



# Tech entrepreneurship ecosystem in Nigeria

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Commissioned by **Google**



# Preface

The digital era has brought a fundamental shift in the global economy, pushing the limits of innovation and redefining the boundaries of global trade. Innovations have never been faster paced, more widespread, or scaled up more quickly, creating billion-dollar “unicorns”. Over the last 15 years, the ICT sector – as a backdrop to innovation and digital advances – has seen its share grow from just 1.3 percent of the global economy to 3 percent, and it’s set to grow even more.<sup>1</sup>

Nations that nurture a digital- and innovation-based culture have pioneered the global shift toward knowledge-based industries and have enjoyed extraordinary wealth (and job creation), while transforming the way people live and do business. This shift is made possible by substantial tech entrepreneurship activity within a supportive environment that includes both government and private-sector contributions. Initiatives by leading countries are now regarded as best practices for aspiring nations that want to create a similar impact, and the global conversation around regulation and innovation policies is framed around such practices.

Countries that are more reliant on manufacturing or natural resources are eager to capture a bigger share of the expanding digital economy. In order to deliver on these aspirations, they are exploring ways to transform the fundamentals of their economic structures and to deploy more resources to cultivate competitive tech entrepreneurship ecosystems. Establishing high-impact tech entrepreneurship as a sustainable source of employment is especially critical for nations with young populations and a need for new sources of job creation.

Given the importance of strong fundamentals in attracting both domestic and global interest in the tech entrepreneurship ecosystem, countries which fail to make broader reforms in education, good governance and create a business environment that supports entrepreneurship risk falling behind.<sup>2</sup>

Google has commissioned this study to identify areas for improvement in policies and regulations which affect tech entrepreneurship in Nigeria as part of a six- country study that includes the Turkey, Russian Federation, South Africa, United Arab Emirates (UAE) and the Kingdom of Saudi Arabia (KSA).

For the purposes of this study, entrepreneurs are defined as those individuals who focus on building a rapidly scalable business venture with the aim of innovating, improving, or transforming the current way of doing things.<sup>3,4</sup>

The entrepreneurship domain, according to our definition, includes the ‘startup’ and ‘scale-up’ phases of the business lifecycle when companies experience high growth in revenues and numbers of employees while validating their value proposition. Furthermore, we specifically address technology-driven entrepreneurship – companies with technology-enabled business models and a focus on hyperconnectivity between networks, people, businesses, things, and hardware.

Using these definitions, we began with comprehensive research of existing literature to identify factors that correlate with tech entrepreneurship success, grouping them into nine components. Some of these components explain the strength of the ecosystem that supports tech entrepreneurship, while others point to the results achieved.

In our view, the inputs that form the preconditions for success and the resulting outputs feed each other in an iterative process, which determines the health of a tech entrepreneurship ecosystem. Factors such as the quality, connectedness, and efficiency of a tech entrepreneurship ecosystem – which we refer to as the inputs – create the conditions for sustainable success. Meanwhile, effectiveness in generating tangible results such as growth, employment, the creation of wealth along with further innovation – the outputs – cultivates a stronger ecosystem by attracting more of the required inputs. This holistic perspective is reflected in the framework we used to assess tech entrepreneurship success.

Based on our assessment, we identified leading and emergent countries in tech entrepreneurship, putting the USA, Singapore, Israel and UK at the top of the list. Identifying successful countries provided a filter for selecting best practices as well as setting performance indicators that aspiring countries such as Nigeria can use to assess their status, identify improvement areas, and apply approaches that fit the nature of their own ecosystems.



<sup>1</sup> Selvam, M. and Kalyanasundaram, P. “Global IT/IT Enabled Services and ICT Industry: Growth & Determinants.” [http://globalbizresearch.org/Chennai\\_Symposium/conference/pdf/C549.pdf](http://globalbizresearch.org/Chennai_Symposium/conference/pdf/C549.pdf) (accessed September 27, 2017)  
<sup>2</sup> World Bank. “Digital Dividends.” <http://www.worldbank.org/en/publication/wdr2016> (accessed September 27, 2017)  
<sup>3</sup> Schumpeter, J. 1942. Capitalism, Socialism, and Democracy. New York: Harper & Bros.  
<sup>4</sup> Global Entrepreneurship Monitor (GEM) Global Report 2016/17, Global Entrepreneurship Research Association 2017

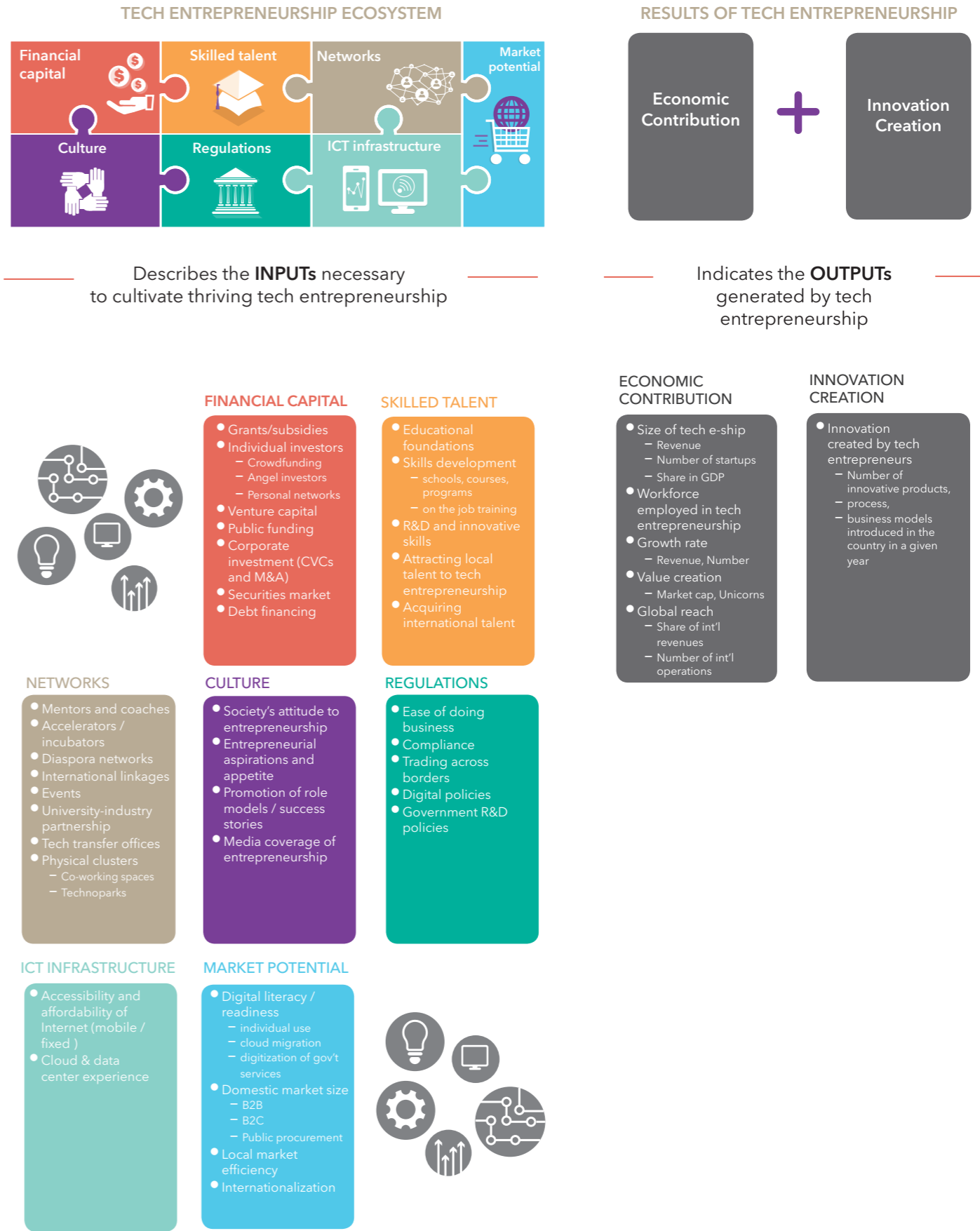
To put Nigeria’s status in context, we have compared input and output indicators for Nigeria against a peer set of countries with comparable development stages, similar characteristics, or geographic proximity.

In the final stage of the study, we conducted extensive primary research in Nigeria to complement the desk research. Whereas the desk research served to develop the structure of the tech entrepreneurship ecosystem and identify current initiatives that are in place to cultivate it, we gained insights and understood the context and impacts by conducting bespoke research with ecosystem participants, together with Ventures Platform. The policy recommendations that are part of this report are suggestions from the Nigerian entrepreneurial community for further policy initiatives that will help strengthen the development of the tech entrepreneurship ecosystem in Nigeria.

In total, we interviewed 31 stakeholders (representing different components of the ecosystem), spanning public and private as well as institutional and individual perspectives. The full list of participants is presented in the Acknowledgments section.

# OC&C’s framework for assessing tech entrepreneurship success

FIGURE I: THE TECH ENTREPRENEURSHIP ECOSYSTEM IS REPEATEDLY STRENGTHENED WITH TANGIBLE ECONOMIC RESULTS AND INNOVATION



# Tech entrepreneurship ecosystem – Inputs

The tech entrepreneurship ecosystem and its components constitute the inputs in OC&C's tech entrepreneurship success assessment.

One definition of an entrepreneurial ecosystem is:

*"a set of interconnected entrepreneurial actors, organizations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies), and entrepreneurial processes (e.g. the business establishment, growth, levels of 'blockbuster entrepreneurship', number of serial entrepreneurs, degree of sell-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment."*<sup>5</sup>

OC&C's Tech Entrepreneurship Ecosystem Framework (Figure II) presents the attributes outlined above, and the way in which they interact and influence one another. These seven components, working together, provide the habitat needed to generate successful tech entrepreneurship.

Best-in-class countries are able to offer **equity funding sources** in greater volume and variety (i.e. business angels, venture capital firms, and government investment funds). **Deep and efficient stock markets and the high frequency of deals** make the entrepreneurial challenge financially worthwhile and are instrumental in drawing in more resources – in terms of funding, skilled talent, and support – into the ecosystem.

These countries have a larger number of **highly skilled** employees and a **labor force** created by **education systems and talent attraction initiatives that support tech entrepreneurship**. These ecosystems are characterized by a **greater pool of scientists, engineers, and research universities** that foster an innovation culture.

Benchmarks demonstrate a superior level of **network development** that is characterized by the availability of entrepreneurial networks, startup associations, accelerators, incubators, co-working spaces, technoparks, etc. There are **stronger innovation linkages between academia and the private sector** such as joint-venture/strategic alliance deals, and industry-university collaborations.

In the best-practice countries, there is a higher **individual risk appetite**, coupled with **cultures that are more supportive of entrepreneurship**. **It is easier and less bureaucratic to start and run** companies as an entrepreneur, and the **risk of failure is better managed**.

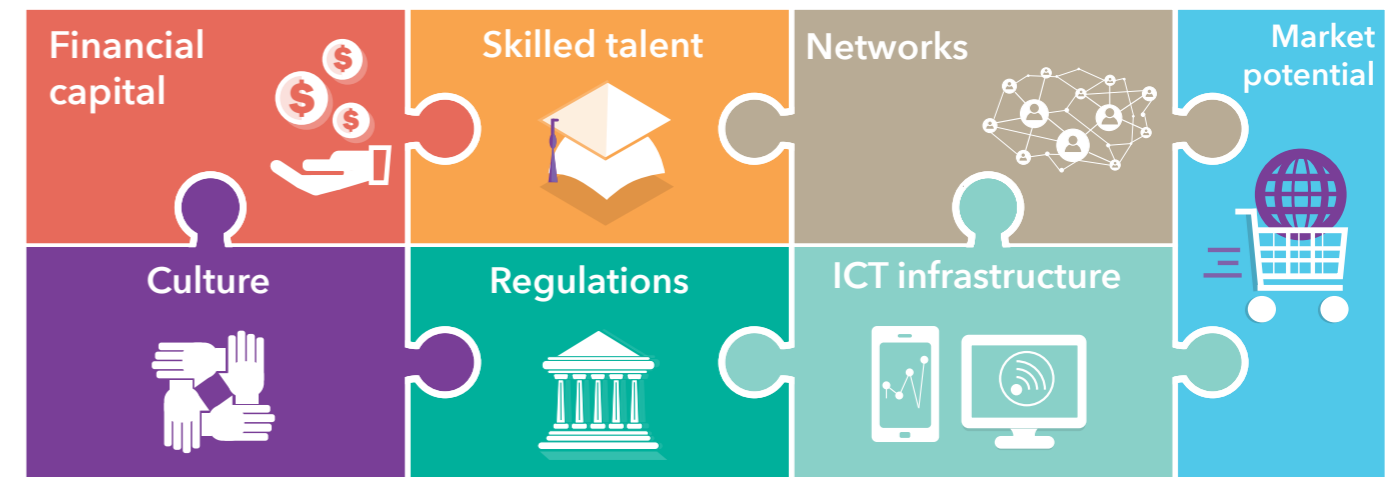
**Supportive digital policies** – laws related to data flow, cybersecurity, data privacy, IP protection, etc. – and **strong innovation capacity** steered by governments' R&D policies provide a sturdy backbone for the ecosystem. **Open foreign trade policies** enable these countries to internationalize their businesses.

Another fundamental differentiator is **reliable fixed and mobile internet infrastructures at affordable prices**. Digital policies that support **cross-border data flows** lead to **higher utilization of efficient, cost-effective global cloud services**.

Lastly, we also see that leading countries possess **considerable (rich) market potential and those that don't have a big enough market are globally oriented** from the start. In the domestic market, **consumer digital literacy is of great importance** as **consumers are then more likely to try new digital products**, thus creating attractive market conditions for B2C companies. In addition, advanced markets are efficient and competitive, with minimum barriers of entry for business startups.

<sup>5</sup> Mason, Collin and Brown, Ross. "Entrepreneurial Ecosystems and Growth Oriented Entrepreneurship." OECD-LEED. <http://www.oecd.org/cfe/leed/entrepreneurial-ecosystems.pdf> (accessed October 2, 2017)

FIGURE II: TECH ENTREPRENEURSHIP ECOSYSTEM FRAMEWORK



Source: OC&C analysis

## Role of the government in strengthening the tech entrepreneurship ecosystem

While many actors are involved in the ecosystem, the role of government deserves attention. Government policy can affect all entrepreneurial actors and components of the ecosystem: resource providers, entrepreneurial connectors within the ecosystem, and the entrepreneurial environment of the ecosystem. The government's contribution is important because of its direct impact on the ecosystem through the creation of favorable terms and the provision of incentives for high-growth startups. Moreover, government exerts its influence on all components to create a constructive environment and facilitate interconnectivity between these components.

In the benchmark countries, the shift to knowledge-based industries has taken place both via favorable policies that support the development of each component of the ecosystem and greater government funding for high-growth firms.<sup>6</sup> Governments have played a leading role in successfully facilitating tech entrepreneurship ecosystems through their impact on all seven components of the ecosystem.

<sup>6</sup> Global Entrepreneurship Monitor, Global Report 2016/2017

# Executive summary

## Nigeria at a glance

Nigeria is the largest economy in Sub-Saharan Africa with a population of c. 186 million and a GDP of USD 406 billion. It is heavily dependent on oil and gas revenues and major drops in global oil prices triggered a recession in 2016 when the economy shrunk by 1.5 percent. The **Economic Recovery and Growth Plan**, which was published in February 2017, **focuses on making Nigeria globally competitive by investing in its people. The plan recognizes the importance of the ICT sector as a key enabler.** Youth employment within ICT and creating a supportive business environment for the ICT sector are thus top priorities.

## The results of tech entrepreneurship – Outputs

Nigeria's tech entrepreneurship is in its early stages but has great future potential. **Startup density hints at great potential for new startups and their longevity indicates that, once founded, tech startups are likely to persevere in Nigeria.** The **Nigerian tech startup ecosystem has already produced three exits over USD 100 million: namely Andela, Konga, and Jumia.** The online marketplace Jumia, which was launched in Lagos in 2012, has 3 million customers, 3,000 employees, and operates in 23 countries. **Jumia group became the continent's first 'unicorn' with a 1 billion USD+ valuation in 2016. Nigeria doesn't perform well in innovation-related performance indicators,** but proposed legislation on National Research and Innovation is expected to make an impact on innovation creation and increase the contribution of knowledge sectors to the economy. The performance comparison of Nigeria against the benchmark set can be found on page 22.

## Nigerian tech entrepreneurship ecosystem overview – Inputs

Nigeria has **a vibrant entrepreneurial culture fueled by abundant activity, despite its infrastructure challenges. Ecosystems have**

**developed in Lagos and Abuja with unique networks of players, areas of focus, and gaps that need to be addressed.** The government, in its efforts to deliver economic and job growth, is developing entrepreneurship initiatives, policies, and programs that take into consideration each state's needs.

**Repatriated startup founders are leading Nigeria's increased focus on innovation** by integrating knowledge acquired abroad into the local ecosystem.

**Marketplace applications represent the most popular tech entrepreneurship area in Nigeria, with SMEs increasingly using these platforms to sell their goods & services.** E-commerce is another large field for startups. **B2B tech entrepreneurship is still latent,** given the requirements for relevant sector expertise, market entry barriers and payment cycles. **The public sector procurement requirements that are in place make this market inaccessible to many startups.**

In order to achieve its growth goals, the **Nigerian government** has initiated a number of endeavors and agencies to support the tech entrepreneurship ecosystem, but it **will need to focus on the effectiveness of its initiatives by featuring cross-agency collaboration and input from entrepreneurs.**

Our review of the Nigerian tech entrepreneur ecosystem **with active participants elevated three areas for improvement:**

- Gaps in Nigeria's infrastructure raise barriers to all tech entrepreneurs in the ecosystem which hinder their development by driving up the costs of doing business.
- The addressable market for Nigerian tech entrepreneurs is only a fraction of the potential that could be achieved through short and mid-term initiatives.
- Government policy and regulatory support have not been in sync with the development needs of the young digital enterprises.



Successful tech startups require adequate and timely funding from different sources, tailored to their needs and stages of growth. **Nigeria lacks richness in financing actors active in the tech entrepreneurship ecosystem, both in terms of numbers and versatility.** Ecosystem players, both investors and entrepreneurs alike, agree that there is a need for more financing capital at all stages of the tech entrepreneur's growth cycle.

**Public funding is scarce and the geographic coverage of existing programs is limited.**

There is a **limited pool of domestic government grants in Nigeria, but the ecosystem participants indicate that these are not inclusive, not well communicated with unclear and complicated application processes.** Most of the time, entrepreneurs' awareness of any domestic grants available to them is low.

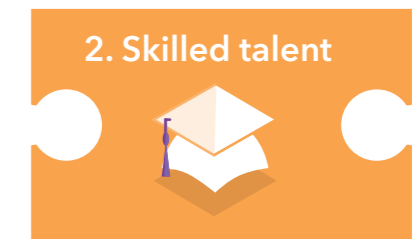
On the other hand, Nigerian tech entrepreneurs are informed and active participants in international grant programs. However, most of these grants are philanthropic in nature with limitations when it comes to addressing the needs of a wider audience and their scope does not cover later-stage funding.

The Nigerian Stock Exchange introduced an **Alternative Securities Market (ASeM) platform in an attempt to bring together fast-growth entrepreneurs with appropriate pools of investors.**

In Nigeria, both the number of angel investors and the investments they make are limited. **Angel investment is not supported by incentives like those that exist in other markets, which limits high-net-worth individuals' inclination to invest** in riskier options such as tech entrepreneurship.

Given the scarcity of smart money in the Nigerian ecosystem, entrepreneurs, especially those with international education and work experience, are seeking access to international programs that provide funding as well as mentorship and networking opportunities.

In Nigeria, **there are not many exemplary exit stories to trigger greater participation** in entrepreneurship or funding. Currently, few entrepreneurs are contemplating their exit options due to the maturity of the ecosystem, but strategic acquisitions are cited as the most likely option.



Nigeria's **general education standards are low, with the quality offered at all levels continuously suffering from poor funding and deteriorating teaching capabilities.** The country is reported to have one of the lowest shares of government expenditure in education (7%). This rate goes up to more than double in Sub-Saharan Africa region according to World Bank.

**Current degree program curricula are not designed around, nor do they encompass, the up-to-date content needed to prepare students to cope with market needs.** Graduates from the country's tertiary institutions often lack marketable skills and are considered unemployable by the competitive private sector as they graduate.

**Universities, in general, are not producing enough research and are also falling short in technical capabilities and building ties with industry to commercialize available research.**

There is also a **need for the government to foster and fund more research and development** to help strengthen the basis for spurring the ideas and innovation that can attract entrepreneurial interest. There are state government mandates designed to address the fundamental educational impediments with extracurricular initiatives.

However, a lack of public funding to nourish their establishments leaves most universities to their own devices. There are also not **many working examples of private sector-university collaborations**. Hence this idea has not materialized.

The few **qualified developers and engineers in the ecosystem are either foreign educated or self-taught**. Private initiatives by entrepreneurs, foundations and multinational tech companies are attacking the skill development challenge in Nigeria.

**Tech entrepreneurs find it difficult to attract and retain good technical employees, as they have to compete with established companies** which can afford to pay a lot more.



**Innovation hubs are the most visible network resource in Nigeria**, providing physical clustering and access to infrastructure, training programs, and initial funding for their participants. **However, their numbers and capacity are not sufficient to meet demand.**

**The network events and demo days** organized in the ecosystem **create opportunities for startups to get visibility and access to grants and prizes.**

**The government recognizes the benefits of clustering talent together** to facilitate synergies and maximize the effect of its investments. **There are ongoing efforts to develop publically funded innovation districts in Abuja and Lagos.**

**Collaboration between ecosystem stakeholders is low. There are no startup associations that advocate meeting the challenges of startups** and lobby for the needs of tech entrepreneurship ecosystem. **The Nigerian government aims to achieve greater private sector participation in R&D by strengthening the relationships between universities and the private sector.**



Highly entrepreneurial cultures are marked by comfort with uncertainty, positive associations with individuality and competition, and less adherence to established norms and rules.

**Nigeria is considered to be a collectivistic society**, which is also reflective of its tribal heritage **that has implications for business dealings** as well. On the constructive side, the **collectivistic aspect of the culture feeds entrepreneurs' motivation to do good for the Nigerian and African people. The society is also driven by achievement and success.**

The overall culture of "quick wins" is revealed by investors, entrepreneurs and tech talent in Nigeria. **Lack of long-term orientation is a common aspect that is repeated when describing the expectations of different stakeholder groups in the ecosystem.**

**In Nigerian culture, people tend to cluster around affiliate groups** and known circles. Even though there are not strong signs of cross-functional, territorial or institutional collaborations, **there is more and more informal sharing of experiences among tech entrepreneurs at the events, innovation hubs, and workspaces.**

The drive behind most entrepreneurial endeavors is **based on necessity rather than following up on an opportunity.**

**Internationalization aspirations are associated with becoming Pan-African and penetrating low-income populated markets.** The initiatives that are born out of a desire to solve a social problem and "hustle" look at the bigger picture to create an impact in the underprivileged communities around the world.



## BUSINESS PROCEDURES

There have been **recent developments designed to improve the ease of doing business in Nigeria. Further modifications are considered necessary to make the processes entrepreneur-friendly** and relieve the need to seek consulting support.

**The Nigerian tax system is hard to navigate for entrepreneurs and not designed to include incentives or reliefs for small enterprises.** Nigeria ranks 182 among 192 countries in tax payment procedures.

The "Pioneer Tax" incentive aims to provide tax breaks for ground-breaking businesses that have an asset base of NGN 100 million (c. USD 270,000). **The language around the definition of obligations are perceived to be vague leading to misinterpretation and miscommunication in the entrepreneurship community resulting in underutilization of this incentive by startups.**

There are currently **no policies to incentivize angel investors to invest in tech entrepreneurship.** Capital gain tax exemptions for early-stage investments in startups for investors and VCs are perceived as good incentives.

## DIGITAL POLICIES

**Nigerian regulations lag behind in addressing digital challenges and framing the ICT and tech entrepreneurship domain in the country.** The main reason for this is that tech startups are new in the country and authorities with executive powers are not all informed enough to steer the discussions.

**The few existing laws are considered obsolete, since they have not been updated to reflect recent developments concerning internet activities. Regulations on e-finance and e-commerce are more current**, given the maturity and global nature of the finance sector and the wide consumer relevance of both.

Data privacy and protection are governed by blanket provisions of the 1999 Constitution of the Federal Republic of Nigeria. The Constitution guarantees the protection of privacy to every Nigerian citizen; however, this is a blanket provision and does not directly touch on data protection. **Other laws and policies touch upon citizens' data and privacy protection from different angles such as the Cybercrimes Prevention Act and the Nigeria Communications Commission (NCC) bill of rights** but authorities point out the need for a comprehensive data protection act.

Until 2017, the Copyright Laws in effect dated back to the 1990s in Nigeria. **Last year the Berne convention was ratified along with the WIPO Copyright treaty. The laws are expected to become full in force once the copyright reform bill passes through the Parliament.** Confidence in the ecosystem will be established once the enforcement uncertainties and ineffectiveness in deterring infringements will be alleviated.

In general, lack of clarity and established implementation guidelines are challenges. **Ecosystem stakeholders feel regulators develop a quick judgment on the policies and regulations without much engagement. In many cases, the digital policies do not seem to take SMEs into account.**

## TRADING ACROSS BORDERS

**Measures to control foreign currency trade have impeded tech entrepreneurs accessing online services and reaching out to international markets.**

In 2016, The **Central Bank of Nigeria** changed its policy to money transfer operators, allowing only those that have operations in Nigeria to conduct services. This **has limited the options for receiving online foreign currency payments.** The policy excluded PayPal from conducting online transactions as well.

Payments are not accepted from outside the country, irrespective of the size of the businesses. This is a hurdle for scaling up any startup beyond Nigeria.

## GOVERNMENT R&D POLICIES

Gross expenditure on R&D is estimated at between 0.1 and 0.5 per cent of GDP. The private sector's contribution to R&D is insignificant (0-0.1% of GDP). **In a bid to improve the country's expenditure on R&D to a minimum of 1% of GDP, the Ministry of Science and Technology has recently pushed for the establishment of a National Research and Innovation Fund (NRIF).** This is currently under review by the national legislature.



**Nigeria struggles with fundamental infrastructure problems** that overshadow most of the initiatives undertaken to foster tech entrepreneurship. **Reliable, continuous power supply is an ongoing concern for most African nations.**

**ICT Infrastructure has significant room for improvement** in order to make the benefits of the internet attainable for most of the Nigerian population.

**Nigeria has 39 million broadband subscribers (mobile and fixed) and 16 million smartphone users. Relative to its 186 million population** this low penetration rate underscores Nigeria's status as a large market with a lot of untapped potential. Fixed internet access is mainly out of reach for many Nigerians. Besides its low coverage, the costs are also very high. **Nigeria ranks 141st out of 182 countries for fixed broadband costs as a percentage of gross national income.**

Cloud computing uptake by Nigerian local businesses is slow and progress is hindered by infrastructural concerns as well as security.



Nigeria is Africa's largest market, with a population of 186 million, a growing middle class, and a big youth market. **One-third of the population is between 15 and 35 years old, representing a growing source of tech-savvy individuals eager to adopt the latest tools as they become available.** There are more than 90 million internet users including 16 million smartphone users.

Improving digital literacy and use of the internet are the key levers to unleash full potential of Nigerian market. Although statistics suggest a sizable potential, the **current addressable market is only a fraction of that potential. Low digital literacy is a major barrier for tech entrepreneurs wishing to penetrate the B2C and SMME market.**

**Online businesses must be complemented with offline services in order to fully tap into the Nigerian market potential.**

Success stories in tech entrepreneurship usually follow the startup partnering with major industry incumbents. **It is expensive for tech entrepreneurs to acquire and scale up a customer base in Nigeria.** Those startups that are able to partner with major players in the market such as banks or telecom companies and access incumbents' consumer base usually do better.

Technology utilization by established companies is fairly strong in Nigeria, but collaboration with tech entrepreneurs to offer innovative solutions is in its infancy.

**Existing public procurement regulations in Nigeria are not written in a way that can easily be interpreted as startup friendly.**

Any company that would like to become a government supplier is required to provide three-year financial audits, tax certificates, and a minimum number of years of experience in the field. Applied as written these rules exclude startups from public procurement procedures. However, **the law also requires the council and the Bureau of Public Procurement (BPP) to approve changes in procurement processes to adapt to improvements in modern technology.** Hence, tech entrepreneurs may stand better chances at public tender programs with revised applications of established rules.

Nigerian startups consider the domestic market as a priority. **Going Pan-African is the most plausible internationalization strategy** for Nigerian tech entrepreneurs to attain a sizable scale that would entice both domestic and international investors.

## Recommendations designed to strengthen the tech entrepreneurship ecosystem

Most of the challenges faced by the **Nigerian tech entrepreneurship ecosystem require addressing the foundation that the tech entrepreneurship ecosystem rests upon.** If the government would like to vie for new technologies and innovation as instruments to create employment and enrich the economy, then overcoming national infrastructure and educational barriers should be recognized as top priorities. Accordingly, Nigeria will need to align its digital policies with the frontier nations in order to become a viable partner and supplier.

However, **attacking all these problem points at once is not feasible due to the size of the country and the state of the ecosystem components. Hence, adapting a focused and targeted approach to relieve major areas of tension at the heart of the tech entrepreneurship activity** could provide early success stories and working models to be replicated across the country.

The immediate recommendations to address gaps and foster a strong ecosystem based on interview insights are grouped under four main headings:



Legend

FINANCIAL CAPITAL

SKILLED TALENT

NETWORKS

CULTURE

REGULATIONS

ICT INFRASTRUCTURE

MARKET POTENTIAL

Details of the specific recommendations under each group can be found on page 63.

### Conclusion

Essential ingredients of a tech entrepreneurship ecosystem have been materializing over the last decade. The **Nigerian ecosystem has seen a drastic increase in the number of hubs, incubators, accelerators, tech media, events, and summits.** Many of the initial businesses were local adaptations of established models around the world. **Today, there is also a new wave of founders starting to tackle Nigeria-specific issues, how these can be solved and later how the businesses can be scaled up to resolve similar challenges in greater Africa.** The ongoing commotion is expected to draw in more participants to the ecosystem and expand its versatility.

Nevertheless, **the ecosystem participants consider tech entrepreneurship in Africa to be a long game.** They believe that it will take another decade for the Nigerian tech entrepreneurship ecosystem to be fully functioning and generating sizable, high-impact tech companies.

**In order to create visible impact, government interventions should address significant challenges that are hindering progress and concentrate on leveraging established structures and organic developments in the two leading ecosystems: Lagos and Abuja.**

**There is a need for an informed presence and interaction between the government authorities and the tech entrepreneurship ecosystem actors.** The government has expressed its interest in investing in the tech industry and has committed to several initiatives. The interviewees see a great benefit in having a champion within the government to push the tech entrepreneurship agenda. The establishment of the OIIE (the Office for ICT Innovation and Entrepreneurship) is a strong sign of the government’s commitment to nurturing, cultivating and expanding ICT, innovation and entrepreneurship in Nigeria.

**All in all, interaction and collaboration with different parties in the ecosystem while addressing many challenges of the budding tech entrepreneurship culture is the key to getting the most out of public initiatives and building the Nigerian ecosystem to become the Pan-African hub for tech entrepreneurship.**



# Nigeria at a Glance

Nigeria is the largest economy and the most populous country in Africa, with a GDP of USD 406 billion and a population of c. 186 million people. Nigeria – a political federation of 36 autonomous states – has a multi-ethnic and culturally diverse society.

Nigeria’s per capita GDP is USD 2,640 (in PPP adjusted terms USD 5,900), which is higher than that in other developing countries such as India, Kenya, and Zambia. The commercial capital Lagos has more than 20 million inhabitants and a higher GDP/capita of USD 6,238.<sup>7</sup> The 70,000 SMEs in Nigeria represent a pool even larger than in countries such as Israel, Kenya, and Zambia. Together with the 37 million micro-enterprises in Nigeria, Micro, Small and Medium Enterprise (MSME) economic activity constitutes 47% of the country’s GDP.

FIGURE 1. MACROECONOMIC INDICATORS FOR NIGERIA

	Value	Rank (192)		Percentage
GDP (USD), 2016	406 B	27	SME contribution to GDP, 2014	47%
GDP per capita (PPP adj. USD), 2016	5.9 K	127	Consumer expenditure as a % of GDP, 2016	81%
Population (millions), 2016	186	7	Stock market cap as a % of GDP, 2015	7%
Rate of population aged 15-19 over those aged 55-59, 2016	4.54		Stock market traded as a % of GDP, 2015	4%

a. The cheaper cities have lower score taking New York as 100 and thus better ranking  
Source: IMF, World Bank, Global Entrepreneurship Monitor, Euromonitor, AT Kearney, Economist, World Economic Forum

Heavily reliant on natural resources, Nigeria is Africa’s biggest oil exporter and has the largest natural gas reserves on the continent. The Nigerian economy contracted in 2016 by 1.7 percent with a drastic drop in global oil prices in recent years, increased currency volatility, foreign exchange shortages, peaking inflation, and unrest in the North resulting in disruptions in fuel supplies.<sup>8</sup>

Economic policy reforms are underway, to address the macroeconomic concerns and social challenges. The Nigeria Economic Recovery and Growth Plan (ERGP, 2017-2020) has three broad strategic objectives: restoring growth, investing in people, and building a globally competitive economy through sectoral diversification.<sup>9</sup> Early efforts have included social transfer programs targeted at the most vulnerable, and improving the effectiveness of budget execution and management.

FIGURE 2. GLOBAL COMPETITIVENESS INDEX FOR NIGERIA (2016)

	Score (1-7)	Rank (138)
GLOBAL COMPETITIVENESS INDEX	43.4	127
INSTITUTIONS The quality of legal and administrative framework that regulates interactions between government, firms and people	3.3	118
INFRASTRUCTURE Existence of extensive and efficient infrastructure to supply required services	2.1	132
MARKET SIZE Size of the economy	5.0	26
MACROECONOMIC ENVIRONMENT Stability of the economy	4.0	108
GOODS MARKET EFFICIENCY Intensity of local competition, ease of doing business, tax rates, imports ratio and buyer sophistication in a country	4.1	98

Source: World Economic Forum

In 2017, thanks to global economic developments and the government’s macroeconomic efforts, Nigeria started to recover from the recession, with an expected growth rate of 1.2 percent. Further improvements are projected to yield 2.4 percent growth in 2018.<sup>10</sup>

Nigeria is a very young country, with nearly two-thirds of its population under the age of 25. Between 2010 and 2015, Nigeria experienced annual population growth of about 2.7%, according to the UN. The cultural value of large families contributes to high fertility rates despite high infant mortality rates, factors that are driving the boom in Nigeria’s population, which is expected to grow to 300 million by 2050.<sup>11</sup> Home to four of the world’s fastest-growing cities, Nigeria’s population growth in part makes it an economic powerhouse. However, all these opportunities come with associated challenges. There are concerns that projected population increases could cripple Nigeria’s already inadequate infrastructure. The young demographic balance also creates a substantial employment challenge for the future. The ratio of the population due to exit the workforce in the next five years (aged 55 to 59), to those due to enter it in the next five years (aged 15 to 19), is 1 to 4.5. This suggests a need for a whole new approach to job creation in the country.

For the next three years ERGP will continue to invest in the Nigerian people by increasing social inclusion, creating jobs, and improving the human capital base. Job creation and youth empowerment has specific significance in the plan, with several interventions to reduce unemployment and under-employment, especially among the youth. The government will also guarantee access to basic education for all, improve the quality of secondary and tertiary education, and encourage students to enroll in science and technology courses.

<sup>10</sup> World Bank. “Global Economic Prospects, A fragile Recovery: Sub-Saharan Africa” 4 June 2017  
<sup>11</sup> United Nations. “World Population Prospects 2017”  
<sup>12</sup> Nigeria National ICT Roadmap 2017-2020

Accordingly, all capacity building and skills acquisition interventions will be targeted at youth-dominated sectors such as ICT, creative industries, and services. These are likely to improve the skilled talent base in Nigeria as well as the tech entrepreneurship ecosystem.

The Nigerian ICT sector’s dramatic expansion from 0.6 percent of GDP in 2001 to 9.8 percent in 2014 was a key driver of the economic recovery. The sector is now the 4th largest in the country and has been dubbed the “infrastructure of infrastructures”. The ICT sector enables and facilitates the proper functioning of many other key sectors of the economy and government, including Agriculture, Commerce, Banking and Finance, Health, and Transportation.<sup>12</sup>

To support Nigeria’s efforts to make its economy more competitive, there must also be a digital strategy that identifies and addresses current challenges to this transformation. Goals include expanding broadband coverage, increasing the proportion of government services delivered on a digital infrastructure, and establishing ICT clusters, starting in the Special Economic Zones. The government will support these efforts with capacitation programs designed to build skills, focusing on training IT Engineers in software development, programming, network development, and cybersecurity.<sup>9</sup>

The ERGP aims to tackle the obstacles hindering the competitiveness of Nigerian businesses, notably poor or non-existent infrastructural facilities and the challenging business environment.

Power, roads, rail, ports, and broadband networks are all subsectors targeted by the new infrastructure development focus. Given the massive capital requirements needed to address the infrastructure deficit in the country, the private sector is expected to play a key role, either directly or under public private partnership (PPP) arrangements.<sup>9</sup>

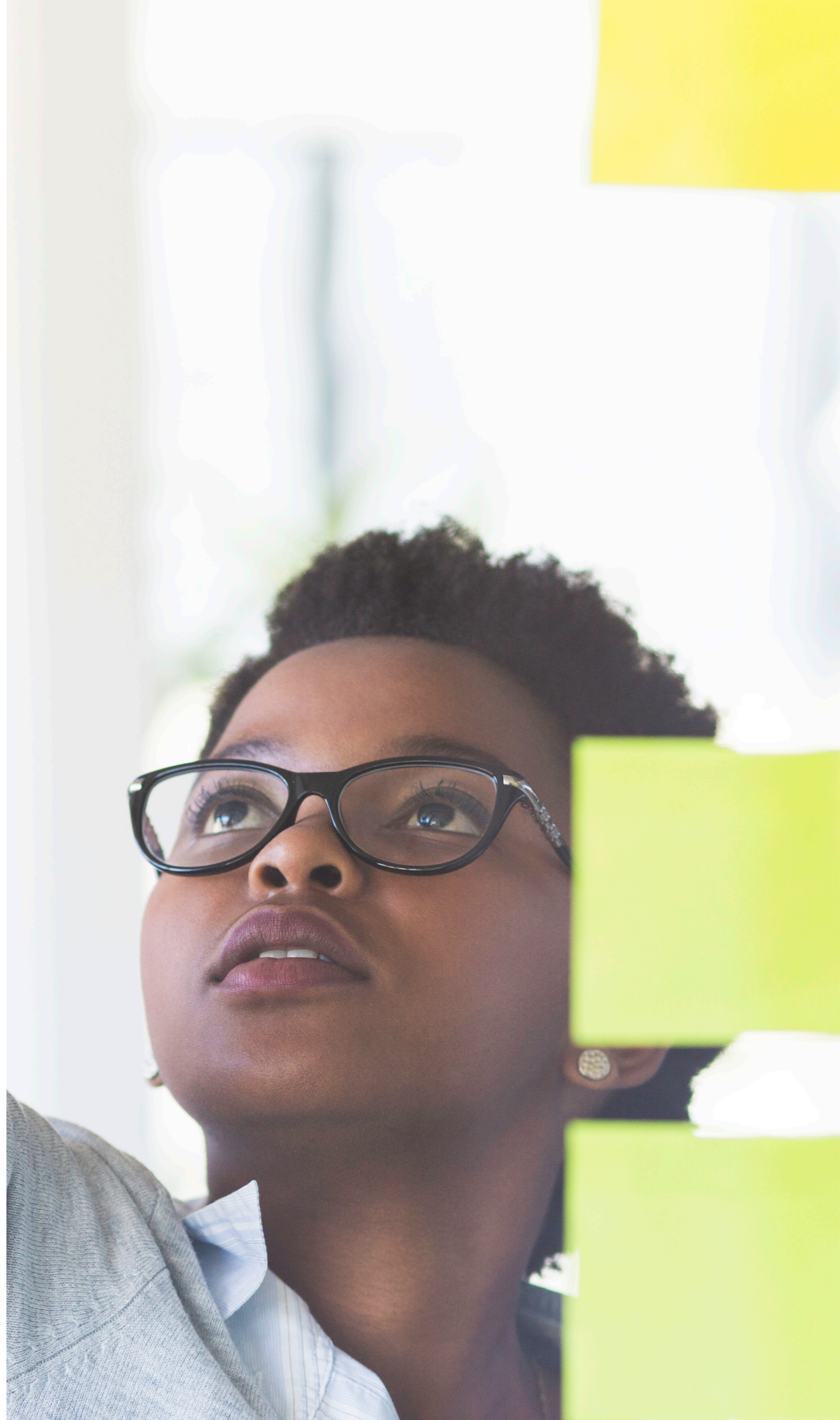
# The results of tech entrepreneurship – Outputs

Nigeria’s tech entrepreneurship is in a very early stage, indicating a huge potential for the future.

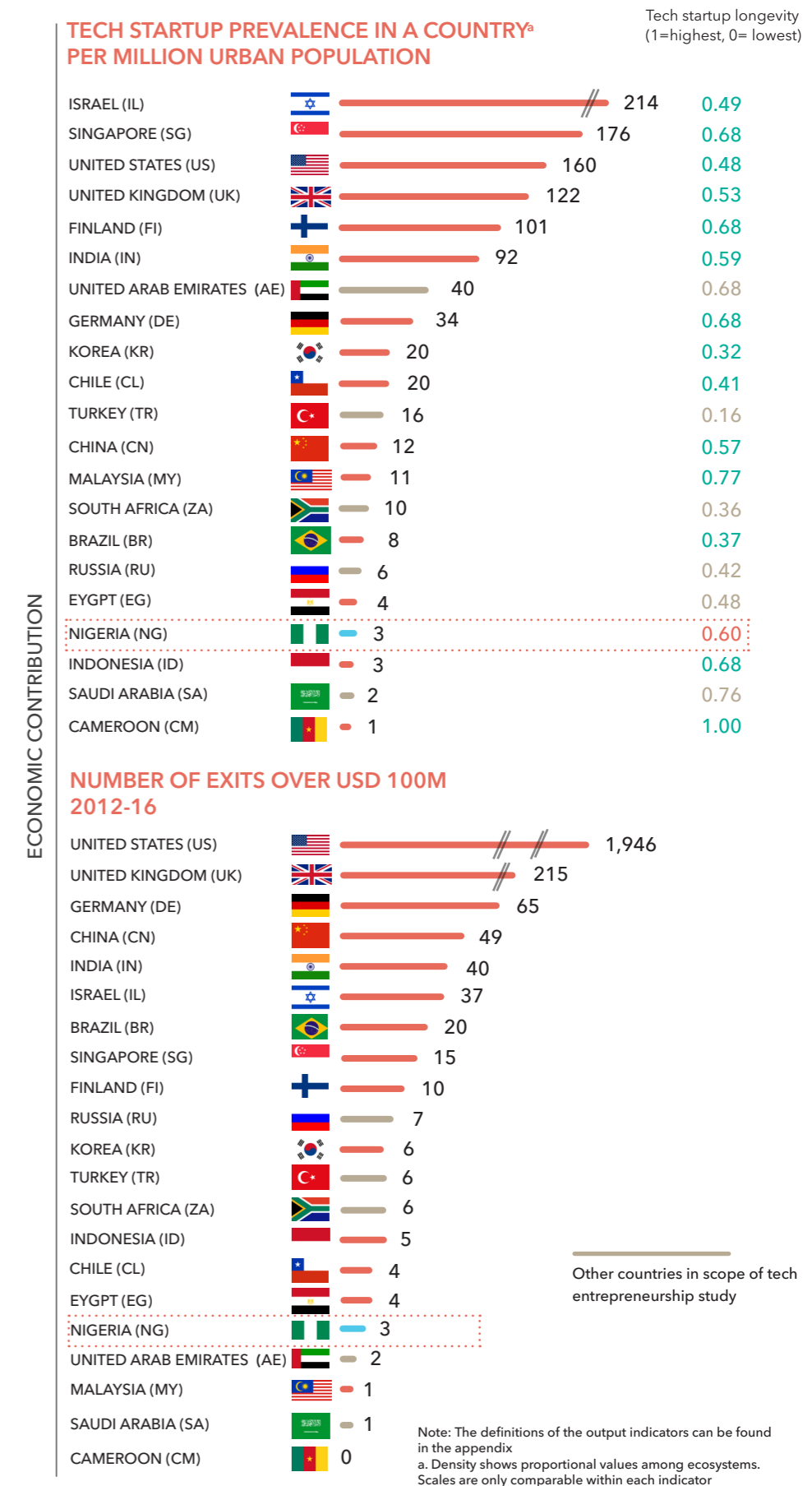
Currently, startup density suggests great potential for new startups and longevity indicates that, once took root, tech startups are likely to persevere in Nigeria.

The Nigerian tech startup ecosystem has already produced three exits over USD 100 million, namely Andela, Konga, and Jumia. The e-commerce company Jumia launched in Lagos in 2012 and it is the biggest brand of Jumia Group. Jumia has 3 million customers, 3,000 employees, and it operates in 23 countries. The group became the continent’s first ‘unicorn’ with a 1 billion USD+ valuation in 2016.

In assessments related to innovation Nigeria doesn’t perform well, but the proposed legislation on National Research and Innovation is expected to make an impact on innovation creation and increase the contribution of knowledge sectors to the economy.



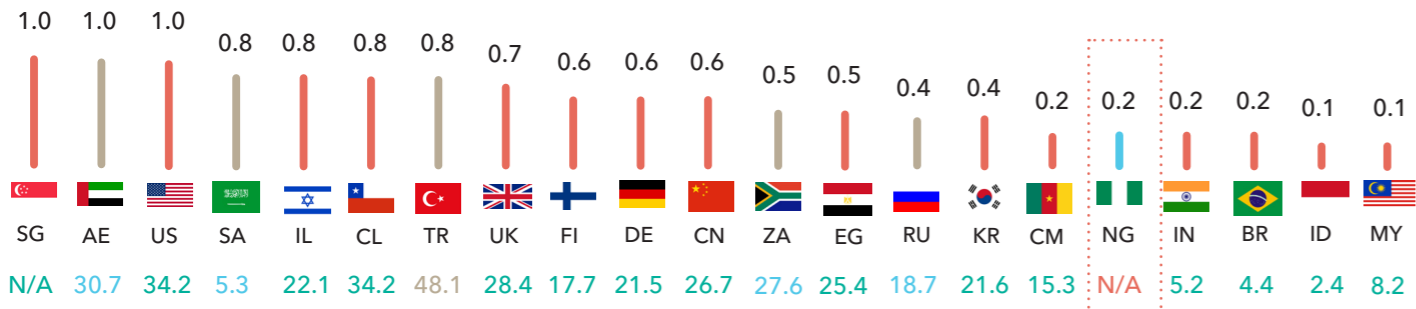
## Nigeria vs. benchmark countries





### ENTREPRENEUR'S GROWTH ASPIRATION SCORE<sup>b</sup>

A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding (1=highest, 0=lowest)

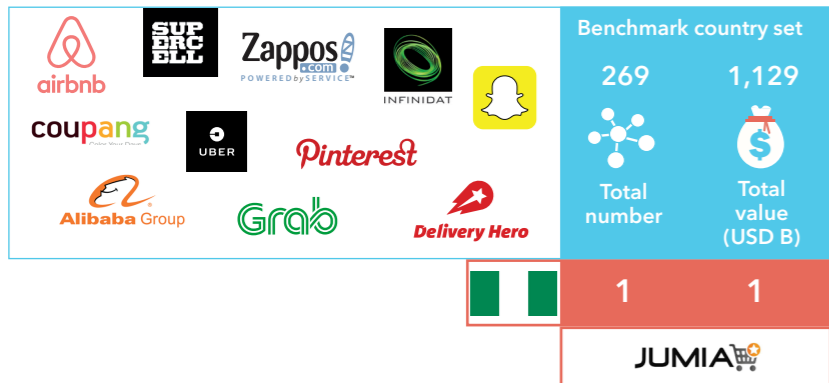


### HIGH JOB CREATION EXPECTATION (% OF ENTREPRENEURS)

Other countries in scope of tech entrepreneurship study

### ABILITY TO CREATE GLOBALLY RECOGNIZED "UNICORNS"<sup>c</sup>

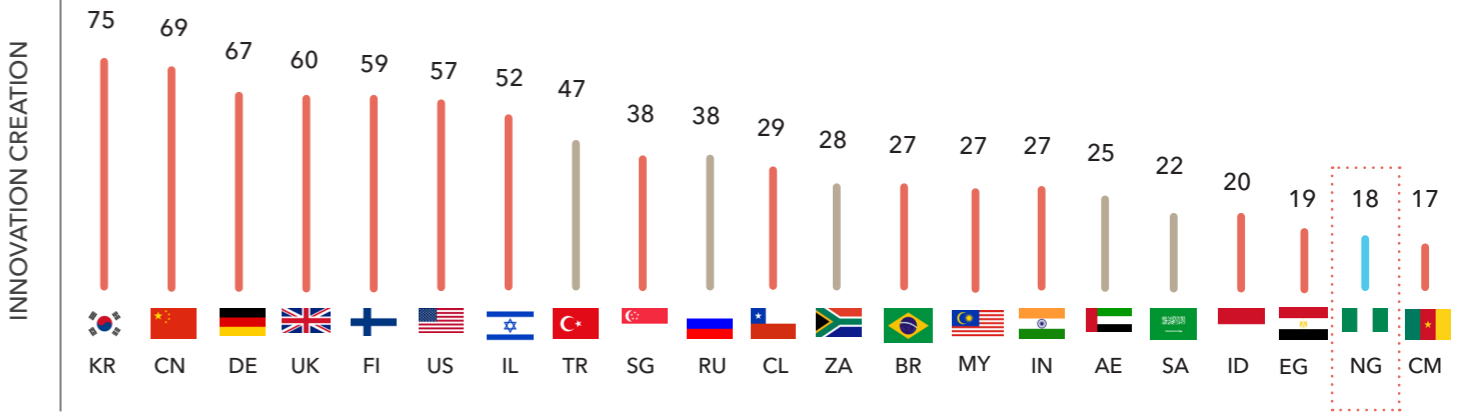
Technology start-ups with over USD 1 billion valuation in benchmark countries



Note: The definitions of the output indicators can be found in the appendix  
b. A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding  
c. Unicorns in tech-related categories are taken into consideration

### INNOVATIVE OUTPUT DENSITY

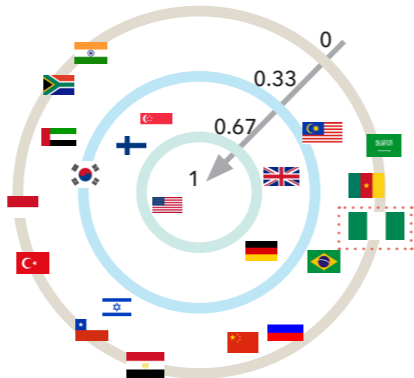
The abundance of knowledge creation and intangible assets in a country (out of 100)



Other countries in scope of tech entrepreneurship study

### CONTRIBUTION OF KNOWLEDGE SECTORS TO THE ECONOMY

ICT & High-tech exports, international data flows and IP receipts(1=highest, 0=lowest)



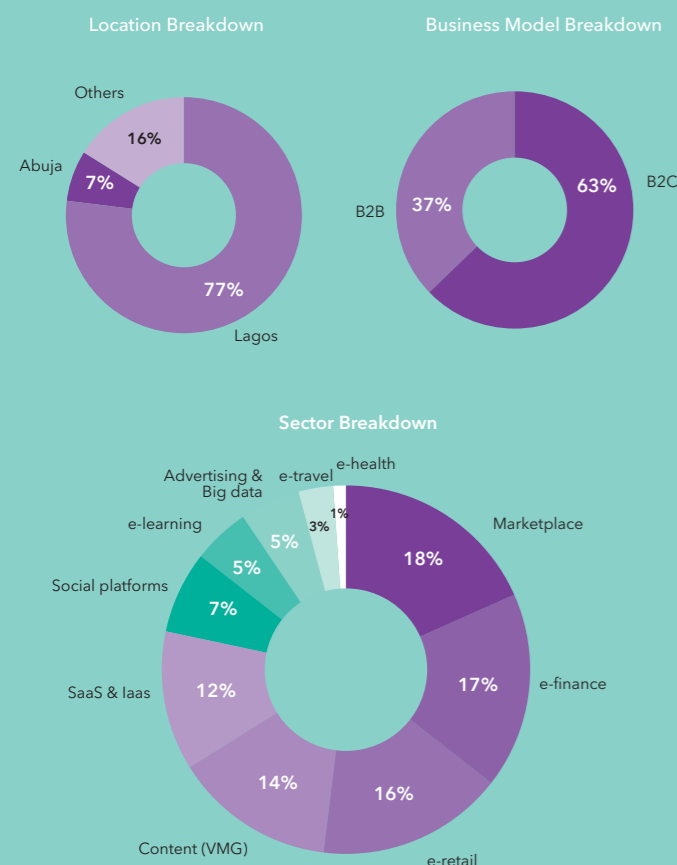
Note: The definitions of the output indicators can be found in the appendix  
Source: OC&C analysis based on World Bank, GEM, GEDI, Crunchbase, INSEAD, McKinsey, CB Insights

# Nigerian Tech Entrepreneurship Ecosystem Overview

Nigeria has a vibrant entrepreneurial culture, fueled by abundant activity, despite its infrastructure challenges. Ecosystems have developed in major urban centers with unique networks of players, areas of focus, and gaps that need to be addressed. The government, in its efforts to deliver economic and job growth is developing entrepreneurship initiatives, policies, and programs that take into consideration each state's needs.

The structural challenges facing Nigeria's businesses mirror those of its peers in other African countries, including inconsistent policies, a difficult business environment, insufficient ICT and physical infrastructure, and human capacity gaps. Despite these issues, data from the Nigerian Bureau of Statistics

**FIGURE 3: PROFILE OF THE TOP 100 TECH STARTUPS IN THE NIGERIAN ECOSYSTEM**



show that Nigeria's MSMEs contribute c. 47% to Nigeria's GDP, and employ 84% of Nigeria's workforce. This suggests strong economic returns would come from addressing the barriers in the small business sector.<sup>13</sup>

Nigerian startups mostly focus on consumers, given the requirements for relevant sector expertise, market entry barriers, and payment cycles in the B2B sector. The public sector procurement practices and applications in place make it inaccessible to many startups.

Marketplace applications represent the most popular tech entrepreneurship field in Nigeria, with SMEs increasingly using these platforms to sell their goods & services. E-commerce is another large field for startups. Most of the business models in Nigeria are local adaptations of success stories in developed markets. FinTech companies, especially those working on payment systems, contribute significantly to the SME sector, because accepting payments is difficult all across the country due to weak ICT infrastructure. Apart from for-profit endeavors, social tech entrepreneurship is also burgeoning and entrepreneurs are increasingly leveraging technology to resolve some of the fundamental challenges faced by the society.

Over the last decade, the Nigerian technology ecosystem has grown and received global attention. Momentum in technology businesses was triggered by the government's urban technology infrastructure investments, and further supported by investments and grants from foreign sources.

This growth of the ecosystem created "Yabacon Valley", in the Yaba area of Lagos State. Yabacon Valley quickly evolved to attract a large number of accelerators, startups, and incubators such as Co-Creation Hub, iDEA Hub, Passion Incubator, and many others.

<sup>13</sup> Mapping Study of Nigeria's Entrepreneurship Ecosystem, FATE Foundation October 2016

Nigeria's tech ecosystem grew when the country went into recession, resulting in an uptake in entrepreneurship and economic diversification. A growing number of repatriating citizens have also increased the focus on leveraging technology and the internet to address Nigeria's problems. Returning to the country with relevant knowhow acquired abroad, these repatriates also bring new ways to create, invest, and nurture institutions and funds that support tech startups. Tech entrepreneurship in the country is now starting to feel like the new nine-to-five job.

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Large domestic corporations, multinationals, embassies, and private universities are increasingly supporting tech entrepreneurship developments in Nigeria. In the domestic market especially, financial institutions and telecom providers, aware that their industries are facing new types of competition and disruption, want to be a part of the transformation through collaboration, incubation, and events

The Nigerian government has recently seen a focus on tech entrepreneurship as an opportunity to use innovation to drive job creation. Being effective, however, will require that the government is systematic, consistent, and pragmatic, and will require cross-agency collaboration. To be effective, the government

needs to engage knowledgeable people in tech entrepreneurship policymaking as well as implementation.

The government's efforts designed to support tech startups are executed by a number of national government agencies:

- **The Office for ICT Innovation and Entrepreneurship (OIIE)** is a dedicated subsidiary focused on addressing barriers that inhibit startup growth and on improving the environment in order to foster innovation and entrepreneurship across the country. Through its programs and initiatives, such as the ICT for Change Empowerment Program, OIIE aims to increase ICT and innovation's contribution to GDP, and drive job and wealth creation through entrepreneurship.
- **The National Information Technology Development Agency (NITDA)** was formed to implement the Nigerian Information Technology Policy by coordinating general IT development in the country and ensuring that IT resources are readily available.
- **The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN)** was founded to support SMEs in Nigeria. Rural industrialization, poverty, and new job creation are SMEDAN's top priorities. The Agency connects SMEs with internal and external sources of finance and appropriate technology. Agriculture has been the largest sector for its grant program. Increasingly, tech entrepreneurs are qualifying for and receiving these grants.

In 2015, the Nigerian government also announced it would invest in the development of two hubs in Lagos and Abuja and six regional hubs across the six geopolitical regions in Nigeria.

"This [Lagos] is one of the, if not the biggest, urban market in the whole entire continent. That is why I feel like unicorn potential is here." – Sean Burrowes, Director of Operations, Ingressive

FIGURE 4: MAJOR ACTORS WITHIN THE NIGERIAN TECH ENTREPRENEURSHIP ECOSYSTEM



a. Donation-based crowdfunding

b. Startups that are founded after 2010 and have technology-related businesses

Source: Crunchbase, F6S, FATE Foundation, Central Bank of Nigeria, CampusBiz, OC&C analysis

In our review of the Nigerian tech entrepreneurship ecosystem – with active participants in roundtable discussions and interviews – three major areas for improvement came up frequently:

**Gaps in infrastructure raise barriers that hinder tech entrepreneurs’ development, drive up the cost of doing business, and limit their customer reach**

Nigeria needs a thorough uplift in its basic as well as ICT infrastructure to accommodate tech entrepreneurship as a source of economic output and employment. Lack of a reliable power supply, the condition of the roads, transportation challenges, the accessibility and affordability of both mobile and fixed internet are major blockages and stakeholders argue that they make conducting business in Nigeria substantially more difficult than in other countries and thus contribute to the high rate of business failures.

**Today’s addressable market for Nigerian tech entrepreneurs is only a fraction of its potential that could be expanded by short and medium-term initiatives**

Although Nigeria is the largest consumer market in Africa, with 186 million people, the interviewees emphasized that the sheer size of the population is misleading. The addressable market for pure online businesses is actually quite limited, due to low educational levels, digital literacy, and the accessibility and affordability of the internet in the country. About 50 million people in the country own

smartphones, but only a small proportion of them actually access the internet or are able to use applications. The state of the consumer base inhibits the introduction of more innovative solutions.

Public procurement, which is considered a dependable source of demand for innovative company products and services, is also not detailed or applied to be inclusive of tech entrepreneurship in Nigeria.

Lastly, due to the macroeconomic turbulence in recent years, international transactions have been constrained in Nigeria. This has an implication on the cross-border scalability of tech entrepreneurship endeavors, while keeping business operations in Nigeria.

**Government policy and regulatory support have not been in sync with the development needs of the young digital enterprises**

Given the current state of development in Nigeria, tech entrepreneurs are mainly digital micro- enterprises. However, existing business procedures and private ICT sector policies are generally geared toward supporting large, established corporations. The government – in its effort to build tech entrepreneurship in Nigeria – could initiate a collaborative review of business procedures and digital policies and align the regulatory framework with the ecosystem’s needs and global practices.

# Insights into ecosystem components



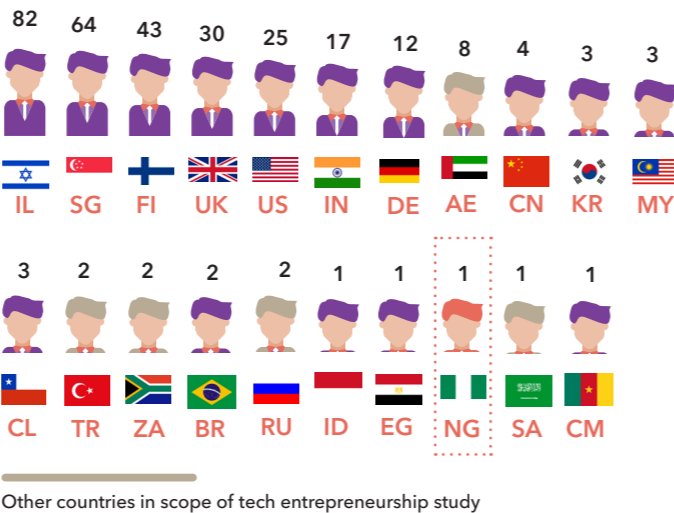
Successful tech startups require adequate and timely funding tailored to the startups' needs, coupled with the guidance and support required for healthy growth.

There are five main sources of equity finance available for entrepreneurs:

- **Individual investors** (personal networks, angel investors, crowdfunding) – at the seed stage.
- **Venture capital** – (institutional investment), from seed to later stages with expectations of high returns.
- **Public funding** (grants, sovereign investment funds, funds of funds) – to fill funding gaps at various stages and stimulate priority sectors.
- **Corporate investment** (direct investment and via corporate venture funds [CVCs]) – at the investment and takeover stages, to acquire industry-specific solutions, or for corporate innovation exposure.
- **Public Offerings** (initial public offerings, additional capital raises) – in local and foreign stock exchanges to realize an exit and return capital to shareholders.

“Fund raising for entrepreneurs is really hard, fund raising for entrepreneurs in Africa is even harder” – Yele Bademosi, Founder, Microtraction Fund

FIGURE 5. INVESTOR DENSITY



Note: Figure shows number of investors per million urban population in each country  
Source: Startup Bootcamp, Crunchbase, OC&C analysis

Nigeria lacks the rich finance network required for a tech entrepreneurship ecosystem, in terms of numbers and versatility. Nigeria's funding landscape resembles that of the rest of the continent, with 57% of founders bootstrapping their businesses, 11% receiving friend and family support, and 15% receiving grants and donations. Only 9% of entrepreneurs receive angel investor equity, and just 3% are able to secure VC investment.<sup>14</sup>

Public funding is scarce and the geographic coverage of existing programs is limited. The Lagos State Employment Trust Fund (LSETF), for example, is mandated to create jobs in the state and its funding program designed to support SMEs and startups is planning to provide NGN 25 billion (c. USD 70 million) over four years. The funds will be disbursed as subsidized loans of up to NGN 5 million (about USD 13,500) with an annual interest rate of 5 percent.

<sup>14</sup> "Nigerian startups can't raise money through crowdfunding because of antiquated laws", Quartz Africa, August 19, 2016 (retrieved on November 22, 2017)

FIGURE 6. SEED ROUND VELOCITY



Note: Figure shows number of seed rounds per million urban population in each country  
Source: Startup Bootcamp, Crunchbase, OC&C analysis

FIGURE 7. LAGOS STATE EMPLOYMENT TRUST FUND HAS A MANDATE TO INVEST IN STARTUPS



### OVERVIEW

- The Lagos State Employment Trust Fund (LSETF), was established in 2016 to provide financial support to residents of Lagos State, for job, wealth creation and to tackle unemployment.
- LSETF serves as an instrument to inspire the creative and innovative energies of all Lagos residents and reduce unemployment across the State.
- The Fund has the mandate to directly invest USD70 million in helping Lagos residents grow and scale their Micro Small and Medium Enterprises ("MSMEs") or acquire skills to get better jobs

### LSETF BENEFITS

1. Loan products and consumption subsidies so far approving over 3,700 beneficiaries
2. Training of young people to close the gaps of technical skills
  - Employability Support Project is aimed to train over 10,000 youth in the state in 2 years.
3. SME Innovation drive enterprise program
  - **Infrastructure program:** Infrastructure support loans to existing workspaces and infrastructure support vouchers to SMEs.
  - **Accelerator Programs:** LSETF gives access to mentors collaborating with MBA programs. Faculty members as investors, faculty students to work for startups instead of corporates
  - **Co-Invest as a Limited Partner:** LSETF collaborates with some Venture Capital firms. Based on VC evaluation, they co-invest with VC

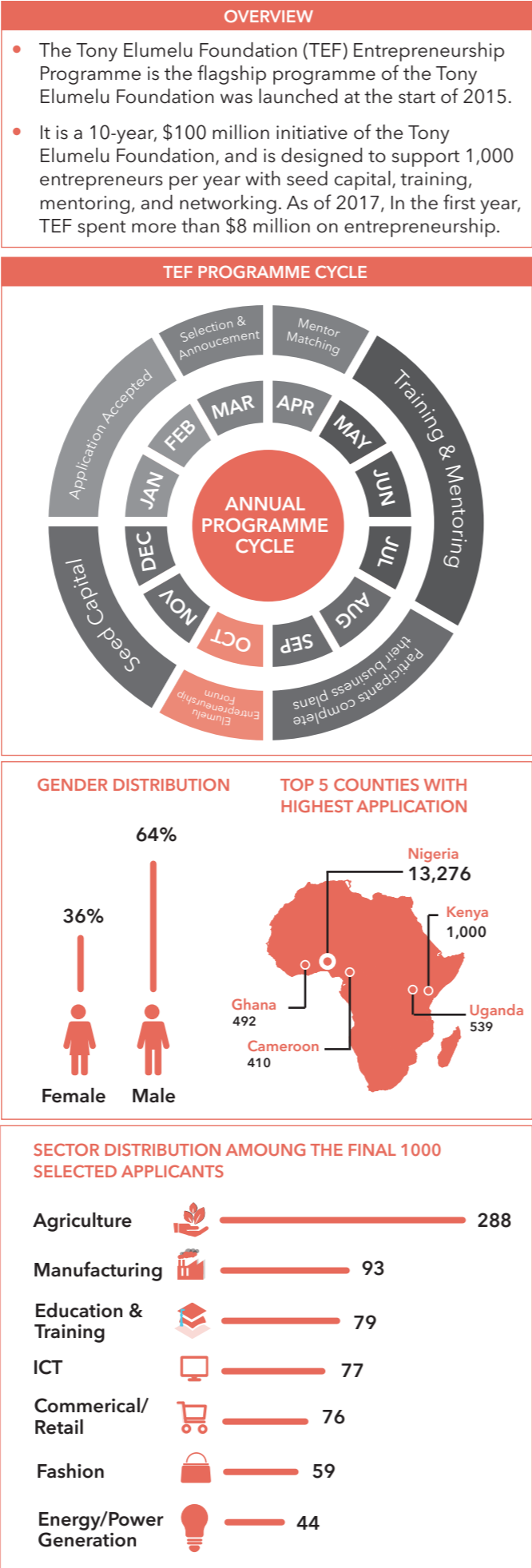
Source: LSETF website, Interviews, OC&C analysis

There are a small number of active business angel networks, but no federal or state incentive schemes to support and motivate high-net-worth individuals to become angel investors in Nigeria. Existing networks are composed of likeminded individuals who use their connections to access complementary skills and have a common appetite for investing in tech startups. The Lagos Angel Network, established in 2012, has 20 active members and a total investable asset size of NGN 100 million (USD 275,000). The members, who are self-certified, with an annual income of NGN 20 million (USD 55,000), can invest NGN 5 million a year and make an investment of at least NGN 500,000 a year to maintain membership. A similar angel network was established in Abuja in 2016.

Equity crowdfunding was suspended by the Nigeria's Securities Exchange Commission (SEC) in 2016, because it wasn't covered under existing laws that regulate the formation and operation of companies and the sale of securities to the public.<sup>15</sup> Reports suggest that the SEC is investigating Canadian and US regulations in order to design an enabling legal and regulatory framework.<sup>15</sup>

Other domestic equity financiers in the ecosystem include the innovation hubs that provide seed funding to startups accepted for their incubation or accelerator programs. The Tony Elumelu Entrepreneurship Foundation Program provides seed funding of USD 10,000 to promising startups that complete a 12-week entrepreneurship training program. The foundation aims to identify and support 10,000 startups in Africa over a ten-year period with this program.<sup>16</sup>

FIGURE 8. TONY ELUMELU FOUNDATION HAS AN INITIATIVE TO PROVIDE SEED INVESTMENT IN ECOSYSTEM



There are several venture capital firms operating in Nigeria and most engage in early-stage funding. According to Crunchbase Nigeria's total VC funding amounted to c. USD 20 million in 2016.<sup>17</sup> There is very limited involvement by corporate investors or banks in the ecosystem.

The tech ecosystem's early stage of development means that few Nigerian entrepreneurs consider exiting their businesses. Strategic acquisitions and public offerings on the Nigerian Stock Exchange are not in the immediate plans of most founders. Instead, entrepreneurs see the continued growth of their businesses (drawing in investors in later stages) as the most viable way to create value.

Ecosystem players, both investors and entrepreneurs, agree that there is a need for more financing capital at all stages of a tech entrepreneur's growth cycle

- Available capital, both domestic and international, focuses on the seed and early funding stages of the entrepreneurial journey, providing USD 10-50,000 for startups.
- There are currently no Series A investors targeting the interval between USD 50,000 and 200,000. Opportunities for B and C level funding are also limited. This makes scaling up in the ecosystem very difficult.
- Private equity investing is getting stronger in Nigeria and investors are more inclined to make larger investments. In the equity funding landscape, therefore, there is a marked divergence between seed funding and later-stage financing, which reflects a widening financing gap for entrepreneurs.

Initial and seed capital needs are addressed by private innovation hubs, which are too few in number to meet the financing demands of early-stage tech startups

- There is a limited pool of domestic government grants in Nigeria, but ecosystem participants indicate that these are not inclusive, not openly communicated, and their application processes are unclear. Most of the time, entrepreneurs are not aware of available grants and, as a result, don't get the capital they need to make a significant impact.
- Most innovation hubs that provide initial investments to their program participants do not have the means to continue with their investments at later stages.

Nigerian tech entrepreneurs actively pursue international grant programs; however, these grants are typically philanthropic in nature and therefore are unable to fully address the needs of a wider audience and later-stage funding in particular

- For grant funding, international programs are typically the first choice of entrepreneurs. However, these grants usually have specific mandates, procedures, and KPI requirements to release funds that may not align with the startup's business model adaptation needs.
- In addition, many international grants are capped in size and designed to support good ideas during the initial implementation stage.

"Series A does not exist locally" - Jason Njoku, Founder, iRokoTV

<sup>15</sup> Crowdfunding in Nigeria, SPA Abijade & Co., November 16th 2016, <http://www.spaabijade.com/>  
<sup>16</sup> <http://tonyelumelufoundation.org>.

<sup>17</sup> Crunchbase database

**The Nigerian Stock Exchange introduced Alternative Securities Market (ASem) platform in an attempt to bring together fast-growth entrepreneurs with appropriate pool of investors**

- The Nigerian Stock Exchange aims to fund small fast-growing enterprises such as tech startups in their early years before they are ready for formal public offerings. The participants are supported by designated advisors, a growth ambassador, and institutional services.
- In order to be eligible, startups need to have already raised some equity and to have generated revenues for at least two years. The companies should also be willing to list fifteen percent of their shares.
- Although this marketplace has not been picked up by tech entrepreneurs – due to low liquidity and precedence – some interviewees think that it could be a remedy for the ‘valley of death’ phase in which a lot of entrepreneurs struggle and collapse.

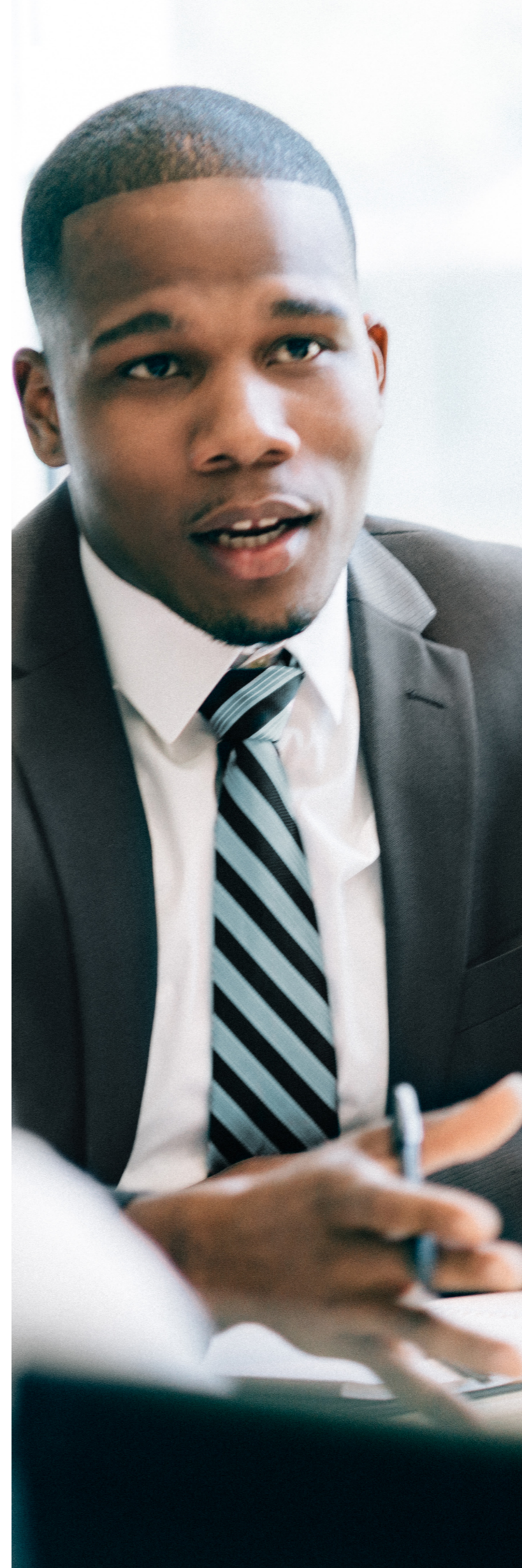
**Angel investors and VCs have difficulty finding investment-ready, “bankable” tech initiatives in the market**

- In Nigeria, the number of angel investors present and the investments they make are limited. There are few incentives for angel investment, unlike in other markets, making investment in tech entrepreneurship less attractive to high-net-worth individuals than conventional investments such as bonds, stocks, or real estate.
- Ecosystem participants believe that founders and investors have different market understanding and valuation expectations, causing a mismatch that affects the number of startups that get funding.
- Entrepreneurs feel that there is lack of “patient capital”, and that the angel investors needed for early stage, pre-seed investments would like to see returns within 2-3 years at similar multiples to those achieved in mature markets. Many tech entrepreneurs believe that at least 5 years is needed to reach the scale that investors expect.

- Investors’ biggest hurdle is the inability of many founders to translate good business ideas into solid, executable business plans that are relevant for the unique market. Many investors prefer proven concepts and revenue streams, and believe that Nigerian startups can match the ramp up rates in more mature markets. This is rarely achievable, given Nigerian market dynamics.

**Experienced entrepreneurs with stronger technical skills, viable business ideas and bootstrapping opportunities pursue international funding provided by accelerators abroad**

- Given the scarcity of smart money in the Nigerian ecosystem, entrepreneurs with international education and work experience seek access to international programs that provide funding as well as mentorship and networking opportunities.
- US accelerator programs such as those offered by Y Combinator and 500 Startups are the most cited examples to follow this route. Graduates of these programs feel that they increased the value of their startups while increasing their chances of securing later-stage investment from international sources.



**In Nigeria, there are not many exemplary exit stories to trigger greater participation in entrepreneurship or local investors**

- Ecosystem players believe most startups are in the very early growth stages, so little emphasis is placed on exit strategies.
- Some VCs predict that the earliest expected exits of some of their portfolio companies is still two to three years away.
- Acquisition activity in the market has been stagnant in light of economic challenges; however, private equity investments have started to gain momentum again, which is considered a positive signal for future prospects.
- Banks and telecom companies are the most likely acquirers in the local market, since they have the necessary financial resources and the willingness to partner with technology companies to acquire innovative solutions.
- An IPO on the Nigerian Stock Exchange (NSE) is not a viable consideration for many, since the exchange mostly hosts large, established corporations, and there is little activity and liquidity. NSE trading only amounts to about four percent of GDP.<sup>18</sup>
- Ecosystem participants believe that the odds of becoming a ‘unicorn’ are higher for those startups that are backed by international investors and those that provide solutions on a pan- African scale.

<sup>18</sup> World Bank Global Financial Development Database

## 2. Skilled talent



A healthy tech ecosystem relies on a large pool of qualified potential tech founders and employees with superior skills in both technology and business. This, in turn, relies on strong STEM educational foundations and the ability to acquire the relevant business skills. While some skills can be taught in formal education, others must be learned via employment or experience, requiring the private sector's participation to provide training.

Nigeria's standard of general education is low, with quality at all levels suffering from poor funding and deteriorating teaching capabilities. At 7% of GDP, the country has one of the lowest shares of government expenditure on education. This rate goes up to more than double in Sub-Saharan Africa region according to World Bank.<sup>7,19</sup> For decades, pressing issues facing the country kept the government from pursuing a long view of educational reform that would strengthen human capital foundation in Nigeria.

**"The curriculum is utterly outdated, resulting in a mismatch between what is taught in school and what is needed in the field" - Oleseun Onigbinde, Lead Partner, BudgIT**

The resulting poor education system means that, after nine to twelve years of education, students do not have the literacy or analytic skills required for working in a global context. The senior school certificate examinations demonstrate the level of the challenge, with 69 percent of students failing five or more subjects in the 2014 WASSCE results.<sup>20</sup> Graduates from the country's tertiary institutions often lack marketable skills and are considered unemployable by the competitive private sector, even after they graduate from degree programs. The science and technology education system and research-based academic culture also lag the countries building knowledge economies.<sup>21</sup>

A recurring theme among the Nigerian tech entrepreneurship ecosystem stakeholders is that one of the largest challenges is the significant gap between what the education system can offer and what's needed to support a thriving technology business.

<sup>19</sup> Government expenditure on education, total (% of government expenditure), data.worldbank.org  
<sup>20</sup> "Poor Education and Nigeria's Future, The Guardian, 16 March 2016 (retrieved on 23 November 2017, <http://allafrica.com>)

<sup>21</sup> Jide Akintunde, "Education vs. infrastructure in catalysing development in Nigeria", Financial Nigeria, 18 July 2017 (retrieved on 23 November 2017, <http://www.financialnigeria.com>)

The curricula of current degree programs are not designed to adequately prepare students for the needs of the job market

- The universities are often seen as teaching outdated material and curricula that is poorly matched to the job market. This, in turn, makes it difficult for employers to find good talent and creates a hurdle to driving the large, young population toward entrepreneurship.
- In engineering degree programs, for example, students learn archaic coding languages such as Fortran, while the industry seeks Java programmers.
- There are also gaps in the curriculum in terms of commercial skills, with not enough focus on accounting, marketing, and project management in particular.
- Ecosystem participants feel that, if the government institutes visa policies allowing knowledge transfer and exchange programs with other countries, students could gain the knowledge needed to close skill gaps.

Universities are rarely able to commercialize their research and lack the required technical capabilities and relationships with the private sector

- The link between research institutes and industry is weak, leading to suboptimal use and commercialization of research efforts.
- A National Office for Technology Acquisition and Promotion (NOTAP) study highlights a gap between Nigeria's research sector and the private sector, showing that academia failed to convert research outputs into intellectual property, patents, trademarks, industrial designs, and knowledge at the highest level.

Existing state government mandates include addressing the educational gaps with non-university initiatives

- Besides the weak technical coding programs, most universities also do not support innovation or meaningfully cultivate an entrepreneurship culture among students.
- Nigerian universities have been directed to establish tech entrepreneurship centers by the government; however, insufficient funding has led to uneven implementation. There are also few examples of private sector- university collaboration to leverage as successful models. As a result, this collaboration has not materialized.
- There are a number of initiatives outlined by the state government authorities in Abuja and Lagos designed to address barriers to skill building. In Lagos, the "Ready, Set, Work" program of the State Ministry of Education provides training on critical thinking, digital skills, and entrepreneurship to university seniors. The Abuja Enterprise Agency, established by the Federal Capital Territory Administration (FCTA), in collaboration with the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), has a government mandate to offer technical training in ICT and other sectors. The initiative also includes providing business support training to entrepreneurs.<sup>7</sup>
- Despite their intentions, these programs are not strong, comprehensive, or extensive enough to compensate for existing weaknesses and thus serve the needs of the Nigerian youth.

**"Universities are not able to commercialize research." - Akintunde Oyeboode, Executive Secretary, Lagos State Employment Trust Fund**

### The few qualified developers and engineers in the ecosystem are either foreign educated or self-taught

- Educated Nigerian youth are very eager to leverage new technologies and create a future for themselves, while tackling local and Pan-African challenges.
- There is a large group of foreign trained entrepreneurs moving back to Nigeria. These repatriates generally describe their motivation as being part of the change they want to see in Nigeria rather than as a response to a specific government policy.
- Technically inclined local talent often self-teach development and coding skills using informal platforms such as Coursera and YouTube.

### Private initiatives by entrepreneurs, foundations and multinational tech companies are addressing the underdeveloped skills challenge in Nigeria

- Programs such as Andela, Africode, and the Tony Elumelu Entrepreneurship Foundation have a shared vision to make Nigerian youth more employable through institutional training and skill development.
- Andela is a software training and outsourcing platform that started in Lagos. It is a four-year training program that takes in students via a highly selective recruitment process. Within six months, the program places participants with clients—including global names such as Microsoft and Udacity.

- While this initiative is considered to be a major move in the right direction, the employee placement mission is international and as such does not provide immediate sourcing opportunities for the local tech entrepreneurship ecosystem.
- Oracle, Microsoft and Google are some of the global tech companies operating in Nigeria and taking part in joint programs with the government, schools, and innovation hubs to develop coding and digital skills.

### Given skill levels and cultural preferences, tech startups struggle to attract, afford, and retain qualified talent

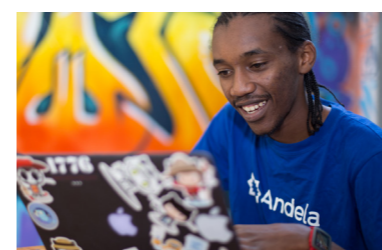
- Technically qualified talent often choose secure corporate careers with better income prospects in telecom companies or banks over the risks of entrepreneurship.
- Startups find it difficult to attract and retain good technical employees, as they are competing with established companies which can afford to pay much more.
- The equity stakes offered in startups as part of the compensation package are not sufficiently attractive to highly sought after employees, as there are very few exits and therefore this is not perceived as a wealth creation mechanism.
- Another challenge is the low number of quality founders in the market, which tends to put off skilled individuals from teaming up to realize business ideas.

- Domestic or international outsourcing for development does not yield satisfactory results. Local talent is usually fully employed and therefore can't invest the required time and attention. International options are rarely considered, given their high service costs.
- Acquiring international talent is very difficult due to economic conditions, currency valuations, and the low attractiveness of Nigeria as a relocation destination.
- Resourceful entrepreneurs overcome recruitment challenges either by recruiting good potential individuals from the southeast and north regions and providing them with dormitory benefits in Lagos, or offering university students paid internships. Either of these two options requires the founders to provide in-house training and devote significant time to transferring knowledge and building loyalty.

FIGURE 9. PRIVATE ENDEAVORS TACKLE LACK OF SOFTWARE DEVELOPER SKILLS IN AFRICA - I.E. ANDELA



- Andela was founded in 2014 on the principle that, with the right kind of training, there is enough talent in almost any country to create a base of advanced software developers
- Andela provides companies with access to the top tech talent by identifying high-potential developers on the African continent, shaping them into world-class technical leaders, and pairing them with global companies abroad as full-time team members.
- The program has received more than 70,000 applications from 19 African countries over the last two years. The top 0.7 percent was accepted which makes Andela by far the most competitive technical program on the continent
- Andela has enrolled around 500 developers to date across its Lagos, Nairobi and Kampala offices. About half of those have been placed with Andela's partners, and the other half are either building Andela's internal products or still continuing with their training.
- Currently, 23% of Andela developers are female, compared to a global average of 5.8% female software developers. In an effort to achieve a more balanced ratio, Andela has held multiple female-only recruitment cycles, as well as launched the "She Loves Code" initiative by which women in the program mentor young women in the community.
- Andela has raised USD 40 million to date. Most recently, in June of 2016 - a USD 24 million Series B led by Chan Zuckerberg Initiative and GV (formerly Google Ventures). Joining investors included Omidyar Network.



#### GLOBAL PARTNERS



"Good technical people are very rare and almost anybody who is good at any technical skill will likely be employed" - Chuka Ofili, Founder, Delivery Science

Source: Andela Media Kit, OC&C analysis

### 3. Networks

Tech entrepreneurship ecosystems function best when there is a dense array of players and structures with strong relationships between them. This helps entrepreneurs exchange ideas, build teams, get the resources they need, and grow.

**Innovation hubs are the most visible location for networking in Nigeria, providing physical clustering and access to ICT infrastructure, training programs, and initial funding for their participants**

- The Nigerian ecosystem saw a burst of innovation hubs in Lagos and Abuja to offset the infrastructure and educational hurdles that constrain the development of tech entrepreneurship in the country.
- These innovation hubs are mainly self-funded and supported by grants and donations, with little public funding. This limits their capacity to host, provide training, and initial funding.
- Private sector collaboration with innovation hubs is usually limited to providing internet access, prizes for competition winners, and event sponsorships.

**The number of established, well-organized incubators and workspaces in Nigeria is not sufficient to meet demand**

- The number of startups is growing in Nigeria, yet the number of incubators that can support startups from idea to product stage, while providing required linkages to investors, remains a bottleneck.
- Innovation hubs and acceleration programs are the main source of mentorship in the ecosystem. There are not enough mentors residing in Nigeria to guide startups with the challenges they face in the country.
- Affordable workspaces are very important for the Nigerian ecosystem, given the high cost of internet access, electricity, and rents, coupled with yearly upfront payment practices in Lagos. Workspaces also provide the opportunity for important collaborations.

“On the supply side we recognized that the biggest challenge was just the lack of sufficient workspace and infrastructure across the city.” Akintunde Oyeode, Executive Secretary, Lagos State Employment Trust Fund

**Startups get visibility and access to grants and financing support from network events and demo days**

- Innovation hubs and accelerator programs leverage networking events and demo days to promote their startups and programs, to create awareness and also facilitate important relationships.
- Government institutions and partnered programs also make use of events and sponsored demo days to promote innovation and technology businesses.
- The Office of ICT Innovation and Entrepreneurship (OIIE), organizes “StartUp Friday” events designed to identify promising startups and provide them with financial support. The Aso Villa Demo Day event in Abuja presents a forum for startups to pitch their ideas, and in Mark Zuckerberg’s much publicized 2016 visit to Nigeria, 30 finalists from this event were selected to pitch to the Presidency and the Facebook founder. This event is seen as a turning point that shed light on the country’s budding tech entrepreneurship ecosystem.

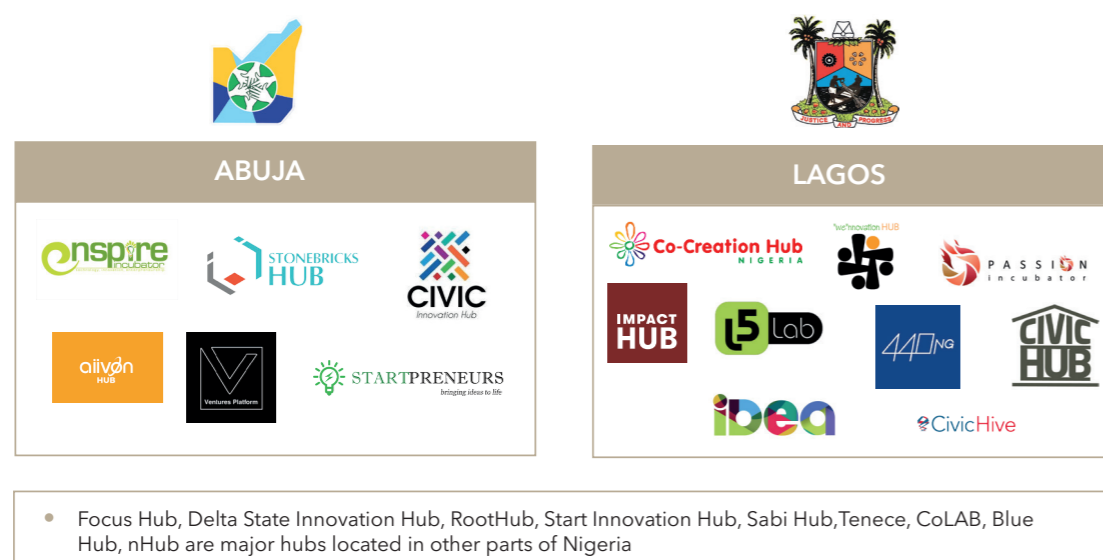
**The government recognizes the benefits of clustering talent together to facilitate synergies and maximize the effect of its investments**

- The state supports the Enspire hub in Abuja, which offers technology talent development and provides seeding and incubation support to entrepreneurs.
- The Abuja state administration is currently developing an innovation district named the Abuja Technology Village Science and Technology Park, which is expected to be operational within the next five years. Technopark activities will span technology research, incubation, and development to strengthen commercialization across four sectors: ICT, biotechnology, minerals technology and energy technology.<sup>7</sup>
- The government also intends to build a similar hub in Lagos, followed by six more around the country.

**Collaboration between ecosystem stakeholders is low, and there are no startup associations to advocate for startups and lobby for the needs of the tech entrepreneurship ecosystem**

- Ecosystem participants believe that many things are happening to uplift the Lagos and Abuja ecosystems, but they are disorganized and happen largely in silos.
- Stakeholders feel that there is a need to create formal interactions between regulators and startups. The Yaba tech community in Lagos drafted a framework – the “Yaba Manifesto” – to present their view on what is required to strengthen their community. However, this manifesto and communication is limited to a selected community.

FIGURE 10: LEADING INNOVATION HUBS IN ABUJA AND LAGOS



Source: OC&C analysis





#### 4. Culture

Cultural expectations and perceptions of entrepreneurship guide entrepreneurial behavior and the level of support from the community. Culture also affects when and whether citizens choose to engage in entrepreneurial activity. Generally, in cultures that support entrepreneurial behavior:

- People seek to equalize the distribution of power and wealth in society by taking personal initiatives, indicated by low power distance scores.
- There is room for individualism and less preference for communal identification and adherence to social norms and rules.

- Society is highly competitive, celebrating achievement, leadership, and assertiveness. People expect to be rewarded materially for success.
- People in entrepreneurial cultures feel comfortable with uncertainty and ambiguity. There is greater acceptance of using nonconformist behavior and ideas to overcome challenges rather than maintaining the status quo.<sup>22</sup>

Nigerian culture, in general, is described as one where there is an acceptance of hierarchical order, often perceived as a consequence of inherent inequalities among people. Accordingly, there is a tendency to favor centralized structures. Nigeria is considered to be a collectivistic society, which is also reflective of a tribal heritage that has implications on business dealings as well. On the constructive side, the collectivistic aspect of the culture feeds entrepreneurs' motivation to do good for the Nigerian and African people. The society is driven by achievement and success. In general people are comfortable with competition, resolving conflicts, and tolerating ambiguity.



<sup>22</sup> Geert Hofstede - Cultural Dimensions ([www.hofstede-insights.com/models/national-culture/](http://www.hofstede-insights.com/models/national-culture/))

#### A common theme that emerged from the conversations with ecosystem stakeholders is the culture of "quick wins" on the part of investors, entrepreneurs, and tech talents in Nigeria

- A lack of long-term orientation is a common aspect that is often repeated by those describing the expectations of different stakeholder groups in the ecosystem.
- There is a limited pool of local investors in tech startup ecosystem with an understanding on how startups work. Most investors desire quick returns, which is not usually the prospect for Nigerian startups.
- Tech entrepreneurs mostly fail in their responsibility to pitch properly to local investors to sell them on ideas so they can get investments. Some tech entrepreneurs also fail because they are looking for a quick payback; they tend to put solving problems before properly identifying the market for a particular need.
- Others have failed because they find it difficult to retain talent. Tech talents do not value having a stake in the startup, because it does not translate into immediate payouts. It is difficult to prove the value of the offer to talents, as there are not enough successful exit stories in the market.
- Nevertheless, candid dialog between stakeholders around realistic expectations given market circumstances is the most fruitful way forward for the ecosystem

#### There is a shifting dynamic among entrepreneurs; knowledge and experiences are increasingly shared in informal settings.

- In the Nigerian culture people tend to cluster around affiliate groups and known circles. Even though there are not strong signs of cross-functional, territorial or

institutional collaborations, there is more and more informal sharing of experiences among tech entrepreneurs at events, innovation hubs, and in workspaces.

- Increasingly, more experienced entrepreneurs are going against common cultural norms to open up about their stories of failure as well as success. This is helping the community benefit from learnings along the entrepreneurship journey.

#### The drive behind most entrepreneurial endeavors is based on necessity rather than following an opportunity

- Individuals with a strong educational background, even those with entrepreneurial ambitions, tend to pursue corporate careers in Nigeria. Entrepreneurship is regarded as a secondary option. However, more of the younger educated generation sees entrepreneurship as an attractive option.
- The emerging entrepreneur profile of new graduates is less innovative, and they are more likely to clone business models that are successful elsewhere without thorough market analysis.
- There is also a group that chooses entrepreneurship in order to be innovative, especially those who are technically inclined. While ambitious, this group needs to close the skills gap to be successful. They are also less concerned with achieving scale and looking at the business as an ongoing concern.
- As in any emerging ecosystem, there are also entrepreneurs with the right skills and a drive to achieve success by creating business models that are game changers. In Nigeria, these entrepreneurs maintain regular employment until their business gets traction, especially if they have a business background.

"They [entrepreneurs] tend to be young, mostly fresh out of school, no work experience; they have never worked in a structured environment. So they have a so called "brilliant idea", they have a lot of passion behind the idea but they lack merit. Either that or they don't have the team to actualize it." - Adedotun Sulaiman, Chairman, Lagos Angels Network



**Private investors, angels and VCs tend to favor repatriated tech entrepreneurs with international experience**

- New graduates out of universities usually lack commercial skills. They do not know the market dynamics or the target customers. The (low) quality of university education affects the quality of ideas and plans for execution of ideas. Graduates require more guidance to materialize their ideas.
- Individuals who have been educated, have worked and have lived abroad have an advantage, since those with this entrepreneur profile are more likely to develop an idea through to implementation and have a better grasp of market applicability.

**Tech entrepreneurship has received a lot of attention in recent years after visits from global role models, and high-profile investments in local startups that pioneer solutions for uniquely African challenges**

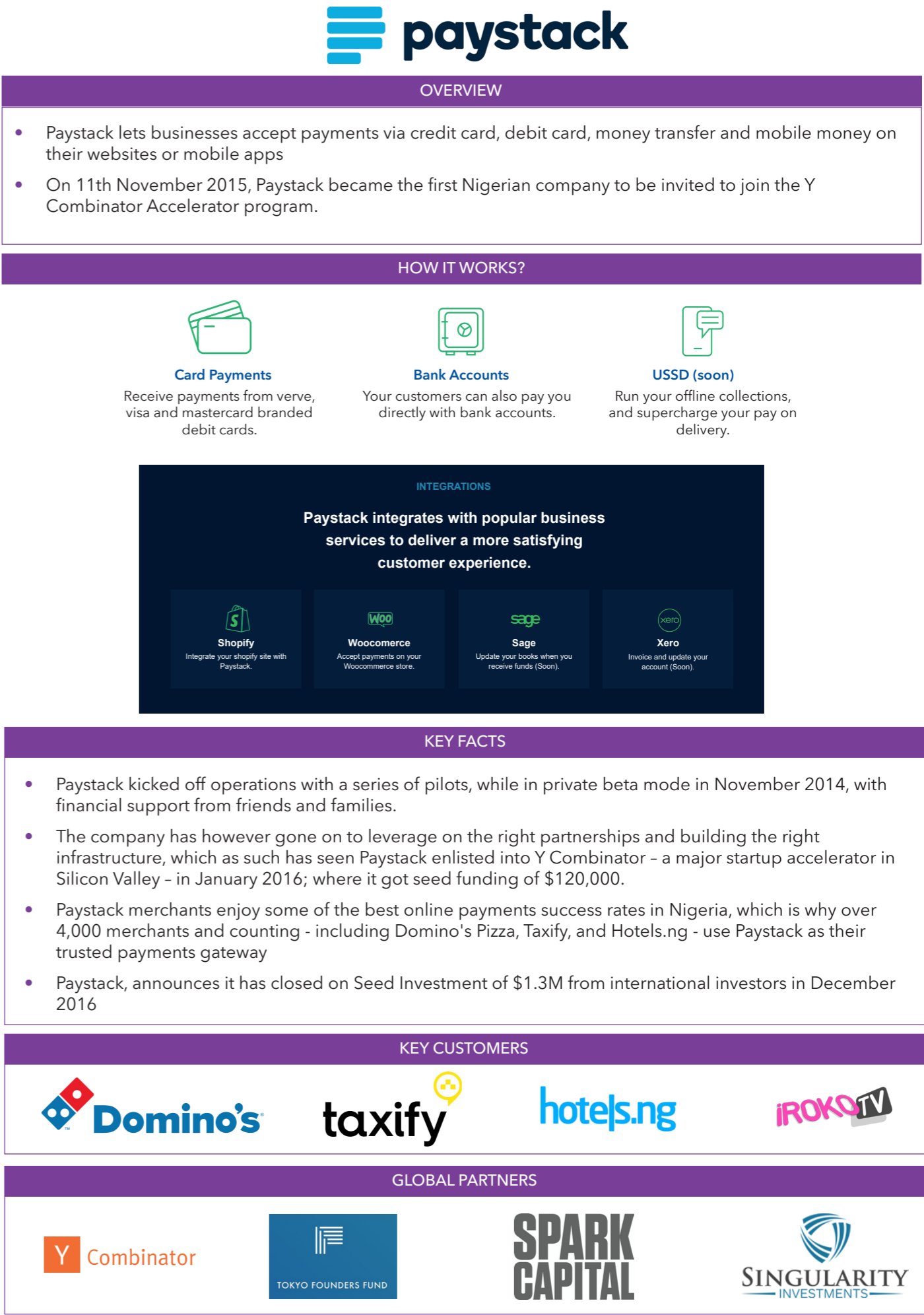
- The Nigerian media promotes success stories and raises the profile of local tech entrepreneurs as heroes. The founders of Interswitch, Mitchell Elegbe, and Paystack are role models in the ecosystem, which sparks enthusiasm.

- Many local and international events take place in Nigeria. Visits made by Google CEO Sundar Pichai and Facebook founder Mark Zuckerberg, captured the government's attention and have built up excitement in the ecosystem.
- A number of regular events and competitions bring the ecosystem members together and build momentum, including Aso Villa Demo Day, Lagos StartUp Weekend, StartUp Friday.
- These activities and high-profile visits receive extensive media coverage, both domestically and outside Nigeria. There is increased media coverage of African startups in the global media, with outlets such as CNN, BBC, Guardian, etc. actively looking for emerging startups to feature.

**Internationalization aspirations are associated with becoming Pan-African and targeting low-income markets and populations**

- Some initiatives come from a desire to solve a social problem and create an impact in underprivileged communities around the world.
- Entrepreneurs with a Pan-African vision aim to grow across borders and are more inclined to seek international financing and mentoring opportunities. They also reach out to organizations that support the development of underprivileged communities early on.

FIGURE 14. PAYSTACK IS A RISING STAR AND A ROLE MODEL FOR MANY TECH ENTREPRENEURS



## 5. Regulations



**There have been recent developments with the goal of making doing business in Nigeria easier. Further modifications are necessary to make the processes more entrepreneur-friendly and to eliminate the need to get third-party support**

- Nigeria ranks 138<sup>th</sup> among 192 countries for Starting a Business in the World Bank's Doing Business Report. This ranking is expected to improve given recent changes that simplified procedures for registering a business.
- In 2016 the government established an "Ease of Doing Business" office to focus on streamlining required business procedures.
- The Corporate Affairs Commission (CAC) established an online business registration platform in 2017, and Certificates of Incorporation can be obtained in about two weeks. In spite of these improvements, the digitalized platform has not yet obviated the need for legal guidance.
- Ecosystem participants and attorneys serving entrepreneurs indicate that a major hurdle is that information on the new advances and new laws is not communicated widely, and so tech entrepreneurs aren't able to take advantage of them.

Tech entrepreneurship is directly and indirectly affected by a broad range of regulations that have an effect on its business construct, operational domain and boundaries, and source of innovation.

### A. BUSINESS PROCEDURES

The ease of executing business drives, in part, how many startups can launch and survive. Straightforward business procedures help drive interest to take up entrepreneurship. Streamlined, hassle-free, and digitized procedures minimize back-office efforts and allow entrepreneurs to accomplish more with limited resources. Tax obligations, both time and cost-wise, can affect a startup's growth, especially in the early years when cash flow is uneven.

Regulatory and legislative practices around business, particularly dispute resolution, serve to reassure both startups and their investors on how their rights will be protected, as well as the costs of protecting themselves. Bankruptcy legislation is also important, because this legislation can be a significant motivator or deterrent to starting a business.

"The Government is looking to simplify the whole process of company registration, such that the entire process of registering a company can be completed online. However, currently, it is not quite that seamless. A lawyer is still often required to assist with the process" - Damilola Thompson, Corporate Counsel, EchoVC

### Business procedures are more stringent for nonprofit entities

- Despite their mission to create positive change for the communities they serve, nonprofit entrepreneurs are faced with longer and more bureaucratic business procedures.
- It can take up to six months for nonprofits to register their organizations and they must report all funding they receive to the Special Control Unit against Money Laundering (SCUML). Complying with these processes is depleting these entrepreneur's resources.
- Several regulators oversee nonprofits, including FIRC, EFCC, CAC, FIRS and the National Population Commission.<sup>23</sup>

### The Nigerian tax system is hard to navigate for entrepreneurs and it's not designed to include incentives or reliefs for small enterprises

- The process required to obtain a Tax Identification Number (TIN) and VAT, while cumbersome, is now more affordable and the verification process has also been made easier.
- VAT is only five percent, which offers a benefit compared to most other countries. However, businesses are expected to file for VAT from the first day of operation.
- The businesses are charged a 30% corporate income tax by the federal government. Companies are also subject to paying withholding taxes based on a certain percentage of their revenue. This withholding tax is netted off against the companies' corporate income tax at the end of the fiscal year.
- A company's withholding tax is payable to the federal government and, for sole proprietors, is payable to state. These procedures often create confusion among entrepreneurs, who feel that they are being double taxed.
- The real uneasiness however, relates to the hardship the monthly statutory contributions put on cash-constrained startups which can be as high as 11% of their monthly income.

- Arbitrary taxation – mostly at the municipality level – is another pain point cited. Nigeria ranks 182 among 192 countries in paying taxes according to the World Bank's Doing Business Report. The Federal Inland Revenue Services (FIRS) has been working to remove hurdles in the tax process to ensure more compliance with tax obligations.

### A few tax breaks that could benefit startups are tricky in application

- The "Pioneer Tax" incentive aims to provide tax breaks for ground-breaking businesses. The incentive allows businesses not to pay income taxes during the first three years of operations (and this could be extended to five years).
- The definition of and eligibility for "Pioneer Tax" status is felt to be vague. Stakeholders indicate that in the past some clone businesses benefited from this tax relief, while some really innovative ideas could not.
- In order to qualify for the "Pioneer Tax" incentives, a company must have a NGN 100 million (about USD 270,000) asset base, albeit non-current assets including future earnings, goodwill and IP, is also considered for eligibility.
- The language around the definition of obligations are perceived to be vague leading to misinterpretation and miscommunication in the entrepreneurship community resulting in underutilization of this incentive by startups. Additionally, there are opinions that the tax break should extend to a set period of time after a company becomes profitable.
- Other tax incentives that are in place are intrinsically addressing mature companies in the later stages of development, since a condition for application is having a three-year tax history.

<sup>23</sup> Economic and Financial Crimes Commission, Corporate Affairs Commission, Federal Inland Revenue Service

### Nigerian commercial laws do not include provisions to incentivize and protect tech startup investors

- There are currently no policies to incentivize angel investors to support tech entrepreneurship, or capital gain tax exemptions for early-stage investments in startups which are seen as good investor incentives.
- Nigeria has a very high business failure rate, with about 80 percent of new businesses failing within the first five years of operation.<sup>24</sup> There are also no policies to protect investors in case of disputes or an investee business failure.
- In addition, few failed businesses go through the procedures to formally file for insolvency. Instead, most businesses are just abandoned, since there are no liabilities or enforced penalties for not formally closing down a business

### B. DIGITAL POLICIES

The benefits of the internet economy are enormous, but there are also growing concerns around privacy, security, crime, and anticompetitive practices. Striking the right balance between capturing the benefits of the internet, while mitigating its potential risks, has become a challenge for policymakers around the world.

Nigerian regulations lag behind in addressing the country's digital challenges and framing the ICT and tech entrepreneurship domain in the country. The main reason for this is that these are new areas of business in the country and not many of the authorities with executive powers are informed enough to steer the discussions. The states of Lagos and Abuja are more progressive and have set up special agencies to tackle innovative companies and their challenges.

A number of existing laws are not current, since they have not been updated to reflect recent developments related to internet activities. Regulations on e-finance and e-commerce are more current, given the maturity and globalized nature of the finance sector and the strong consumer relevance of both.

The Cybercrimes Prevention Act 2015 was enacted in response to an upsurge of cybercrime in Nigeria. International companies have formed their own strategies to combat fraudulent scams, PayPal stopped providing money receipt services to send funds and make online payments.

The cybercrimes law aims to promote cybersecurity and protect computer systems and networks, electronic communications, data and computer programs, intellectual property and privacy rights. The Cybercrimes Act stipulates punishments for the various offenses and makes enforcement easier once an offense has been committed.

Lawmaking procedures are also seen as inefficient and legal professionals involved in the tech ecosystem point out several bills under consideration which could benefit tech entrepreneurs, but these have been slow to be passed into law.

### Data privacy and protection are governed by the blanket provisions of the 1999 Constitution of the Federal Republic of Nigeria

- The Constitution guarantees the protection of privacy to every Nigerian citizen<sup>25</sup>; however, this is a blanket provision and does not directly affect data protection.
- The Freedom of Information Act of 2011 only addresses public information and does not give any guidance on data protection. This act also does not reflect the core principles of data protection around the world.<sup>26, 27</sup>
- The Personal Information and Data Protection Bill provides the principles governing the collection, use and disclosure of personal information of individuals in a manner that recognizes the right of privacy. Other laws and policies touch upon citizens' data and privacy protection from different angles such as the Cybercrimes Prevention Act and the Nigeria Communications Commission (NCC) bill of rights but authorities point out the need for a comprehensive data protection act.

<sup>24</sup> Organization for Economic Co-operation Development

<sup>25</sup> Section 37 of 1999 Constitution of the Federal Republic of Nigeria as amended

<sup>26</sup> Dr. Bernard O. Jemilohun and Prof. Timothy Ifedayo Akomolede, Regulations or Legislations for Data protection in Nigeria? A Call for a Clear Legislative Framework

- The regulatory body charged with the implementation of the Nigerian information technology policy is The National Information Technology Development Agency (NITDA). The agency has drafted data protection guidelines by leveraging UK provisions and the European Data Protection Directive. This guideline is not yet in effect.

### Only very recently Nigeria ratified the Berne convention and its provisions are domesticated in Nigerian copyright laws

- Until 2017, the Copyright Laws in effect dated back to the 1990s in Nigeria. Last year the Berne convention was ratified along with the WIPO Copyright treaty. The laws are expected to become full in force once the copyright reform bill passes through the Parliament.

- In the past, due to gaps in IP and copyright enforcement there have been experiences where established companies take ideas of startups which might be using their licenses and infrastructure. To protect themselves, most entrepreneurs with the means to do so went abroad to get copyright protection. Once the laws become enforceable in the country judicial interpretations and precedence will emerge, building confidence in the ecosystem.

### Key challenges for the ecosystem include a lack of clarity around digital policies and the low predictability of policies

- Ecosystem stakeholders feel regulators need to move faster on policies and regulations and to increase engagement with SMEs. Most laws currently focus on issues related to larger corporates.

"I believe the government is wanting and willing to enact policies that promote digital growth, while at the same time balancing concerns around fraud, market stability, and consumer protection. Regulators are having to adapt to fast changes in the market and often don't have the education on best practices; hence they are more reactionary to make policies, without understanding their consequence to the digital marketplace and Nigeria's competitive position in this economy. Still policies and regulations remain cumbersome, lack transparency, and often enacted in ways that mean huge cost repercussions for startups. Likewise, the unpredictability of the government and regulators is often a bigger risk than the direct policies themselves" - Alexandra Novitzske, Chief Investment Officer, Singularity Investments

C. TRADING ACROSS BORDERS

Measures designed to control foreign currency trade have impacted tech entrepreneurs’ access to online services and international markets

- The collapse of world oil prices led to an erosion in Nigeria’s foreign currency reserves. As a result, the Central Bank of Nigeria (CBN) started expanding its currency control measures from 2015, in an effort to support the value of the naira by curbing demand for foreign currency.
- Nigerian entrepreneurs who typically use their naira-denominated cards to pay for online services such as server space and web hosting in Europe or America now have limitations on how much they can spend on foreign currency.<sup>28</sup>
- Platforms such as Google Play do not accept Nigerian debit and credit cards, making it difficult for startups to monetize their ideas.
- In 2016, the Central Bank of Nigeria changed its policy on money transfer operators, allowing only those with operations in Nigeria to offer services. This has limited the options for receiving online foreign currency payments. This policy also excluded PayPal from conducting online transactions.<sup>29</sup>
- Payments from outside the country are not accepted, irrespective of the size of the businesses. This is a hurdle for scaling any startup beyond Nigeria.

D. GOVERNMENT’S R&D POLICIES

Gross expenditure on R&D is estimated at between 0.1 and 0.5 per cent of GDP, and the combined budget of the two federal ministries in this domain (Ministry of Communications Technology and Ministry of Science & Technology) in 2016 was NGN 35.4 billion (c. USD 100 million), less than 1% of the total budget of the Federal Government.<sup>30</sup>

The private sector’s contribution to R&D is insignificant (0-0.1% of GDP).

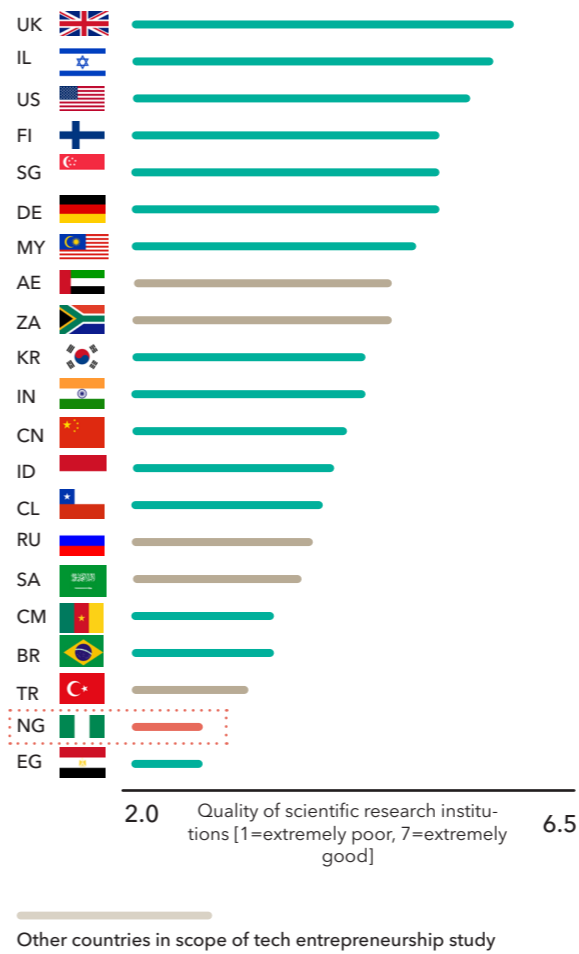
To spur the ideas and innovation that create interest in entrepreneurship, the government needs to fund and support more R&D

- Nigeria ranks 52nd globally according to published documents and citations, with many innovations by Nigerians introduced abroad without any resulting benefit created for the country.<sup>31</sup>
- Nigerian government agencies and universities are the main venue for some degree of basic and applied research.
- Nigerian government agencies and universities are the primary source of basic and applied research, and public R&D agencies focus on chemical technology (National Research Institute for Chemical Technology), industrial research (Federal Institute of Industrial Research, Oshodi); agriculture (International Institute for Tropical Agriculture, IITA); space technology (National Space Research & Development Agency) and technology incubation (NBTI).<sup>7</sup>
- The University of Lagos established the Office of Research and Innovation in 2013 which now focuses on developing research clusters, providing support to academic staff on access to external funding, and improving the quality of academic research at the university.<sup>7</sup>
- However, poor funding over the past three decades has limited the quality of research output from government-funded institutions.

In a bid to improve the country’s expenditure on R&D to a minimum of 1% of GDP, the Ministry of Science and Technology has recently pushed to establish a National Research and Innovation Fund (NRIF)

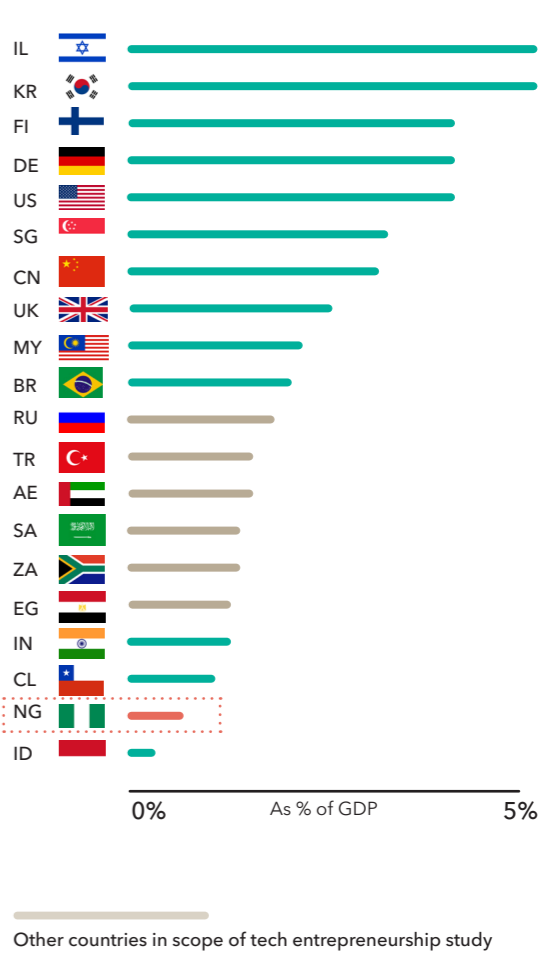
- The fund aims to complement the budgetary allocations made to government research departments that address the R&D funding deficit, through greater participation from Nigeria’s private sector.<sup>7</sup> The National Research and Innovation Bill (2016) that would establish this fund is currently under review by the National legislature.

FIGURE 15. QUALITY OF SCIENTIFIC INSTITUTIONS



Source: WEF The Global Competitiveness Report, OC&C analysis

FIGURE 16. R&D SPENDING AS A % OF GDP

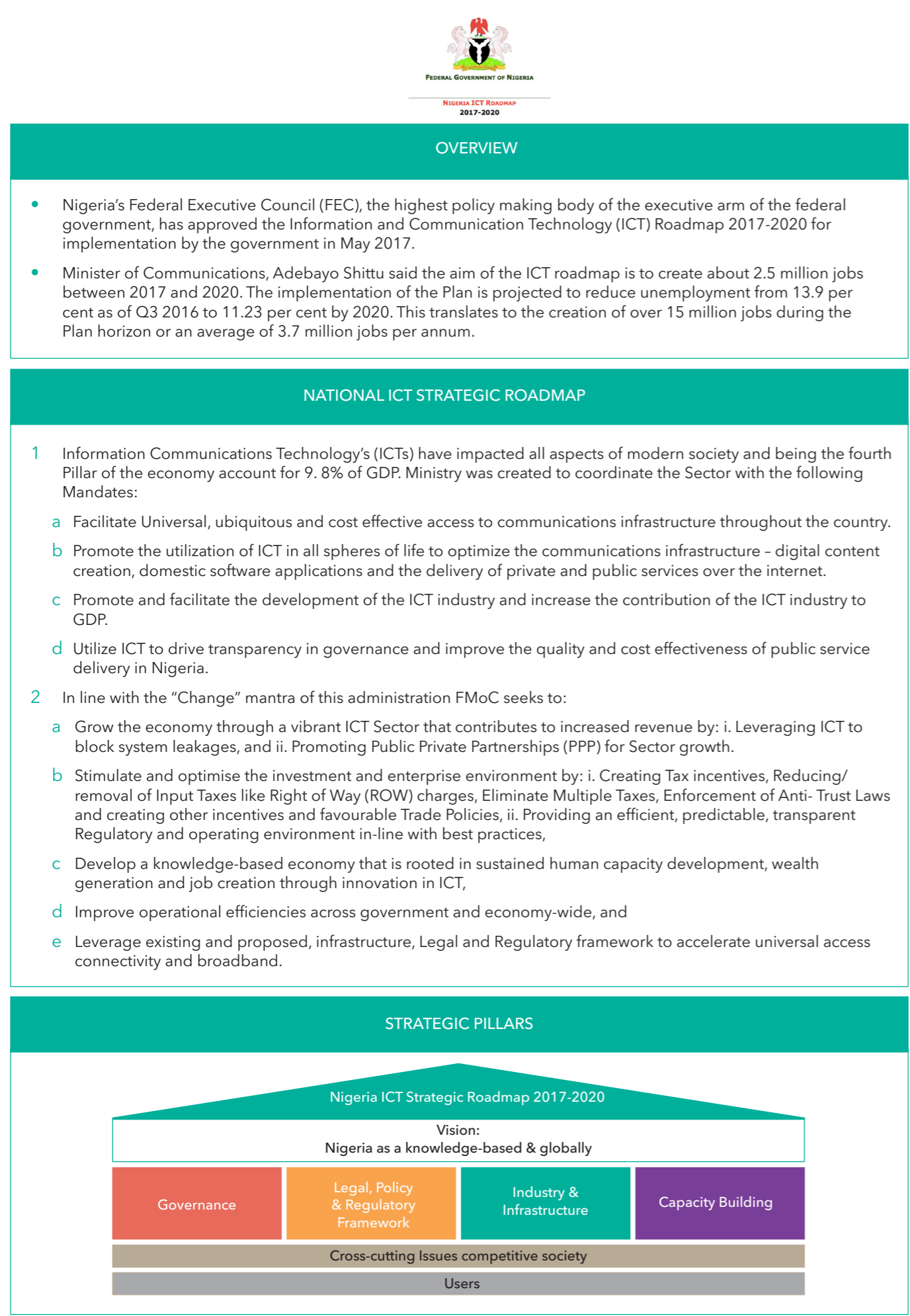


Source: UNESCO, OC&C analysis

<sup>28</sup> “Why Nigerians can’t use their bank debit cards outside the country anymore”, Quartz Africa, December 27, 2015  
<sup>29</sup> “Nigeria clamps down on money transfers to the country”, CNN.com, August 4, 2016

<sup>30</sup> Federal Government of Nigeria Appropriation Act 2016  
<sup>31</sup> UK Science & Innovation Network Country Snapshot: Nigeria

FIGURE 17. NIGERIA NATIONAL ICT ROADMAP - 2017-2020



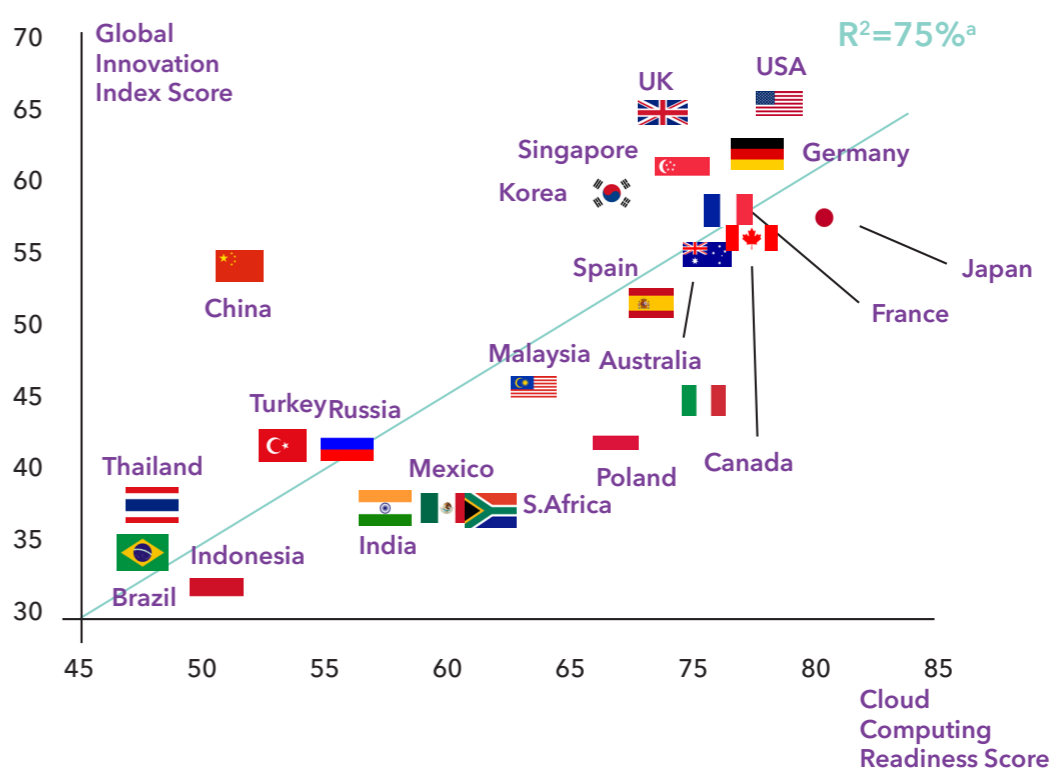
Source: Federal Ministry of Communications, Interviews, OC&C analysis



Wide penetration of high-speed internet at affordable prices reflects the ability of the ecosystem to support rapid knowledge-sharing and dissemination of new technologies to the wider population. It also highlights the ability of the wider market to consume tech- enabled products and services.

Cloud services allow businesses, especially tech startups, to lower their capital expenditure and IT cost structure by providing hardware, infrastructure, software, and application requirements as a service instead of capital investments, increasing their business agility and operational resilience. Moreover, studies indicate that increased access and use of cloud computing services correlates positively with the level of innovativeness of a country.

FIGURE 18. CLOUD COMPUTING PLAYS AN IMPORTANT ROLE CULTIVATING INNOVATION



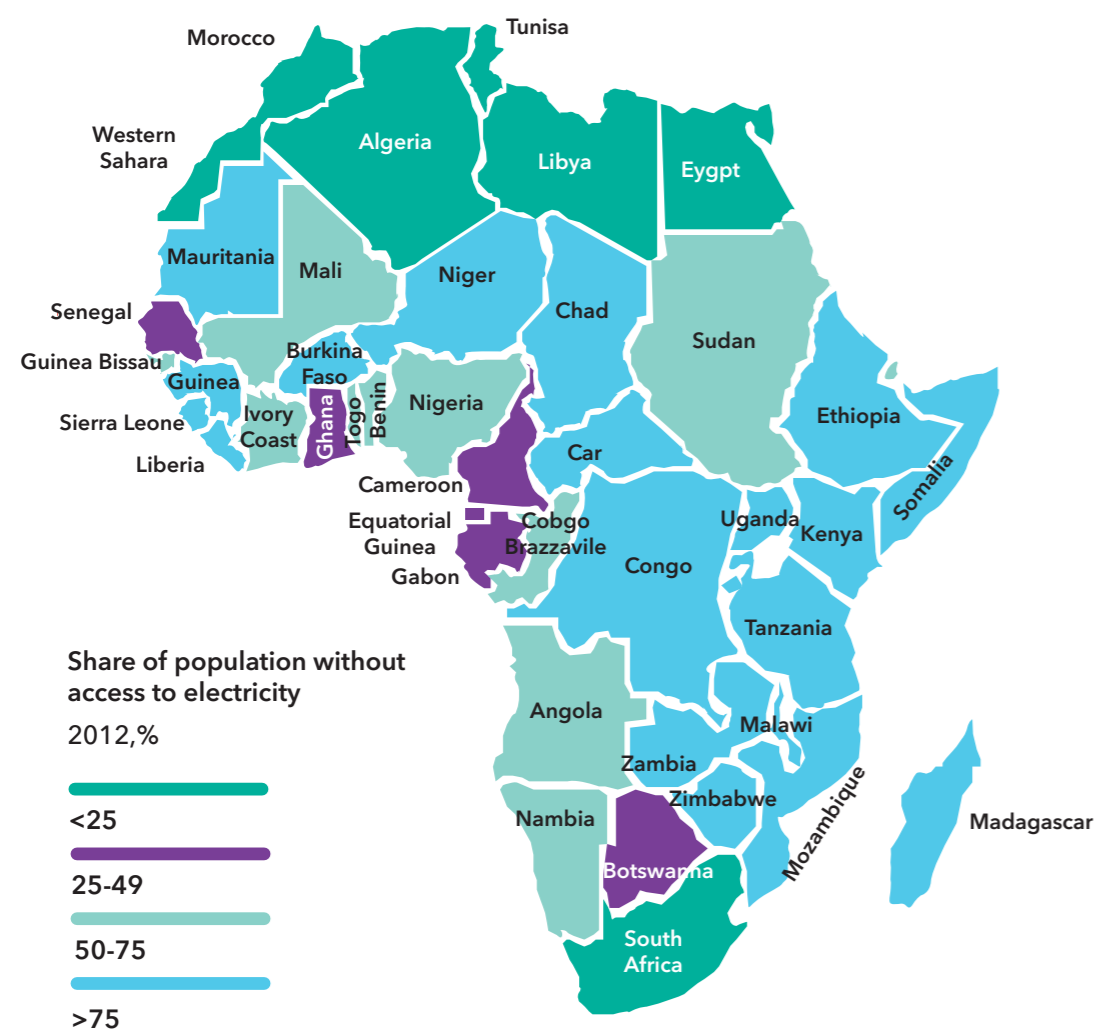
a. Excluding China  
Source: Business Software Alliance, INSEAD Global Innovation Index, OC&C analysis

### Nigeria struggles with fundamental infrastructure problems which overshadow most of the initiatives undertaken to foster tech entrepreneurship

- Reliable, continuous power is an ongoing concern for most African nations.<sup>32</sup>
- In Nigeria, the power supply is irregular and, according the International Energy Agency, about 74 million Nigerians do not have access to electricity.<sup>32</sup>
- The situation is better managed in the urban centers where most businesses, public institutions and residential areas make their own arrangements for backup power supply. Interviewees indicate that there is no power from the grid 40% of the time.

- However, this means medium-sized tech businesses must spend between USD 7,000-10,000 per month<sup>33</sup> on diesel costs to feed power generators. This is one of the main reasons why tech entrepreneurs cluster around hubs and workspaces.
- Innovation hubs indicate that infrastructural expenses drain more than half of their funds.
- Other major infrastructure issues relate to road and transportation networks, and getting secure office space at affordable rates. Hubs and common workspaces play an important role in providing solutions to some of these challenges.

FIGURE 19. ELECTRICITY ACCESS IS A COMMON PROBLEM IN MANY OF THE AFRICAN COUNTRIES



a. Excluding China  
Source: Business Software Alliance, INSEAD Global Innovation Index, OC&C analysis

<sup>32</sup> Energy access database, IEA

<sup>33</sup> Iroko TV interviews

### The ICT infrastructure has significant room for improvement to make the benefits of the internet accessible to the wider Nigerian population

- Nigeria has 39 million broadband subscribers (mobile and fixed), and 16 million smartphone users. According to the Nigerian Communication Commission (NCC), there are 91.6 million Nigerian internet users, a national penetration rate of 50%.<sup>34,35</sup>
- Internet penetration rates increase in urban centers; Abuja has 72% and Lagos is estimated to have 90% internet penetration.<sup>7</sup>
- Relative to its population of 186 million, the low penetration rate underscores Nigeria's status as a large market with considerable untapped potential.

### Fixed internet access is mainly out of reach for many average Nigerians

- Nigeria ranks 141st out of 182 countries for fixed broadband costs as a percentage of gross national income.<sup>34</sup> Besides its high costs, the coverage is also very low; regional access and regular use remains a challenge.
- In Nigeria, the average cost of monthly entry-level fixed broadband packages is around USD 33. This is more than half of the Nigerian minimum wage of level of NGN 18,000 (USD 50).<sup>36</sup>
- The further away the country and its population is from the cable landing stations in the coastal regions, the higher the infrastructural costs of providers to bring the services inland, which is in turn reflected by higher end user prices.
- Lagos has the most widespread connections of metro-fiber cables in the country. Outside of Lagos and Abuja, almost none of the households have fixed broadband connection.
- Efficient and cost-effective fixed broadband internet is critical to get the greater population online in schools, government institutions, corporations and research institutes.
- In October 2015, the NCC removed data floor pricing in Nigeria, allowing mobile operators to set competitive mobile data service charges.<sup>37</sup> In just one year, the amount of data that a subscriber could buy for the same price increased six fold.<sup>38</sup>

"I think if we can improve our ICT infrastructure it would create a leapfrog effect compared to what you would get in a more established country" -  
Tunde Akinnuwa, Country Manager, Seedstars Nigeria

<sup>34</sup> International Telecommunications Union

<sup>35</sup> "Internet users in Nigeria hit 91.6m", Vanguard Nigeria, July 26 2017, (<https://www.vanguardngr.com/2017/07/internet-users-nigeria-hit-91-6m>)

<sup>36</sup> "These charts show broadband internet is still too expensive for many Africans", Quartz Africa, November 28, 2017

<sup>37</sup> "NCC removes "Data Floor Price" Imposition; Networks can now offer cheaper data", techsuplex.com, October 27, 2015

<sup>38</sup> "Nigeria's mobile data prices are finally starting to come down", Quartz Africa, May 31, 2016

Internet speed is another major hurdle in Nigeria, as in many other African nations, affecting both businesses and consumers

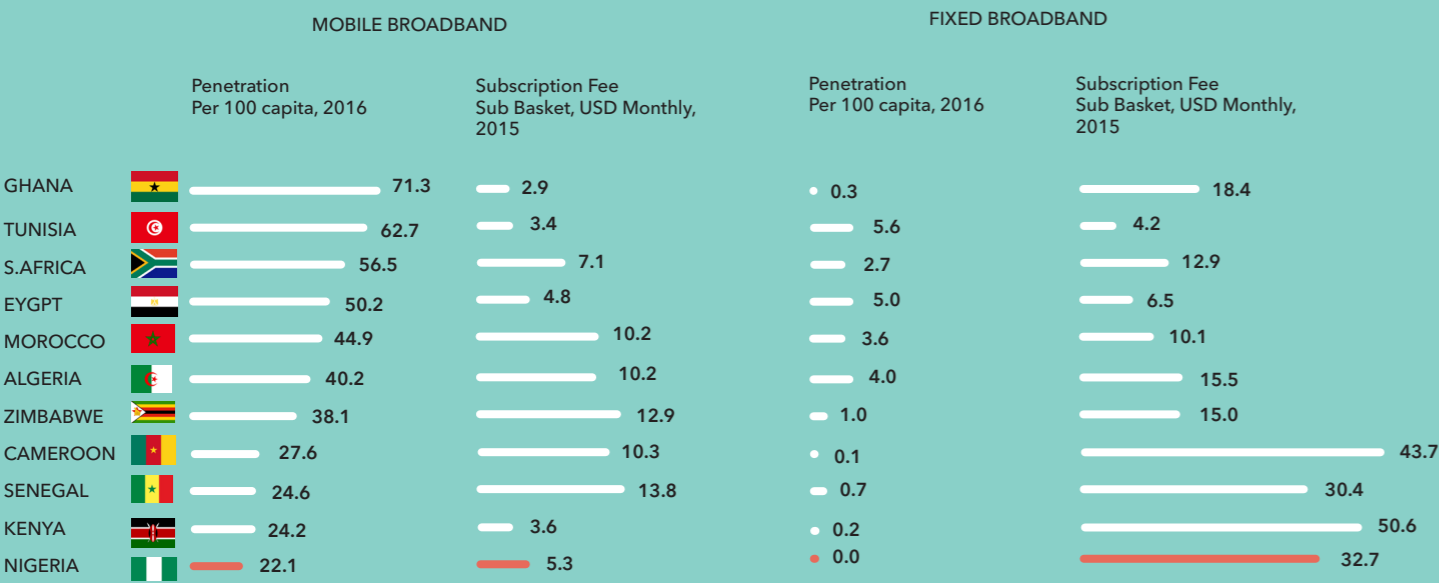
- Across Africa, internet speed is below the global minimum standard of 10 megabits per second<sup>36</sup>
- As of 2017, Nigeria’s average connection speed is 3.9 mbps, ranking 114 among 143 countries studied in Akamai’s state of the internet report.<sup>39</sup> On average upload speeds are faster than download.<sup>40</sup>

Cloud computing uptake by Nigerian local businesses is slow and progress is hindered by infrastructural concerns as well as security

- Galaxy Backbone is the only local data storage provider for cloud services working mostly with government institutions, satisfying public data localization requirements.

- The most prevalent cloud services among entrepreneurs are Amazon Web Services and Azure. Other available cloud services providers in Nigeria are Microsoft, IBM, and Google serving directly to companies or in partnership with some other players such as Infoware, Descasio, and Sunnet.<sup>41</sup>
- The established local businesses in Nigeria tend to host and maintain proprietary IT infrastructure, systems and applications. SMEs are typically able to migrate to using cloud services at affordable rates.
- Safety concerns, poor internet service quality, dependability of power supplies, and the absence of protective regulatory frameworks are some of the hurdles that prevent further conversions.
- Industry experts estimate a cloud computing market potential of USD 1 billion in Nigeria, if the broadband infrastructure hurdles are resolved.<sup>41</sup>

FIGURE 20. BROADBAND INTERNET (MOBILE AND FIXED) ACCESSIBILITY AND AFFORDABILITY ACROSS AFRICA



Note: The broadband sub-basket refers to the price of a monthly subscription to an entry-level broadband plan  
Source: International Telecommunications Union, Statista, Euromonitor, OC&C analysis

<sup>39</sup> “State of the Internet - Q1 2017.” Akamai. <https://www.akamai.com/us/en/multimedia/documents/state-of-the-internet/q1-2017-state-of-the-internet-connectivity-report.pdf> (accessed August 10, 2017)  
<sup>40</sup> <http://www.bandwidthplace.com/location/nigeria/lagos/>

<sup>41</sup> Chapman Eze Nnadozie, “The Challenges of Cloud Computing Adoption in Nigeria”, World Academy of Science, Engineering and Technology International Journal of Computer and Information Engineering Vol:10, No:11, 2016

## 7. Market potential



The addressable market size for tech startups in a country is a function of the national economy, digital literacy, and the readiness of customer groups. Consumer habits are affected by internet and mobile coverage, as well as their appetite for new products and services. Business procurement policies and competition dynamics affecting established companies shape the market potential for startups that rely on business customers. Other factors such as the political climate and international opportunities define startups’ growth opportunities.

The government can impact the size of the market with consumer protection and competition rules, by building public confidence in online services, and especially via procurement programs and policies.

Nigeria is Africa’s largest market, with a population of 186 million, a growing middle class, and a large youth market. One third of the population is between 15 and 35 years old, representing a growing source of tech-savvy individuals eager to adopt the latest products and services as soon as they become available. There are more than 90 million internet users and 16 million smartphone users.

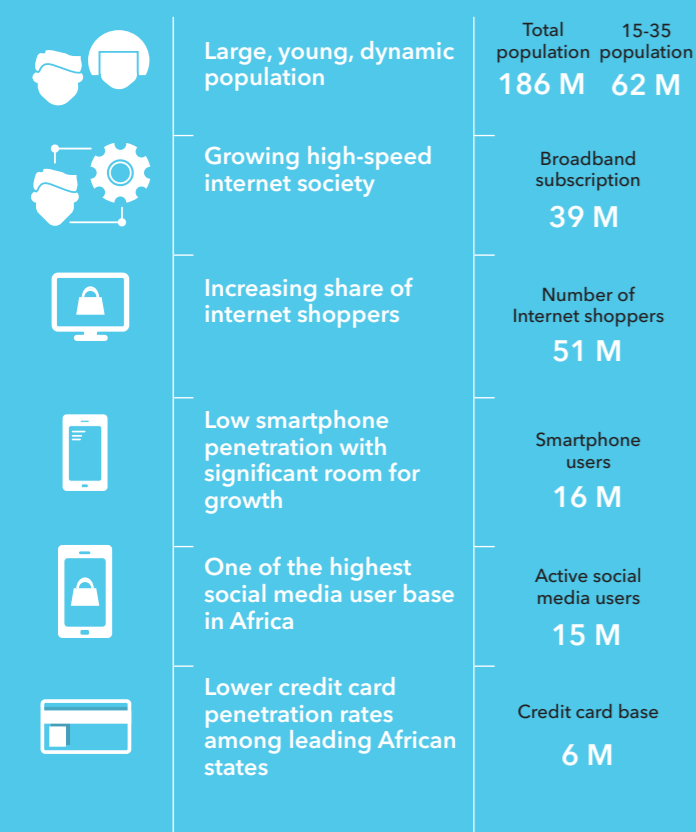
Sources indicate that there are more than 70,000 SMEs and 37 million micro-enterprises in Nigeria and that their economic activity contributes about 47% to the country’s GDP. This is similar to the profile of a developed economy.<sup>7,42</sup>

Lagos is the commercial capital of the country, accounting for over 60% of all industrial and commercial activity. The state also hosts 18 Fortune 100 companies.<sup>43</sup>

<sup>42</sup> “How Nigeria can push SMEs GDP contribution beyond 47%”, September 19th, 2016, [businessdayonline.com](http://businessdayonline.com)  
<sup>43</sup> PwC, Lagos: City of Opportunities, an Investor’s Guide 2015



FIGURE 21. DIGITAL ECONOMY DRIVERS



Source: IMF WEO Oct 2017, Euromonitor, Population Pyramid, This Day, Statista, We Are Social, IT News Africa

### Improving digital literacy and internet use are the key levers to unleash the full potential of the Nigerian market

- Although statistics suggest a sizable potential market, the current addressable market is only a fraction of this size. Low digital literacy is a major barrier for tech entrepreneurs penetrating the B2C and SME markets. Although many people may have access to the internet, few use more than a limited number of products and applications, as indicated by the modest 15 million active social media users in the country.

“The digital literacy barrier is still large, despite positive trends in internet use and smartphone penetration - over 28%. The reality is that most consumers are still using their phones for a few basic platforms like messaging and Facebook and don't yet know how to engage with or use the multitude of other mobile services out there.” - Alexandra Novitske, Chief Investment Officer, EchoVC

### Success stories in tech entrepreneurship usually involve startups partnering with major industry incumbents

- It is expensive for tech entrepreneurs to acquire and scale up a customer base in Nigeria. Those startups that are able to partner with major players in the market such as banks or telecom companies usually do better if they can access incumbents' consumer base.
- However, forging these partnerships is difficult and often requires the tech entrepreneurs to sign exclusivity agreements. While the greater customer access can be transformative for the business, it also has implications on how the business will continue to grow in the future

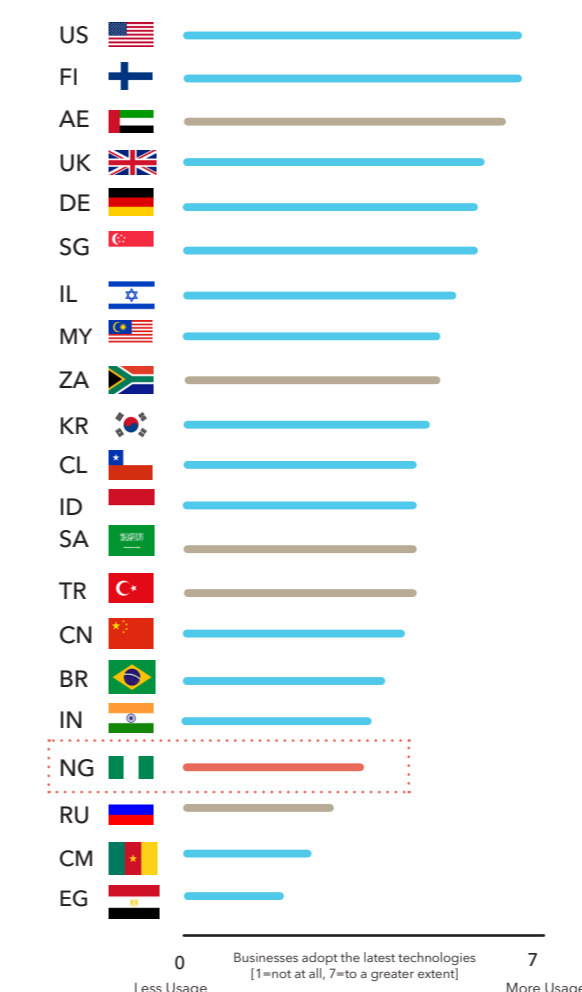
### Online businesses must be complemented with offline services in order to fully tap into the Nigerian market potential

- Ecosystem participants indicate that the best way to penetrate the Nigerian consumer market requires developing offline strategies. In reality, the Nigerian consumer and SMME market is still largely offline, and online-only solutions can address just 10% of the market.
- Entrepreneurs are advised to “take the hustle offline”; or to educate customers in offline environments first to earn their trust (create an incentive for the customer to move online). Jumia's Jforce network marketing model is an example of how to use field teams to acquire customers.

### Technology utilization by established companies is fairly strong in Nigeria, but collaboration with tech entrepreneurs on innovative solutions is in its infancy

- Ecosystem interviewees suggest that for the B2B market to flourish there should be a shift from tech entrepreneurs pushing their offerings to established companies pulling in innovative solutions.
- There is a long sales cycle in the B2B market and convincing traditional companies of the value of innovations takes a long time, which strains the startup's ability to manage cash flow.
- While financial services and telecom operators more actively collaborate with tech entrepreneurs, other major industries such as oil and gas, agriculture, and hospitality could increase their involvement and integrate technology in their models.

FIGURE 22. TECHNOLOGY UTILIZATION OF COMPANIES



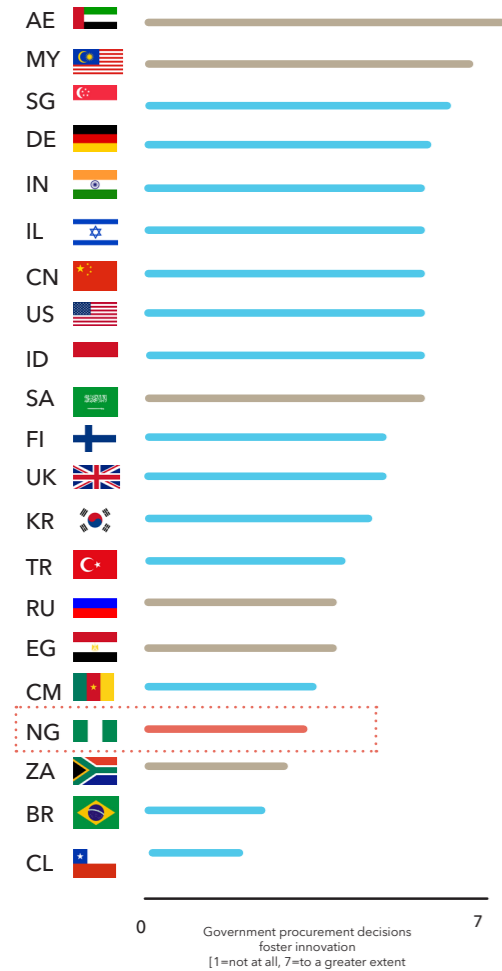
Other countries in scope of tech entrepreneurship study

Source: WEF The Global Information Technology Report, OC&C analysis

### Public procurement policies are not inclusive of tech entrepreneurs

- In the more mature tech entrepreneurship ecosystems, governments are the biggest funders and consumers for startups' innovations. The public sector provides a strong source of demand for tech entrepreneurs to achieve sustainable scale and steady cash flow.
- Existing public procurement regulations in Nigeria are not written in a way that can easily be interpreted as startup friendly.
  - In order to become a government supplier, a company is required to provide three years of audited financial statements, tax certificates, and a minimum number of years of experience in the field. Applied as written these rules effectively shut out standalone startups from public sector procurement.
- However, the law also requires the council and the Bureau of Public Procurement (BPP) to approve changes in procurement processes to adapt to improvements in modern technology.
- The law also has an allowance for consortiums which can provide access to tech entrepreneurs as a partner.
- The challenge therefore, is not in the law itself but in the way it is applied by the respective institutions. Exacerbating this challenge is the common practice of kickbacks that the entrepreneurs cannot afford.
- Ecosystem participants feel that the government can play a larger role in creating a market tech entrepreneurship by relaxing preconditions for bidding in public procurement tenders. A specific quota allocation for startup procurement is one option. Another could be developing a focused agenda for soliciting tech entrepreneurs to address public challenges through open innovation.
- While developing guidelines for partnerships between tech entrepreneurs and government, authorities should take into consideration payment policies to ensure the steady cash flows needed for startups to survive.

FIGURE 23. GOVERNMENT PROCUREMENT OF TECH PRODUCTS



Other countries in scope of tech entrepreneurship study

Source: WEF The Global Information Technology Report, OC&C analysis

Going Pan- African is the most viable internationalization strategy for Nigerian tech entrepreneurs

- Nigerian entrepreneurs view the domestic market as a top priority, but achieving the scale needed for local and international investors requires testing business models in similar market conditions elsewhere.

Recommendations designed to strengthen the tech entrepreneurship

Most of the challenges faced by the Nigerian tech entrepreneurship ecosystem require a total overhaul. If the government intends to vie for new technologies and innovation as instruments to create employment and enrich its economy, then overcoming national infrastructure and educational barriers should ultimately be recognized as top priority. Accordingly, Nigeria will need to align its digital policies with the frontier nations in order to become a viable partner and supplier.

There are few opportunities for quick fixes or low hanging fruit. Adapting a focused and targeted approach to relieve the major tensions at the heart of tech entrepreneurship activity could provide early success stories and working models that could be replicated across the country.

In order to create visible impact, the government interventions should address the significant challenges that are hindering progress and concentrate on leveraging established structures and organic developments in the two leading ecosystems: Lagos and Abuja.

There is a need for interaction between the government authorities knowledgeable about the sector needs and the tech entrepreneurship ecosystem actors. The interviewees see a great benefit in having a champion within the government to push the tech entrepreneurship agenda. This authority could facilitate comprehensive review of policies/laws and their enforcement to ensure that they are conducive for tech entrepreneurs and thus improve the survival rate of new businesses.

Enlisting the services of private sector experts or technocrats to draw up policies, create implementation plans, and follow up progress is essential to expedite proper interventions.

The immediate recommendations to address gaps and foster a strong ecosystem based on interview insights are grouped under four main headings:

“The bigger the problem, the bigger the opportunity in Africa. In this market there are a number of straightforward friction points. The right entrepreneur addressing those friction points can catalyze a whole number of things and create scalable companies” - Oluntosin Oni, Principal, Investments & Portfolio Management, EchoVC

FIGURE 24: POLICY RECOMMENDATIONS DESIGNED TO STRENGTHEN THE NIGERIAN TECH ENTREPRENEURSHIP ECOSYSTEM



Legend

- FINANCIAL CAPITAL
- SKILLED TALENT
- NETWORKS
- CULTURE
- REGULATIONS
- ICT INFRASTRUCTURE
- MARKET POTENTIAL

Reform educational foundations to prepare the youth for knowledge-based employment

Create pilot public school programs with a reformed curriculum and technology-enabled learning

The sheer number of young Nigerians in the school pipeline and the inefficiency of the current school curriculum to deliver an employable workforce creates an urgency to make a paradigm shift in what is being taught and how it is being taught.

The task at hand is a tremendous undertaking and requires a long-term strategy with persistent implementation. Nevertheless, **kick starting the process by structuring an early school program that emulates the standards in more advanced systems** would build momentum. Consultation from domestic and international academia, existing programs aboard should be leveraged. The private sector could play a part in the form of PPPs or program collaborators. The pilot needs to address several issues: content, how to train the trainer, hardware deployment, and the infrastructure needed for seamless delivery.

The Nigerian government is pursuing a similar route to introduce technology and coding at the primary and secondary schools with their “N power junior” program proposal. The OIIE has set the aim at reaching 1 million children during the pilot stage, starting with schools that already have the infrastructure in place - i.e. computer labs. Once the curriculum is established and approved, private schools will also have access to the program. Achieving this plan is crucial to designing the future of Nigerian primary and secondary education system.

Initiate vocational programs to provide digital literacy and technical skills

Since building an analytically strong and technically inclined generation from the grassroots up will take at least a decade, the most effective **short-term solution could be to partner with regionally acclaimed private or nonprofit training programs** to create customized vocational programs on computer and technical skills. The programs could also

include elective courses on entrepreneurship and business skills to provide options for participants.

Scaling such vocational training programs up nationwide would necessitate joint collaboration between the government and various private sector stakeholders. Until the teaching standards could be established and replicated on a wider scale, a rigorous recruitment procedure such as the one Andela uses could serve to promote the quality of the program in domestic and international markets.

In parallel, the curriculum of these programs could be made available online for the benefit of the self-teaching young community.

Strengthen the innovation and research commercialization capabilities of leading universities

Research-based university education is the bedrock of tech entrepreneurs who take innovative ideas and turn them into commercial opportunities.

Currently, the research standards and private-sector collaboration at Nigerian universities are described as “laggard”. **In order to reboot the university innovation capacity, the government can start off by designating leading public universities with stronger engineering and analytical degree programs as “research universities”.** This will narrow down the focus of interventions and help to customize university support programs with respect to the needs of each institution to elevate them to the desired standards.

The Nigerian research universities could also **make use of the strong Nigerian diaspora community engaged in R&D, innovation, and technology businesses in more advanced ecosystems.** The universities can work on structuring interfaces and programs to apply the diaspora’s knowledge within the Nigerian context and nurture the ecosystem by asking for mentorships and linkages to international platforms.

Another crucial filter for selecting research university candidates would be their proximity to the anchor industries that will be recipients of the universities’ research and innovation.

**Adapting best-in-class Tech Transfer Office practices for these universities would be a good step in forging strong research and commercial links.** Assigning areas of specialization to the TTOs would prevent duplication of efforts and suboptimal use of resources. In facilitating demand, the government can offer financial breaks or incentives for the private sector to motivate companies to collaborate, partner, and finance universities to create market-ready, business applicable innovation.

**Create incubators at universities to inspire student entrepreneurship and build a culture around it**

Equipping university students with only technical skills will not suffice for individuals with potential to engage in entrepreneurial initiatives. **Students need to get exposure to business and management skills and the universities can provide this with customized training programs.** Providing the environment for entrepreneurially inclined students to try building their ideas while in school with the guidance of “entrepreneurship” faculty, training programs and available infrastructure will increase the quality and marketability of young graduates’ ideas.

The **universities can leverage their relations with international programs, domestic industry players, alumni and active Nigerian entrepreneurs** in a number of ways.

These relationships will help introduce real life business problems to students in the incubation programs that they would not have exposure to before they get full-time jobs. They will draw in mentorship, both at the functional and entrepreneurial level. Lastly, international exchange opportunities for entrepreneurial studies will broaden the understanding of students who would like to pursue entrepreneurship and assist Nigerian universities in creating high-standard programs and perhaps minor degrees in tech entrepreneurship.

**Relieve early-stage financial and operational hurdles for tech entrepreneurs**

The startup failure rate is very high in Nigeria, with most endeavors ceasing before they can go through enough iterations to validate their business proposition. The government’s support in early stages could provide the lifeline needed for aspiring entrepreneurs to keep trying for a longer time and thus improve their chances of survival.

**Design seed-stage tech entrepreneurship grants to be allocated by private and/or quasi-government agencies with performance targets**

Nigerian tech entrepreneurs need access to early funding in order to be able to pursue their business ideas. Most entrepreneurs are finding it very difficult to balance the perseverance needed to make startups work and the need to secure their livelihoods as well as support their families. The international grant programs, the innovation hubs, and accelerators in the country are the only venues able to support the entrepreneurial journey financially.

The Nigerian government can address the growing pains of the entrepreneur by **launching grant programs tailored to the specific needs of tech startups. Leveraging the experience of different ecosystems by providing public grants would be beneficial, while involving startups and other actors from the ecosystem in designing the grants is crucial** to creating the most appropriate programs.

Learnings from various ecosystems suggest that tech startup adapting an upfront payment model rather than expense reimbursement are better aligned to meet tech entrepreneurs’ development needs. However, the grants can be released in tranches, as the entrepreneur continues to meet progressive criteria that signal business continuation and ramp up.

Besides the grant programs, the **Nigerian entrepreneurial community can benefit from subsidized services and remittances.** For instance provision of vouchers for workspaces, internet, cloud computing services, similar to

what is being done by LSETF as allowance for using workspaces could take care of some operational expense concerns.

The selection, follow-up, and evaluation of tech entrepreneurs during grant or subsidy processes are tasks best suited to be delegated to individuals with program management skills as well as entrepreneurship experience. In more successful public grant applications around the world, **the deployment of funds and resources are entrusted to quasi-government or private institutions with clear objectives, performance targets, and periodic effectiveness analyses.**

Most Nigerian entrepreneurs are well informed about international grants and funding programs. They are clear about the application procedures, admission criteria, and quotas and capacities involved.

Hence **any formal public support program that will be structured to serve Nigerian tech entrepreneurship needs to be publicly announced and promoted.** The details and prerequisites need to be clearly defined and made transparent by public announcements. A user-friendly portal could be the gateway to detailed information (e.g. about applying for grants).

**Form a public ‘fund of funds’ to fill funding gaps along the investment cycle**

Ecosystem participants stress that while private equity investments are on the rise in Nigeria, it is getting harder to fulfill the stage “A” equity needs of tech startups. Therefore, early funding needs can be met by public funding.

Most emerging market governments **use the ‘fund of fund’ approach to provide funding to tech entrepreneurs in their ecosystem.** This approach allows private institutions able to make commercially viable investments to strengthen their funding base by matching the funds they raise at varying rates. This way **the government can increase the reach and investment versatility in the ecosystem without interfering with the market dynamics of the allocation and evaluation process.**

Over time the fund’s mission might evolve to support growth-stage funding requirements as the startups mature.

Introducing favorable tax regulations could enable practical use of this incentive.

**Introduce tax breaks, rebates, or exemptions for high-impact tech startupss**

The Nigerian government has taken the steps to mitigate some of the challenges in establishing business. However, in the area of ease of conducting a business, Nigerian tech entrepreneurs, especially those who could be considered to offer high impact in terms of social benefits or employment, are not shielded from the operational and financial burdens of tax and social security compliance.

**Reducing or waiving the tax obligations and providing social benefit subsidies for a period could relieve the operational burden and reserve cash for business development.** The terms of the support can be either defined as years of operation or certain revenue thresholds.

**The business establishment processes of nonprofit startups and the monitoring of their funding could be streamlined and expedited** in order to unleash their contribution to the development of underprivileged communities.

**Revise public procurement regulations to make them more welcoming for tech entrepreneurship**

Public procurement programs are one of the most effective ways that governments can support the tech entrepreneurship ecosystem. Young startups achieve operational sustainability years ahead of schedule when the public sector becomes a key customer. The public sector could also provide an outlet for innovative initiatives that will elevate the quality and extend the reach of public services.

The federal governance structure of Nigeria allows for states to design targeted approaches in their support programs for tech entrepreneurship, taking into consideration the intricacies of their districts. However, **public procurement of tech entrepreneurship products and services is an overarching theme, which can perhaps best be addressed at a national level.**

The current laws are open to interpretation for applying them in favor of tech entrepreneurship however, in practice rules are applied as written.

A thoughtful revision of the current public procurement regulations and practices could eliminate barriers to public sector opportunities for startups. Creation of a framework to provide guidelines on how tech startup peculiarities will be taken into consideration could be beneficial. **Streamlined procurement processes and prompt payment practices are 'must haves' for the participation of tech entrepreneurs in public service provision.** Communication of government tenders suitable for tech startups on a central portal might serve transparency and achieve traction. Additionally, the **establishment of innovation offices within government bodies could facilitate interaction and improve the effectiveness of startups**

### Collaborate with established innovation hubs to increase their impact and reach

The innovations hubs and the accelerator programs are the strongest links of the Nigerian tech ecosystem. The government can leverage these existing networks and amplify their reach and impact on tech entrepreneurship in Nigeria.

#### Alleviate infrastructural constraints of established clusters with targeted interventions

The major cash drain for existing innovation hubs is the resources used to resolve infrastructural inhibitions. **While modernization of all aspects of infrastructure nationwide continues to be the paramount expectation** of Nigerian interviewees, they underline **the relief of the challenges in the two major hubs** – Abuja and Lagos – especially in concentrated zones as **a priority**.

Government's greatest role in helping tech entrepreneurship in the short term would be to undertake the responsibility – solely or in partnership with private sector – to provide sustainable, cost-effective infrastructure at innovation hubs and workspaces. **Subsidized electricity generation, high-speed internet connectivity, designating vacant government**

**buildings in the heart of tech clusters for the use of private or university-run innovation hubs/ workspaces** are some of the ways that the states can contribute.

#### Match investments of private innovation hubs and accelerators in startup funding

The seed-stage funding is mostly provided by the innovations hubs and the accelerator programs in Nigeria. However, their reach and financial contribution is limited, due to the challenges they face in raising funds for their programs.

**The government can allocate a certain proportion of the 'fund of funds' it will set up to these institutions to create a win-win situation.** The government should ensure that the funds are properly managed and deployed to support the most deserving endeavors with proper follow-up mechanisms. The programs will benefit from enhanced muscle power; as a result they will be able to extend their capacity, increase the frequency of their training programs, and enhance the services they provide to participants.

#### Push forward the establishment of planned tech/ innovation hubs in Abuja and Lagos

The government's plans to establish comprehensive tech / innovation hubs in Abuja and Lagos are viewed with eager anticipation by ecosystem participants.

**Incorporating the learnings and the suggestions of the existing private programs will increase the appropriateness of the features** to be included within these state-sponsored innovation hubs and better match the needs of the entrepreneurs.

#### Establish international networks and facilitate program collaborations to provide exposure to world of tech entrepreneurship

Appropriate government authorities or state institutions can **help organize event and exchange program collaborations between Nigerian and other ecosystems**, for example a Lagos/London startup week collaboration. The Nigerian diaspora as well as foreign embassies that are active in the support of the Nigerian tech entrepreneurship ecosystem can be instrumental in structuring these partnerships.

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#### Include a network of delegates (entrepreneurs and other ecosystem stakeholders) in discussions about new policies and implementation plans

**The ecosystem participants could be engaged in policy and regulation development by including them in policy workshops and in task forces to relay sector views and suggestions on specific areas of concern.** Their reports could serve as the cornerstone of policy initiatives and legal frameworks.

### Make tech entrepreneurship more attractive to individuals, the investor community and the private sector

#### Play an active role in promoting key success stories domestically and across Africa

**Recognizing successful Nigerian tech entrepreneurs with prizes, grants or subsidies, and using their stories to create a buzz** in the Nigerian business community and among the young generation can help to build aspirations and the appetite to get involved in entrepreneurship.

**Providing roadshow opportunities for Nigerian success cases in African-focused international venues** could lead the way to forming linkages to expand Nigerian business across African.

#### Develop incentives for high-net-worth individuals to encourage them to invest in tech startups

An entrepreneur's initial sources of equity – besides friends and family and government grants – include early-stage equity investments by business angles. Governments of many of the established and aspiring ecosystems try to **encourage experienced investors to invest in**

**tech entrepreneurship by providing personal income tax breaks or matching investments made by angel networks.** Similar approaches might relieve some of the more stringent investment criteria the angel investors currently apply to protect their interests.

#### Strengthen the regulatory framework for institutional investors

Nigeria's regulatory framework does not **take into consideration the need to support and protect institutional investors such as corporate and private VCs.** Contract enforcement reliability as well as the consistency and availability of courts knowledgeable in digital economy and its workings are great sources for building a trusted, investor-friendly ecosystem. **Insolvency regulations are one of the major tools that can be used to protect investor rights** and they are not strongly enforced in the country. However, any bankruptcy rules to be introduced should also consider the future prospects of the entrepreneur and his or her ability to try again in case of failure.

Institutional investors elsewhere are lured into the ecosystem by **matching their funds, giving breaks on capital gains taxation, and favorable corporate tax terms.** Discussions with institutional investors and reviews of best practices around the world would yield the ingredients of a winning strategy to motivate the investor community to zoom in on Nigeria.

#### Encourage private-sector involvement to support the development of tech entrepreneurship

**Large corporations and multinationals could be incentivized to partner with tech entrepreneurs in open innovation and help build a stronger ecosystem** by committing resources for development. Introducing a scoring system designed to track private enterprises' degree of support for tech startup development could be a tool for granting benefits. For instance, the South African government is using a similar approach to implement its Black Economic Empowerment Initiatives. In South Africa the government mandates private enterprises over a certain size to make financial contributions to different tech entrepreneurship development programs and in return they receive priority in public procurement tenders based on their score cards.

# Conclusion

Essential ingredients of a tech entrepreneurship ecosystem have been materializing in Nigeria over the last decade. The Nigerian ecosystem has seen a drastic increase in the number of hubs, incubators, accelerators, tech media, events, and summits and is expected to continue to attract more players. Many of the initial businesses were local adaptations of established models around the world. Today, there is also a new wave of founders starting to tackle Nigeria-specific issues, how they can be solved, and later how they can be scaled up to resolve similar challenges in the rest of Africa. The recent visit of Facebook’s founder, Mark Zuckerberg and the USD 24 million investment in Andela, represents a recognition of such innovative approaches and brings much-needed attention to the potential of Nigeria’s tech ecosystem.

Nevertheless, ecosystem participants consider tech entrepreneurship in Africa to be a long game. They believe that it will take another decade for the Nigerian tech entrepreneurship ecosystem to be fully functioning and generating sizable, high-impact tech companies.

The government has expressed an interest in investing in the tech industry and committed to several initiatives. The establishment of the OIIE is a strong sign of its commitment to nurturing, cultivating and expanding ICT, innovation, and entrepreneurship in Nigeria.

All in all, interaction and collaboration with different parties in the ecosystem while addressing many challenges of the budding tech entrepreneurship culture is the key to getting the most out of public initiatives and building the Nigerian ecosystem to become a Pan-African hub for tech entrepreneurship.

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- Uka Eje** - Co-founder, Thrive Agric
- Yele Bodomasi** - Founder, Microtraction Fund

# Appendix

## Definitions – Tech entrepreneurship frame of reference

For the purposes of this paper, entrepreneurs are distinguished from self-employed individuals by their motivation to create a rapidly scalable business venture with the aim of innovating, improving, or transforming the given way of doing things.<sup>3,5</sup>

The entrepreneurship domain includes startup and scale-up phases of the business cycle where companies are experiencing high growth in revenues and employees numbers while validating their value proposition and building up.

Technology-driven entrepreneurship bases its business proposition on the use of new technologies as an enabler and focuses on hyperconnectivity among of networks, people, businesses, things, and hardware that's internet-enabled. Technological applications in conventional sectors and new businesses in emerging sectors fall under its definition.

agents of change who create new value propositions by means of new products, services, innovative processes, and organizational innovations that lead to evolution or obsolescence of current way of things

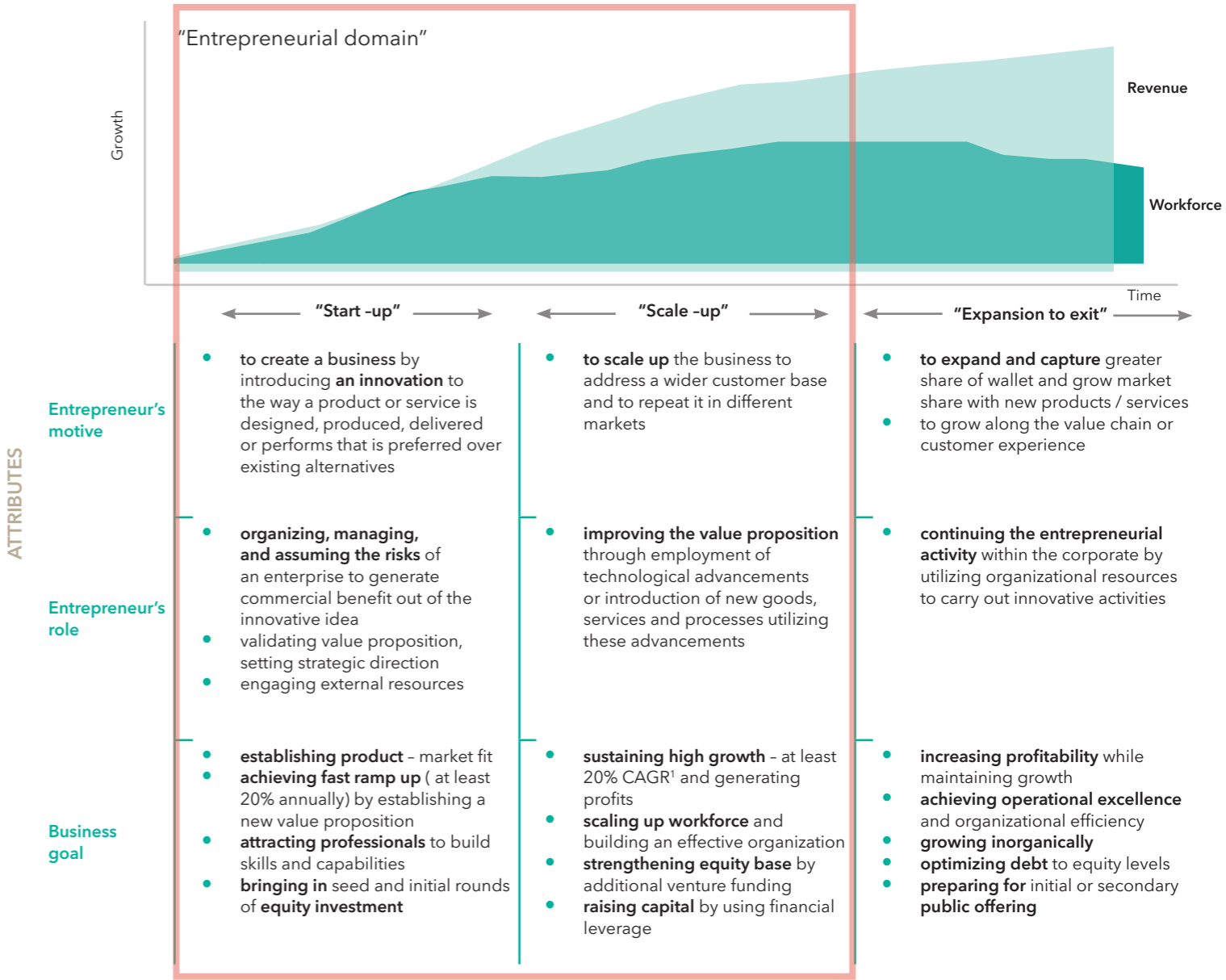
business owners who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets

... different from self-employed individuals who seek to generate income by using existing products, processes or markets

initiators whose business ventures result in the development, growth and well-being of their societies through job creation and level of innovation<sup>2</sup>

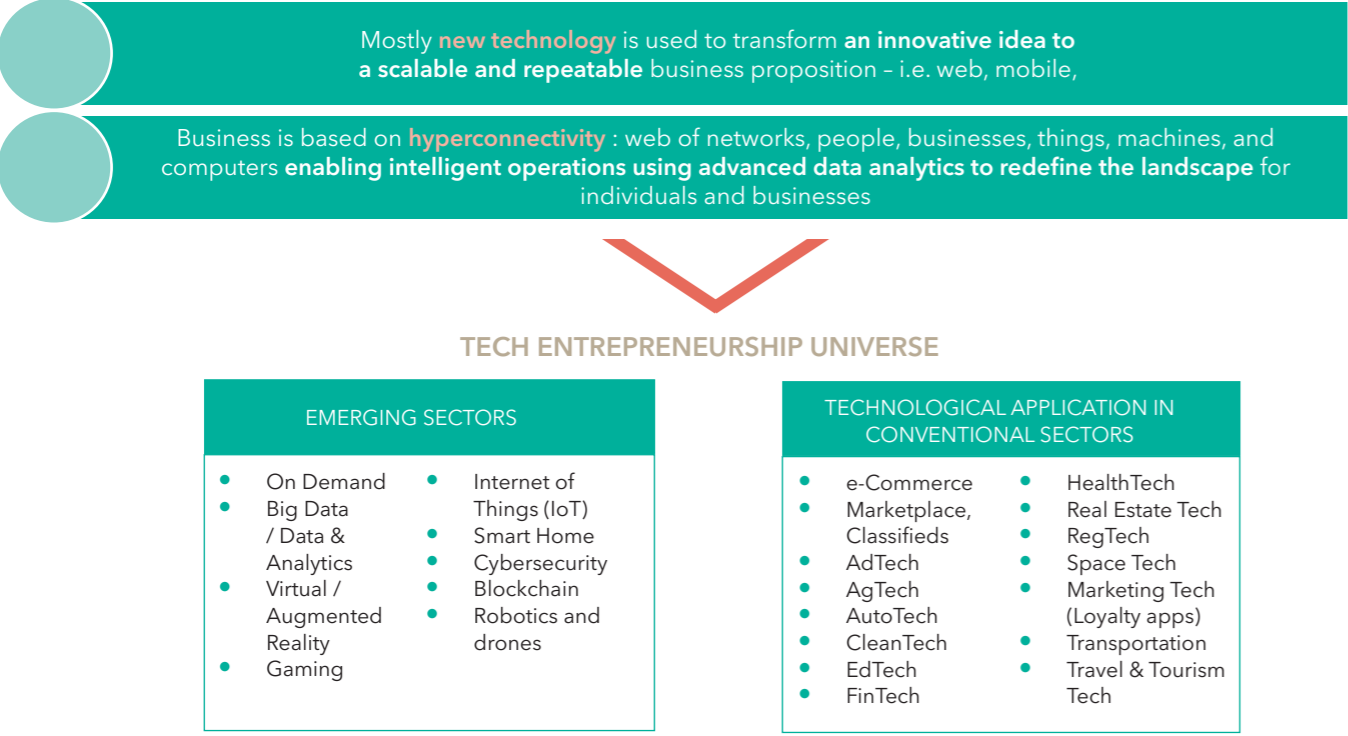


FIGURE I. THE MAIN INDICATOR OF AN ENTREPRENEURIAL ENTERPRISE IS ACHIEVING YEAR-ON-YEAR HIGH GROWTH IN REVENUES OR EMPLOYEE BASE



<sup>1</sup> High-growth Enterprises and Gazelles -Sensitivity Analysis, Ditte Rude Petersen and Nadim Ahmad, OECD 2007  
Source: Global Entrepreneurship Monitor (GEM) Global Report 2016/17, Global Entrepreneurship Research Association 2017

FIGURE II. “TECHNOLOGY ENTREPRENEURSHIP” CAN BE DISTINGUISHED FROM OTHER FORMS OF ENTREPRENEURIAL ACTIVITY



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