets and boost liquidity, which is desperately needed to bring forward the industrialization and growth required in Africa. African countries need to carefully navigate the environment to ensure minimal unintended consequences and take advantage of the opportunities available, including tapping emerging technology, forming new trading relationships on equal footing, increasing investments, boosting collaborative partnerships internally and externally, and boosting internal private-sector engagement. In particular, monitoring progress with China is an important consideration given that China, with about \$2 trillion worth of trading activity, is Africa's largest trading partner,³ surpassing the United States and Europe. As the African continent is becoming more widely recognized as a focal region for future investment opportunities and potentially the next growth phenomenon, Africa must strengthen its capacity to meet not only the needs of the investment community but also the needs of its internal market, in particular supporting entrepreneurs and micro, small, and medium enterprises (MSMEs), which make up over 70 percent of the African business community. The source of GDP production for many economies in the future can be derived from fully supported MSMEs in Africa.

Africa is in a strong position to renegotiate trade relationships after Brexit with both the United Kingdom and the European Union; negotiations should already be in progress. This

presents an opportunity for Africa to boost both interregional trade and access to global trading opportunities for MSMEs as significant drivers of economic growth in Africa. Despite some of the core challenges outlined above, now is probably the most exciting and best time for the continent to lead the delivery of internally driven solutions to spur growth. High up on the continent's agenda is the implementation of the Africa Continental Free Trade Area (AfCFTA).⁴ The AfCFTA has the transformative potential to introduce the world's largest single market since the creation of the World Trade Organization. This much-anticipated vision would create a single market that allows for seamless intra-Africa trade and free movement of goods, capital, and people among the African member states.

Before digging into the significance of the AfCFTA, it is important to set some context. The development agenda in Africa is particularly key for the future of the continent. First, the continent has taken a different approach by pushing to change the discourse so that Africans themselves are center stage in driving the development agenda and bringing to the fore solutions that are best suited for Africa. Underpinning this is the important alignment with the global Sustainable Development Goals (2030), aimed at leaving no one behind and ensuring fairer economic systems that provide for the many rather than the few. This is in line with the African Union's Agenda 2063, focused on building the "Africa we want." In this context, there are several key important "ingredients," or what we will refer to as growth components (GCs), which need to be given priority and are critical for Africa's successful shift to becoming a production economy and a key driver of growth rather than just a consumer or recipient of growth from other parts of the world. This includes and is not limited to favorable economic fiscal alignment; human-centric, evidence-based policy frameworks; strong leadership; harmonized and secure governance structures; healthy and

well-regulated transparent trading environments with access to easy flowing liquidity; accessible labor markets with a variety of job opportunities; investment in a reskilled workforce and talent to service the digital age; a healthy digital economy with robust infrastructure systems; and the creation and retention of productive, innovative high-value chains that MSMEs can access to tap value. These key GCs will spur economic growth and diversification in the continent. A few of the GCs will be picked up and explored in the context of a growing dynamic digital and fintech economy. By no means are these GCs the only factors needed for sustainable development and growth for the region, but they do play a key catalytic role in boosting growth. Many other GCs are explored in further specialist publications and are beyond the scope of this snapshot chapter.

9.2 THE RELEVANCE OF THE AFCFTA AND DIGITIZATION

The launch of the AfCFTA on May 30, 2019, sparked a remarkable and ambitious drive by African Union member states to facilitate seamless trade, particularly interregional trade that today is low in volume⁵ but could be boosted through a single market that is projected to significantly contribute up to US\$4 trillion GDP to African economies. This will be the world's largest single market when fully operational with all member states, including some of the top ten fastest-growing economies, which are located in Africa.⁶ At the time this chapter was written, the AfCFTA had fifty-four members committed to the delivery of this game-changing initiative, which is an opportunity to not only facilitate trade across borders but also to generate, redistribute, and retain wealth within African nations, supporting economic diversification and social capital development and creating value across communities. The World Bank predicts the AfCFTA could lift 30 million people out of poverty and increase real income gains by up

to 7 percent by 2035.⁷ The AfCFTA combined with a healthy digital economy provides an indispensable platform to boost productivity, create jobs, open access to new markets, and boost MSMEs and entrepreneurship capacity. This is particularly important given that Africa is a youthful continent with many young people, some of whom are facing high levels of unemployment and high barriers of entry to the labor market. The traditional labor market will not generate the number of jobs that are required to tackle the high unemployment levels. In order to stimulate the creation of more jobs, it is important to boost entrepreneurship and direct resources to MSMEs. The emergent technology tools can support this transition.

A range of technological advancements across continents, made possible by the fourth industrial revolution, can and will enable African economies to take the lead not just in using digital solutions from other parts of the world but also in leveraging homemade African technology solutions to leapfrog and help create jobs, liquidity pools, and new trading markets to strengthen wealth access for Africans. The opportunities to leapfrog and tap tailored digital solutions will provide greater choice and access. This is what Africa needs. Digitization is not new to African countries: nations such as Kenya have been leading digital movements through creations such as M-Pesa, a mobile money innovation that has excited the world and motivated other applications to follow. These applications have been founded on data-driven innovations that utilize blockchain, artificial intelligence (AI), 3D printing, drones, and robotics, which are now starting to feature in the corners of African economies. Nigeria, Africa's most populous nation, has seen an increase in fintech investment in the past few years—more than \$600 million in funding between 2014 and 2019.⁸ A majority of the fintech solutions coming to market in Africa have been in the payments sector, although a growing trend as more awareness builds in the emergent technology sector is the rise of products that are being driven by some

of the newer technologies, including AI, blockchain, and the internet of things (IoT). These technologies are automating transactions and processes, helping with efficiency, and creating transformational business models. Driving this further will be a thriving private sector, which needs to have a closer alignment and engagement with governments, civil society, and other key stakeholders to ensure that digital solutions are fit for the marketplaces and aligned to policy frameworks, and that properly managed wide-scale digital education programs are set up. Governments have a key role to play in ensuring that regulatory and policy frameworks that are in place are conducive to innovation and help create a competitive digital economy. Such an economy is key for the future growth of the continent and the world as a whole. The World Economic Forum predicts that by 2022 close to 60 percent of the world's GDP will come from digitized activity.⁹

For Africa, it is essential that investment in infrastructure be prioritized, ensuring that high-speed broadband and internet connectivity can reach a larger pool of people across the continent. This will pave the way for utilization of digital tools and support innovation from more value chains in different sectors, boosting African GDP by as much as \$300 billion a year.¹⁰ It might come as a surprise to some that the African continent is the world leader in mobile-enabled digital payment systems and that it hosts some of the most innovative systems, such as M-Pesa (mentioned earlier) and payments systems such as Paystack. But there are many barriers that hinder the scalability of such solutions across the continent. These include challenges around data (accessibility, processing, affordability, and disparities in national data laws), the high costs associated with both cross-border and international settlements, internet inaccessibility, and trade barriers faced by many innovators and potential new entrants into the market. Africa's need for connectivity will grow, especially as the mobile market in the region continues to boom;

the number of smartphones is expected to almost double to reach 678 million by the end of 2025, an adoption rate of 65 percent.¹¹ Although smartphone adoption is high, internet user penetration levels still lag behind. To capitalize on smartphone adoption, more investment in internet infrastructures and connectivity will be key. In 2013 McKinsey predicted that with continuous infrastructure investment, internet reach will expand at a much larger scale, potentially adding \$300 billion a year to Africa's GDP.¹² These developments present a big opportunity for mobile phone innovation—particularly decentralized innovations that can be easily deployed onto mobile platforms. The implementation of the AfCFTA is positioned to alleviate challenges around trade and some of the barriers outlined earlier. At the second e-commerce conference organized by the African Union in Dakar in 2018, the trade commissioner (H. E. Albert Muchanga) outlined three core operational instruments that will enhance digital trade and the digital economy in the African continent: (1) the Pan-African Payments and Settlements System, which will derisk trading across Africa; (2) the Continental Online Mechanism, for monitoring, reporting, and eliminating nontariff barriers to help tackle restrictive regulations; and (3) the African Trade Observatory, which will integrate an online platform that provides more secure, reliable, timely, and accurate data and listing of authorized economic operators. This will help facilitate more seamless, transparent interregional trade, creating a more competitive business environment in which African businesses can build and strengthen their global market positions. A number of countries across Africa are developing national digital strategies that map out the opportunities that come with digital engagements. As this chapter was being written, Senegal¹³ was developing a national e-commerce strategy to guide the development of a robust digital strategy to help boost growth in the country. The African Union is collaborating with many actors and national representatives to develop

Africa's digital transformation strategy, which outlines some of the core digital tools. This will be a useful resource for member countries in adopting their own national digital strategies to encompass innovative plans that leverage emerging technologies for development plans at the country level.

9.3 DIGITIZATION AND FINTECHS TO SPUR AFRICAN GROWTH

The fintech market in Africa is growing rapidly, driven by a dynamic mix of large and small solution providers, with an increase in mobile payment solutions; new fintech applications and decentralized applications are supporting innovation in areas including agribusiness, financing, health care, energy, insurance, and many other sectors. Many of the solutions are leveraging functionalities of a mix of emerging technology solutions such as blockchain, AI, and IoT, bypassing traditional infrastructure and leapfrogging to mobile-enabled solutions. One area where we are witnessing an increase in the deployment and usage of emerging technology solutions is in e-commerce transactions, with a surge in payments infrastructure developed by fintechs to fill some of the gaps unmet by traditional banks. In 2019, African electronic payments accounted for about \$19.3 billion in revenues, with \$10 billion from domestic electronic payments.¹⁴ Globally, e-commerce accounts for trillions of dollars, and this trend is likely to continue to rise as more complex digital tools emerge to enable greater efficiency and customer-centric products and services. Africa can boost its internet penetration rate, which was around 272 million internet users in 2019 (36 percent) and is predicted to reach 475 million users in 2025.¹⁵

Flexibility, harmonization around e-commerce rules, data access, and greater infrastructure investment, pulled together with a wider digitalization agenda across the value chain, will encourage greater accessibility, increased participation, and

new entrants into the marketplace. In addition, this will enable greater access to more productive markets to foster growth. For example, it is predicted that more than half of global mobile money operators are in Africa, with the African mobile money economy predicted to grow rapidly. The world is expected to see a surge in mobile operators, predicted to reach 620 million new mobile subscribers by 2020, a global penetration rate of 75 percent.¹⁶ E-commerce is still largely untapped across the continent, and many countries have limited participation owing to challenges around connectivity and other barriers in the e-commerce ecosystem. Underdeveloped digital infrastructures, fragmented financial and payment systems, affordability blocks, and the lack of education in digital skills contribute to some of the factors limiting countries' participation. E-commerce in Africa was predicted to be worth US\$8 billion in 2014 and is estimated to grow to US\$75 billion by 2025.¹⁷ Indeed, Africa is well positioned to support this growth with major players such as Jumia expanding across the continent, including in key markets such as Nigeria. The most populated country in Africa, Nigeria is expecting a population growth of 200 million and is one of the leaders in fintech solutions provision and adoption. Many Nigerian innovations link to e-commerce activity, with groups such as Interswitch digitizing payments and processing up to 500 million transactions per month. Interswitch also runs Quickteller, which is a consumer-driven payments platform enabling financial inclusivity for a larger pool of customers to engage with financial and economic systems. Nigeria is a bustling country with a dynamic entrepreneurial ecosystem, and increasingly more digital firms and tech hubs are springing up, many of which are led by young entrepreneurs keen to transform the country.

Nigeria is not immune to the challenges faced by many of the African countries, as outlined in earlier sections. In Nigeria's case this includes the depreciating naira and monetary pressure from the drops in foreign reserves, but it also presents

an opportunity to explore alternative currency solutions leveraging emerging technology such as blockchain. Regardless of the challenges, Nigeria has immense opportunity with rising incomes and a vibrant digital economy, and the internally driven investments in the start-up ecosystem have benefited the country, leading to expansions in Yabacon Valley and an increase in philanthropic support. This is growing across the continent, and it is inevitable that more players will enter the fintech ecosystem, especially if more investment is channeled toward better connectivity and a more decentralized and secure approach to data access with fewer of the tech giants monopolizing data ownership and access. Data ownership should be retained from sources that support innovation, local content development, and buildup of quality data pools in these countries, which is critical to support growth plans. If organizations are to grow and scale in these countries, data must become the core backbone, and it has to be clear when, how, and with whom data is being shared. More African countries need to establish clear data laws regarding how data is shared from one jurisdiction to the next. Data flowing securely across borders without compromise to data privacy can have powerful catalytic impacts, helping to spur seamless trade, higher levels of competitiveness, and greater transparency across value chains.

The digital revolution is really the data revolution building up interconnected platforms upon platforms and forming what many refer to as the digital economy. This digital economy will be driven by digital data. Blockchain technology can be an enabler to support much of this—the underlining technology supported by cryptography and encrypted data provides a secure platform by which data or other items of value can be exchanged, managed, shared, and monetized. This vehicle of trust leverages encrypted data and has helped bring efficiency gains and cost reductions to business value systems, allowing businesses to innovate through new business models in some

countries. Because the technology is consensus driven and not reliant on a single entity or third party to verify or confirm transactions, the system enables greater trust, transparency, and transformation. This is not only critical for digital trade but key to drive sustainable development, building a thriving and more evenly spread people-centric Africa. Africa has not fully exploited blockchain's potential, but in time it will.

By acting as a trust engine and inclusivity vehicle, blockchain can help mitigate against perceived risk and allow multiple parties (regardless of jurisdiction) to interact, trade, and communicate, leveraging more productive and scalable value chains with minimal risk. This is key especially in the current global trading system, where diminishing trust has resulted in a loss of confidence and barriers for trade. Transactions in the trading system can easily be digitized, automating through instruments such as smart contracts¹⁸ and even tapping some tokenized models to support the financing of trade. Blockchain is, however, still very poorly understood; the what, where, and how still puzzle many across the world, and the hype associated with its first application, bitcoin, has slowed the prospects for the technology to go mainstream. Blockchain is one of the distributed ledger technologies (DLTs)—technologies that have certain characteristics that make them special (e.g., their ability to help in verification and authentication processes).

Blockchain is an innovative technology built on DLT that allows for consensus-driven verification and sharing of information or value. Put simply, a blockchain is a “digital book of records” backed by cryptographically secure data. This digital book contains records of synchronized encrypted data that represents a chain of transactions or digital assets. This digital book of records or transactions or assets can be shared or distributed across a network of users or computers commonly known as nodes. The same copy of the digital book is accessible to multiple parties, and any changes made have to be

agreed on or verified by the network of users rather than one entity. The records of transactions are time-stamped, making it difficult to manipulate them, and thus the transactions are very secure and easy to audit. The blockchain is unique in that it offers three core distinct characteristics: it is decentralized (not reliant on a central authority), immutable (tamper-proof), and consensus driven (must be agreed upon by the network). This mix brings greater levels of trust and transparency.

Despite widespread agreement that blockchain has massive potential to transform many sectors at scale, there remain technological, regulatory, governance, infrastructure, and structural challenges for countries that place specific limitations that will slow the pace for wide-scale adoption. Further work is needed with more investment in research and development in this area. It is not uncommon for a new technology to take time to come to fruition, nor is it necessarily a bad thing, but more research is necessary if we are to fully take advantage of the transformative opportunities that blockchain offers. Resolving some of the current barriers, including interoperability of blockchain systems, will not necessarily be as fast as the technology advances but will be critical for the wider, more scalable dissemination and adoption of the applications that are developed on the blockchain. A much earlier focus on research and development could have helped spur greater understanding around the technology, but this is now happening to a greater extent in some parts of the world, such as in China and much of Southeast Asia, and increasingly the appetite for cryptocurrency is growing in Africa. China is positioning itself to be the world leader in this space, evident from the public announcement by China's president Xi Jinping that China is focusing on the development of blockchain rather than cryptocurrency. In Africa there is a growing blockchain ecosystem, but this is mainly concentrated in a few of the dominant countries (South Africa, Kenya, Uganda, Nigeria, Rwanda, and Ethiopia). Nigeria has expanded its coverage

of the cryptocurrency market with many engaging with bitcoin, which is the most popular cryptocurrency. With greater awareness of the underlying technology, blockchain is gaining more attention with major projects emerging from tech hubs as interest in digital assets continues to rise. Many institutions are looking beyond just cryptocurrency (by “cryptocurrency” I am referring to, for example, bitcoin, Ethereum, and Ripple) and are starting to tap offers from blockchain.¹⁹ The combination of blockchain and other emergent technologies within the fintech ecosystem can be the anchor needed for growth in many sectors of Africa. It is important that Africa nurture these next-generation technology hubs. But to do so, it has to strategically invest in conducting the research necessary to evaluate the opportunities that blockchain brings to national economies, noting that each of the African countries will be at varying stages in relation to digital skills and capacity, infrastructure, and economic development.

It is important to understand blockchain’s relevance, if any, and clearly map out what this technology means for emerging markets structures. Some of the blockchain opportunities available in Africa and to emerging markets are highlighted in the following section. In general, emerging technologies will be most prevalent and transformative in emerging markets, where developing nations face fewer barriers to adoption. For example, the opportunities that lie with leapfrogging onto mobile-based platforms, skipping interoperability challenges, can enable easier, faster addition of decentralized applications through the mobile. The mobile is an asset that will drive more opportunities, especially with millions of people expected to become mobile internet users by 2025. Africa’s mobile industry is predicted to drive GDP contribution of \$184 billion by 2024.²⁰ This also presents a strong foundation to boost the deployment of blockchain-based products and services that are supported not only by blockchain systems but a mix of emerging technology solutions including AI, IoT, cybersystems,

and big data. For example, the company Kuva has combined advances in three disruptive technologies—blockchain, peer-to-peer payments, and smartphones—to create a secure value store and payment system that works for everyone.

9.4 THE RELEVANCE OF BLOCKCHAIN IN THE CONTEXT OF AFRICA

One of the major problems facing many African countries is accessibility to sustainable liquidity and long-term financing. Many nations rely on development finance institutions to support financing, and many African countries have called for increased foreign direct investment, which is not always easy to attract. African markets are also generally perceived to be much riskier than other markets. But this is not always the case; at times the perceptions stem from a lack of understanding of local markets and how to do business in these markets, and at other times cultural barriers may get in the way. This is not to say that in some countries a combination of barriers exists (cultural, economic, political, and financial complexities). In addition, corruption in some nations makes it extremely difficult to do business in these countries. These issues are not unique to Africa, and the world has to recognize that Africa has massive business and trading opportunities. The other fundamental issue is the abundant lack of trust and transparency in African ecosystems, particularly with cross-border activities and foreign market engagements, which further hinders business opportunities and productive cross-border trade activity in these markets. Bringing in digitized trade and technologies like blockchain, which in effect is a mix of several preexisting technologies with unique characteristics, can help build trust between parties that might not otherwise interact with each other.

Tapping cryptographically secure data that is stored in the form of a shared ledger or as explained in the “digital book

of records" (a.k.a. the blockchain) enables the visibility and sharing of information across networks. This means trust no longer resides with just one single entity; rather, the networks are empowered to come together, give consensus (through a consensus-enabled algorithm or code), and share the same source of real-time information with peer-to-peer networks to enable them to effectively govern, make decisions, and verify activity, thus building up the trust that is missing. It is through this process that trust is created among networks and systems. This concept of networks is an important element that must be well understood as it forms the basis of blockchain community networks. Networks and communities built on code form distinctive components of blockchain technology. The decentralization that comes with networks will be the game changer in the way society as a whole transitions and operates, giving more control, ownership, and democratized decision-making powers to the networks themselves. The composition of networks essentially means that anyone who is engaged as part of that community of networks (both open and private) will be the key driver of what happens in those networks. Layers of networks over networks will be created as technology advances. Governance is therefore key and becomes decentralized.

9.5 BLOCKCHAIN AS A CRITICAL FRIEND OF GOVERNMENT

It might come as a surprise to some, but blockchain is one of the most significant technologies of government. Skeptics argue that entities such as banks and governments will become irrelevant and obsolete when blockchain reaches mass adoption. This is not necessarily true, as governments will be some of the biggest winners should they choose to embrace blockchain, understanding clearly how to implement and leverage not just blockchain-based systems but a mix of different emerging technologies to reap economies of scale and even

boost better governance structures. Governments are core to the overall success, development, and adoption of blockchain. To emphasize this even more, the efficiency gains and transparency boost that come from digitization and blockchain utilization are critical for governments, especially in emerging markets. Governments can capitalize on the economies of scale that emerging technologies and blockchain bring. A number of government functions can benefit: tax and revenue collection methods, record keeping and secure data management (on key things such as title deeds, health data, housing waiting lists, and land banks), automated documentation, auditable voting, provenance, and identity management.

A blockchain identity functionality entails a more secure manner of sharing “who is who,” maintaining the privacy of individuals but helping to create a pool of reliable identities. This functionality is key for African economies because it enables better inclusion and better economic and financial integration. A robust digital identity system is paramount for Africa, given that many people today are unaccounted for or have lost their origins because of conflict and displacement. Governments are also key anchors mandated with improving the living standards of their citizens and supporting the sustainable development of their nations. In the context of Africa, the AfCFTA is a central element of this. Leveraging blockchain to ease the flow of trade is particularly key. Opening up borders and tapping blockchain to ensure more compliant, transparent, cost-effective, and sufficiently funded supply chains that open up new digital jobs and services are paramount. Blockchain transparency has enabled between 30 and 50 percent cost savings on compliance and up to 50 percent potential cost savings on key operations such as meeting “know your customer” (KYC) requirements.²¹ In emerging countries, services are expanding and more digitization attached to these services will lead to more sustained growth, particularly for key demographics like women and young people who are creating the

next generation of jobs. Some of these women and young people work in the informal sector, where they often do not have an identity or indeed their economic contribution is not captured properly. Africa benefits from a youthful human capital, which is expected to double to over 830 million by 2050, but youth unemployment is rising fast at an average of 6.2 percent in sub-Saharan Africa,²² increasing the poverty gap between countries. By tapping the digital economy and valuable data from digital platforms (including mobile networks, which may or may not have blockchain-based applications embedded on them), government can begin to capture the data flowing from these to measure GDP contribution and tailor support services as well as formulate policies to support and introduce initiatives that help tackle unemployment and other challenges. In addition, governments can leverage digital financing as an alternative to traditional finance provision to service some of the lower ends of the markets, including many operators in the informal markets. As economies move toward cashless societies and access to money becomes more decentralized through innovations such as central bank digital currencies (CBDCs), there will be shifts toward better financial inclusion, particularly where economies are able to offer a hybrid of digital and cash systems to meet the needs in each economy. The African agriculture sector is already hugely benefiting from the use of technology. Supporting agrivalue chains in Africa will result in multiplier impacts, particularly if this includes deployment of blockchain, AI, and IoT systems and tapping smart contracts for agribusiness, insurance pooling, and financing.

Governments have an opportunity to use blockchain internally for better government public service provision, communications, and auditing and monitoring of government budget allocations that can be traced on the blockchain. Blockchain monitoring can also help automate government policies and align them with deliverables. The key question is to what degree governments are prepared for this level of

transition, transparency, and traceability. It is encouraging to see that countries across the continent, including Nigeria,²³ are starting to develop their national blockchain strategies, aiming to use the blockchain to push adoption and pivot into the digital economy.

9.6 BLOCKCHAIN AND DERISKING MARKETS

With increased trust and transparency, networks can begin to operate more effectively, opening up new market access, derisking projects, and creating new avenues of financing. This is particularly important for Africa, which faces shortfalls in financing particularly at the lower end of the market spectrum, where MSMEs struggle to access the financing required for them to scale. For example, the continent's intraregional trade is currently getting only about 43 percent of trade financing, leaving a massive gap. Introducing blockchain-based trade financing platforms, building on novel approaches to providing financing, such as digital currencies, and implementing digital financing infrastructures can provide new avenues for income streams, helping to reduce the barriers and costs associated with trade financing. Furthermore, blockchain-based digital financing platforms can reinvent and unlock access to capital, widening the pool, type, and diversity of investors and projects that can utilize blockchain. This enables greater transparency and reduces the overall barriers associated with accessing financing. In addition, blockchain can be a good verification instrument for due diligence and cybersecurity. With greater transparency, Africa can begin to dismantle its negative "image problem" as a very "risky and corrupt region" and can open up opportunities for business and trade on a level playing field.

The emergence of the digital asset and token economy with a range of token offerings will rise, with marked impact in some communities. Putting it simply, tokenization is taking ordinary physical assets such as property, land, cars, and

commodities and turning them into liquid digital assets that are placed on the blockchain and can be verified, transferred, traded, and audited. With value attached to these assets, new forms of liquidity can be created, and creative fund-raising models will appear. In addition, the decentralized nature of these models will lead to widening participation from various stakeholders, including the less wealthy members of society. This is key for inclusion and decentralization of wealth. These groups can choose to purchase decentralized tokens or shares in these asset classes at reduced costs, giving them access to wealth and valuable long-term assets. Many more investors and a bigger pool of MSMEs can benefit from tokenization, enabling speedier and more secure, transparent, and audible transactions. Derisking can also be achieved by embedding compliant algorithms, which helps alleviate concerns around anti-money laundering and KYC.

There will be a big shift toward platforms, the token economy, and deriving value from these digital assets. Africa has to have in place the foundation, including the connectivity and digital payments infrastructure, required to tap into these new models. It is also important that we don't get lost in the hype, as blockchain is still developing. Moving forward, we will begin to see some technology convergence, particularly as we tackle limitations of blockchain and other complementary technologies. These include issues around speed, regulation, governance, standardization, technical interoperability, and wide-scale adoption.

In the short to medium term, we will continue to witness the growth of digital assets and concentration from many of the world's central banks to explore the possibilities of CBDCs, for example. This does not mean that all future central banks will adopt digital currencies, as a country must consider many factors before introducing digital currencies. Additionally, digital currencies do not necessarily need to be designed with a layer of DLT/blockchain-based architecture, although DLT

applications offer some significant benefits worth exploring. DLT-based design principles for digital currencies are being explored by several central banks around the world. In the context of Africa, CBDC could help support onboarding people unable to access traditional financing packages, including the unbanked, giving them access to a more secure, affordable digital payments infrastructure and access to affordable credit. Wholesale CBDC could support not only better cross-border and interbank transactions but also the flow of remittances, which are a key source of income for many people across Africa. Because existing payment systems and intra-African payments come with high costs and are fragmented, this presents a massive opportunity to provide alternatives that are cheaper, inclusive, and easy to use. The flow of money in Africa, as well as accessing it, remains challenging, but new models like CBDC and other decentralized offerings, including cryptocurrency, decentralized finance, and stable coins, could help rebalance and diversify the forms of money available in the market. A number of organizations in Africa are doing this.²⁴ The key to implementation of CBDC is its ease of use, security, accessibility, and adoption by the citizens of nations. Some caution should be exercised for digital currency implementation at this stage, especially for African economies that may not have the resources or capacity to fully deploy a CBDC in the immediate future but could at a later stage, after proper consultation and feasibility reviews to ascertain the implications of CBDC at the national level. Countries that decide to deploy these digital currencies should undertake feasibility studies on their impact.

9.7 BLOCKCHAIN AS A LEVER FOR THE SCALABILITY AND RESILIENCE OF MSMEs

MSMEs are a vital part of any economy, fueling economic growth and creating job opportunities for local communities. The African Union Commission clearly highlights the

importance of supporting the development of MSMEs, as outlined in the African Union SME strategy.²⁵ MSMEs are key drivers of employment and contribute significantly to GDP growth; in Africa, approximately 70 percent of the total population is employed within the MSMEs' domain. MSMEs are dynamic in nature and spread across various sectors, making it harder to reach them to distribute tailored support. The setup of the MSMEs' ecosystem has layers of complexity, which makes it hard to do business with this network of operators. Many challenges exist to channel support that enables them to fully optimize value networks and build operational efficiency, so they scale and are competitively placed to grow. Leveraging digitization can be a means to support this competitiveness. The productivity of these MSMEs can be further improved through emerging technologies such as blockchain and AI, which can help support cheap, efficient, and transparent MSME value chains. Blockchain in particular can assist MSMEs operating within complex supply chains by unbundling the complexities, automating trade practices and processes, and making it easy to access financing, thus helping MSMEs grow.

In African countries, 70–80 percent of businesses can be grouped as MSMEs. The blockchain can help improve supply chain accessibility for these MSMEs to scale; the blockchain can also help the micro-entrepreneurial businesses, which often have no assets or collateral or credit history, to build creditworthiness and links to access liquidity and new markets. By facilitating seamless cross-border transactions through blockchain, MSMEs can be empowered to bring forward innovative business models and widen their access to markets and financing. Trade opportunities for MSMEs can be boosted through the full implementation of the AfCFTA, which is an important channel for MSMEs to utilize digital trade as a means for trade facilitation, growth, and diversification. African governments and policy makers must invest in creating

the right enabling environment for digital trade, including tackling tariff and nontariff barriers, boosting manufacturing and industrialization capacity, developing accessibility to regional value chains, and utilizing digitization as a vehicle for development of Africa's MSMEs.

There is also a growing pool of MSMEs exporting and benefiting from trading expansion into other regional and international markets, an area where blockchain could have a significant impact. In sectors engaging in trade finance, pharmaceuticals, agribusiness, international exporting, manufacturing processing, and health care, blockchain could play a major role in improving efficiency, trust, and traceability to support more see-through supply chains and lucrative businesses operations. Exporters and importers can benefit from this technology and in turn improve innovation and productivity. In the following key points, we explore some of the benefits of the blockchain, particularly in relation to MSMEs.

- For MSMEs, **opportunities** presented using blockchain technology are numerous, but at the core of this technology is its ability to improve efficiency, build trust, and reduce costs. Blockchain can help improve access to global supply chains, trade finance, and more reliable data sets, which can help businesses design better models to sustain their operations. Because it operates in a more secure and transparent manner, blockchain reduces the complexities that come with opaque supply chains today. It can be costly for small businesses to go through the different stages within any given supply chain, at times dealing with a variety of players and their associated costs, resulting in additional issues around financing and the speed of transactions. Blockchain can help reduce these costs by streamlining supply chains, cutting out intermediaries and their transaction costs, and supporting more efficient processes and transactions.
- MSMEs engaged in **trading across borders** can be key beneficiaries of the use of cross-border blockchain and

AI-enabled systems that can capitalize on the ease of doing business because of more seamless digital platforms and e-commerce interventions. For example, businesses that trade across different jurisdictions deal with many different players, such as financing institutions, insurers, brokers, and trading partners, and many complex regulatory, compliance, and logistical pressures in these jurisdictions. These institutions all require various forms of documentation, but in some instances the same information is needed and the verification process is slowed down by having to repeatedly supply the same information to different parties. The reality in some markets is that some of these businesses do not have the documentation required. This occurs on both the import side and the export side at different stages of the trade supply chain. This repetition can be avoided, as the blockchain can hold the same information that can be shared with the relevant parties, where it is required in real time. The key is paperless trade and end-to-end digitization on secure interoperable platforms that enable these businesses to conduct valuable cross-border trade. A blockchain-based platform presents an opportunity for trading MSMEs to engage in more efficient cross-border trade—for example, by holding all necessary data for verification on the blockchain so that it is visible to all parties involved in a particular transaction, making it faster and less costly. This also leads to improvements in due diligence and better auditable financial information about the MSMEs.

- **Smart contracts for MSMEs**—The parties involved in business are able to view and amend records/transactions within the scope of agreed-upon rules through the use of smart contracts (or in simple terms, code with execution terms programmed into the blockchain system). The parties involved in the transaction must be able to trust the code. Blockchain platforms that use smart contracts allow for

secure automated actions to be taken—for example, embedding instructions on future actions around identifying, moving, and tracking goods and settling payments quickly.

- **Building financial independence / creditworthiness**—End-to-end digitization with tools like blockchain will happen as businesses trade on platforms with better compliance, due diligence, and auditability embedded into processes and systems. Decentralized platforms supported by technologies such as blockchain and AI will help support financial freedom and inclusion. Furthermore, as outlined earlier, MSMEs are also struggling to access the necessary capital and seed funding, but the combination of blockchain and AI can help with this issue.²⁶ Through blockchain, better tracking of MSMEs' transactions will help create an auditable credit history that lenders can use to evaluate the suitability of MSMEs for additional financing. Data on the GDP that MSMEs generate can be tracked using secure nonbiased AI algorithms, particularly for those in the informal sectors for governments and others to provide more tailored policy and business support. The combination of a well-designed digital payments and mobile infrastructure in Africa (outlined earlier) and technologies like blockchain provides a recipe for increased trading opportunities and peer-to-peer transactions that are governed and secured by code, which could boost more trust and transparency across the network.

9.8 CONCLUSION AND RECOMMENDATIONS

Africa's opportunity to lead in the digital revolution is now. As outlined, the digital revolution is the data revolution driven by an expanding platform and token economy. Africa must and can capture these. Digital innovations are not new in the continent, as we have seen many new digital applications coming out of Kenya, Nigeria, and Rwanda. These innovative products are transforming many sectors and helping to build the next

generation of creative fintechs and businesses that will contribute significantly to the economic growth of the continent. The world is witnessing the digital revolution, which is becoming an indispensable part of the wider economy. The digital economy in Africa needs to be strengthened with widening participation and collaboration from various actors, including innovators, policy makers, investors, fintechs, and many others. The continent's growth can be driven through the establishment of strong infrastructure systems, access to affordable financing and data, and investment in human capital, as well as by supporting a fully functioning single market through the AfCFTA that businesses can tap. Digital platforms will pave the way for more innovation, but it is critical that government, working with cross-sector stakeholders, tailor support by ensuring that policy frameworks, regulatory measures, and the general business climate are right, allowing innovation to thrive. Investing in systems and structural changes to stimulate internally driven solutions is paramount for the industrialization agenda that Africa needs to deliver through the AfCFTA and other supporting infrastructure. It is important that government, working collaboratively with other players, seize this moment to lead the data revolution and competitively place Africa on the global digital economy platform. Africa has to be strategic in approach and cautious about the impacts of potential threats outlined, including threats of high indebtedness and other unforeseen external impacts. The GCs are key for African growth. Leveraging digitization, data access, and ownership, the AfCFTA and youthful human capital will help lead Africa toward a transition that will support the long-term sustainability of inclusive and sustainable economies.

Further recommendations include the following:

- African economies are shifting toward industrialization within national economies as a push to enable growth and diversification. With this overarching objective, Africa must optimize mechanisms to support this, especially in

key sectors including manufacturing, agriculture, health care, technology, and others.

- Many African countries face challenges around foreign exchange and high levels of debt, which is stopping these countries from growing. Key for governments will be to evaluate these challenges to minimize unnecessary debt accumulation and restructure debt where necessary to enable countries to grow and not hamper the prospects for industrialization. In addition, greater transparency on debt and the flow of financial instruments can be achieved even through the utilization of emergent technologies such as blockchain and AI.
- African economies can diversify the pool of financial instruments and bolster capital markets infrastructure to support the development of a strong liquidity market, which is a necessity for industrialization and growth.
- The GCs outlined in this chapter should be a focus for policy makers, governments, and other partners. The future will be built on strong partnerships and collaboration from a range of stakeholders working together to build the foundations of a strong Africa that strives for every country in the region to be a “production economy” and not just a consumer of finished goods that utilize many of Africa’s raw materials. Africa must reap benefits from its own production capacity, which can be boosted with digitization.
- All African countries must prioritize investment in building the infrastructure and connectivity channels that are necessary to support the digital economy and its digital tools. The successful delivery of the AfCFTA will rely on a thriving digital economy that allows for connectivity, inclusivity, and transformation.
- Policy makers and decision makers must build a robust approach to data, explore data strategies, and utilize the digital tools available to manage data securely, ensuring a high level of consumer protection is embedded.

- Although some pockets of Africa have various digital innovations in place, these offerings need additional investments and additional tailored support so that they can be scaled and reach more markets.
- Investing in fintechs and digital financing products will hugely benefit African economies, particularly in regard to the rapidly expanding digitization and mobile penetration in many of the African economies. African leaders can work with innovators to develop more innovative funding platforms that provide accessibility to funding streams for fintechs and MSMEs.
- Policy makers and governments should invest in Africa-wide digital skills education and capacity-building programs that also cover emerging technologies (including blockchain, AI, cybersecurity, and data literacy), delivered at a Pan-African level, an area that the Global Policy House is covering in partnership with several global groups.
- Tackling challenges around access to affordable data, connectivity, and regulatory barriers will strengthen Africa's position to lead in digital innovations that can competitively place the continent on the global stage.
- Greater attention should be given to solutions that leverage blockchain, AI, and cybersecurity applications to build trust in trade and future-proof Africa, especially with growing challenges around cyberattacks, currency fluctuations, job losses, and opaque trading systems.

If Africa is to lead in the digital revolution, then ensuring no unintended consequences arise is important to safeguard African economies. It will be vital that the leadership in the various African countries be open to innovation and be key champions of digital solutions that will help tackle some of Africa's biggest challenges. As stated, now is the best time for Africa as the fintech/digital ecosystem matures and we see the implementation of the AfCFTA, which will be a major game

changer for the continent by helping to open borders and facilitate a new wave of jobs (including digital jobs) that give many young Africans economic opportunity and wealth.

Blockchain technology, along with other key technologies, can play a pivotal and significant role in driving growth in the continent; it is an important catalyst that can support many sectors, including MSMEs. Blockchain technology, the trust and inclusivity vehicle for the African continent, is vital, but it should be noted that this technology is not a magic wand and cannot address everything. Instead, the power of the technology lies in its ability to connect, authenticate, verify, and be converged with other innovative technologies to support digital transformation and growth. The technology is not perfect or indeed fully developed and will see continuous improvements to support more advanced technical capability, scope, and interoperability. Africa can leverage existing success around mobile penetration and leapfrog to use technology to enable access to more liquid markets, build greater financial inclusion, and support more seamless, transparent trading supply chains. Technology is part of the solution and will be important to generate growth. But what is really key is what the technology and the data can do to enable inclusive growth and sustainable development so that many people benefit rather than just a few. Africa has access to the necessary tools, but more must be done to support upskilling, education, liquidity supply, and capacity building, ensuring strong governance as well as government policy alignment to facilitate success. Africa's time is now.

NOTES

1. E. Suzuki, "World's Population Will Continue to Grow and Will Reach Nearly 10 Billion by 2050," *World Bank Blogs*, July 8, 2019, <http://blogs.worldbank.org/opendata/worlds-population-will-continue-grow-and-will-reach-nearly-10-billion-2050>.

2. African Development Bank Group, "African Economic Outlook 2019: Africa Growth Prospects Remain Steady, Industry Should Lead Growth," January 17, 2019, <https://www.afdb.org/en/news-and-events/african-economic-outlook-2019-africa-growth-prospects-remain-steady-industry-should-lead-growth-18925>.
3. E. Smith, "The US-China Trade Rivalry Is Underway in Africa, and Washington Is Playing Catch-Up," CNBC, October 9, 2019, <https://www.cnbc.com/2019/10/09/the-us-china-trade-rivalry-is-underway-in-africa.html>.
4. The AfCFTA is a trading agreement among fifty-four African Union member countries (at this writing). This agreement aims to create the largest single market set to help ease the free movement of goods and services across the countries' borders. Tralac Trade Law Centre, "African Continental Free Trade Area (AfCFTA) Legal Texts and Policy Documents," accessed December 31, 2019, <https://www.tralac.org/resources/by-region/cfta.html#legal-texts>.
5. Cory N., Information Technology and Innovation Foundation, "Key Issues to Building an Open, Vibrant, and Integrated Digital Economy and Digital Trade Agenda for Sub-Saharan Africa," October 2019.
6. A. Haas, "The World's 10 Fastest Growing Cities Are Going to Be in Africa within 16 Years," World Economic Forum, October 21, 2019, <https://www.weforum.org/agenda/2019/10/africa-cities-organisational-structure-cairo-institutions>.
7. World Bank, "The African Continental Free Trade Area," July 27, 2020, <https://www.worldbank.org/en/topic/trade/publication/the-african-continental-free-trade-area>.
8. Disrupt Africa, "African Tech Startups Funding Report 2019," <https://disruptafrica.gumroad.com/l/KAzNE>, accessed 12 July 2021.
9. World Economic Forum, "Shaping the Future of Digital Economy and New Value Creation," 2020, <https://www.weforum.org/platforms/shaping-the-future-of-digital-economy-and-new-value-creation>.
10. J. Manvika, A. Cabral, L. Moodley, S. Moraje, S. Yeboah-Amankwah, M. Chui, and J. Anthonyrajah, "Lions Go Digital: The Internet's Transformative Potential in Africa," McKinsey, November 1, 2013, <https://www>

.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/lions-go-digital-the-internets-transformative-potential-in-africa#.

11. GSMA, “The Mobile Economy: Sub-Saharan Africa 2020,” 2020, <https://www.gsma.com/mobileeconomy/sub-saharan-africa/>.

12. Manvika et al., “Lions Go Digital.”

13. Senegal, in West Africa, is forging ahead with innovations and developing a nationwide e-commerce strategy to support the buildup of digital engagements.

14. McKinsey & Company, *McKinsey on Payments* 13, no. 31, March 2021, 47, <https://www.mckinsey.com/~media/mckinsey/industries/financial%20services/our%20insights/mckinsey%20on%20payments%2031/mckinsey-on-payments-issue-31.pdf>.

15. GSMA, “The Mobile Economy.”

16. GSMA Sub Saharan Africa, “The Mobile Economy 2017,” April 3, 2016, <https://www.gsma.com/subsaharanafrica/resources/the-mobile-economy-2017>.

17. Manvika et al., “Lions Go Digital.”

18. Smart contracts are self-executing codes that are written to allow for the execution of agreed terms or transactions at a future date when initial terms agreed are met. For example, smart contracts can be written to give automated instruction to execute a payment if goods are received from a cross-border transaction.

19. An example of an African company using blockchain is Binkabi, an e-bartering platform for SMEs that allows traders to settle transactions using blockchain and payments in local currency, using its own utility token. The focus will be on trade flows between Côte d’Ivoire and Vietnam. FurtherAfrica, “10 Companies Revolutionising Blockchain Technology in Africa,” February 22, 2019, <https://furtherafrica.com/2019/02/22/10-companies-revolutionising-blockchain-technology-in-africa/>.

20. GSMA, “The Mobile Economy.”

21. Accenture Consulting, *Banking on Blockchain: A Value Analysis for Investment Banks* (Albany, NY: Accenture Consulting, 2017), <https://>

www.accenture.com/_acnmedia/accenture/conversion-assets/dotcom/documents/global/pdf/consulting/accenture-banking-on-blockchain.pdf.

22. African Development Bank, *Jobs for Youth in Africa*, March 2016, https://www.afdb.org/fileadmin/uploads/afdb/Images/high_5s/Job_youth_Africa_Job_youth_Africa.pdf; World Bank, “Unemployment, Total (% of Total Labor Force) (Modelled ILO Estimate)—Sub-Saharan Africa,” World Bank, June 21, 2020, <https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=ZG>.

23. Government of Nigeria, “National Blockchain Adoption Strategy: Streamlining into a Digital Future” (proposed draft, 2020), <https://bitcoinke.io/wp-content/uploads/2020/10/DRAFT-NATIONAL-BLOCKCHAIN-ADOPTION-STRATEGY.pdf?x46620>.

24. Groups such as Binance, Paxful, Luno, and Bitpesa are utilizing blockchain, peer-to-peer networks, and cryptocurrency innovations to the African market to support the diversification and decentralization of access to money and technology innovations. As more of these players and institutional groups enter the market, we will begin to see more adoption.

25. The vision of the AU SME strategy is to “develop competitive, diversified and sustainable economies underpinned by dynamic, entrepreneurial and industrial sectors that generate employment, reduce poverty and foster social inclusion.” African Union, *Annual Report on the African Union and Its Organs*, 65, <https://docplayer.net/102527135-Executive-council-thirty-second-ordinary-session-january-2018-addis-ababa-ethiopia.html>.

26. Companies such as Twiga Foods have teamed up with IBM to use the supply chain finance platform to support local farmers and small businesses tapping blockchain and machine learning.

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