

CFC Africa Insights

Rising to the Digital Challenge
in Africa



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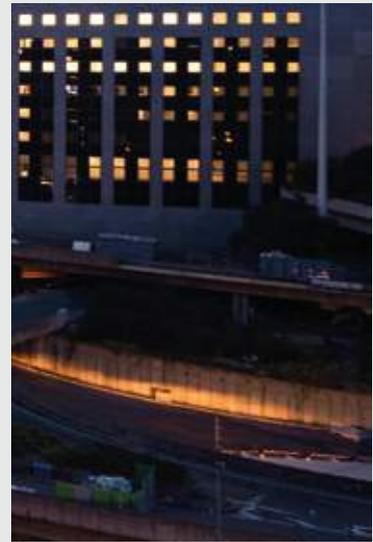
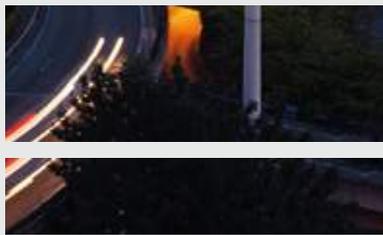


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FOREWORD



As part of our "CFC Africa Insights" series that contribute to leverage our members' expertise and share knowledge within our community, we are delighted to partner with the Boston Consulting Group and bring you this latest report on "Rising to the Digital Challenge in Africa".

This report details some of the key success factors to accelerate the continent's digital transformation, the importance of scale effects, of talented human resources, and having a conducive ecosystem.



As the leading African financial center, we at Casablanca Finance City, have the strong conviction that establishing a business-friendly environment is instrumental when it comes to enabling value creation, encouraging cutting-edge innovation and fostering cross fertilization among our ecosystem.



The current pandemic is a clear reminder of how 'VUCA' (Volatile, Uncertain, Complex, Ambiguous) our world can be. Nevertheless, Covid-19 is also a silver lining and offers tremendous opportunities to be seized by the resilient and versatile, especially in Africa. In this perspective, a recent survey of our CFC members has shown how most companies are now rising to the digital challenge, both from within and in their way of doing business across sectors and geographies.

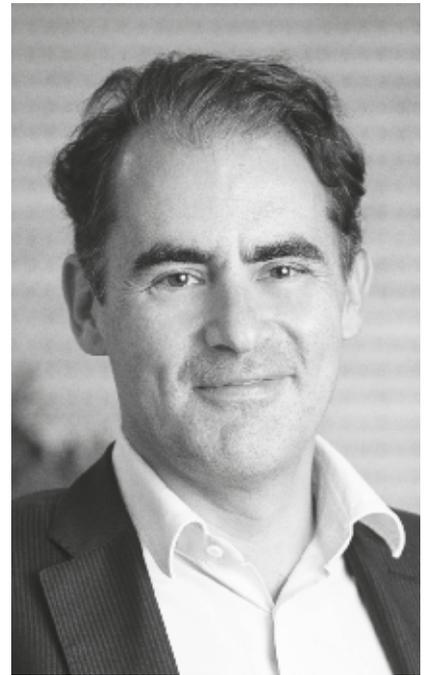
At CFC, we are fully committed to supporting this shift, by working alongside the various stakeholders to enhance Africa's digitalization and thus keep up the momentum.

I wish you a pleasant read.

Said Ibrahim

CEO of Casablanca Finance City

On behalf of Boston Consulting Group, it is my pleasure to present our report on Rising to the Digital Challenge in Africa. It is thrilling to see the pace of digital adoption and infrastructure buildout in Africa.



“

Our research shows that this is happening faster in Africa than in any other region of the world. This creates exciting possibilities for consumers and industries alike, including the chance to leapfrog older technologies and blaze a uniquely African path. The rapid adoption of mobile money is just one example of how digital is poised to improve lives.

”

Of course, Africa's progress is no surprise to us. We have worked with clients around the continent for many years and have seen first-hand the determination to advance digital adoption and spur economic growth.

This report, published in collaboration with CFC, explores how the private and public sectors can coordinate to continue or even accelerate this effort, and thus unlock the enormous economic potential on the continent.

There are challenges to be sure, but the story is fundamentally an optimistic one for Africa's industries and the fortunes of its 1.2 billion people.

Patrick Dupoux

Managing Director and Senior Partner,
Head of Africa
Boston Consulting Group



**RISING TO THE DIGITAL
CHALLENGE IN AFRICA**

RISING TO THE DIGITAL CHALLENGE IN AFRICA

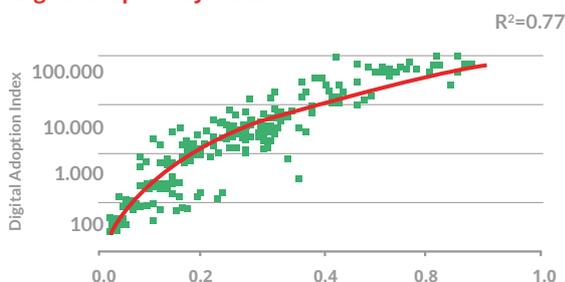
Africa trails other regions in terms of digital adoption and maturity. Myriad reasons account for this, including underdeveloped connectivity infrastructure, lack of trust in digital service providers and a dearth of digital talent. At the same time, there is clearly a nascent desire to catch up to the rest of the world and reason for optimism. Digital adoption and the infrastructure buildout are, for example, occurring faster in Africa than in other regions, giving the continent an opportunity to leapfrog certain technologies. The COVID-19 crisis has further focused minds, accelerating digital adoption among consumers and digital transformation among companies.

For success going forward, we believe that companies and governments need to coordinate on three fronts. The first involves creating scale. Scale is necessary to make digital business models economically viable and sustainable on a continent that has many international borders and is less densely populated than other regions. Second, companies and governments need to nurture and attract digital talent, which will require a full range of corporate and national initiatives carefully designed to appeal to these valuable employees' priorities. Lastly, companies need to build ecosystems and innovation hubs that encourage all stakeholders—governments, businesses, investors, incubators, universities and private operators—to work together to unlock the potential of digital services by improving access to financing options, regulation and technology.

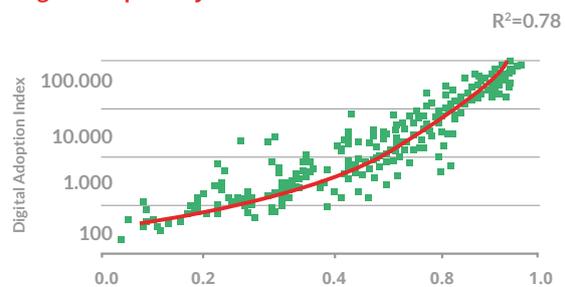
These are not pie-in-the-sky dreams. Boston Consulting Group (BCG) and Casablanca Financial City (CFC) have worked with several companies in a variety of sectors across the continent—telcos, banks, fintechs, industry, retail, consumer goods, online marketplaces—that have already successfully addressed scale, talent and ecosystems. The stakes could not be higher. There is a significant positive correlation between digital adoption and GDP per capita (see exhibit).

INCREASED DIGITAL ADOPTION FOR POPULATION AND COMPANIES IS TO DRIVE ECONOMIC DEVELOPMENT

Digital adoption by businesses



Digital adoption by individuals



Source: 'World Development Report'

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WIDE DIGITAL GAPS PERSIST

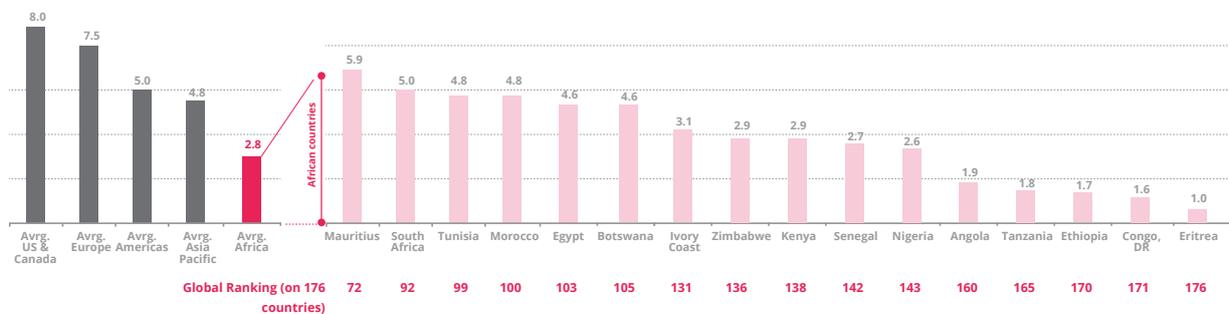
WIDE DIGITAL GAPS PERSIST

The African population's digital maturity is relatively low, due to limited digital service penetration, a lack of digital skills and little trust in digital service providers. Weak connectivity coverage (information and communications technology (ICT)), data - is also an issue. For these same reasons, the digital maturity of African companies also trails all other regions. But African companies must also contend with a range of internal factors that contribute to their digital underdevelopment.

These include cultural resistance to adopting digital tools, a lack of organizational agility necessary to use digital tools effectively, and underdeveloped technology capabilities. For Africa to catch up to the rest of the world, companies and governments need to work together to bridge wide digital gaps across three main areas: infrastructure, demand, and supply.

For starters, Africa's connectivity infrastructure is far behind other parts of the world. Only 40% of African consumers have 3G coverage vs. 72% worldwide, and connection speeds and digital service quality in Africa are relatively inferior. For example, data hosting capacity per million inhabitants is 50 times less than in Europe. This underdeveloped ICT infrastructure is linked to other structural issues in Africa, such as unreliable electricity, and a poor transportation infrastructure.

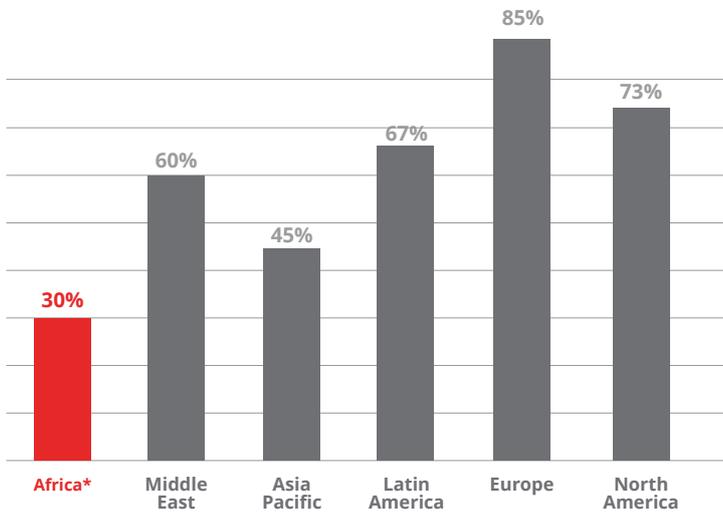
ICT Development index by world regions and African countries (from highest score 8.9 to lowest score 1.0)



Note: ICT Development Index combines 11 indicators in three categories : ICT access (e.g. fixed telephone & cellular subscriptions) ICT use (e.g. % of individuals using internet); ICT Skills (e.g. tertiary gross development ratio)
Source: International Telecommunication Union (ITU) - ICT Development index 2017; BCG analysis

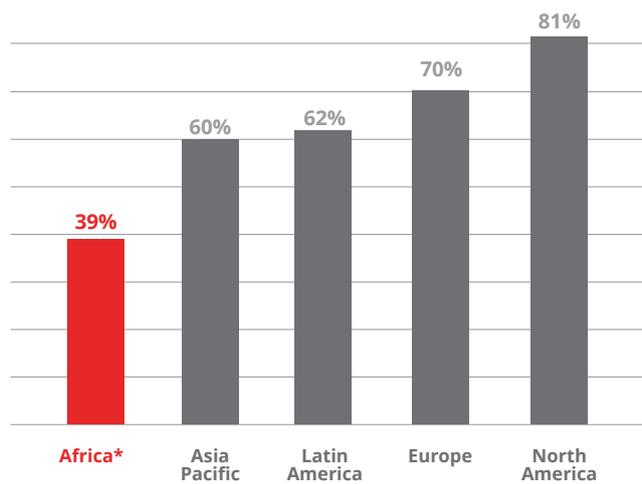
These ICT problems naturally depress demand for digital services. As of 2018, only 30% of Africa's population had access to the Internet, compared to 67% in Latin America. And less than 40% of people in sub-Saharan Africa had smartphones, less than those in other global regions.

Internet penetration as % of population in 2018



Source: 'World Bank, GSMA, BCG Analysis
*Excluding North Africa

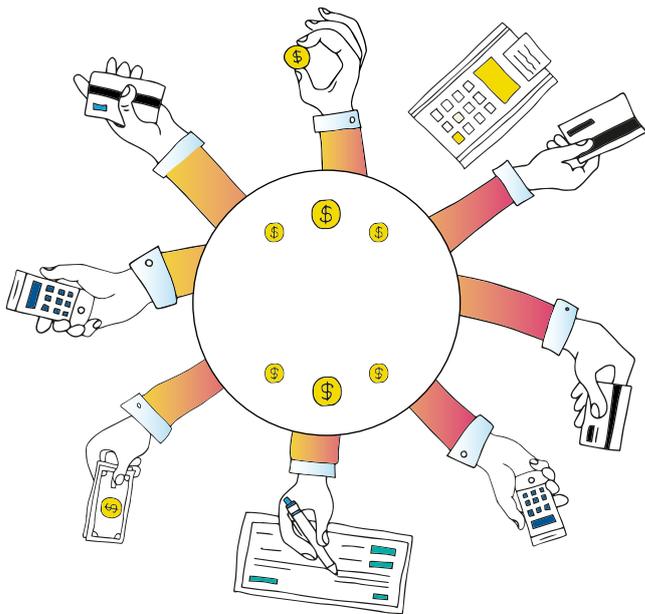
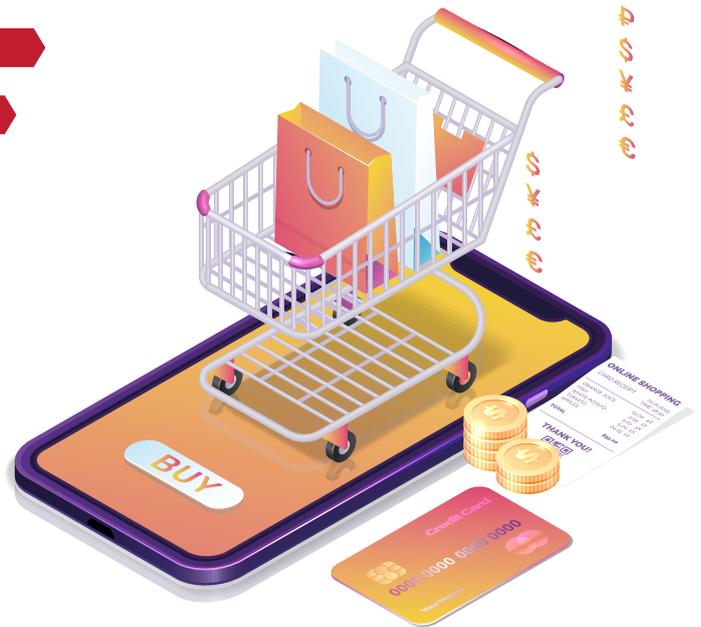
Percentage of smartphone adoption by regions in 2018



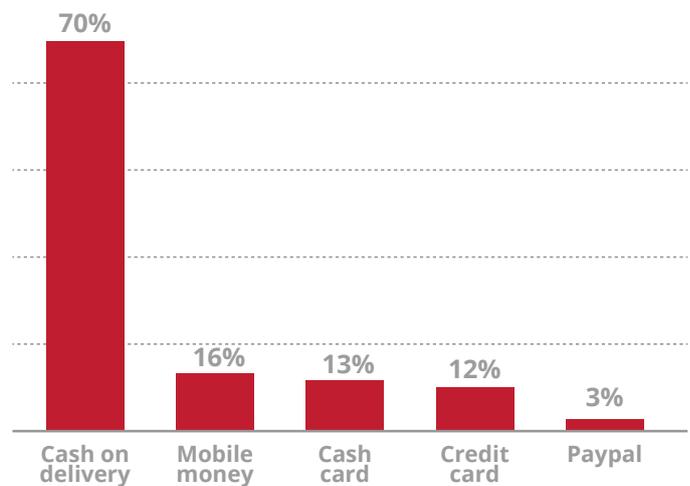
Source: 'World Bank, GSMA, BCG Analysis
*Excluding North Africa

Another factor keeping demand low is that, even among those with access to digital services, digital skills are often underdeveloped. For example, 40% of smartphone holders do not know how to make purchases online. This is a significant obstacle to the adoption of new services. Also weighing on demand is the public's lack of trust in digital service providers. Since many do not trust they will receive their orders, they wait to pay in cash upon delivery (70% of e-commerce transactions are in cash). These consumers are generally less receptive to new digital business services that could benefit them in terms of price, reliability, and simplicity.

Main reasons for not buying online (multiple responses) - urban areas



Preferred payment methods to buy online (multiple responses) - urban areas



Survey question: "Why have you not purchased online in the past 12 months?"
 Note: Survey reached 12,575 total consumers in 12 countries
 Source: 2018 BCG Africa Consumer Sentiment Survey January to March 2018, World Bank, Analyses BCG

But these two factors—demand and infrastructure—can only partly explain why Africa is so far behind other continents. Another major culprit is the issue of supply. More specifically, African companies are substantially less digitally mature than other regions of the world and are not offering the range of digital services found in other regions. This conclusion is based on our own in-depth analysis of companies using BCG’s Digital Acceleration Index (DAI) from 2019.

As part of our global DAI survey, we asked executives at 83 companies in Africa to rate their companies (on a scale of 1 to 4) on 35 points related to digital maturity. We then assigned raw scores and calculated resulting values to their responses on a scale from 0 (digital starter) to 100 (best-in-class digital leader). We weighed these to determine each company’s overall performance on the index. The sectors represented in the survey include financial services, basic industries, energy, insurance, consumer goods and retail, and telecommunications. All major regions of the continent were represented. We also conducted qualitative interviews in order to better understand companies’ areas of digital investment, the impact they receive from digital, their hiring strategies, and the constraints they work under with respect to talent and digitization generally.

AFRICAN COMPANIES SCORE BELOW GLOBAL COMPANIES ACROSS ALL SUB DIMENSIONS IN THE DAI SURVEY

	 Strategy	 Go-to market	 Operations	 Support functions	 New digital Growth	 Ways of working	 Technology	 Ecosystems	 DAI Score
 AFRICA	47	29	24	25	24	29	24	33	29
 ASIA	58	50	49	50	49	50	50	51	51
 EUROPE	60	54	54	57	54	54	56	55	55
 NORTH AMERICA	58	50	48	51	50	51	51	53	52
 SOUTH AMERICA	54	44	46	49	45	44	46	44	46

Source: BCG DAI Surveys; Digital maturity score not compounded by relative industry or countries size, only for selected industries



The survey shows that African companies have the lowest average digital maturity index across the world. The 83 African companies in the index scored an average of 29 (out of a possible 100), compared with 55 for Asia, 51 for Europe and 49 for the Americas combined. In fact, Africa scored below global companies across all eight subdimensions of the DAI survey.

This deficit has four main causes:



46%

Management's inability to narrow digital priorities



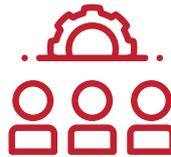
45%

Cultural resistance within companies to adopting digital



45%

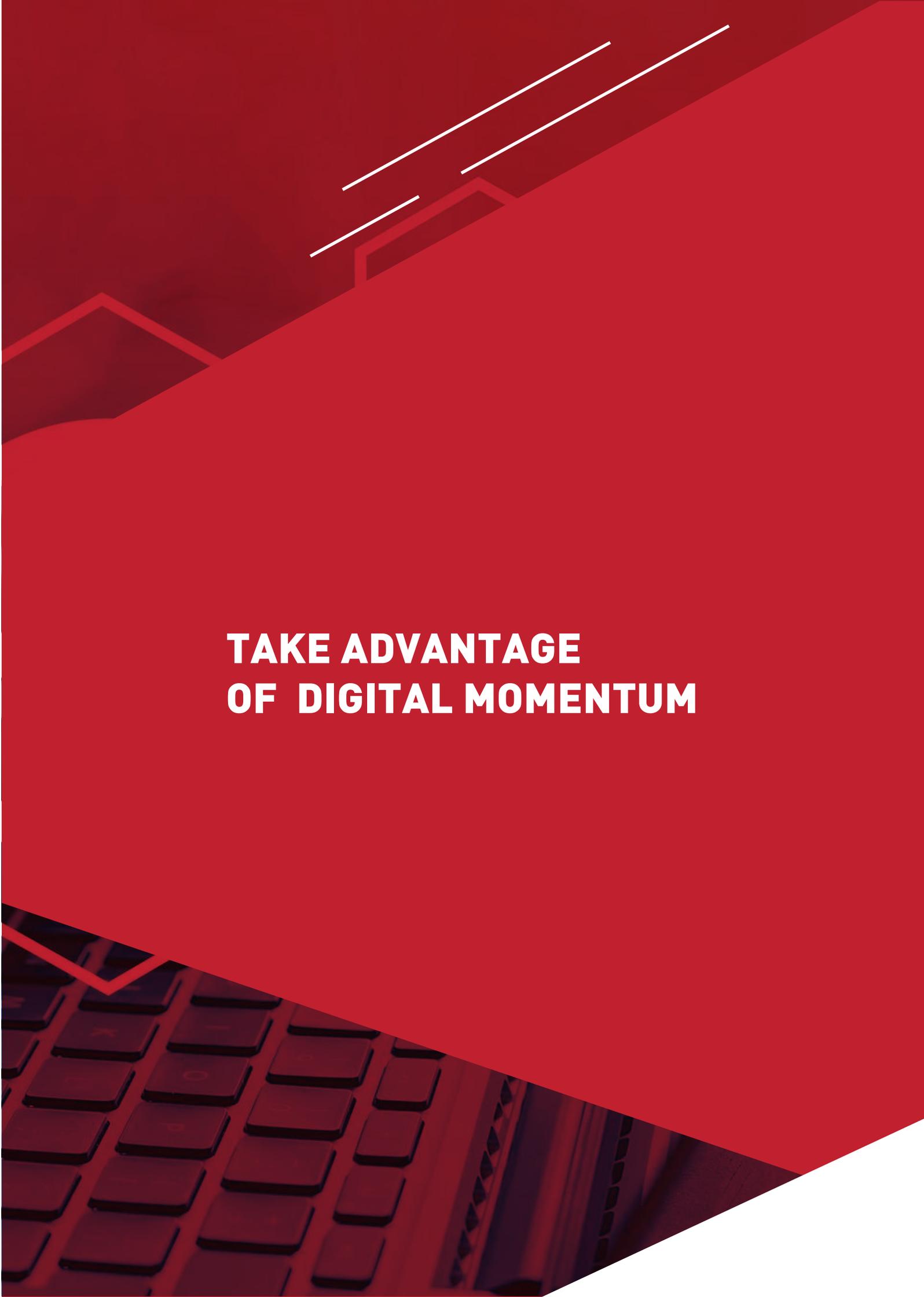
Insufficient digital capabilities



37%

A lack of organizational agility



The image features a solid red background. In the upper portion, there are several white, parallel diagonal lines that appear to be part of a larger, faint geometric pattern. At the bottom of the image, a portion of a dark-colored keyboard is visible, showing several keys. The overall composition is clean and modern, with a strong emphasis on the red color and geometric shapes.

**TAKE ADVANTAGE
OF DIGITAL MOMENTUM**

TAKE ADVANTAGE OF DIGITAL MOMENTUM

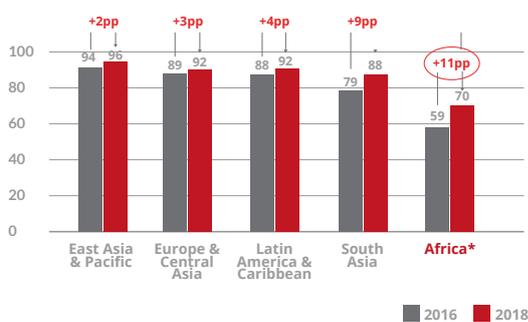
Despite these wide digital gaps, and the challenges inherent in bridging them, there's a nascent desire among companies and governments to catch up to the rest of the world. Four factors are helping to build this momentum, which is also spurring the formation of more startups in Africa.

1. Infrastructure and Demand (penetration and usages) for digital services in Africa have been growing steadily and faster than other regions in the world.

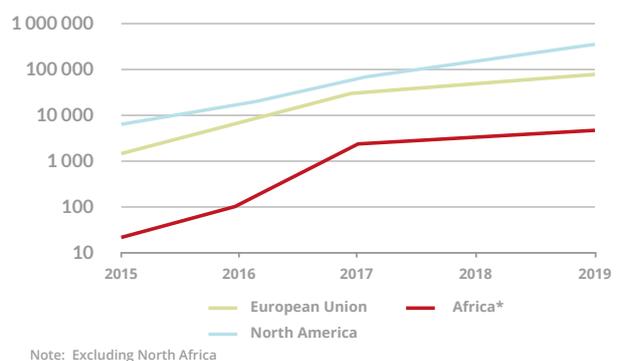
For starters, connectivity infrastructure for digital services in Africa has been growing steadily and faster than other regions in the world, such as 4G coverage and data hosting capacity. This development has the upside effect of lowering prices, helping to stoke demand and further growth. For example, the cost of broadband services dropped by 21% in Africa from 2018-2019, compared to a 3% drop in Asia.

In this perspective, the '2Africa' initiative is a promising and potentially transformative one. Announced in May 2020 by global and African partners (China Mobile International, Facebook, MTN GlobalConnect, Orange, STC, Telecom Egypt, Vodafone and WIOCC), this 37,000km long cable will be one of the world's largest subsea cable projects and will interconnect Europe, the Middle East, and 16 African countries. The system is expected to go live in 2023/4, delivering more than the total combined capacity of all subsea cables serving Africa today, with a design capacity of up to 180Tbps. The project will deliver much needed internet capacity and reliability across large parts of Africa, supplement the fast-growing capacity demand and underpin the further growth of 4G, 5G and fixed broadband access for hundreds of millions of people in the region.

3G network coverage in LMICs¹ (% population)



Secure Internet servers (per 1 million people)



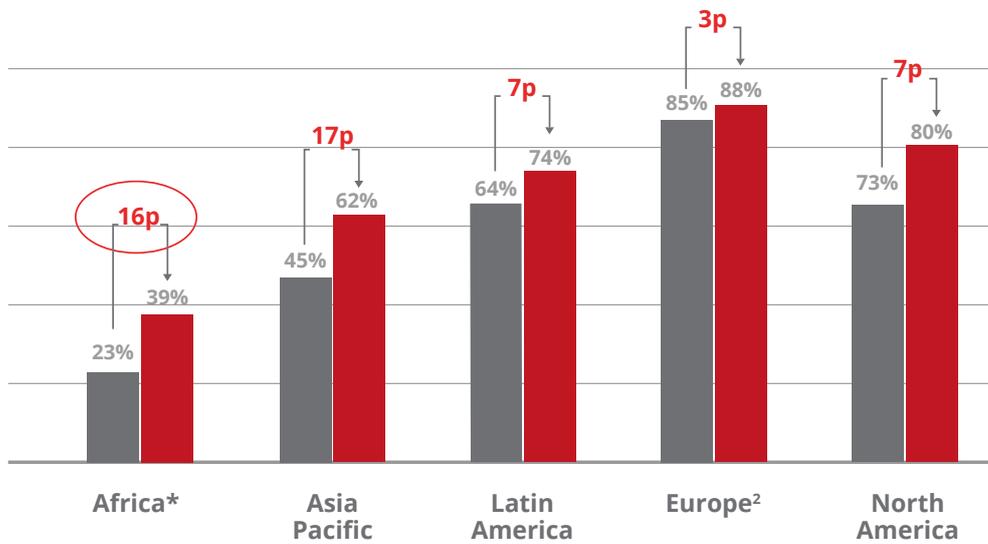
1. Low to Middle income countries. Source: GSMA intelligence. Coverage refers to the proportion of population that lives within the footprint of a 3G network, GSMA intelligence



As broadband prices have dropped, smartphone adoption in Sub Saharan Africa is forecasted to grow at an annual rate of ~7-8% between 2018 and 2025, which is higher than other developing and developed regions (~3-4% in Latin America and ~4-5% in Asia Pacific).

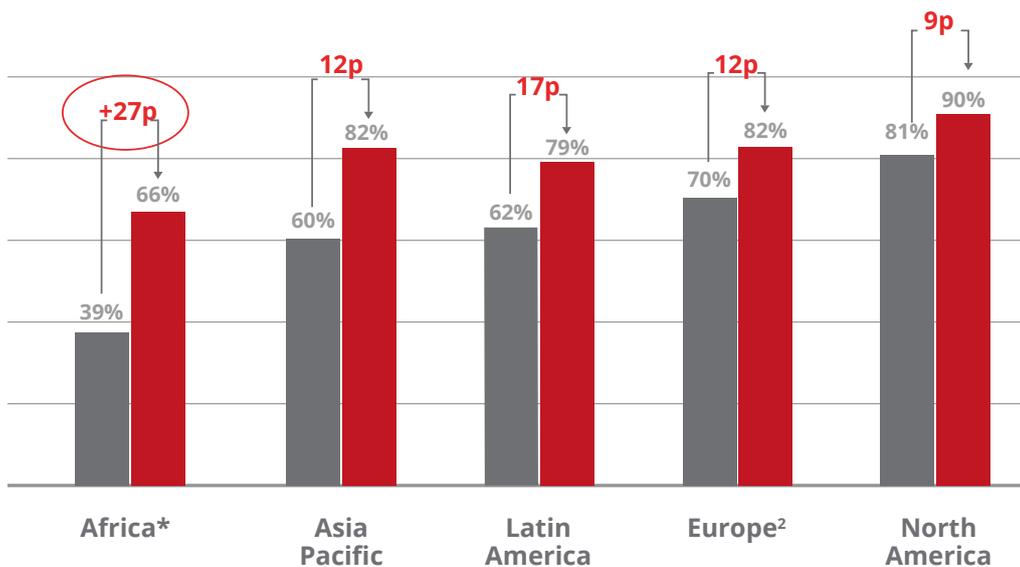
AFRICA'S INTERNET PENETRATION AND SMARTPHONE ADOPTION IS EXPECTED TO GROW FASTER THAN OTHER GLOBAL REGIONS

Internet penetration (% of population)



Percentage of smartphone adoption by regions 2018 - 2025¹

■ 2018 ■ 2025



1. 2017-2025 for Europe, Latin America, Middle East and North Africa
 2. Unique mobile subscribers
 Source: GSMA; BCG Analysis
 Note: Excluding North Africa

And while consumer demand is still low compared to other regions of the globe, urban consumers in Africa are increasingly comparing the best digital services worldwide with local services and asking for more and better digital services—even when those services are not directly comparable. For example, their Netflix experience can influence what they expect from their local bank.

Some established African companies are already addressing and meeting customers' heightened expectations. For instance, Nigerian bank UBA developed Leo, a chatbot using AI to provide 24/7 financial assistance to its customers. With the chatbot, customers can open a bank account, check credit, pay bills, transfer money and get financial news updates anytime or anywhere that it's convenient for them (the chatbot leverages Facebook and WhatsApp platforms for all daily needs). And to appeal specifically to Nigeria's young population, UBA designed Leo with a youthful, fashionable, African persona. One year after Leo's launch, the service had one million registered users and 70 million conversations.

2. Africa's lack of digital maturity creates an opportunity to leverage innovations and leapfrog older technologies and business models.

Emerging technologies spur new growth cycles, and these create the opportunity for Africa to mature faster than other economies. For example, mobile money might be widely adopted in Africa, leapfrogging the widespread use of credit cards or even traditional bank accounts.

In fact, with an annual growth of ~20%, mobile money is gradually becoming the dominant model for financial services. The percentage of the population with access to mobile money grew from 12% to 21% over 2014-17 and is already the dominant model in 12 African countries, including Kenya, Tanzania, Ivory Coast and Senegal. While mobile money gains momentum, traditional financial services are still underdeveloped due to high infrastructure costs. The percentage of the population with access to traditional financial services grew from 28% to 32%.



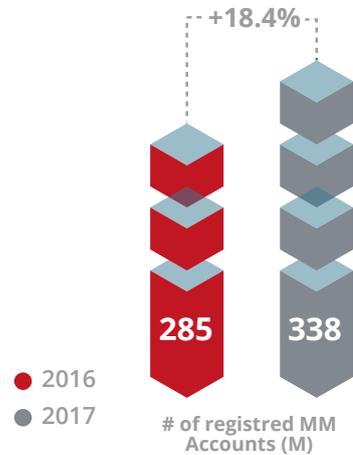
Digital maturity lag and specific African context provide opportunities to leapfrog

Illustration of mobile money, becoming the dominant financial service model in Africa

Strong in digital payments via mobile money...

Evolution of mobile money in Africa*.

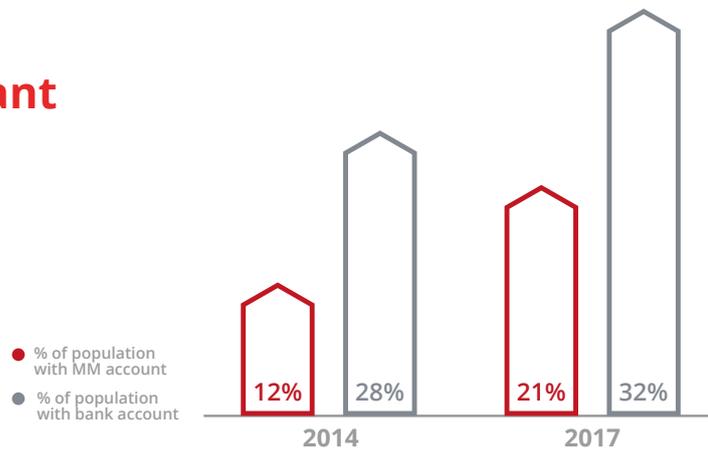
*Excluding North Africa



... Which is gradually becoming the dominant model in Africa

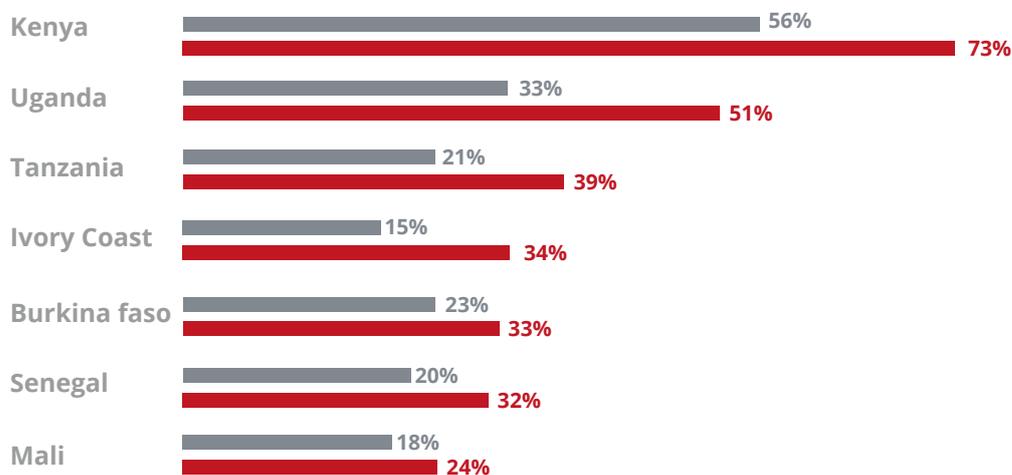
Penetration of mobile money and bank accounts in Africa*.

*Excluding North Africa



... Which is already the case in 12 countries

Countries with more mobile money penetration than bank accounts



Finding, mining, and analyzing as much data as possible is critical to leapfrog technologies and offer world-class services. For example, a North African insurance company decided to offer “insurance on demand” to improve its product mix and boost revenues. This ambition, leaders realized, would take more than simply leveraging its own data. It would also require a full-scale data transformation to gather and analyze additional data. The company deployed specialized tools to tap social networks for client information, designed and launched a free application for customers that captured more data, and developed algorithmic models to better understand client behavior. These efforts generated data with 90% accuracy.

3. Digital momentum is accelerating as companies recognize that digital maturity correlates with better performance, including market access and value chain efficiencies.

According to BCG’s DAI survey, companies in the top quartile of digital maturity grew their market share by 7% from 2012-2017, while those in the bottom quartile lost 11% of their market share.

Today, some companies in Africa (especially in banking and telecommunication) have a digital maturity comparable to top performers in other regions of the world and are pioneering digital solutions. For example, Kenya-based Safaricom grew from a telecom company to a digital platform in 10 years. Thanks to its MPESA platform, it now provides diversified services (e.g., e-commerce, ride hailing, lending, energy, and logistics) that generate 30% of its revenue.

Some companies are already seizing this digital momentum to improve their operations. For example, a leading African bank decided to leverage data and analytics to better understand its customer base and increase cross-sell and customer retention. It built a 360° view of all customers with more than 50 billion data points, applied machine learning models to identify potential churn and cross-sell opportunities, developed models to personalize offers, and updated relationship management models to support personalization. The results included \$30 million in incremental profits, a 14% reduction in churn, and a 24% cross-sell uplift.

In another case of seizing digital momentum, an online retailer realized that by investing in data and technology it could optimize delivery routing to lower costs. To this end, it collected real-time data from the ground (speed, localization, etc.), gathered customer addresses, built a logistic tool to manage inventory and control delivery, and included an optimization module for routing delivery (especially for the last mile). As a result, it lowered logistics cost by 35-50% compared to competitors.

4. The COVID-19 pandemic has accelerated digital adoption among consumers and digital transformation for companies.

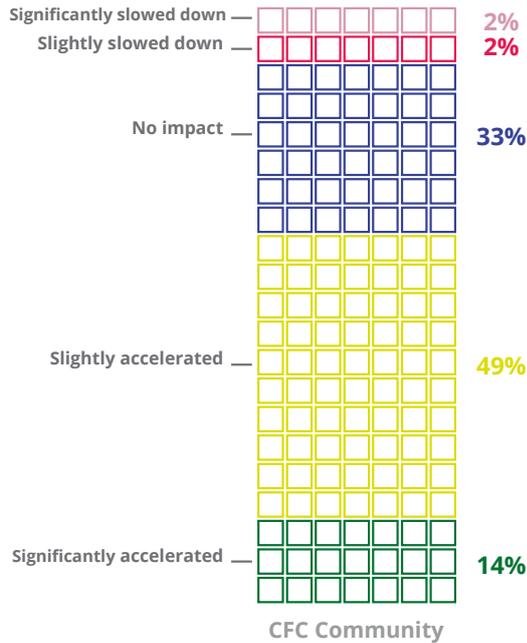
Customers now engage companies much more often through digital channels and evidence suggests a good percentage of this shift will be permanent as they come to appreciate the ease of use and convenience of these channels. One industry where this shift is quite apparent is banking. Many African consumers have already adjusted their day-to-day banking behavior because of the pandemic. For example, 46% of surveyed South Africans said they are considering making a permanent shift to digital banking, 47% said they were unsure and only 8% said no. Meanwhile, the pandemic has spurred companies to accelerate their own digital transformations. In a June 2020 survey led by CFC, 53% of surveyed companies declared that the Covid-19 crisis had accelerated their digital transformation, only 4% mentioned that it had slowed it down. Internal and front process digitalization come out as the main priorities.

THE RECENT SANITARY CRISIS HAS LARGELY ACCELERATED THE DIGITAL TRANSFORMATION OF COMPANIES

Illustration in Morocco

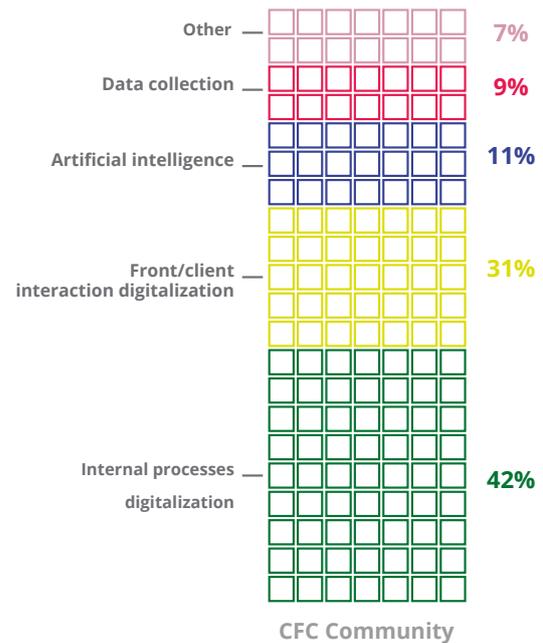
Covid-19 crisis has mainly accelerated the digital transformation of companies

What has been the impact of Covid-19 on the digital transformation of your company?



Internal and front process digitalization are the main priorities

What are your company's current priorities in terms of digital transformation?





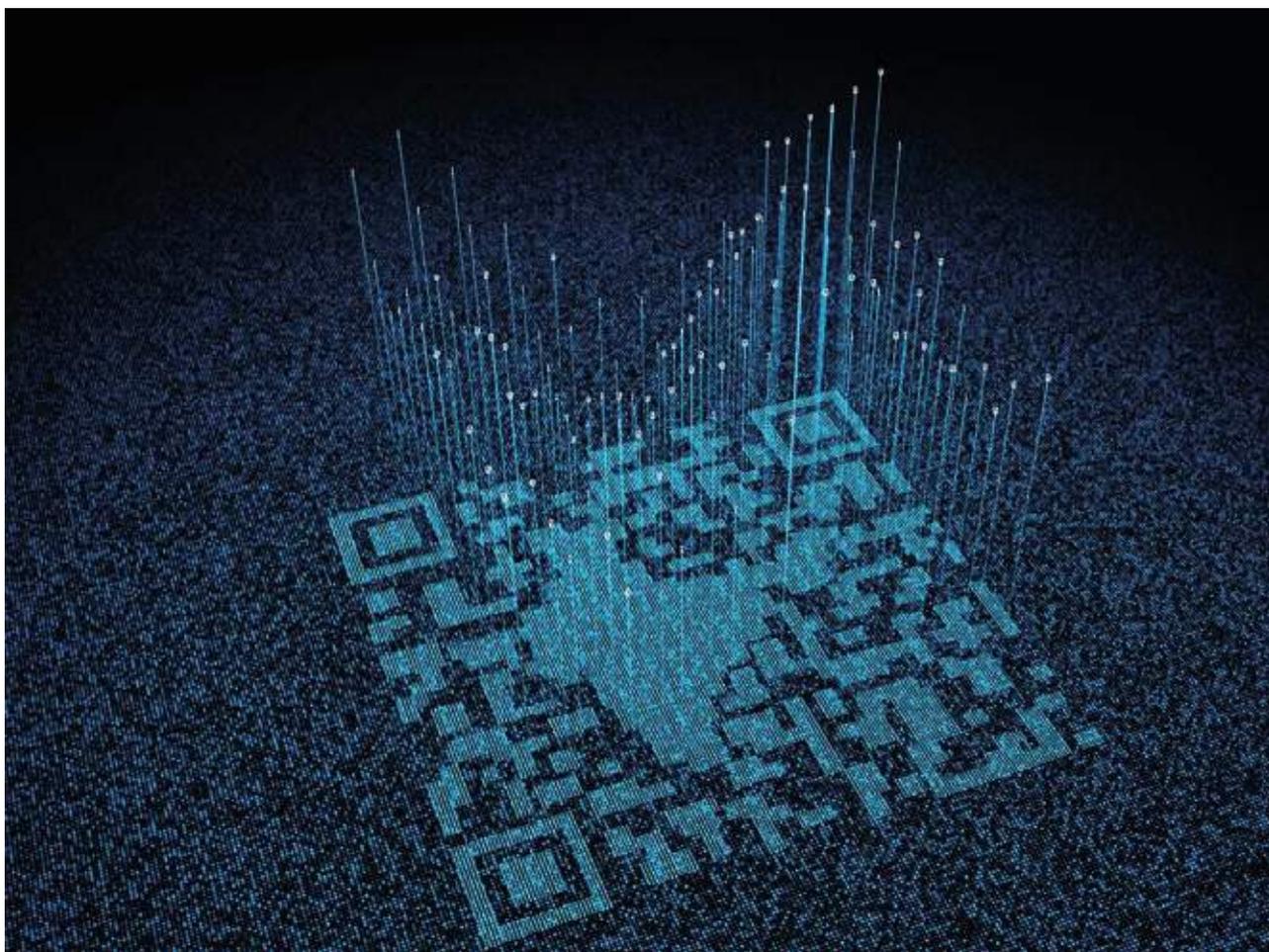
**KEY FOCUS AREA TO WIN
THE DIGITAL BATTLE**

KEY FOCUS AREAS TO WIN THE DIGITAL BATTLE

To keep up this momentum and drive success going forward, companies and governments should coordinate and focus on a few key goals: drive toward scale; find, train and keep digital talent; and build ecosystems that can support digital services.

1. Scale is beautiful

Scale is essential for digital business models to be economically viable and sustainable, and companies and governments should work to achieve scale on two levels: at the individual operations level, and at the market level.



Key challenges often met by African companies during their digital transformation include unclear governance, low financial return, and difficulties to attract and retain talents. To overcome them, top digital performers in Africa are building scale by using centralized digital centers. Among top performers, 68% have either a regional or an international digital centre, compared to 40% among laggards. By concentrating digital capabilities and gaining critical mass within these centres, companies can deliver digital at scale and can, by following six best practices, maximize the value of projects.



See the future.

In a disrupted environment, it can be difficult to stick to business objectives. So, it is important to be clear on your vision and ambition, use cases, and the capabilities needed.



Install a digital control tower.

To simplify decision processes and focus on value, create cross-functional governance and value-driven decision-making processes that focuses on core priorities.



Invest in digital talent.

There is a shortage of digital skills in the market, and companies should not rely completely on external vendors. It is important to build, train and retain your own talent by offering a differentiated Employee Value Proposition.



Develop new ways of working.

Digital success demands agile ways of working, and that does not come naturally to a great number of companies.

There is a need to transform the culture and leadership style to enable new ways of working across the organization.



Build a digital ready IT architecture.

Overcome rigid IT systems. By updating and making IT more flexible, the company can take advantage of scale and cost benefits and decrease the time-to-market.



Pick your 'unicorns' to fund the journey and generate buy in.

Focus energy on a few of the potentially most impactful initiatives rather than spreading resources over many initiatives.



SEE THE FUTURE

Orange has been a leader in leveraging scale across Africa. To foster digital innovation and make support more accessible, the company created Orange Digital Centers in all the countries in which it operates.



INVEST IN DIGITAL TALENT

These centers focus on training (e.g., coding school, "Orange Campus Africa" online platform, and partnerships with universities), accelerating transformation (through mentoring, capacity building, and business partnerships) and funding startups in the local digital ecosystems.



PICK YOUR 'UNICORNS' TO FUND THE JOURNEY AND GENERATE BUY IN

At the same time, the company drove digital transformation across all its customer segments (B2G, B2B and B2C) by creating impactful tailor-made offerings (e.g., collaboration tools, cloud, cybersecurity, connectivity, and financial services). This list of best practices might seem daunting, especially for traditional companies with long-established ways of working, but it is achievable with the right focus and willingness to give up some aspects of the current way of doing business. For example, BCG worked with a bank that implemented agile at scale.



BUILD A DIGITAL READY IT ARCHITECTURE

In year one and two of the bank's digital transformation, it created a technology foundation by building a simplified, API-based web-scale architecture, implementing continuous delivery, and building an agile workforce of highly skilled engineers.

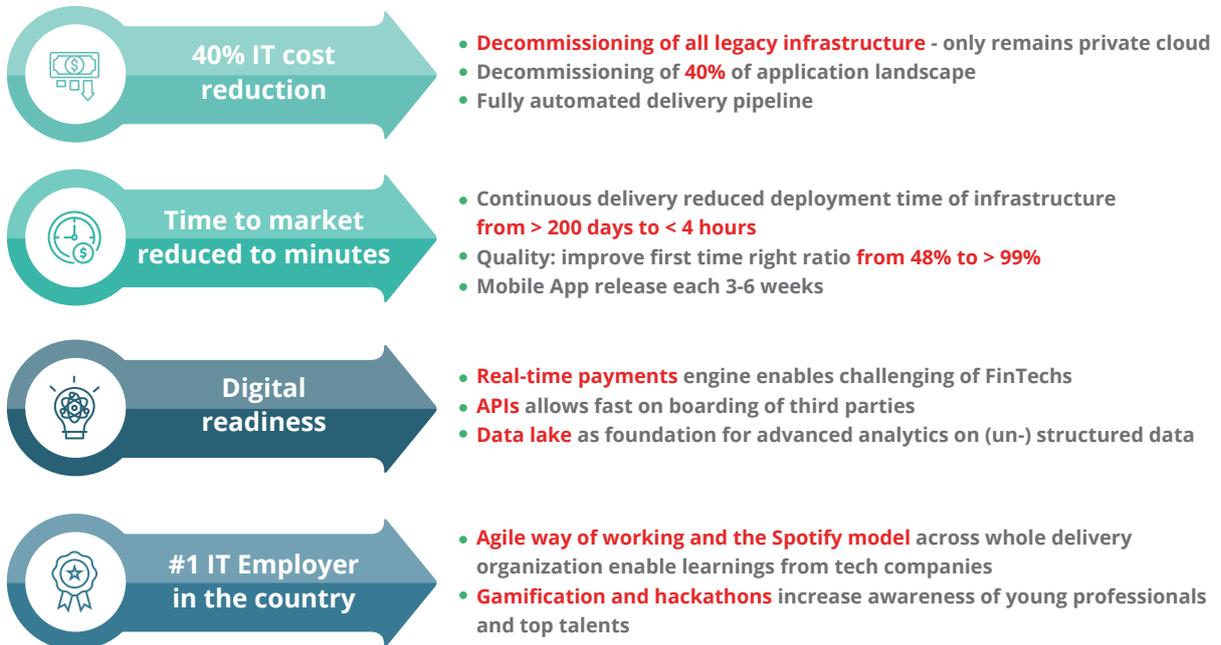


DEVELOP NEW WAYS OF WORKING

In step two, which played out over most of years three and four, the company rolled out agile ways of working broadly across the organization, bringing together business and IT. The results in terms of cost reduction and increased time to market was drastic.

Impacts : Significant reduction of costs and time-to-market, employer brand improvement

Illustration from a leading international bank



Source: BCG case experience

In addition to building scale at the individual operations level, it is also critical to build scale at the market level. Africa is a fragmented territory, which means a multi-country approach is needed to build a viable at-scale business model. The fragmented landscape (43 countries per billion inhabitants vs. 6 countries per billion inhabitants in Asia or in North America) adds cultural and regulatory complexity.

Also, compared to other continents, Africa's population is much less dense; hindering trade and communication. The average distance between main African cities is 4,100 km, vs. 1,300 in Europe, for example. The net effect, is that African companies must aggregate many countries to create adequate scale; even when they do, the economic "surface area", is much smaller than their peers. Therefore, to reach scale, the relevant strategic play is a regional or continental one. By way of illustration, consider the African e-commerce sector; Jumia operates in 14 countries, the same as Amazon, but Amazon's economic surface is 30 times larger.

REGIONAL SIZE IS A MUST TO GROW AT SCALE, SPECIFICALLY IN AFRICA

Illustration of the e-commerce sector

Search for scale effect by the main players in e-commerce...



"e-commerce is incredibly sensitive to economies of scale because of logistics and other costs" CFO, Mercado Libre



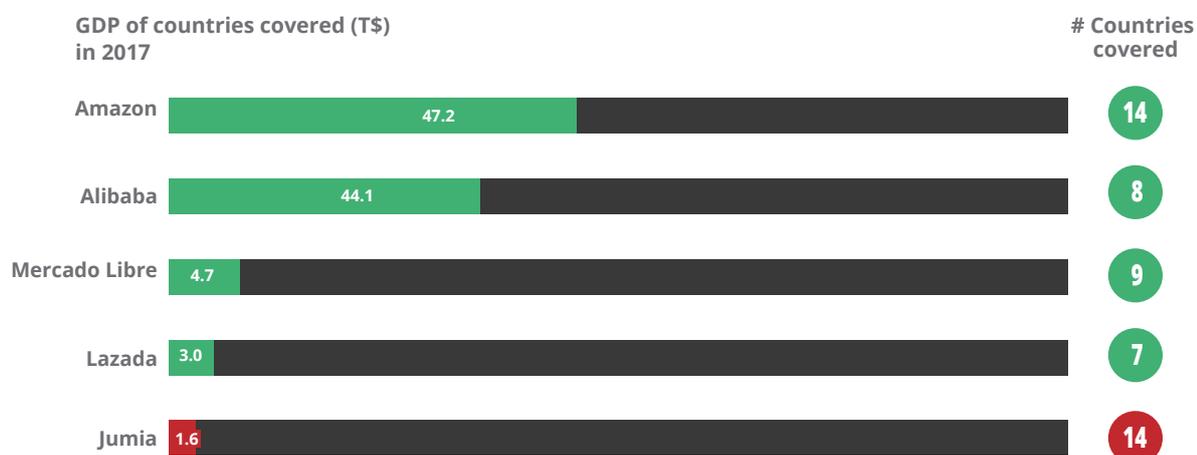
"E-commerce is a thin margin business, and at scale, reliance on manual operations hurts the business's bottom line. In this context, Flipkart has been using Machine Learning (ML) to optimize prices of products and better manage supply chain" CEO, Flipkart



"To achieve profitability, you need scale and efficiency", CEO Takealot



...Jumia forced to aggregate many countries for an economic surface much smaller than its peers



Source: interviews; Crunchbase; World Bank; analyses BCG

2. Secure Talent

Digital talent is scarce in Africa and the global competition for that talent is intense. According to a World Bank/WEF report, African workers have the lowest digital scores across the world, and the talent shortage is made worse by the fact that skilled local employees are highly likely to emigrate. According to a recent BCG study covering eight African countries*, 80% of digital experts are willing to work abroad. Remarkably, however, less than 30% of surveyed companies have implemented dedicated digital talent sourcing strategies.

Given the scarcity of talent and the intense demand, this lax approach to talent management cannot continue. The private and public sectors need to take a coordinated, strategic approach to this effort. For its part, the private sector needs to focus on two broad areas. First, companies need to develop specific employee value propositions (EVP) for digital to address issues that really matter to digital talent, starting with learning and skills development programs, (one unexpected finding of the study is that wages are not among the top three priorities of digital experts).

Remuneration is not the main reason for leaving

Criteria sought by digital talents in companies



1. % of digital talents surveyed who are already working abroad or are ready to move abroad

2. ~ 75% for French and Canadians

3. Rekrute.com 2018 survey on the skills sought by job offer, increase of 14 pts compared to 2017

Source : Press, Decoding Digital Talent BCG / The Networkin study (May 2019), BCG Experience

Since the talent pool is scarce, companies need to grow digital skills internally. This includes upskilling (e.g., a data scientist learning advanced ML techniques), cross-skilling (e.g. a biostatistician learning Python to take on role as a data scientist) or reskilling (e.g. an accountant developing the skillset to be a data architect). Conveniently, these training initiatives dovetail nicely with a strong EVP.

*Algeria, Angola, Ivory Coast, Kenya, Morocco, Nigeria, South Africa, and Tunisia

For example, BGG helped a pan-African Bank create a Digital Center to coordinate all phases of digital talent management. First, the Center identified new recruitment pools and tailored the bank's EVP to improve sourcing and attraction. Second, to improve the odds that new employees would become high performers, the Center updated the recruitment process to include a coding test, culture fit interviews and a business case test. Third, the Center invested in upskilling and retention by creating an Academia. The Academia formalized new ways of working and constantly updated the EVP to reflect what data scientists most valued (e.g., personal challenge/growth, career advancement opportunities, use of new technologies, and collaborative environment).

Meanwhile, at the national level, governments can help fill the talent gap by launching a variety of initiatives to develop and find local talent and attract foreign talent. There are excellent examples of these efforts both inside and outside Africa:

01

Build the culture: Raise awareness, educate, and build digital skills by launching innovation competitions and partner with startup incubators to expose the organization to new digital skills. For example, C4DLab is an R&D and startup incubation hub at the University of Nairobi that develops programs to train and mentor students.

Formalize digital careers: Develop national curricula in close collaboration with digital job providers to meet market needs. In the Netherlands, the National Science Agenda and the Digital Society Research Agenda of the Association of Universities cooperate to build dedicated curricula for digital jobs.

02

03

Push life-long learning: Implement programs for continuous upskilling for technology entrepreneurs and employees. In Nigeria, many specialized private training centers in technology and digital have sprung up to cover upskilling needs for individuals and companies (e.g. Mest, Andela, and TD4PAI).

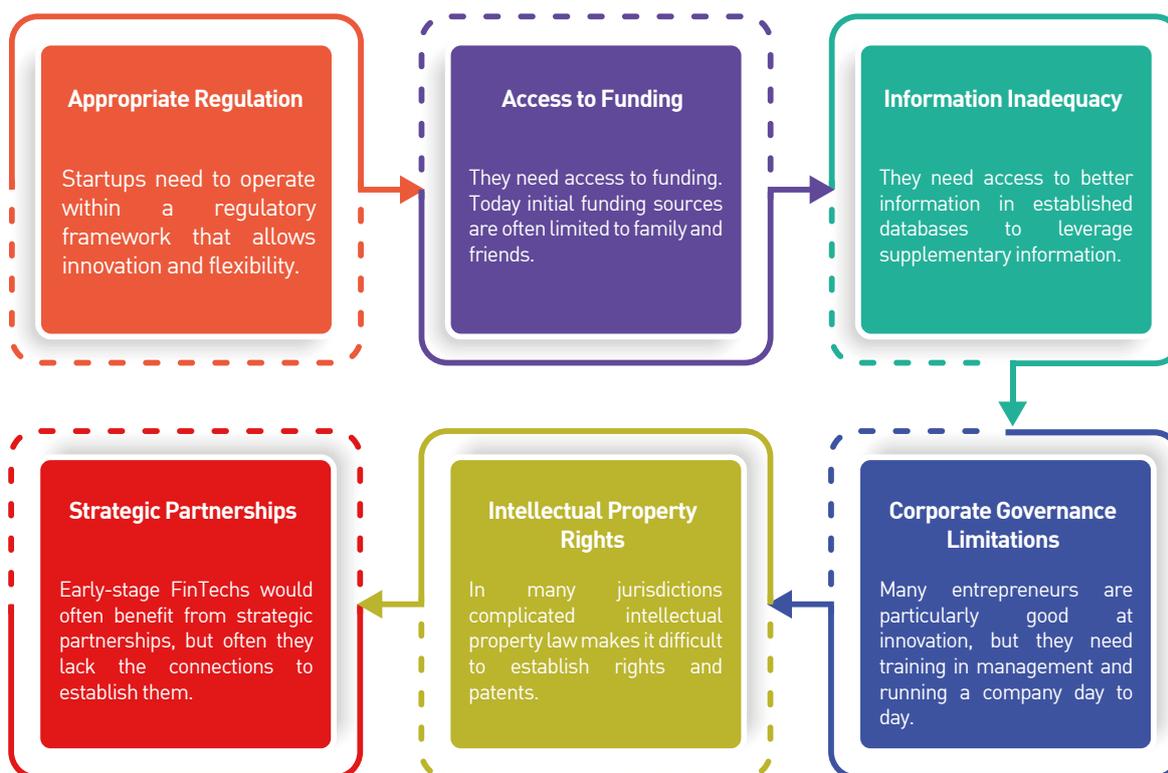
Attract foreign digital talent: Adopt incentive measures to attract foreign experts or entrepreneurs to increase the talent pool. China designed the Thousand Talents Plan to recruit 2,000 high-quality overseas talent, including robotics experts. The plan provides salaries, research funding, lab space, and other incentives to lure experts into researching for China.

04

3. Build Digital Ecosystems

Strong ecosystems can accelerate the development and adoption of digital services. To do so, it is important to involve all stakeholders—governments, businesses, investors, incubators, universities, and private operators—to work together. Digital ecosystems are particularly important to nurture entrepreneurs and startups, which in turn fuel the development of a nation’s technological landscape. Today, even the main economic hubs in Africa are lagging: only 2,000 startups in South Africa and 3,500 in Nigeria, for example, compared to 6,000 in Israel and 10,000 in France.

Currently, the African startup ecosystems face six key limitations.



So how best to tackle this list of challenges? Based on BCG and CFC research, well-organized digital ecosystems rest on four pillars: financing and market access, regulation, platforms, and orchestrators.

Improving financing options and market access

While digital ecosystems are important for companies of all sizes as they work to improve their digital maturity, the issue of financing and market access is most relevant to startups and early-stage companies. They need access to investment/funding through various vehicles, such as crowdfunding, corporate venture capital, venture capital, development finance institutions, and public investment. There is some good news here. Startup investment in Africa is growing faster than the world average, up 38% from 2015-2018 vs. 16% globally, with some countries such as Kenya and Nigeria clear beneficiaries. Still, early stage investments represent just 0.4% of GDP in Africa vs. 2.3% globally.

Different investor profiles exist in the African ecosystem

	 Crowdfunding	 Corporate VC	 Venture Capital	 Public investment	 DFIs ¹
Goals	<ul style="list-style-type: none"> Invest small amounts individually in risky projects 	<ul style="list-style-type: none"> Inject innovation into their organization 	<ul style="list-style-type: none"> Supporting startups over the long term 	<ul style="list-style-type: none"> Develop entrepreneurship and stimulate innovation 	<ul style="list-style-type: none"> Have a social, economic, or environmental impact
Actions lever	<ul style="list-style-type: none"> Grants/Donations Minority stake 	<ul style="list-style-type: none"> Minority stake with buyback option Incubator Innovation lab 	<ul style="list-style-type: none"> Minority Stake Incubator Expertise 	<ul style="list-style-type: none"> Donations & matching programs Tax credit Minority stake or JV Loan 	<ul style="list-style-type: none"> Donations Minority stake Concessional loan Guarantee

1. Development Financial Institutions

Sources : KTH Royal Institute of Technology in Stockholm, Analyses BCG

The high-risk profile of startups, their need for operational and technical expertise, and their need for market access, make corporate VCs particularly important players. They are involved in about a third of early stage deals. But while the private sector should play a major role in improving financial access, governments should step in where they can use the unique set of tools at their disposal, including tax credits, grants, and loans. In general, these initiatives are still rare among African governments, but there are plenty of good examples of public investment from other regions that they can look to for inspiration.

- **Research:** In Germany, The Central Innovation Program for SMEs funds business R&D. With a €559 million budget in 2019, it is the largest program to support innovative SMEs in Germany.
- **Tax Cuts:** In the US, The Tax Cuts and Jobs Act passed in 2017 offers a 20% deduction to small business owners for pass-through income.
- **Venture Capital:** The Rwanda Innovation Fund will leverage public funding to crowd in up to \$70 million in additional funding closes to make equity investments focused on funding tech-enabled SMEs and to develop the country's entrepreneurial ecosystem capacity.
- **Technology adoption and financing:** In Japan, the SME Unit of the Japan Finance Corporate makes special purpose loans to support the implementation of government policies. This includes "Loans to Boost Corporate Vitality," which helps firms enhance manufacturing technologies.

Using regulations to set the stage

Governments need to address emerging regulatory pre-requisites for ICT development, such as personal data protection, cybersecurity, IP, etc., and create a regulatory framework that allows for innovation and flexibility at companies of all sizes. They have four primary regulatory levers at their disposal.

- **Promote inclusive and secure technologies:** Promote investment and security through technology policies (e.g. creating large spectrums to encourage companies to compete and invest in connectivity), and support open data platforms and data security by passing rules that encourage cybersecurity investment. They could also encourage the creation of a national data/AI center to provide open, massive, and free data.
- **Support innovation:** Protect and stimulate R&D with IP laws and patent protection, push digital literacy and life-long learning in partnership with universities, promote ease of doing business, and support initiatives to help specific sectors, such as e-health.
- **Push digital adoption:** Accept or mandate digital ID for government services, such as visa, pension, and health insurance. Offer tax credits for adopting digital services, and perhaps apply coercive regulations such as enforcing a cashless policy.
- **Develop flexible regulation:** Promote service-based regulations, without regard to industry, to ensure regulatory consistency throughout the ecosystem.
Here again there are examples of global best practices, as well as some already underway in Africa.



ILLUSTRATION OF REGULATORY INITIATIVES IN AFRICA OR GLOBALLY TO DEVELOP DIGITAL ECOSYSTEMS



Promote inclusive & secure technologies

Investment-friendly Tech. policies

 2015 auction by Germany resulted in sufficient spectrum availability (700, 900 & 1800 MHz) for all players and prices allowing for infrastructure build out

Open Data platform

 Data.gov.UK-over 8000 datasets available for business in every industry

Support data security

 "Secure by Design" policy for IoT device makers, by Department for Digital, Culture, Media and Sports, in an effort to improve protections

 Japan: New cybersecurity strategy, aimed at encouraging industry to invest more in cybersecurity for operations, risk mgt & innovation



Support innovation

Protect a Stimulate R&D

 Singapore: Master Research Collaboration Agreement, which simplifies, standardizes and shortens IP negotiations

 NL: PPP to boost innovation in big data analysis, cybersecurity, blockchain, AI, 5G and quantum computing

 US: Established SBIR (innovation competition) to stimulate high tech SME innovation research

Promote ease of doing business

 Singapore: Established one stop shop for Startups offering range of solutions

Support specific initiatives

 Ireland : Department of Business, Enterprise and Innovation launched a scheme to support e-commerce start ups



Push digital adoption

Encourage usage of digital ID

 Singapore: SingPass provides online ID through which users can access 270 services from 58 gov. agencies using one identifier and password, starting from a single online portal

Adopt digital for e-gov services

 Nigeria: Mobile wallets provided to single mothers to distribute assistance

Incentivize digital usages

 Kenya, M-Pesa: 10% increase of the retailer margin on phone recharges

Apply coercive regulation

 Bulgaria: Obligation to verse health reimbursements electronically



Develop a flexible regulation

Promote functionally-based regulation

 Europe: GDPR applies to any processing of personal data and follows a risk-based approach, placing the responsibility on companies to comply with the rules, implement comprehensive policies & safeguards and demonstrate compliance

Adopt regulatory sandbox approach

 NL: Contact point set up where businesses can report obstacles to digital innovation in laws and regulation

 NL: Monetary and financial market authority enable to explore innovative financial products, services or business models

 Singapore: Policies enable fil and FinTech startups to experiment with services

Growing technology and platforms at scale

Develop the technology infrastructure necessary to unlock the ecosystem's full potential (e.g., broad investment in open API for telcos) or create new ecosystems (e.g. a national cloud strategy, digital ID, open data). It is also important to anticipate future ICT industry development by, for example, building an interoperable framework and spectrum management.

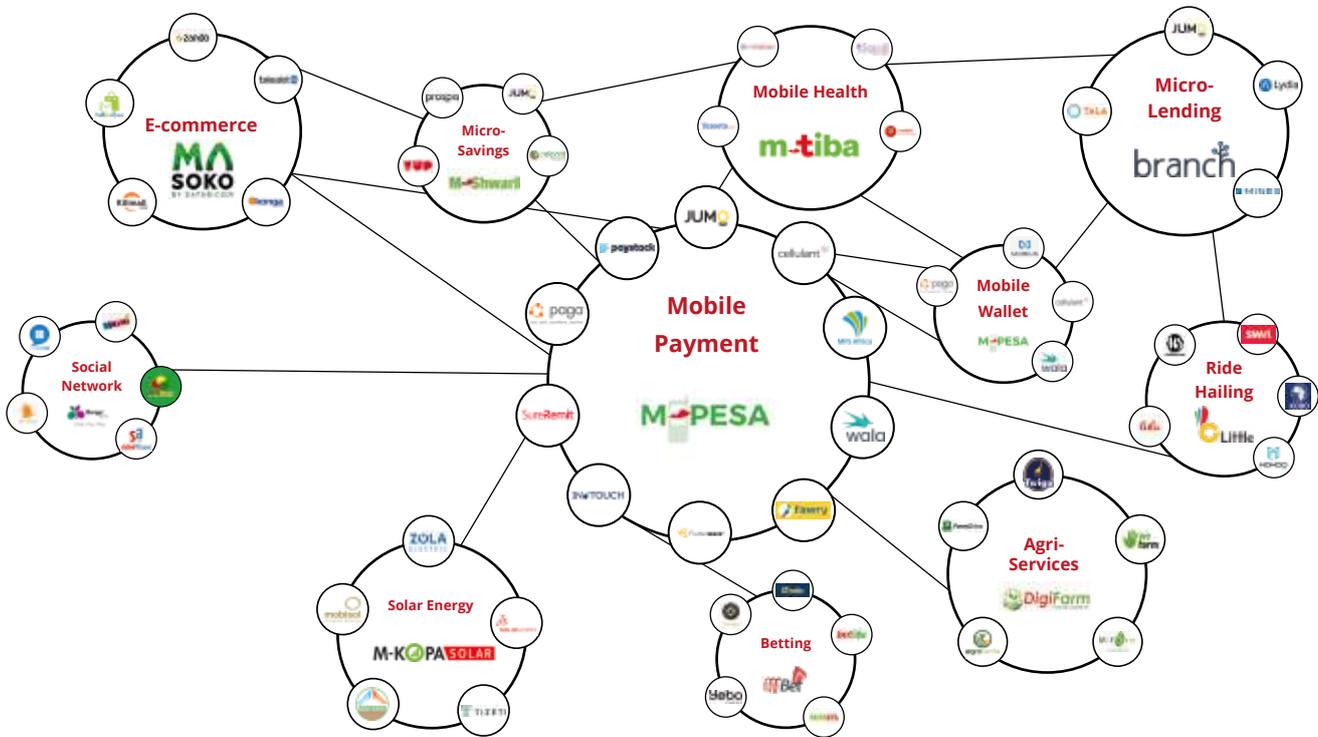
For example, several mobile network operators (MNOs) in Africa made major investments in open APIs to open their mobile money platforms. These efforts have had three direct impacts on the digital ecosystem: innovation around mobile money technology increased; startups including aggregators and service developers proliferated and competition intensified; and MNOs put themselves squarely in the center of the digital ecosystems, generating opportunities for partnerships (e.g. merchants or startups) and integration of startups.

Leveraging orchestrators

Orchestrators are the glue that hold ecosystems together. They make sure they operate efficiently, and they catalyze ongoing development. These larger players have numerous channels and connections throughout the ecosystem, facilitating the interaction of all members and helping startups get off the ground. A great example is M-Pesa, which leveraged its early success in mobile financial services to develop a diversified ecosystem (e-commerce, agri-services, solar energy, etc.).

ORCHESTRATORS DRIVE THE DEVELOPMENT OF NUMEROUS STARTUPS IN DIVERSIFIED SECTORS

East African ecosystem example



One African ecosystem stands out: Kigali Innovation City is part of Rwanda's National Strategy for Transformation 2017-2024. The cluster is one of the projects that aims at establishing Rwanda as a globally competitive knowledge-based economy and middle-income country. KIC hopes to attract biotech firms, technology companies, financial and healthcare services as well as foreign and domestic universities. Its key accomplishments include:

- Enabling legal and regulatory frameworks (Start-up Act in progress)
- Business-friendly environment (business facilitations and incentives, mobility, and friendly visa policies...)
- World-class ICT infrastructure developments (e.g., 4G/WIFI coverage, countrywide broadband infrastructure)
- Concerted efforts to mobilize and activate linkages across public and private sectors, domestic and international investors/companies, academia, and other innovation ecosystem stakeholders (e.g., R&D Labs, incubators/accelerators)
- Pan-African talent pool development: International universities based in KIC with over 35 African countries represented (including Carnegie Mellon University Africa, African Leadership University and African Institute of Mathematical Sciences)

Conclusion

While Africa trails other regions in terms of digital adoption and maturity, the future is promising. The digital infrastructure is being built across the continent, and both supply and demand are improving. That said, there is enormous work to do. The private and public sectors must begin to coordinate more regularly and strategically. Together they can help build the scale necessary for digital models to succeed, to nurture and hang on to homegrown talent, and build ecosystems and innovation hubs to aid entrepreneurs and startups by improving financing options, regulation and technology.



The digital leaders in Africa are already working on all these fronts with success, proving that digital maturity correlates strongly with marketplace reach and performance. The stakes could not be higher. The availability of digital services is critical to drive economic development and to lift the fortunes of Africa's 1.2 billion people.



CASE STUDIES

A New Conversational Business Model in Nigeria



United Bank for Africa (UBA), a pan-African company headquartered in Lagos, Nigeria with subsidiaries in 20 African countries, wanted to reduce call center volume and develop a more innovative and efficient way to interact with its more than 10 million banking customers in Nigeria—and to do so around the clock.

Given the high percentage of smartphone users among its customers, UBA decided to develop an AI-powered chatbot to provide 24/7 financial assistance (e.g., to open a bank account, check credit, pay bills, transfer money, and get financial news updates). Dubbed Leo, UBA designed the service with its young customers specifically in mind, creating a friendly chatbot persona that impersonates a young, fashionable African. And to ramp up adoption as quickly as possible, UBA launched the service through Facebook and WhatsApp platforms, both used by about 40% of the Nigerian population.

The results were impressive. After one year, one million customers (72% between 18 and 34 years of age) had 70 million conversations on Leo. And throughout that time, UBA was continuously refining the chatbot by gathering and incorporating customer feedback. This allowed the bank to improve the chatbot persona and customer engagement and offer products and services very close to each customer's needs.



Major telco enables digital transformation in Africa



Orange is a major global telco player with a strong presence in Africa and the Middle East and 5.6 billion € in turnover. The company covers 18 countries in the region, has over 18 000 employees and 124 million customers including 19.6 million active Orange Money customers.

Orange has been a leader in leveraging scale across Africa. To foster digital innovation and make support more accessible, the company is creating Orange Digital Centers in all the countries in which it operates. These centers focus on training (e.g., coding school, "Orange Campus Africa" online platform, and partnerships with universities), accelerating transformation (through mentoring, capacity building, and business partnerships) and funding startups in the local digital ecosystems. At the same time, the company drove digital transformation across all its customer segments (B2G, B2B and B2C) with tailor-made offerings (e.g., collaboration tools, cloud, cybersecurity, connectivity, smart city solutions and financial services).

In the case of Orange Africa, Covid-19 has been a silver lining and acted as a catalyst to its digital transformation. The company has reacted to the crisis by being innovative and agile thanks to the adoption of remote work, multi-channel distribution strategies, personalized solutions for corporate clients, light e-KYC for the onboarding of new customers and transaction fees waived for Orange Money services in some countries.

So far during the Covid-19 crisis, it offered more than two million e-education packages, and has allocated 50 million euros to support the digital ecosystem through the Orange Digital Ventures investment fund. It is worth mentioning that Orange owns the 'Teranga Capital Orange' fund (7 million euros) and invests as well in funds dedicated to African SMEs such as 'Comoé Capital', 'Partech Africa' or the 'French African Fund' managed by AfricInvest.

Last, Orange Ventures Africa & Middle East announced recently the results of its MEA Seed Challenge along with the inauguration of its new seed investment activity to finance 100 startups by 2025. Launched in June 2020, the Orange Ventures MEA Seed Challenge called for applications from seed stage tech startups from Cameroon, Côte d'Ivoire, Egypt, Jordan, Morocco, Senegal and Tunisia. Over 500 business projects have been submitted and vigorously examined by investment teams and local Orange teams and 670,000 euros will be invested as a result in some of the most promising startups around the continent.

Kigali Innovation City fosters entrepreneurship, innovation, and digital transformation

Kigali Innovation City is a flagship project to drive Rwanda's vision to become a globally competitive knowledge-based economy and middle-income country. Launched in 2018, Kigali Innovation City is a technology park under development and is anchored by four world-class universities including Carnegie Mellon University - Africa. The Government of Rwanda has partnered with Africa50 to build the rest of the site into a mixed-use development to foster technology and innovation to serve the African continent.

Kigali Innovation City is part of Rwanda's National Strategy for Transformation. The initiative's ambition, is to create 50,000 jobs, train 26,000 students, reach the \$150 million ICT exports annually, and attract \$300 million of foreign direct investments per year.

Undertaken initiatives and success factors include:

- Pan-African talent pool development: International universities based in KIC with over 35 African countries represented (including Carnegie Mellon University Africa, African Leadership University and African Institute of Mathematical Sciences)
- Proof-of-concept destination: Rwanda is a pioneer in adopting new technologies (e.g., first drone delivery service for blood, telemedicine, etc)
- Concerted efforts to mobilize and activate linkages across public & private sectors, domestic & international investors/companies, academia and other innovation ecosystem stakeholders (R&D Labs, incubators/accelerators...)
- Ad-hoc enabling legal & regulatory reforms (Start-up Act in progress)
- Business-friendly environment (doing business facilitations & incentives, mobility & friendly visa policies...)
- World-class ICT infrastructure developments (4G/WIFI coverage, countrywide broadband infrastructure...)



A leading African bank increases cross-sell and customer retention



An African bank's product-centric, mass-marketing approach was generating low returns and the bank was suffering significant customer churn. It chooses a new course, determined to better leverage data and analytics to improve customer engagement to boost cross-selling and retention. These efforts led to a 24% lift in cross-sell in the first year, \$30 million a year in incremental profits, and a 14% reduction in customer churn.

A leading bank reboots its digital transformation



Five years after a pan-African bank made digital transformation a key strategic priority, the bank had achieved less than 20% of its goals. Digital use cases had only been partially integrated into business processes—with many digital initiatives stuck in prototype mode. Moreover, the governance of the digital transformation was uncoordinated and ineffective.

To reboot the digital transformation, leaders of the effort worked closely with all business units to identify, size and assess possible use cases. With this input, the bank created a transformation roadmap that prioritized the highest impact digital use cases. The bank also set up agile business/IT governance. A “control tower” was created and given a comprehensive view of the entire digital transformation. On a weekly basis, managers in the control tower would prioritize use cases based on business value, allocate resources, and steer the company along the roadmap.

The bank also realized that the digital transformation could not succeed without a keen focus on talent. To this end, it created a digital center within the bank to coordinate digital talent and expertise and set up best-in-class sourcing, recruiting and retention capabilities.

First industrialized use cases are generating a 50 million € boost to the bottom line.

An online retailer optimizes delivery routing



Retailers face huge infrastructure constraints when it comes to delivery. Online retailers feel these constraints even more acutely since they do not have physical stores to sell their products. In response, an African online retailer built a platform to optimize delivery routing and reduced logistics costs by 35-50% compared to its competition.

An African Insurer Plans to Offer Insurance on Demand



A North African insurance company made a strategic decision to begin offering “insurance on demand”* to improve its product mix and boost revenues. This ambition, leaders realized, would take more than simply leveraging its own data. It would also require a full-scale data transformation.

To this end, the insurer moved on several fronts. While it cleaned up and enriched existing customer data it also set out to gather more and better data. It deployed specialized tools to tap social networks for additional client information. It designed and launched a free application for customers that helped the bank to capture more data. And it developed algorithmic models to better understand client behavior.

By enriching and gathering all this data, and making sure that the data was extremely high quality (its data has proven to be 90% accurate), the insurer has begun a data transformation that will eventually allow it to offer insurance on demand with a very high level of confidence.

*Insurance on demand allows consumers to purchase insurance coverage when the asset requiring coverage is in use and at risk.

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