

In collaboration with Deloitte



Regional Action Group for Africa Attracting Investment and Accelerating Fourth Industrial Revolution Adoption in Africa

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Foreword



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The economist Steven Landsburg famously posited that economics can be defined in two words: “incentives matter”,¹ all else is commentary. The Fourth Industrial Revolution has the potential to transform Africa’s economy, increase productivity, enhance competitiveness and achieve business growth. Historically, Africa has lagged behind other regions in employing the full potential of the previous industrial revolutions and this has limited its ability to become a truly competitive market.

Compared to the rest of the world, the current adoption and impact of the Fourth Industrial Revolution on the continent remains low.

² Embracing the Fourth Industrial Revolution also requires investment in, inter alia, digital transformation, artificial intelligence (AI), the internet of things (IoT), robotics and 3D printing.

The biggest challenges in Africa remain inadequate infrastructure and skills, which hamper broad adoption of Fourth Industrial Revolution solutions by businesses and consumers. However, Africa has an advantage over developed markets: the continent is not impeded by outdated legacy infrastructure and may have little difficulty in embracing change. Can investment incentives motivate such change so that companies adopt Fourth Industrial Revolution applications – developing unique, local, high-tech products and services?

Traditionally, investment incentives have been used as an efficient tool to motivate firms to generate investment. To this end, an investment incentive may be understood as a tangible financial advantage that is granted by states to firms to induce a type of behavioural change. Almost all states provide some combination of tax or fiscal incentives to support the business sector in a combination of tax holidays, investment allowances, reduced tax rates, research and development (R&D) incentives, and special economic zones (SEZs). Are these incentives useful in spurring the adoption of Fourth Industrial Revolution technologies in the business cycle?

Unlocking the potential of small, medium and micro enterprises (SMMEs) also requires the support of big business in the form of shared value. Risk capital, skills development and training are among the most significant contributors to the success of SMMEs. In the current incentive landscape, amplifying shared value principles between SMMEs and big companies can address the difficulties that arise in Fourth Industrial Revolution adoption.

This white paper aims to examine the sphere of investment incentives in Africa through the lens of Fourth Industrial Revolution adoption. It explores the sui generis nature of incentives to increase foreign direct investment (FDI) and related economic development, allied to know-how and capital to improve the skills base of domestic labour markets.

Executive summary

The \$1.2 billion and growing start-up scene in Africa is testament to the value that can be unlocked through wide-scale digital transformation in the region.

As the World Economic Forum Africa Regional Action Group reflects on the priority pathways set out at the start of the COVID-19 pandemic, digital transformation seems to be the one catalyst that can accelerate the region's response. The five pathways for driving economic recovery and building resilience are: new financing models for rapid recovery; unlocking manufacturing to mitigate global supply-chain risks; employing integration and regional value chains; revitalizing infrastructure and connectivity; and scaling digital transformation and inclusive innovation.³ The pandemic demonstrated the massive leaps that business, government and civil society made during the crisis – and that sustaining this level of focus and momentum can boost economic growth, especially as the region looks within to reap the fruits of the African Continental Free Trade Area (AfCFTA).

The African Union Fourth Industrial Revolution strategy provides the foundation to ensure that the region is able to embrace opportunities and challenges. This paper builds on that work, looking at developments in Africa and in other emerging markets to provide direction for policy-makers and investors to consider the mechanisms that can scale up digital transformation. The paper explores the landscape of incentives in the region and the market failures that limit scale-up and adoption. SMMEs in particular are uniquely affected; they are a key group because they constitute 80% of Africa's enterprises⁴ and create seven out of 10 jobs.⁵

The paper looks at the perspective of SMMEs as enablers of digital transformation through the exponentially growing start-up scene, with Africa raising \$1.2 billion in start-up funding in 2020 despite setbacks caused during the pandemic; this is positioned to grow to \$10 billion by 2056.⁶ In addition, it explores the need to support SMMEs as they digitally transform, adapting their business models and creating cost advantages to become more competitive through new technology. While there are a plethora of accelerators and innovation hubs across the region, the Centre for the Fourth Industrial Revolution in South Africa is embarking on a project that specifically structures incentives to support the transition of SMMEs to become digitally enabled through the internet of things (IoT). Similarly, various telecommunication and technology operators are building ecosystems to nurture SMMEs that can serve the diverse needs of the African market and bridge the economic and digital divide. The paper concludes with a set of progressive incentives for consideration, ranging from co-investment of critical infrastructure to efficiency-gain rebates realized through digital transformation.

This paper serves to stimulate a more considered approach by policy-makers and investors to accelerate the rate of the region's digital transformation and spur investments in a manner that aligns with its environmental, social and governance (ESG) aspirations.

1

Overview of incentives in Africa

While there are incentives to support industrialization, there are very few that focus on technology, technology adoption and technology integration.



Despite broad recognition of its economic value, investment in the Fourth Industrial Revolution – especially in developing economies – is challenged by market failures in investment.⁷ It is argued that only by developing and adopting strategies to correct for these market failures will it be possible to capture the economic value associated with Fourth Industrial Revolution technology adoption.⁸

As developing economies aspire to emulate the development experience of developed economies, the acquisition of this technology and know-how has assumed critical importance in terms of achieving economic growth.⁹ The African Union (AU) has set out to “create a conducive environment to empower people to innovate, facilitate access to finance and funding mechanisms for digital enterprises”.¹⁰

Surveying 32 countries in Africa, a total of 188 national incentives were reviewed.¹¹ Only 14 incentives were found to be responsive to investment in Fourth Industrial Revolution technology in 10 of the 32 surveyed countries. Data relating to effectiveness and efficiency is still lacking in order to determine the impact these policy instruments have had.

Still, many African countries offer tax incentives to stimulate the manufacturing, agricultural and industrial bases of their economies, or to localize financial services. For example, Kenya and Cameroon provide tax deductions for companies that are listed on their respective stock exchanges. A more recent trend in a number of African countries has been incentives to attempt to diversify economies, from a reliance on extractive industries to more value-added services. For example, the introduction of the R&D tax incentive in Côte d'Ivoire in 2020 is an attempt to drive investment in innovation away from a reliance on commodities.

South Africa launched the automotive production and development programme (APDP) as an incentive scheme to make the country an attractive location for manufacturing vehicles. As a result of the incentive, South Africa had exported 344,859 vehicles by 2016,¹² comprising 15% of all exports. Despite the deindustrialization experienced in many other sectors of the South African economy, the APDP incentive had a considerable effect on the country's gross domestic product (GDP). In 2020, South Africa's automotive sector contributed 4.9% to GDP (down from 6.4% in 2019), accounted for 18.7% of manufacturing output and made up 62% of Africa's automotive production.¹³ The continuation of the APDP and its refinement in order to strengthen and build the automotive supply chain domestically will continue to increase the capacity of motor manufacturers and support industrialization, technology capacity and job creation.¹⁴ The fact that its automotive industry is one of the largest economic contributors in the country may be one reason why the South African government continues to support it. Another reason is that the industry may not survive globally without the support of the state.

Measuring the effectiveness of these incentives relies on having monitoring and evaluation (M&E) frameworks in place. With a few exceptions, M&E is not fully incorporated into the design of incentives in Africa. Just four incentives in South Africa had a comprehensive framework in place for M&E; and in half of these cases, there was no indication that M&E processes had been considered upfront.¹⁵ Furthermore, output data is seldom tracked or verified, which makes the evaluation of incentives insufficiently substantive.

In South Africa, there is some evidence that individual incentives are supporting firms and contributing to increased economic participation.¹⁶ Notwithstanding, there are notable studies examining the impact of investment incentives on economic development that confirm the positive impact of incentives on the development of an economy¹⁷ (mainly on productivity and employment).

History has shown that the most successful civilizations are those that are adept at dealing with information and economic transactions, and that embrace R&D.¹⁸ This becomes even more critical in the context of the Fourth Industrial Revolution.

Africa's participation in global knowledge generation remains negligible. According to UNESCO's Institute of Statistics, Africa's R&D funding in 2019 was estimated to be 0.42% of the continent's GDP¹⁹ – far below the global average of 1.7% and the lowest in the world. The AU's executive council in 2006 established a target for all member states of 1% of GDP for R&D investment, to improve innovation, productivity and economic growth. Investment in R&D may not be considered a priority as African governments seek to satisfy their citizens with access to basic commodities. However, there is a need to simultaneously develop capacity and capitalize on the opportunities brought by the Fourth Industrial Revolution, without creating disincentives for investment.²⁰

The Fourth Industrial Revolution in Africa will rely on generalized knowledge, tech transfer and absorption, which will involve several undertakings. Industrial-led activities will require learning how to operate, maintain and repair machines, introducing incremental innovation, developing new products and processes, etc.²¹ The adoption of Fourth Industrial Revolution solutions will depend on “a minimum level of domestic institutional and industrial capacity to enable late starters to take advantage of the potential for catching up depending on public and private competence: infrastructure, education, the financial system and quality of government institutions”.²²

Universities are widely considered to be engines of innovation through technology transfer offices. In South Africa, between 2011 and 2014, an average of 100 new technologies were added each year to technology transfer offices (TTOs). The success of university-to-industry tech transfer is primarily a function of the system in place in that respective

country or university. Only a few emerging nations have effective systems in place to manage university-to-industry knowledge transfer. This is partly due to a lack of scientific and technological research. The OECD reports that less than 10% of all businesses in Africa collaborate in innovation transfer with universities, as compared to 13% for small and medium-sized enterprises (SMEs) and 35% for large business in OECD countries.²³ In Nigeria, studies show that, between 2010 and 2017, only 3% of Nigerian businesses obtained their innovative ideas from universities.²⁴

The Global Entrepreneurial Monitor Report (GEM) asserts that Egypt's most nascent entrepreneurial activity is in the retail and services sector rather than research-based industries, support for R&D and acquisition for new technologies is low and that tech transfer from universities to new enterprises is "extremely weak". It is furthermore estimated that Egypt's total investment in R&D from non-governmental resources is only 5%.²⁵ However, the Egyptian government is ramping up investment in the country's start-up ecosystem as part of its Digital Egypt strategy, designed to encourage innovation to transition to a knowledge-based economy.

Technology transfer is capital-intensive and mainly benefits licensees rather than the institutions themselves. Incentives and funding will be critical to prioritize technology transfer as a core activity. The lack of a clear set of public policies, guidelines and incentives hinders the prospects for knowledge and technology transfer.²⁶ FDI incentives should serve

to bring new technology, knowledge or innovative processes to a country and accelerate integration into the global economy.

From an incentive perspective, certain policy instruments tend to be more effective at different stages of an economy's development. In the early-emerging stage, when developing the business base is critical, useful incentives tend to focus on tax breaks on capital expenditure. In the late-emerging stage, encouraging innovation focuses on R&D incentives (to help companies with early-stage losses and to boost profits). In the mature phase, governments look to exploit established market innovations that seek to keep the output of R&D in-country.²⁷ Intellectual property (IP) regimes that lower tax rates on income from patents are common. In Africa, 10 of the 32 countries surveyed offer super-deductions of R&D expenses, with no form of R&D tax credits or IP tax relief. The challenge of accessing information on the uptake of incentives is indicative of a shortfall in administrative, technical and human resources. These are necessary resources for incentive policy to spur the adoption of Fourth Industrial Revolution technologies and applications.

There is evidence to suggest that African States are beginning to incentivize innovation. However, such interventions do not appear to be intense nor widespread enough to encourage the adoption of Fourth Industrial Revolution technologies. This may lead to there being a greater economic space for foreign and domestic firms to forge ahead in the financing of new businesses that drive such technology adoption.

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2

Fourth Industrial Revolution investment market failures

Incentives should be designed to boost the productivity and infrastructure needed to scale digital transformation in the region.

African economies continue to lag behind their global peers when it comes to technological advancements. For example, African economies have the lowest number of internet connections globally – according to the first-quarter figures shared by Internet World Statistics, only 39.3% of the continent has internet access;²⁸ meanwhile, the coverage gap in sub-Saharan Africa (SSA) remains the highest globally, with 67% of the world's population (about 800 million people) still not connected to the mobile internet.²⁹

Though Africa is behind in terms of internet access and usage, it also has the largest potential for progress. Following the introduction of the United Nations (UN) e-government system, there has been an increase in Africa's development index from 0.47 points in 2014 to 0.54 points in 2018. Similarly, countries such as Seychelles, Kenya, Ethiopia, Morocco, Ghana, Rwanda, Mauritius, Tunisia and South Africa scored above the world average of 0.56 points for online services, which shows that an increased uptake of technologies by African countries would help in boosting overall development.³⁰

Africa is also emerging as the fastest-growing region for mobile phones in the world, growing at a rate nearly twice as fast as that of Asia. SSA is expected to remain the fastest-growing region, with a compound annual growth rate of 4.6%, obtaining an additional 167 million subscribers over the period to 2025.³¹ Mobile broadband coverage has also progressed to an impressive degree: SSA saw an

increase in 3G coverage to 75% compared to 63% in 2017, and 4G coverage had doubled to nearly 50% by 2019, compared to 2017.³²

While it is clear that progress has been made to bridge the technological gap and connect more people to the internet, several factors contribute to this disparity (and ultimately the market failures) that Africa is experiencing, including: 1) outdated government policies; 2) poor digital infrastructure; 3) a lack of the right skills (or skills mismatch); and 4) high levels of corruption.

It is evident that the success of digital transformation in Africa rests on: 1) enabling the necessary digital infrastructure that can assist in reducing the digital gap; 2) developing digital literacy and skills in order to solve the skills mismatch so that young people can take advantage of the growth and prosperity promised by the digital economy; 3) making sure the region has less corruption within its structures to ensure that sustainable economic growth can occur in all areas; and 4) creating enabling environments to allow national stakeholders to manage risks better by having the right regulations and frameworks in place to offer support locally, across the region and internationally.

Addressing these factors will assist African economies to thrive, particularly by allowing key players such as SMMEs – which lag behind in digital transformation but are vital drivers of economic growth and employment opportunities – to get involved.

3

SMME development in Africa

The implementation of Start-up Acts in countries such as Tunisia, Senegal, Rwanda and Ghana is accelerating the pace of inclusive growth in the region.



3.1 Africa's start-up scene

The growth of digital businesses and end consumers in Africa has revealed that the Fourth Industrial Revolution is becoming a reality. Though the continent is embracing the Fourth Industrial Revolution, the African Development Bank has found that access to finance, skills and inclusive growth needs to be improved.³³ On the supply side, Africa is characterized as an adopter of Fourth Industrial Revolution technologies instead of a net producer, which indicates that the African start-up system is undercapitalized, unlike Silicon Valley, whose ecosystem has universities, investors, infrastructure and the right incentives to support start-ups. Despite this, there are a number of tech start-ups developing such technologies – in 2019, 6,500 tech start-ups were identified on the continent, of which just over 10% were developing Fourth Industrial Revolution applications.³⁴ Start-up funding in Africa crossed the \$1 billion mark in 2019, up from an investment of less than \$200 million in 2015. More significantly, in 2020, amid the COVID-19 pandemic, total funding still increased by 8% compared to 2019,³⁵ granting tech a lucrative spot in Africa's investment landscape.

However, green shoots of progress have also been observed in recent investment milestones. In 2019, Jumia made history, becoming the first African tech start-up to list on the New York Stock Exchange. In 2020, Irish-American financial services company Stripe acquired Nigeria's Paystack for over \$200 million, making it the largest exit for an African start-up.³⁶ And in October 2021, Google stated that it would be investing \$1 billion over five years to support digital transformation across Africa. This will include laying subsea cables for higher internet speeds along with low-interest loans, equity investment and skills training for African start-ups.

High-speed internet infrastructure will provide approximately 20 times more network capacity, leading to a 21% reduction in internet prices in Nigeria, with approximately 1.7 million jobs created in Nigeria and South Africa.³⁷

It comes as no surprise that Africa's most vibrant start-up hubs (Lagos, Nairobi and Cairo) have benefitted from significant investment activity. Start-ups have been recognized as a vital engine to encourage economic growth and innovation. While African countries may seek to emulate the development experience of start-ups, developed economies such as the United States, Sweden, Israel and Singapore have taken different approaches to nurturing start-up culture. These approaches have required substantial government intervention in the form of investment and support for start-up ecosystems. While some African start-ups have benefitted from government incentives, too, there have been fewer resources and more regulatory burdens to navigate.³⁸

Growing fiscal pressures have meant that African governments cannot afford a broad array of policy instruments, but instead require more targeted interventions to support innovation. Supportive legislation in the form of Start-up Acts – laws specifically designed to spur innovation, reduce the burden of regulation and promote entrepreneurship – have featured prominently in policy toolkits to provide an enabling environment for start-ups and investors. Start-up Acts in Tunisia and Senegal have paved the way, with Rwanda and Ghana both in discussions with key stakeholders to implement similar reforms.³⁹ Larger economies such as Kenya,⁴⁰ Uganda,⁴¹ South Africa⁴² and Ethiopia⁴³ have also followed suit.

3.2 Start-up Acts – an accelerator

The legislative incentives embedded in Start-up Acts could help to further tech entrepreneurship. These include a set of policy instruments intended to increase incentives for young people to start a venture, with other ecosystems, such as big business, lending support where needed.

Key elements of Tunisia's Start-Up Act, for example, include state salaries for up to three founders per company during the first year of operation, tax incentives and a year's leave period for private- and public-sector employees to start a company with the right to return to their jobs. There are further incentives including start-up grants, fast-tracked

business registration processes and increased state support for patent licensing. Senegal's version of the Start-up Act includes three tax-free operational years, training for youth and female entrepreneurs, and start-up registration platforms to accelerate business registration.

There are, of course, other incentives that enable Fourth Industrial Revolution investment, such as the state of readiness for the Fourth Industrial Revolution. In the context of Africa, this may be regarded as the ability to capitalize on future production opportunities, mitigating risks and ensuring agility to respond to unknown future shocks.

From information gleaned from surveys, workshops and interviews with Regional Action Group for Africa (RAGA) members, these may be measured by enablers such as:

A Available workforce

B Access to and diversity of financing

C Digital entrepreneurial support ecosystems, policies and regulation

D Infrastructure

A Available workforce

Africa's performance against its global counterparts is weakest on available workforce. This is consistent with companies surveyed for the Africa Growth Platform in which Côte d'Ivoire-based fintech company S-Cash Payment cited lack of expertise in implementing artificial intelligence (AI) and blockchain technology. South African-based edtech company Africa Teen Geeks, which requires AI technology to support its business strategy and operations, reported a lack of a talent pool to execute these features in its operations. The challenges that the Fourth Industrial Revolution faces with respect to the workforce relate to education, skills and competencies. There is an acute lack of science,

technology, engineering and mathematics (STEM) graduates in Africa: currently, only 2% of the continent's university-age population holds a STEM-related degree.⁴⁴ Investment in the Fourth Industrial Revolution will require engineers and scientists from a variety of industries, who may have to be sourced from abroad. To create incentives to attract and retain talent from abroad to Africa, Solomon Assefa, IBM's Research Vice-President, suggested transparent and simpler visa regulations by African states to attract those with critical skills. This will ensure the barrier to entry to attract talent is not prohibitive, improving learning ecosystems that are weaker in Africa compared to others.

B Access to and diversity of financing

African businesses need strong and sufficient finance to address the challenges of the Fourth Industrial Revolution. This requires stable and liquid capital markets with incentives to attract inward FDI. As in most parts of the world, Africa's largest business base is made up of SMMEs. SSA alone has 44 million SMMEs, almost all of which are micro enterprises (with fewer than 10 employees). Of these, 51% require more funding than they can currently access, but are faced with credit constraints:⁴⁵ they have limited access to external financing or have experienced issues in obtaining previous funding.

In an interview, IBM's Solomon Assefa agreed that industry partnerships could mitigate the lack of funding faced by innovators in the start-up ecosystem. IBM already provides a platform for techno entrepreneurs to develop tech-based solutions. But data needs to be inclusive of widespread connectivity. Commercial investment in Africa that brings together public and private objectives offers the opportunity to reduce and rebalance the risk of exposure arising from Fourth Industrial Revolution technology adoption. Partnerships between the public and private sectors can lower input costs, improve management and generate higher productivity output.

The current available financial sector support for SMMEs in Africa is dominated by banks, which – due to low competition as well as high lending/low deposits – have double-digit interest margins. Business angels and wealthy individuals who support project investment are not widespread in Africa. In an interview with Nimrod Gerber, Managing Partner of leading impact investment company Vital Capital, he stated that the lack of an investment regulatory framework can be prohibitive to funding projects. In the ESG investment space, the absence of an investment regulatory framework may create uneven competition between those investors that are ESG compliant versus those that lack the credentials.

Early-stage funding would ideally be suited to angel investors if appropriate incentives are correctly organized. In addition to providing financial capital, these investors would provide strategic and expert advice. The significant growth in UK-based SMMEs has been attributed to a range of income tax deductions that focused on early-stage start-ups. The Seed Enterprise Investment Scheme (launched in 2012) raised £175 million (\$230 million) for 2,260 companies.

The South African Venture Capital and Private Equity Association (SAVCA) has also seen significant growth

in terms of deals and value. Highlights of the 2021 SAVCA Venture Capital Industry Survey reported 841 active deals amounting to 6.87 billion rand (\$0.4 billion) as compared to 159 deals with a total of 1.16 billion rand (\$0.07 billion) in 2017.⁴⁶ There is, however, an insufficient number of experienced fund managers in Africa, particularly those with the knowledge to assist successful businesses to grow globally.

Mobile money services are also flourishing in African countries where mobile network operators can service unbanked customers. Phumlani Gambushe of MTN South Africa said that recently adopted financial and telecom regulations have been key to financial inclusion and are enabled by mobile money platforms. There is further evidence that traditional banking services with wider fintech applications, including AI and blockchain, can develop new smart payment/banking systems to accelerate financial inclusion.⁴⁷

Africa's digital entrepreneurship ecosystem is growing, with net positive effects on job creation and social impact. Corporate finance is another pillar through which targeted investments in start-ups such as Naspers Foundry in South Africa are expanding.⁴⁸ The Naspers Foundry is a \$96 million early-stage investment vehicle to develop South Africa's tech ecosystem. It provides South African tech companies with access to markets, international expertise and big company business support, and has made a series of investments in a portfolio of tech start-ups. In June 2019, it made a \$2 million investment in SweepSouth, an online cleaning services platform that connects domestic cleaners with clients. In 2020, SweepSouth launched its service model in Kenya and, in September 2021, in Nigeria. The platform has also expanded its home services to include other offerings such as gardening, plumbing and building services.

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C Digital entrepreneurial support ecosystems, policies and regulation

Africa's entrepreneurship ecosystem has been thriving thanks in part to incubators and accelerators with an increased focus on technology. The number of technology hubs across Africa grew by 50% between 2016 and 2018,⁴⁹ with Morocco, South Africa, Kenya, Nigeria and Egypt hosting the highest amount. The top five ecosystem cities by number of active hubs are Lagos, Cape Town, Nairobi, Cairo and Accra. Many of these hubs remain fragile and heavily reliant on grant funding from international

donor partners. Digital entrepreneurial ecosystems are fast changing and need agile policy support. This will require the establishment of clear institutional leadership backed by better publicized programmes from a central source. This may in turn be evaluated and communicated more rapidly through public-private dialogue. Fourth Industrial Revolution-led businesses would be better facilitated through reforms in R&D tax incentives, exchange control, IP and labour flexibility.

D Infrastructure

Rob Shuter, former Chief Executive Officer of Africa's largest mobile telecoms network MTN, reported that telecoms operators invested \$10 billion annually in Africa, which could be doubled if regulators made more spectrum available.⁵⁰ Education and fiscal incentives are clear examples of areas where states could encourage adoption of Fourth Industrial Revolution technologies. With widespread adoption of 5G underway, African governments need to ensure that the potential of 5G that operates within the spectrum-sharing environment is harnessed for public purposes – deploying a wider spectrum would be a vital enabler of the Fourth Industrial Revolution. Technology company GovChat in South Africa – an online platform used to access social grants

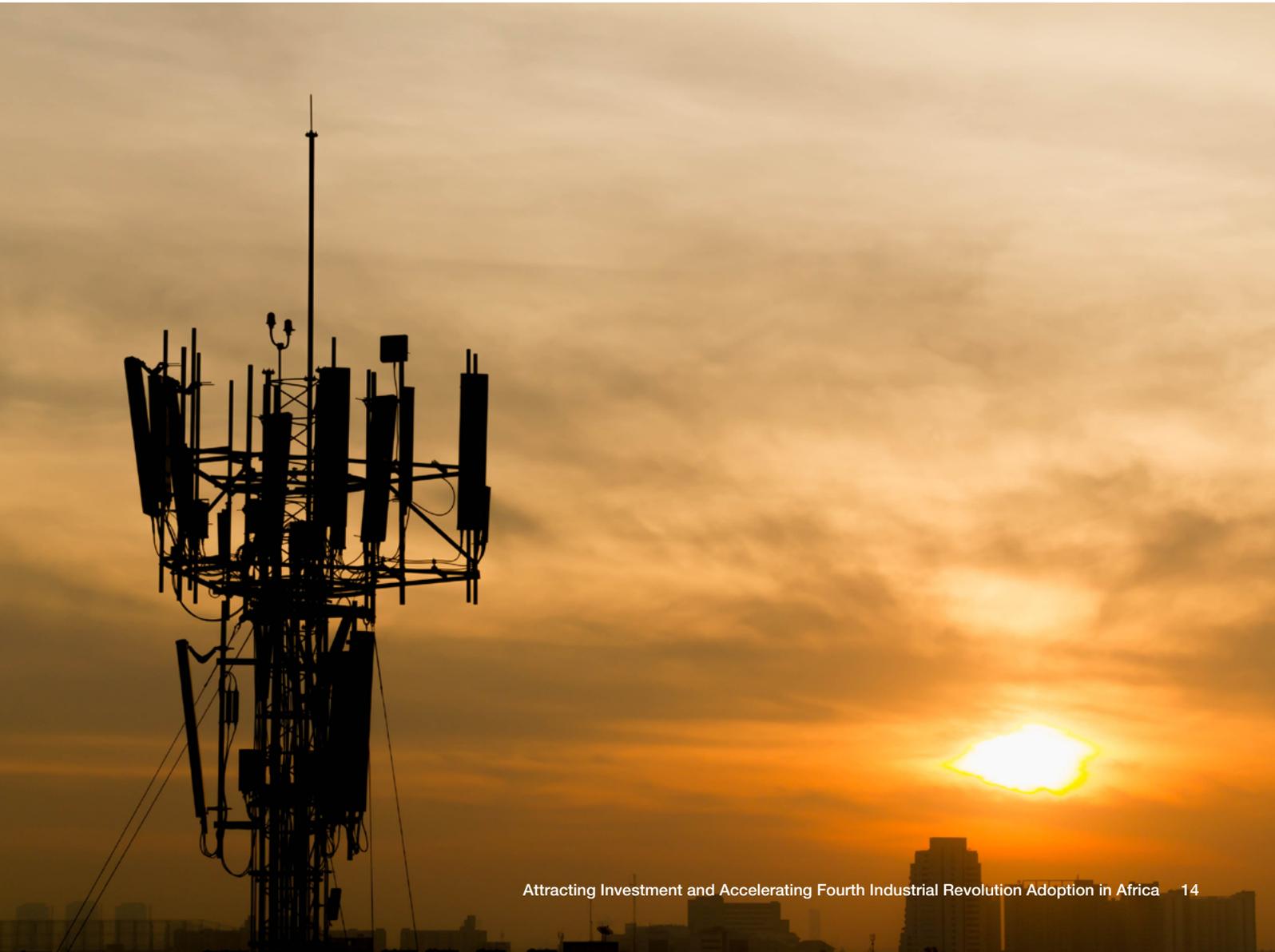
– regards connectivity and internet access for all as a prime requirement that government needs to incentivize.

Infrastructure is broadly regarded as a basic necessity to ensure a competitive economy. The inadequacy of the power supply in Africa is well documented and has impeded adoption of Fourth Industrial Revolution technology. Ubongo, a Tanzanian edtech company, regards power outages and slow internet speeds as one of the main contributors to preventing implementation of digital technologies. Regardless, it has been suggested that Africa has high potential for the adoption of renewable and green technology as a palliative to energy demands. Grants and incentives for the adoption of renewable technology are likely to spur uptake.

4

The opportunity for SMMEs in digital transformation

Partnerships through global and local funding institutions are bridging the opportunity for non-tech SMMEs to join the e-commerce wave.



The digital transformation trend presents an opportunity for impact investors such as Vital Capital to focus on the digital transformation of the SMMEs with whom they work. In particular, the growing e-commerce trend (the sale of goods and services through online marketplaces) creates an important channel for SMMEs. A successful e-commerce platform can help to support growth in an economy and can facilitate trade within the digital economy; for example, between large online entities and SMMEs that make equal use of this platform.

Digital transformation continues to accelerate the market for all e-commerce businesses. Companies in the e-commerce industry are moving towards using digital transformation methods to facilitate their businesses. In Africa, e-commerce is still in its early stages, with traffic being only 10% of that enjoyed by leading global platforms. Compared to global standards, these numbers are quite insignificant; i.e. in 2019, global e-commerce sales amounted to \$26.7 trillion,⁵¹ with Amazon having estimated number of transactions of 26.73 billion in 2019, which accounts for 13.7% of worldwide global retail e-commerce sales, while eBay and AliExpress had estimated traffic of 10.47 billion and 6.66 billion respectively. This presents an opportunity for Africa to participate more actively in e-commerce, with untapped potential that can offer opportunities for small enterprises and stimulate trade across the continent. The benefits include increased speed and accuracy of business exchanges – which can reduce trade transaction costs – minimal set-up expenses in terms of infrastructure required – offering consumers more

customized services – and the ability for businesses to provide cross-border services – thus expanding global exchange.

Since the start of the pandemic, there has been an accelerated shift towards e-commerce in Africa. Retailers with traditional brick-and-mortar operations had little option but to “go online” in order to survive. A recent report by Visa shows that SSA realized a 42% year-on-year growth in e-commerce across the region from 2019 to 2020.⁵² This was largely attributed to cross-border transactions, highlighting the potential value that can be realized through the successful implementation of the AfCFTA agreement.

Still, according to the Digital Economy Report by the United Nations Conference on Trade and Development (UNCTAD), developing markets lag behind developed nations in terms of capturing the growth that the digital economy provides.⁵³ Figure 1 shows that more than 80% of internet users in a number of European countries shop online, while in many of the least-developed countries (LDCs), the share of people who shop online is less than 10%.

Despite this, there are some encouraging signals in the market, one of which is the birth of Africa’s first unicorn Jumia, which reported a 50% rise in transactions during the first six months of 2020 and raised \$341.2 million in its initial public offering (IPO), placing it alongside global marketplaces such as China’s Alibaba and Latin America’s Mercado Libre.⁵⁴

FIGURE 1A

Global internet use – measured by level of development and by region, for selected years (%)

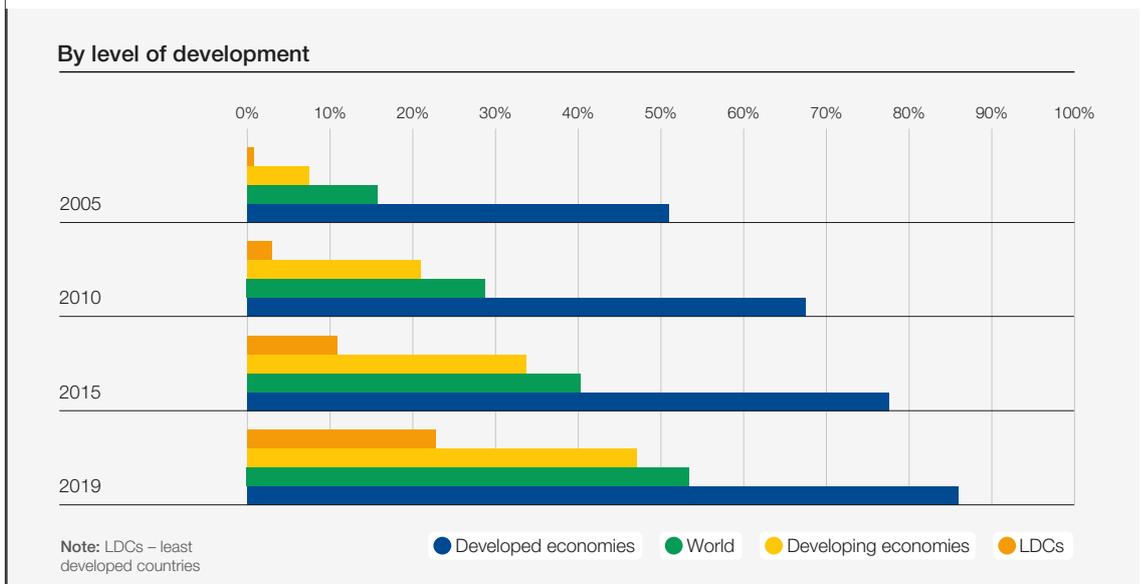
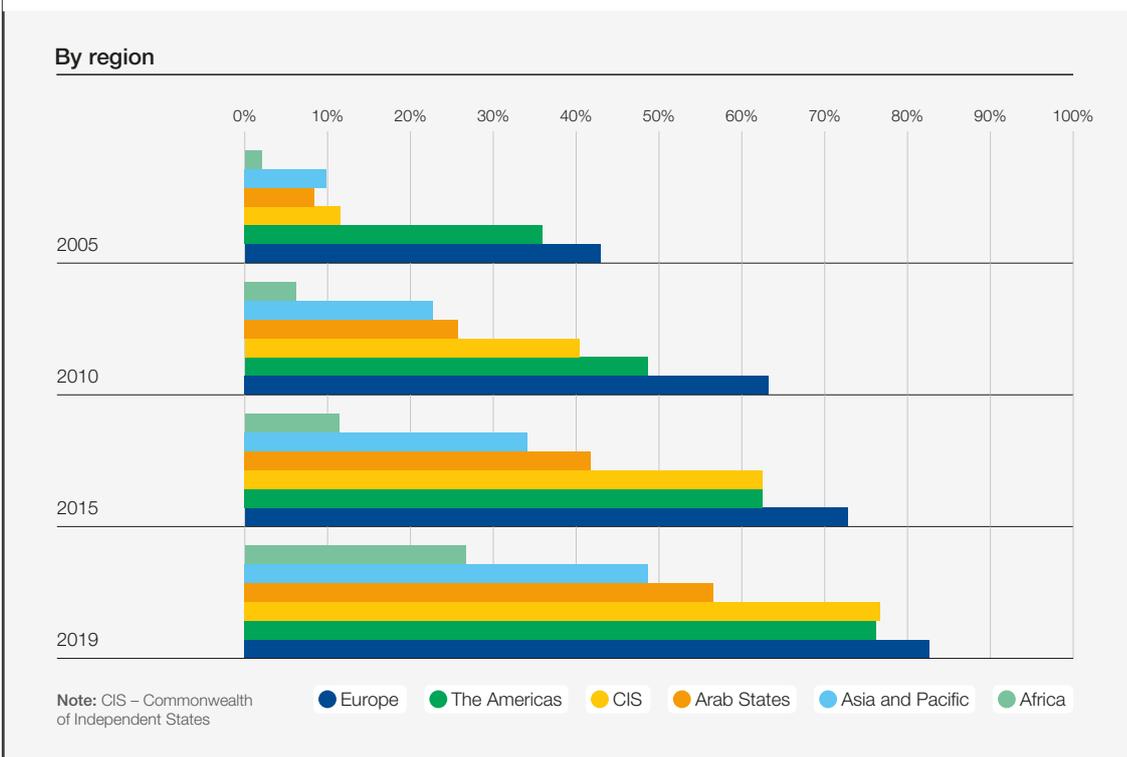


FIGURE 1B | Global internet use – measured by level of development and by region, for selected years (%)



Source: UNCTAD, based on ITU Statistics database, available at www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

Similar growth has also been reported by other fintech players operating in the e-commerce market such as Paystack, a Nigerian financial payments company with more than 60,000 merchants across Africa. The company reported a five-fold increase in transactions relative to pre-pandemic levels. Logistics players including Kenya's GetBoda, an e-commerce delivery company, saw a 150% rise in orders in the first weeks of the pandemic.⁵⁵

A range of initiatives is cropping up to bridge the infrastructure and skills gap, including one led by the UN Capital Development Fund partnering with SafeBoda in Uganda to support SMMEs to deliver their goods. This partnership will be able to provide 800 market vendors with access to the SafeBoda app and enable these small enterprises to sell their produce while helping to preserve the livelihoods of the 18,000 SafeBoda drivers whose income source was affected by public transport bans.⁵⁶

In South Africa, the CDI Capital Growth Fund (a subsidiary of the Craft and Design Institute) has turned its focus to small businesses involved in e-commerce and digital services.⁵⁷ The Growth Fund seeks to help small businesses unlock their growth potential and create permanent jobs, along with contributing towards the economic development and competitiveness of South Africa. The funding of between ~\$10,000 and \$690,000 supports SMMEs with growth opportunities and addresses needs such as advertising, marketing

and communications. Funding works on a sliding scale based on the number of jobs the SMME can create and requires the SMME to match 20% of the grant value.⁵⁸

SMMEs have an incredible opportunity to benefit from this trend: as stated in the UNCTAD report⁵⁹ published in March 2021, more than 40% of customers in four large African countries were planning to decrease their supermarket shopping in the future by opting for online purchases of food, clothing and electronics.

This is further supported by the forecast from the International Finance Corporation (IFC) that the region's largest e-commerce markets (No. 1 Kenya; No. 2 Morocco; No. 3 South Africa) will see a rise in the contribution of the digital economy to GDP from 7.7% to 9.2% by 2025 and to 15.2% by 2050.

The Phase 3 negotiations on the implementation of the AfCFTA covering e-commerce and digital trade were set to take place in 2021 and show great promise for unlocking value in the region. The Phase 2 negotiations were initially scheduled to be concluded by December 2020 and the Phase 3 negotiations were meant to commence immediately afterwards. This deadline was not met due to the COVID-19 pandemic; however, the African Union (AU) Assembly has set 31 December 2021 as the deadline for the conclusion of Phase 2 and 3 negotiations.⁶⁰

5

A case study for developing incentives for SMMEs

Industry and government can adapt the available incentives to meet the needs of SMMEs through agile policy development.



In an effort to better mobilize and support nations to harness the power of the Fourth Industrial Revolution, the World Economic Forum collaborates with partners across the world to set up affiliate centres for the Fourth Industrial Revolution, giving greater coverage and scale to the work started in the San Francisco, Japan, India and Brazil centres. In turn, these centres are collaborating with various local stakeholders to serve as a “do tank”, taking working technologies and creating the ecosystem to scale them, whether in the form of policy frameworks, industrial capacity development or even mobilizing civil society towards a just transition. One of the first projects being carried out is a scale-up of the SME futures network,⁶¹ which was initially implemented in Brazil and is now in Columbia, Turkey, Saudi Arabia and South Africa.

The project aims to pilot an IoT-adoption digital transformation journey, working with local SMMEs to identify specific use cases that will support them in increasing their competitive advantage thereby improving their value proposition to large businesses and grow their offtake, thus augmenting the SME base and even increasing employment.⁶²

In South Africa, the first industry that was prioritized for this pilot was the automotive sector, given its focus as a growth area and the significance it has in rallying the country’s industrial base. By working with industrial partners such as the National Association of Automobile Manufacturers of South Africa (NAAMSA), the National Association of Automotive Component and Allied Manufacturers (NAACAM) and the Automotive Industry Transformation Fund (AITF), the centre is identifying and selecting potential SMMEs. As part of the onboarding process, SMMEs will be profiled to

understand their business challenges and support will be provided in aligning the leadership team for their digital transformation journey. While there is a plethora of incentives available to SMMEs from the state, DFIs and industry, there is none available that directly focuses on supporting digital transformation. Therefore, through this pilot process, the partners, together with the government incentives team, will identify how existing incentives can be repurposed or new ones introduced to accelerate SMMEs to become digitally enabled.

The project team has taken lessons from the Brazil scheme and incorporated some critical local needs, such as enabling a more local diverse supplier base to improve both localization and support historically disadvantaged individuals to access economic opportunities. The pilot project will highlight the areas in which incentives are needed and how best they can be used to attract private capital to improve scalability.

Given the focus on intentionally building capability for a digital economy, the project will assess the supply-side landscape in terms of local production, local skills base, etc. The project also aims to identify opportunities for industrial capacity creation to meet local and regional needs for the automotive sector and potentially more broadly in industrial manufacturing.

This will provide an invaluable learning experience for governments and key actors globally to embrace a learning-by-doing approach to policy design and implementation in an environment that is rapidly changing and requires more agile governance toolsets.

6

Transitioning SMMEs into the digital economy

Leveraging the available capacity through an ecosystem approach can boost the reach of available incentives and ensure long-term sustainability.



Lessons learned so far about how SMMEs can be successfully incubated and need to be collated through an ecosystem of all those involved in the process. Such ecosystems are being created on an ad hoc basis by various industry groups through formal and informal collaborations with the business sector.

Mobile network operators (MNOs) are targeting SMMEs as a large unserved market for traditional voice and data services. These SMMEs are looking for more affordable options to grow and scale in the digital economy and, if anything, the COVID-19 pandemic has accelerated these efforts. Songezo Masiso, General Manager for SME at MTN Business, says that computing and cloud storage are core services for SMMEs, simply because they have had to adapt to new ways of working from wherever they are, often in a virtual manner.⁶³ This creates an opportunity for SMMEs that were otherwise locked into their brick-and-mortar models to start exploring digital commerce, including online payments, and even more sophisticated capabilities such as automation and AI enabled by 5G. The solutions available to service SMMEs are largely on offer through other SMMEs themselves, providing more cost-effective and modularized solutions. MTN and other operators are building an ecosystem around this, starting with the suppliers they bring onto platform businesses they are building. MTN, in partnership with the Department of Small Business Development (DSBD), is focusing on identifying small information and communications technology (ICT) businesses that can be supported through the National Gazelles flagship programme.⁶⁴ The National Gazelles is a South African SME growth accelerator funded by the Small Economic Development Agency (SEDA) and the DSBD. Currently in a three-year pilot, the programme aims to identify and support SMEs in growth areas across 10 priority industry sectors aligned with the National Development Plan and SEDA's SMME strategy.⁶⁵

The three-year partnership will focus on grant financing to SMEs in the ICT sector with high potential, as well as inclusive business development workshops and services on offer from MTN Business. The purpose of the grants will be to boost growth through the funding of assets, supporting market access and innovation.⁶⁶ Inevitably, this provides an opportunity for these same businesses to offer services to other businesses in the SMME segment.

A key challenge many SMMEs face is to manage payments, especially less formalized businesses and those with unbanked customers. MTN's Mobile Money (MoMo) platform is aiming to close this gap by enabling business-to-business (B2B) and business-to-consumer (B2C) payments. The platform recently accelerated its service footprint through its partnership with the IFC. The \$2 million financing received will be used to recruit, enrol and train 10,000 MoMo agents in 2021 across the network. There are already 280,000 MoMo agents in Nigeria, who work on a commission basis for every

transaction. In 2020, transactions increased by 35%, with 12,400 MoMo transactions per minute (up from 9,200 in 2019).⁶⁷

The IFC has supported several other fintech businesses in the region with financing and advisory services in an effort to address financial inclusion, support the formalization of trade activities and, in turn, stimulate employment opportunities.

SMMEs are also using Ayoba – an instant messaging platform made by Africans for Africans to reach their customers and grow their sales. Ayoba has a functionality that supports B2B and B2C through its “Channels” section. By using the app, businesses can connect with customers, who are not only able to subscribe to their preferred channel, but will also receive a newsfeed in the chat menu.⁶⁸ This app has been integrated into 12 MTN markets, including South Africa; it is also multilingual, supporting many of the local languages spoken across the 12 markets, namely isiZulu, isiXhosa, Pidgin, Yoruba, Swahili, Hausa, French and English.⁶⁹

As the ecosystem becomes more developed, the possibilities seem endless. One notable platform is Chenosis, which creates a marketplace for developers from all over the continent to make their application programme interface (API) – a software intermediary that essentially allows two applications to talk to each other – available and start to create seamless integration between different platforms and services within their business segment, in order to grow and scale their operations. Since its launch in August 2020, more than 250 developers have joined the API marketplace, with a strong pipeline of partners.⁷⁰ “Chenosis is a separate brand and entity, and will have an arm’s-length relationship with MTN so that it remains open to all MNOs, fintech start-ups, payment service providers, mobile wallet operators, financial service providers and more,” said Charles Molapisi, MTN Group Chief Technology and Information Officer.⁷¹

According to MTN's press statement: “The Chenosis marketplace allows businesses and developers to publish their APIs so that other developers can discover and use them. The marketplace also provides the tools for publishers to monetize and promote their APIs by creating subscription plans and product bundles that developers and businesses can purchase. The Chenosis marketplace portal has dashboards for publishers and consumers to track revenue and credit balances, view consumption analytics and API performance and lots more.”⁷²

This is critical as it serves to attract technology providers, reduces the cost for customers, and encourages local digital technology capability. Furthermore, it creates a conducive ecosystem that considers the financial, technical and network effect required to truly support the growth of SMMEs in their digital transformation. This is the foundation for building a truly inclusive digital economy with the potential to provide Africa with the economic boost it will need following the global pandemic.

7 Proposed incentives to accelerate Fourth Industrial Revolution adoption

Incentives that focus on infrastructure, productivity and skills development will be critical for Africa's recovery post-pandemic.



According to the Digital Transformation Strategy for Africa (2020–2030) put together by the African Union, digital transformation will not thrive nor be self-sustaining in the absence of four key foundational pillars, namely: 1) an enabling environment, policy and regulation; 2) digital infrastructure; 3) digital skills and available workforce; and 4) digital innovation and entrepreneurship.⁷³

Though there is a “need for intensive ICT investment in infrastructure” and the technology necessary to support Africa’s engagement in the Fourth Industrial Revolution, in the absence of the relevant skills and capabilities, this will not occur. Thus, to “fully realize the opportunities that can be brought about by digital transformation” and the Fourth Industrial Revolution, it is critical to prioritize both skills development and digital infrastructure.⁷⁴

7.1 Co-investment models

In terms of overall investment, ICT comprises a moderately small proportion of what Africa’s total infrastructure will require. According to the African Development Bank, it is estimated that dealing with the continent’s infrastructural needs will see annual costs of ~\$130 billion to \$170 billion until 2025.⁷⁵ Of this, only ~\$4 billion to \$7 billion would need to be put into the ICT sector. However, to fully bridge the current digital divide over the next 20 years, the Global Infrastructure Facility (GIF) suggests that physical infrastructure will require a financing gap to be plugged that equates to approximately \$1.7 trillion.⁷⁶

Experience in the United Kingdom⁷⁷ and France⁷⁸ indicate that regulators which promote co-investment in network infrastructure are more likely to see high rates of broadband penetration and adoption. Importantly, this also helps to improve competition among network providers and therefore should be considered to close the infrastructure gap in the region.

One of the most critical investments required in the region is access to affordable connectivity,

and the trend seen by large network providers on the continent for separate fibre assets (an asset constructed or acquired by a regulated service provider) is an indication that a different business model is required.⁷⁹ Alternative business models should focus on more innovative user fee models while securing state incentives to support scale of service and ensure that the digital divide can be closed.

The Malaysian government recently released its national Fourth Industrial Revolution policy. One of the areas it focused on was incentives for businesses to adopt Fourth Industrial Revolution technologies linked to performance.⁸⁰ Practically, this means that, should an organization purchase and implement IoT sensors or the relevant software and demonstrate the value of implementation, it will receive a tax incentive from the state. This is rather progressive as countries that can use the Fourth Industrial Revolution for productivity gains are likely to be more competitive and increase their tax base through increased profits that can then be directed towards development.

7.2 Efficiency gain rebates

Africa has the youngest population in the world and has more than enough capability to supply the world’s future workforce. However, over 50% of young people in SSA do not have access to formal education and only an estimated 2% of the labour force possess IT skills.⁸¹ This shortage in skills is one of the reasons why it is crucial to invest in skills development, which will be beneficial to organizations and their employees, the workforce and, ultimately, the economy.⁸²

Considering that the available workforce and skills are complementary to other factors of production, governments will need to play a leading role in preparing young people for future work integration based on the skills of the future. African governments, in partnership with the private sector, will need to generate opportunities through an

ecosystem approach that enables youth to thrive in the digital era.⁸³ Addressing the skills requirements of the Fourth Industrial Revolution will require commitment from African governments to review employment and education policies. This may include accepting skills-based programmes rather than traditional four-year graduate programmes and even considering different types of safety nets as people operate in the gig economy.⁸⁴ It is by creating the necessary means for youth to be adequately skilled that the digital revolution will have a positive impact on productivity and effective service delivery – gains that can be achieved only with a highly skilled workforce.⁸⁵

An emerging model from industry is to use available skills-development incentives to deliver training programmes that are predominantly

targeted towards unemployed youth who can upskill and find opportunities in, for example, the ICT sector. It was estimated that by 2020, 95,000 jobs for unemployed youth would be available in the ICT sector across six African countries, namely Egypt, Ghana, Kenya, Morocco, Nigeria and South Africa.⁸⁶ Organizations such as IBM, Google, HP and Microsoft are also directing a lot of their investments towards offering free online training programmes for young people. By partnering with local organizations, these multinationals ensure youth can get access to learning centres

(predominantly for internet connectivity and access to devices) through which to conduct the training. Given the challenges of accessing quality programmes, efforts need to be made to identify digital accelerators that can scale programmes through micro-learning, teacher development, etc. The recent winners of the WorldClass Education Challenge⁸⁷ detailed in the table below are examples of how digital technologies can be used to increase the reach and development of young people to provide them with a better opportunity to be economically active.

TABLE 1 Africa's top innovators in the WorldClass Education Challenge

Learnable	Learnable is an augmented teaching assistant that allows teachers to compose and distribute dynamic, interactive lessons via a dedicated mobile app and WhatsApp. Learnable was developed from the ground up with African teachers in mind, to bridge the digital divide and close the inclusion gap in education.
Nomad	Nomad Education strives to help students from all over the world succeed in their studies by offering free mobile educational apps for those aged 11 to 25 years old. The content, written by 350 teachers, is improved and updated on a daily basis. By offering free, mobile and offline solutions, Nomad guarantees full educational continuity across the globe.
Pan-African Robotics Competition	The Pan-African Robotics Competition (PARC) has created a virtual learning platform (VLP) with online and offline capabilities for young people to virtually engage with coding, programming and robot design. The PARC VLP is free and available for anyone to access and begin using directly.
StanLab	StanLab enables schools and colleges to deliver practical STEM classes to students remotely or in-school to allow for educational continuity. It is a 3D virtual laboratory app, where teachers set up virtual labs for students to learn, practise and master STEM with embedded learning analytics.
UCT Online High School	UCT Online High School (OHS) has created a new opportunity for African children to access aspirational, high-quality education, regardless of their circumstances. The University of Cape Town, Africa's top-ranked university, in partnership with Valentre Institute, a leading edtech social enterprise, has created educational opportunities that serve students from a range of backgrounds.

7.3 Upskilling the employed

The second group that is often neglected is the employees, who are not given an opportunity to upskill while their organizations transform through digital adoption. Upskilling these employees could see them take on new roles and potentially even improve their earnings. A report by the Asian Development Bank found that, despite the high productivity gains to be realized through digital transformation, businesses are not adopting these technologies and, when they do, they are more likely to hire people with skills than train their existing workforce.⁸⁸ Malaysia's and Singapore's governments are both responding with targeted incentives offering businesses tax incentives

through which they can claim funding for digital skills development training that their employees complete on an hourly basis.

By prioritizing skills development as well as infrastructure investment and development, digital inequalities and insufficient ICT infrastructure can be tackled in a sustainable manner. This will not only support Africans by giving them access to the tools and resources necessary to enter the job market, it will also ensure they are equipped with the competencies to proficiently use the newly developed infrastructure that will be vital in accelerating business operations and ultimately lead to economic growth.

Conclusion

These incentives should be aligned with ESG aspirations that can create a harmony in country policy and business strategy.

In designing these incentives, regulators and other stakeholders must consider structuring conditions that support more environment and social value creation, aligned with ESG commitments. This can be in the form of increasing digital access to rural areas or even linking power supplies to more sustainable energy solutions. The growing stake of the FANG⁸⁹ in Africa can be better employed through incentives, with conditions linked to ESG commitments that can promote localization by identifying value-add opportunities for local SMMEs. These commitments must be specific to local and regional development that will attract further investment in the region and build much-needed local capability and the infrastructure required for local business to thrive in the digital economy. The recent \$1 billion investment commitment by Google⁹⁰ could become a test case for implementing a regional approach to strengthening the value-add created by large multinationals seeking to grow in the African market.

This paper seeks to address the initial questions that have been raised: can investment incentives motivate change so that companies adopt Fourth Industrial Revolution applications – developing unique, local, high-tech products and services? Are incentives useful in spurring adoption of these technologies in the business cycle? There is a strong case for private firms to drive innovation and a need for governments to create a conducive environment, such as the recent wave of Start-up Acts across the continent. Investment incentives that promote innovation by encouraging risk-taking, skills development and the development of digital infrastructure are likely to boost productivity. Some of the traditional incentive tools such as tax holidays and special economic zones may be applicable in some settings. Incentives that promote private-sector growth through technology transfer, R&D and skills development are likely to drive industrial transformation – with SMMEs and start-ups being important sources of innovation and mechanisms to drive inclusive growth.

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