

# **African Entrepreneurship Ecosystems: A Comparative Study of The Top Five**

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## **ABSTRACT**

Over the last 20 years, entrepreneurship has become an important field for research and monitoring globally. We have seen the emergence of many success stories of people starting with an idea and then building billion-dollar organizations that make a global impact. These entrepreneurs and their activities do not happen in a vacuum. If a society would like to produce more of them, it has to understand how they came about.

Researchers identified key success factors for entrepreneurship ecosystems, and although there are slight differences based on the researcher, they do have some basic measures in common. Mainly, Entrepreneurship Ecosystems research points to the need for governmental policies that support entrepreneurship, the existence of institutions to support entrepreneurship activities, and a culture that encourages entrepreneurship.

This thesis aims to look at the ecosystems emerging on the African continent and identify the different strategies or key success factors working for the top ecosystems through the application of MIT'S Stakeholder Framework for Building & Accelerating Innovation Ecosystems.

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# 1 INTRODUCTION

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Over the last 20 years, entrepreneurship has become an important field for research and monitoring globally. We have seen the emergence of many success stories of people starting with an idea and then building billion-dollar organizations that make a global impact. These entrepreneurs and their activities do not happen in a vacuum. If society would like produce more of them, it has to understand how they came about.

Researchers identified key success factors for entrepreneurship ecosystems, and although there are slight differences based on the researcher, they do have some basic measures in common. Mainly, Entrepreneurship Ecosystems research points to the need for governmental policies that support entrepreneurship, the existence of institutions to support entrepreneurship activities, and a culture that encourages entrepreneurship.

Today one can easily find in-depth qualitative and quantitative information on the entrepreneurship ecosystems that have created the most highly successful entrepreneurs, such as Silicon Valley. These ecosystems tend to be in the developed world. There is very little information on what is happening in the entrepreneurship ecosystems in the developing world.

Recently we have seen the emergence of success stories from the developing world in entrepreneurship ecosystems that, according to the research, should not have been able to produce such cases. For example, Jumia is the first African unicorn<sup>1</sup> and came from Nigeria. Although Nigeria is prosperous in its own right and the largest economy on the African continent, it has not yet reached a point where the infrastructure it offers is comparable to that offered in the developed world. Yet Nigeria is producing a multitude of highly successful start-ups.

This thesis aims to examine the ecosystems emerging on the African continent and identify the different strategies or key success factors working for the top ecosystems.

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<sup>1</sup> A unicorn is business term referring to a startup company valued at over USD1 billion. The term was first introduced in 2013 by Aileen Lee to describe the rare 39 US based software companies started since 2003 and valued at over \$1 billion by public or private market investors (Lee, 2013).

- Chapter one introduces the industry ranking reports I used to identify the five countries (entrepreneurship ecosystems).
- Chapter two discusses the different assessment methodologies and introduces the method that this thesis applies.
- Chapters three to eight each contain an analysis of the five countries, which are Egypt, Kenya, Nigeria, Rwanda, and South Africa.
- Chapter nine provides a summary of the findings and conclusions.
- Chapter eight will provide the references used in this thesis, and chapter eleven contains an appendix.

## **2 IDENTIFICATION OF TOP THE 5 AFRICAN ECOSYSTEMS**

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### **2.1 GLOBAL START-UP ECOSYSTEM REPORT (GSER)**

Started in 2012 by Start-Up Genome, the Global Start-up Ecosystem Report provides an in-depth look at the start-up ecosystems across the globe. It provides a basis of comparison of start-ups in different markets and provides rankings of the various ecosystems.

The annual Global Start-up Ecosystem Report was initially created as part of an exercise to explore entrepreneurship activities outside of the popular centers, such as Silicon Valley and Boston. The report was created to assist Startup Ecosystem stakeholders (entrepreneurs, employers, investors and policymakers) by providing information that can be used to establish where they stand in comparison, areas of opportunity, and methodologies for improvement.

Start-up Genome created the 2020 Global Startup Ecosystem Report in collaboration with The Global Entrepreneurship Network (GEN) and other Knowledge partners such as Crunchbase, Orb Intelligence, Pitchbook, Dealroom and local investors, incubators, accelerators, and hubs. The report was released on 25 Jun 2020. The 2020 GSER examines 270 ecosystems in 100 countries and ranks the top 140 ecosystems.

#### **2.1.1 Start-up Genome**

Start-up Genome works with governments, advising them and conducting research into their start-up ecosystems. Their work extends to nurturing and maintaining thriving start-up ecosystems. Start-up Genome has developed the Lifecycle Model framework, which is used when assessing the performance of technology start-ups and helps gauge where the start-up stands in the evolutionary phases (Activation, Globalization, Expansion, and Integration).

Start-up Genome collected their information through their partnerships with 10,000 companies and 300 organizations in over 50 cities across the globe. A quote from the CEO of Start-up Genome, "We offer the genome of developing a well-resourced, high-performing start-up ecosystem—we help you quantify what stage you are at, and we then can give you

the tangible policies and activities to help you accelerate through the lifecycle." - JF Gauthier, (Startup Genome, n.d.)

### **2.1.2 The Global Entrepreneurship Network (GEN)**

The Global Entrepreneurship Network (GEN) is an organization that promotes cross-border collaboration between entrepreneurs, start-ups, investors, researchers, policymakers, and other support organizations. The GEN was established in 2007 and works by providing a platform for projects and programs that help people start, network, and scale a business. Their footprint covers 180 countries. GEN institutions and resources ensure that members across their footprint have equal access to knowledge, networks, and support. They have programs that uniquely cater to the individual country's economic size, start-up ecosystem maturity, language, location, and culture.

### **2.1.3 GSER's Analysis Methodology**

(Startup Genome LLC, 2020) The GSER 2020 report was created through analysis of the following primary data sources:

- Interviews with over 100 industry experts
- Surveys: The annual Start-up Ecosystem Survey as well as a new COVID-19 related survey. Combined these surveys had over 12,000 participants.

The rankings are a weighted sum of a collection of attributes. Emerging markets are measured using a unique equation. The equation and subsequent attributes are detailed below:

$$\mathbf{Rank = 0.45P + 0.3F + 0.15MR + 0.1TE}$$

Where:

- Performance (P)
- Funding (F)
- Market Reach (M.R.)

- Talent and Experience (T.E.)

See Appendix 11.1 *GSER's Analysis variable calculations* for how these variables are calculated.

### 2.1.4 GSER's Relevant findings

African cities do not feature in the list of top 30 ecosystems for 2020. Since the first publication of the GSER, Africa has not had an ecosystem that could be ranked as part of the leading global ecosystems.

The rankings according to continents have mostly remained consistent from 2012 through to 2019. North American cities have been ranked in first place, with Europe coming in second, followed by the Asian Pacific and South America. The first deviation in dominance can be seen in 2020 by the Asian-Pacific region taking over second place and displacing Europe, see Figure 1 below. This has been attributed to the democratization of technology and a focus on R&D, using their research and patent production to improve their global standings.

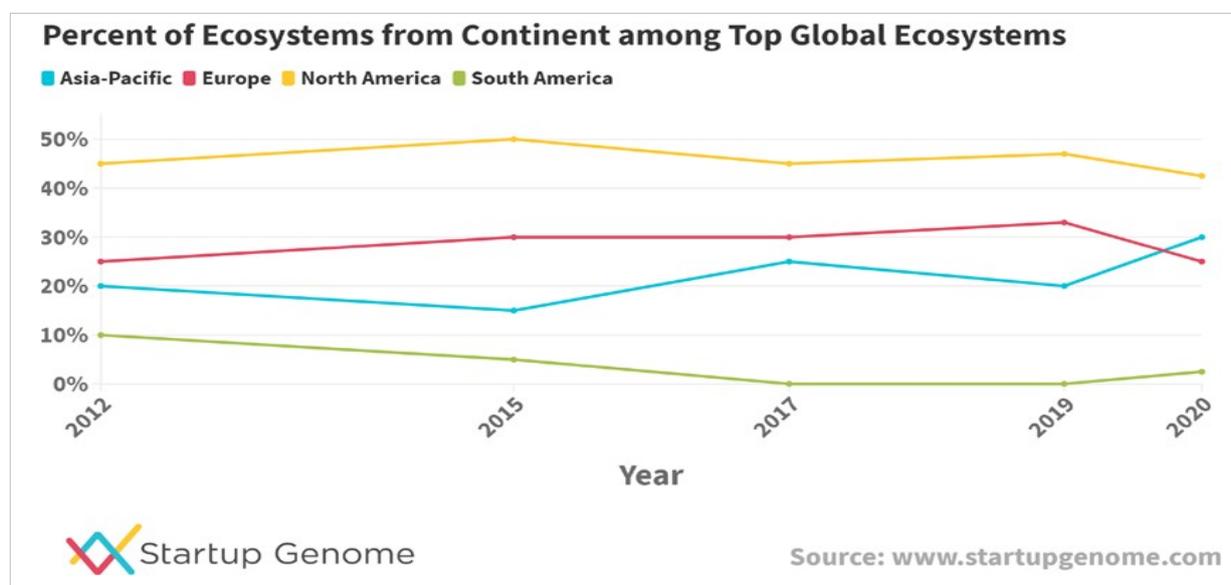


Figure 1: Startup Genome report's percent of ecosystems from the continents which are in the top global ecosystems

The GSER presents a Top 30 Ecosystems list, followed by a list of the 100 emerging ecosystems list. In the 2020 report, we first start seeing African cities appearing after position 60 on this list.

Table 1: Startup Genome emerging ecosystems list with African cities highlighted (Startup Genome LLC, 2020)

Startup Genome							
	Rank	Country	Continent	Performance	Funding	Market Reach	Talent
Columbus	31-40	United States	North America	9	6	7	1
Charlotte	31-40	United States	North America	9	5	8	1
Nanjing	31-40	China	Asia-Pacific	9	4	1	8
Indianapolis	31-40	United States	North America	7	7	5	6
Xiamen	31-40	China	Asia-Pacific	8	2	6	10
Bogota	31-40	Colombia	South America	6	7	9	4
Rhineland	41-50	Germany	Europe	5	7	2	9
New Zealand	41-50	New Zealand	Asia-Pacific	4	7	2	8
Oslo	41-50	Norway	Europe	6	9	2	4
St. Louis	41-50	United States	North America	6	7	5	6
Edinburgh-Glasgow	41-50	United Kingdom	Europe	3	8	1	10
Vienna	41-50	Austria	Europe	4	8	5	4
Orlando	41-50	United States	North America	6	6	3	6
Las Vegas	41-50	United States	North America	7	5	3	4
Birmingham	41-50	United Kingdom	Europe	4	6	2	7
Nashville	41-50	United States	North America	5	5	7	4
Cairo	51-60	Egypt	Africa	3	7	1	7
Calgary	51-60	Canada	North America	3	5	3	3
Chennai	51-60	India	Asia-Pacific	4	3	4	8
Malmö	51-60	Sweden	Europe	5	7	3	3
Santa Barbara	51-60	United States	North America	8	1	8	5
Bangkok	51-60	Thailand	Asia-Pacific	3	5	3	8
Wuhan	51-60	China	Asia-Pacific	7	3	1	7
Gothenburg	51-60	Sweden	Europe	2	6	5	3
Cape Town	51-60	South Africa	Africa	3	4	8	6
Cincinnati	51-60	United States	North America	4	3	8	5
Frankfurt	61-70	Germany	Europe	4	4	3	5
Lagos	61-70	Nigeria	Africa	4	7	1	1
Ottawa	61-70	Canada	North America	6	3	1	8
Sacramento	61-70	United States	North America	6	2	6	1
Stuttgart	61-70	Germany	Europe	2	5	3	5
Nairobi	61-70	Kenya	Africa	2	6	1	5
Cleveland	61-70	United States	North America	4	2	8	4
Madison	61-70	United States	North America	5	3	4	2

*Ecosystems classified in by scores from 10 (highest) to 1 (lowest)*

## 2.2 STARTUPBLINK'S START-UP ECOSYSTEM RANKINGS REPORT

### 2.2.1 StartupBlink

StartupBlink is a platform and research center that aims to provide the most comprehensive index of global ecosystem rankings. The online platform, which includes a map, also seeks to grow the global start-up community by highlighting and promoting ecosystems that do not get much global attention or investment.

StartupBlink's rankings cover over 100 countries and over 1000 cities. They issue a yearly report which has become one of the trusted references for ecosystem comparison. The data used by StartupBlink are from their numerous partners and the registered start-ups, coworking spaces, and accelerators on their platform.

The 2020 report is the third report that StartBlink has published. It provides two rankings, one listing countries, and the other listing individual ecosystems. The country analysis is adjusted to account for elements such as population size and ensure an accurate comparison.

### **2.2.2 StartupBlink's Analysis Methodology**

The algorithm used to analyze ecosystems focuses on three key elements:

1. The number of start-ups and other supporting organizations.
2. The quality of start-ups and other supporting organizations. This measure aims to determine to what extent the start-ups are driving innovation. The measure is determined using proxies such as CrunchBase data, the presence of global coworking brands and mass start-up events with thousands of participants, and the presence of the top 100 global influencers<sup>2</sup> as listed on the platform (StartupBlink, 2020).
3. The business environment and critical mass. This is a mixture of both the success of the local start-up ecosystem and indicators related to infrastructure, business environment, and the ability to freely operate as a start-up founder in the country or city. This measure is calculated using a weighted average of a variety of business indicators such as those supplied by the World Bank Doing Business Report, Internet speed, Internet freedom, and R&D investment, to name a few.

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<sup>2</sup> A global influencer is defined as someone who has impact far beyond their local ecosystem. A city where a Bill Gates or Elon Musk resides creates an allure that attracts more entrepreneurs and investors to the ecosystem.

### 2.2.3 StartupBlink's Relevant findings

According to the 2020 report, the African continent has had a challenging year, with most countries featuring in the list dropping in the rankings since the 2019 report was published. The first African country appears at position 52 on the list, see Table 2 below.

Table 2: StartupBlink's start-up ecosystem rankings table with African ecosystems highlighted (StartupBlink, 2020)

Rank	Country	Rank Change (from 2019)	Quantity Score	Quality Score	Business Score	Total Score
50	Thailand	-17	0.41	0.86	1.68	<b>2.948</b>
51	Slovakia	-2	0.65	0.13	2.16	<b>2.945</b>
52	South Africa	-1	0.33	0.63	1.93	<b>2.896</b>
53	Philippines	+1	0.43	0.72	1.64	<b>2.789</b>
54	Indonesia	-13	0.22	1.15	1.12	<b>2.485</b>
55	Cyprus	+13	0.58	0.10	1.71	<b>2.397</b>
56	Peru	+1	0.12	0.54	1.29	<b>1.949</b>
57	Armenia	+6	0.50	0.06	1.27	<b>1.829</b>
58	Iceland	-	0.34	0.09	1.28	<b>1.707</b>
59	Vietnam	+13	0.12	0.58	0.95	<b>1.653</b>
60	North Macedonia	-1	0.28	0.06	0.96	<b>1.296</b>
61	Malta	+28	0.28	0.07	0.83	<b>1.183</b>
62	Kenya	-10	0.28	0.10	0.80	<b>1.181</b>
63	Belarus	-8	0.34	0.09	0.61	<b>1.038</b>
64	Moldova	+2	0.21	0.05	0.65	<b>0.906</b>
65	Rwanda	-1	0.09	0.24	0.55	<b>0.872</b>
66	Uruguay	+5	0.22	0.05	0.59	<b>0.859</b>
67	Jordan	+6	0.22	0.05	0.58	<b>0.850</b>
68	Nigeria	-12	0.27	0.11	0.46	<b>0.843</b>
69	Liechtenstein	new	0.10	0.06	0.59	<b>0.758</b>
70	Azerbaijan	-3	0.14	0.03	0.37	<b>0.539</b>
71	Ecuador	+6	0.15	0.05	0.31	<b>0.513</b>
72	Albania	+13	0.13	0.05	0.33	<b>0.510</b>
73	Bosnia and Herzegovina	+3	0.14	0.04	0.32	<b>0.500</b>
74	Lebanon	+8	0.15	0.04	0.31	<b>0.493</b>
75	Bahrain	+20	0.13	0.06	0.30	<b>0.488</b>
76	Jamaica	+12	0.11	0.03	0.31	<b>0.448</b>
77	Tunisia	-3	0.12	0.03	0.29	<b>0.438</b>
78	Dominican Republic	+1	0.15	0.02	0.24	<b>0.408</b>
79	Georgia	-17	0.08	0.03	0.29	<b>0.408</b>
80	Paraguay	+16	0.11	0.02	0.22	<b>0.360</b>
81	Egypt	-21	0.17	0.04	0.15	<b>0.358</b>
82	Pakistan	-21	0.16	0.07	0.13	<b>0.354</b>

## 2.3 SUMMARY

Based on the two reports, the top countries that will be investigated are the first 5 African countries featured in both lists. Four countries are featured in both lists: Kenya, Nigeria, South Africa and Egypt. Since Rwanda was listed in the 3<sup>rd</sup> spot in StartupBlink's list, and it is the first

country that follows the already mentioned countries, it will also be added to the thesis list to reach five countries. See Table 1Table 3 below.

Table 3: Summary of top African ecosystems in GSER and StartupBlink's reports

	Global Startup Ecosystem Report	Startupblink's Start-up Ecosystem Rankings Report
1.	Egypt	South Africa
2.	South Africa	Kenya
3.	Nigeria	Rwanda
4.	Kenya	Nigeria
5.		Tunisia
6.		Egypt

Therefore, the countries that will be analyzed are, in alphabetic order:

1. Egypt
2. Kenya
3. Nigeria
4. Rwanda
5. South Africa

### **3 EVALUATING START-UP ECOSYSTEMS METHODOLOGIES**

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The challenge with quantifying the performance of an ecosystem is that the measures of success are often not easily converted into numbers that can be compared across different ecosystems that might be focused on different industries. In the reports mentioned in Chapter Two, proxies are used to determine figures that can relate to the performance of an ecosystem.

When deciding which methodology to use in this thesis, it was important to use a framework that would provide the following:

- A credible way of evaluating ecosystems.
- Independent measures that can be compared across ecosystems
- Measures that could apply where quantitative information is not available

MIT's Stakeholder Framework for Building & Accelerating Innovation Ecosystems framework fit the criteria above.

#### **3.1 MIT'S STAKEHOLDER FRAMEWORK FOR BUILDING & ACCELERATING INNOVATION ECOSYSTEMS**

This framework was first introduced with the MIT Regional Acceleration Program (REAP), started at the MIT Sloan School of Management in 2012 (<https://reap.mit.edu/>). It is described in a working paper titled MIT's Stakeholder Framework for Building & Accelerating Innovation Ecosystems. In this paper, the authors, Dr. Phil Budden and Prof. Fiona Murray, explain that there are five critical stakeholders in innovation-driven ecosystems: government, risk capital, academia, corporations, and entrepreneurs. See Figure 2. The framework provides a more nuanced perspective than the earlier methodologies discussed in Chapter Two, which considered the roles of industry and government or industry, government, and academia. The MIT REAP framework provides a more precise context by considering additional stakeholders critical to the ecosystem and the success of business ventures in the 21st century.



Figure 2: MIT's five stakeholders in an Innovation Ecosystem (Murray & Budden, 2019)

The purpose of each of the five stakeholders are detailed below (Murray & Budden, 2019):

- **Entrepreneurs:** Entrepreneurs play a central role in the ecosystem. They are responsible for creating the companies that the ecosystem is based on. The entrepreneurs' needs are often assumed incorrectly if they are not included. This could result in efforts that lead to no progress.
- **Risk Capital:** Considering all sources of funding available in an ecosystem is crucial to understanding the support and resources the ecosystem can provide to fuel innovation and drive entrepreneurship. All businesses at some point will need external sources of funding, and their availability can make a difference to the survival of the ecosystem.
- **Universities:** Innovation and technology go hand in hand in the 21st century. Skills are required to drive globally applicable innovations. Universities vary widely and provide a range of different activities and insights for the innovation ecosystem, such as novel science-based ideas, technical and scientific training, entrepreneurship education, sophisticated facilities, etc.

- **Large corporations:** Their ecosystem-building activities range from 'on-the-job' talent development, contributions to risk capital through corporate venture capital (CVC), and facilities (e.g., space, testbeds, and labs) that the development of the ecosystem.
- **Government:** A prominent and always considered stakeholder, the government's role is critical to creating and nurturing ecosystems. The government's presence and ongoing interaction with different organizations and individuals can be vital in shaping appropriate rules and norms within ecosystem networks, even though they may not necessarily be the leaders of all ecosystem-building activities.

## 4 EGYPT

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### 4.1 GOVERNMENT

#### 4.1.1 Government Structure

Egypt's system of government is a presidential republic<sup>8</sup> but also runs as a combination of a prime ministerial and presidential system. The president is the head of state, and until the 2019 changes to the constitution, the president was commander in chief of the armed forces and head of the Egyptian cabinet. Under the changed constitution, the president's powers were reduced. Together the president, prime minister, and the council of members make up the executive branch.

The Prime Minister is appointed by the president, acts as the president's deputy, and implements his policies. Both the Prime Minister and the Council of Ministers are appointed and removed by the president. The parliament enacts laws submitted by the cabinet. In the meantime, the judiciary supervises the enforcement of these laws (Library of Congress, 2020).

According to Article 133 of Egypt's constitution, the president is elected by a parliamentary majority and serves a four-year term with the possibility of being reinstalled once via democratic elections.

In March 2018 President Abdel Fattah el-Sisi was re-elected as president to serve his second term. A year later, in April 2019, a referendum was held and approved, which changed the constitution allowing President Abdel Fattah el-Sisi's current term to run until 2024. It also made allowance for a president to run for a third term. The new constitutional terms are that the president may sit for two consecutive terms of 6 years. The referendum also included changes that re-introduced an upper chamber (the senate) in the parliament. The amendments strengthened the powers of the president over the judiciary, giving him the power to appoint the head of the Supreme Constitutional Court and making him the head of the Higher Council for Judicial Authorities, which appoints the public prosecutor and judicial leaders. ( Export Entreprises SA, 2021)

#### 4.1.1.1 Legislature:

- **The People's Assembly:** Has 454 members (444 directly elected, 10 President appointed). It enacts laws, approves and approves treaties, and approves the national budget.
- **The Shura Council (Consultative Council):** Has 262 members (174 directly elected, 88 President appointed). The council acts in a consulting capacity to the President, the executive branch, and the People's Assembly. (Library of Congress, 2020).

#### 4.1.1.2 Judiciary:

The judicial branch monitors and supervises the implementation and enforcement of laws. Judges are appointed for life with a mandatory retirement at the age of seventy.

*(Library of Congress, 2020)*

### 4.1.2 Economic Data

Table 4: Egypt's relevant key economic 5-year data. (Source: International Monetary Fund, World Economic Outlook Database, October 2020)

Main Indicators	2016	2017	2018	2019	2020 (e)
GDP <i>(U.S. dollars, Billions)</i>	332.48	236.53	250.25	302.34	361.88
GDP <i>(Annual % change)</i>	4.35	4.08	5.31	5.56	3.55
General Government Gross Debt <i>(% of GDP)</i>	96.84	103.16	92.65	83.80	86.59
General Government Revenue <i>(% of GDP)</i>	20.26	21.76	20.70	20.12	19.16
Inflation Rate <i>(%)</i>	13.98	29.78	14.36	9.36	5.63
Current Account <i>(billions USD)</i>	-5.97	-6.09	-2.38	-3.60	-3.20
Population <i>(Million)</i>	91.00	95.20	97.10	99.33	101.62

Egypt is the 13th largest gas producer in the world. Egypt's economy is based on agriculture contributing 11.7% of GDP and employing 23%, media, petroleum imports, natural gas, and tourism. The services sector contributes 54% to GDP (CIA.gov, 2017). The services sector comprises telecommunications and tourism and employs approximately 49% of the working population.

Egypt's main exports are Oil & Mineral Fuels, Precious Stones & Metals, and Plastics, and their main export partners are China, United States, and Saudi Arabia.

Egypt generated USD 5.61 billion in revenues from the Suez Canal in 2020.

#### **4.1.3 Support and relevance**

The General Authority for Investment (GAFI) is Egypt's body responsible for regulating corporations and sets the policies for free trade zones. Companies within free zones are required to export more than 50% of their total production. The incentives associated with free trade are: (Ezz, 2015)

- No limitations in transferring profits and investing money.
- The right to import and export without the need to maintain records in the Register of Importers.
- All equipment, machinery, and transportation required for the activities thereof are exempt from customs duties and sales tax (except for cars).
- Sequestration will not be imposed administratively on the companies and establishments, nor will their property and funds be disdained, seized, retained in protective custody, frozen or confiscated.
- No administrative body will interfere in pricing the companies' and establishments' products or determine their profits.

GAFI is also a proactive investment promotion agency that channels investors' feedback to government agencies, adopts new investment regimes, and supports entrepreneurship as a driver for economic growth.

In early February 2018, the General Authority for Investment opened a one-stop shop for starting up a business called the Investors Center. The number of days it typically takes to register a business in Egypt is 12 days; this is below the Middle East and North African average of 12 days but above the OECD high-income country average of 9.2 days. (The World Bank, n.d.). The Investors Center offers a Premier option which reduces the time it takes to get incorporated and get tax registration to 1 to 2 days. The Premier process comes at an additional cost but is designed to be easier and faster than the regular process.

The Premier process allows the individual to be assigned a single point of contact responsible for taking all the steps required with all the institutions involved, relieving the individual from the back and forth needed with lawyers and the various institutions. Entrepreneurs have to pay an extra fee of EGP 7,500 (±\$480) to use the Premier process.

The process of starting a business in Egypt is significantly more challenging for female entrepreneurs. As per the Personal Status law of 1985, if a woman fails to obtain the permission/support of her husband to work outside the marital home (for example, for entrepreneurial ventures), she may suffer consequences under the law. (The World Bank, n.d.)

#### **4.1.4 Taxes and bureaucracy**

Companies can request to be set up as a private free trade zone. This applied to companies outside the free zones may apply to be classified as private free trade zones allowing them to benefit from not being subject to taxes but paying 1% of the value of goods entering the free zone. The general free trade zones are:

- The Alexandria Public Free Zone,
- The Nasr City Public Free Zone,
- Port Said Public Free Zone,
- Damietta Public Free Zone,
- Ismailia Public Free Zone,
- Public Free Zone of Keft,

- Media Public Free Zone,
- Shebin El Kom Public Free Zone
- Suez Public Free Zone

According to the amended Article 57 of the Executive Regulation of the Company Law, the capital requirement for starting a business was dropped from EGP 50 000 to EGP 1 000. In 2008 this capital requirement was removed. Income tax is calculated based on the amount earned, with the upper limit being 20%. The Corporate Tax rate is 20%.

#### 4.1.5 Entrepreneurship programs

Three public entrepreneurship centers in Egypt are credited for igniting the start-up scene in Egypt:

- **Bedaya** is a government-backed private-sector-led incubator that was established in 2009. It is the first program that GAFI backed. Bedaya is said to no longer be operational; however, its offering included:
  - Funding of up to EGP 150000
  - Office space,
  - Business development services,
  - Networking opportunities
  - Manufacturing spaces.

Bedaya also included a financing arm. This fund provided between EGP 2 million and EGP 50 million for start-ups in the food, agriculture, manufacturing, services, and I.T. sectors (Egyptian Streets, 2019). They funded companies for three to five years in return for equity.

- **The Technology Innovation and Entrepreneurship Center (TIEC)** is a government entity specializing in incubating information and communication technology (ICT) start-ups as part of the governmental plan to develop Egypt's ICT sector. (Egyptian Streets, 2019) Their incubation/accelerator supports early-stage, growth-driven companies through education and mentorship for one year. They do not take equity.
- **Fekretak Sherketak** was launched in September 2017 by Egypt's Ministry of Investment and International Cooperation was designed to support and empower the

next generation of Egyptian entrepreneurs and contribute to the development of the Egyptian start-up ecosystem through its Falak program. (Egyptian Streets, 2019)

## 4.2 LARGE CORPORATIONS

- Ecosystem supporting activities by local companies:
  - **Tatweer Misr** opened an entrepreneurship and innovation hub managed by the Global Entrepreneurship Network (GEN) in Mostakbal City, Cairo. In 2020 Tatweer Misr received an award from Entrepreneur Middle East's Enterprise Agility Awards for their efforts in building entrepreneurship and community development.  
"Since the company's establishment in 2014 we have kept entrepreneurship at the core of our business activities. Tatweer Misr has given special attention to education and entrepreneurship as our two main pillars for its social development programs. Over the past six years the company has supported several youth-related activities either through partnering with entrepreneurs, sponsoring entrepreneurial-based events and activities and other activities that aims to directly or indirectly support entrepreneurship and education in Egypt."- Ahmed Shalaby, President and CEO of Tatweer Misr (Daily News Egypt, 2020)
  - **EGBank** launched the MINT startup incubator in collaboration with Cairo Angels. The MINT incubator takes no equity and offer no debt. The incubator offers a three-month intensive program aimed at growth stage start-ups.
- Ecosystem supporting activities by international companies:
  - **Orange** and **PepsiCo** have signed on to sponsor the new Egypt's Entrepreneur Awards (EEA). The aim of the EEA is to celebrate the successful entrepreneurs who achieved great success and became leaders in their industry and inspire more young entrepreneurs to follow their dreams through the stories of those leaders (Think Marketing, 2021).

### 4.3 UNIVERSITIES

As part of Egypt's Vision 2030, the Egyptian government has plans for educational reform. Part of these plans included the construction of eight new technical universities.

The educational reform seeks to expand technical and vocational education and training (TVET) and distance education, develop curricula more aligned with labor market needs and improve student-to-teacher ratios and quality assurance and accreditation mechanisms and teacher training (Ramage Y. Mohamed, 2019). Although Egypt has proved to be one of the most important educational hubs in the Middle East and North Africa (MENA) region in 2016 and 2017, the GEM ranked Egypt at the bottom of their entrepreneurial education list. State schools only provide basic sciences and literature education until later in secondary level; only then is elementary economics education introduced as a trivial subject (Henry, 2015). The Egyptian government has several programs in place to address this as well as other educational shortcomings. One such program was the Egypt STEM Schools Project. The STEM schools project was an initiative of World Learning, the Franklin Institute, the 21st Century Partnership for STEM Education, the Teaching Institute for Excellence in STEM, and the Egyptian Ministry of Education (MoE).

The aims of the project were: (World Learning, Inc., n.d.)

- Increase student interest, participation, and achievement in science and mathematics
- Strengthen the STEM school initiative by developing an effective model for specialized high schools
- Build the capacity of a highly qualified cadre of STEM professionals and provide opportunities for training and sustained intellectually rigorous professional learning
- Strengthen MoE capacity at the systems and policy level to sustain and replicate these model schools
- Support the MoE in upgrading science and mathematics curriculum standards, student assessments, and teacher preparation for mainstream schools

The project developed 11 STEM-focused high schools across the country and ran from 28 Aug 2012 to 31 Oct 2017. The project resulted in 2,799 students (1,586 boys & 1,213 girls)

enrollments, with 458 (294 boys, 164 girls) graduates who pursued tertiary education abroad. The project also trained teaching staff and fostered public-private partnerships.

#### 4.3.1 Organizations engaged in STEM education

- Africa Code Week
- Nutty Scientists
- Olomangy علومنجي

#### 4.4 RISK CAPITAL



Figure 3: Funding path and resources for Egyptian start-ups (Fund your business, n.d.)

Like many other countries, Egypt has a surplus of businesses that need funding compared to the risk financing available. Historically most traditional equity funding institutions in the form of V.C.s and P.E. firms have targeted established start-ups. There is a growing emergence of institutions targeted at funding seed and early-stage start-ups. See appendix for a list of resources according to the Egypreneur<sup>3</sup> funding staircase (depicted in Figure 3).

<sup>3</sup> Egypreneur is the first and largest network for entrepreneurial business owners and executives in Egypt

The rise of individual Angel investors has been sluggish, but there has been a rise in the Angel investment institutions, with the likes of Alexandria Angels emerging. Alexandria Angels is a V.C. company based in Alexandria established in 2016 as a joint venture between Techie Summit and Germany's international development agency, GIZ. It is one part of a network of Angel investor institutions across the country (Cairo Angels and K.I. Angels)

#### 4.4.1 Grant funding

The Egyptian government has also tried to fill in some of the gaps in the ecosystem by founding Falak Startups and creating Egypt Ventures. Egypt Ventures is an investment fund that finances both start-ups and other investors.

## 4.5 ENTREPRENEURS

### 4.5.1 Featured tech start-ups

#### SWVL Technologies Inc.

<b>Founders:</b>	Ahmed Sabbah, Mostafa Kandil	<b>Founded Location:</b>	Cairo, Egypt HQ in the British Virgin Islands
<b>Employees:</b>	500+	<b>Founded year:</b>	2017
<b>Sector(s):</b>	Automotive	<b>Funding raised:</b>	\$106.5 M
<b>Markets(s):</b>	Egypt ad Kenya		

Swvl is an app that allows customers to book fixed-rate rides on buses and vans. It is considered to provide buses in all neighborhoods in Cairo. It also allows people to share a ride in a van or bus during morning and evening commutes for a fixed flat fare with no surge pricing (Crunchbase, n.d.). Swvl, started in Cairo and now operates in Alexandria, Egypt; Nairobi, Kenya.

#### 4.5.2 Focus industries

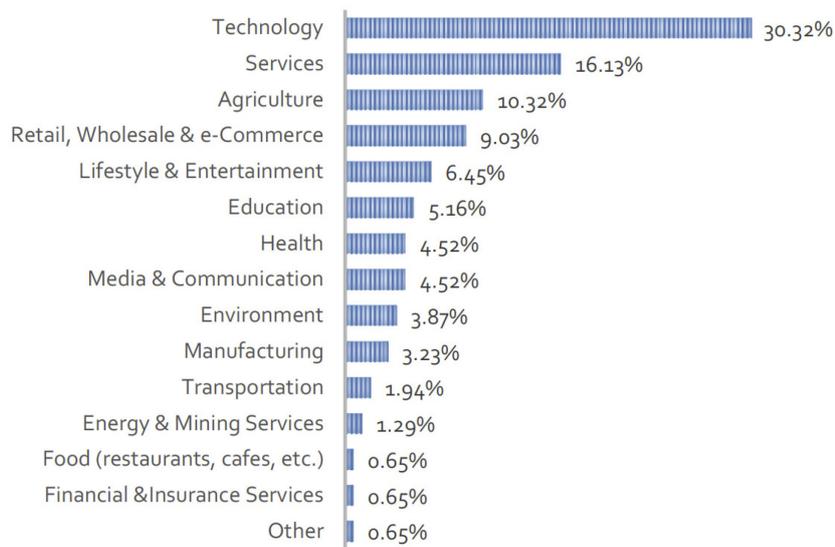


Figure 4: Start-up activity by sector 2019 (Zaki & Zeini, 2019)

#### 4.5.3 Culture

Entrepreneurship has become a more palatable career choice over the years, although the Egyptian public is still somewhat hesitant and risk-averse. With the turmoil experienced in the last decade in mind, stability plays a critical role in decision-making, and most Egyptians look to the government for employment prospects. Some have attributed this to the growth of the public sector after 1952, which drove people away from entrepreneurship (Henry, 2015).

Families encouraged young adults to stable careers. Commerce faculties in Egypt are looked upon as the faculties for the underachievers, being the least selective amongst all other (Henry, 2015).

Previously, entrepreneurship has been considered negatively, with most people believing that you have to be corrupt to be a successful business person. Kickbacks and bribery are seen to be part of the business game. The modern form of entrepreneurship seems to be developing an independent reputation and gaining public acceptance. Public support for critical entrepreneurial traits such as risk-taking, creativity and innovation, and individual initiative seems to be steadily growing between 2012 and 2017 (Ismail, Tolba, Barakat, & Meshreki, 2018).

Since 2016 there has been a drastic shift, and society has seen entrepreneurship in a highly favorable light. The 2018-2019 GEM report found that 75.9% of Egyptians perceive entrepreneurship as a good career choice (ranking 7th among GEM countries), and 43.5% of Egyptian non-entrepreneurs perceived an opportunity to start a new venture (ranking 29th). 55.5% of Egyptian non-entrepreneurs surveyed indicating interest or intentions to start a business within the next three years (Niels Bosma, 2018).

## 5 KENYA

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### 5.1 GOVERNMENT

#### 5.1.1 Government Structure

Kenya is a presidential republic<sup>7</sup>. The Deputy-President supports the president of the Republic of Kenya, and the Cabinet Secretaries comprise the executive. The president is elected directly and serves a 5-year term. The president must get at least 51% of the total vote. The president must also get 25% of the vote in at least half of the 47 counties. The president nominates Cabinet Secretaries who are not already members of parliament. The National Assembly approves the nominations.

Since Kenya's independence in 1963, the country has held elections consistently every five years. Kenya experienced political turmoil in 2017 leading up to the elections attributed to ethnic clashes linked to the first presidential elections. Jomo Kenyatta won the election over Oginga Odinga, whose supporters were made up of the Luo community, one of the larger of Kenya's more than 40 ethnic groups (Blair, 2016). Kenya endured terrorist attacks between 2013 and 2015, and there was also instability along its north-eastern borders.

The Republic of Kenya's current President, Honourable Uhuru Muigai Kenyatta, and his deputy president William Samoei Ruto was re-elected for the second time under the new constitution on 26 Oct 2017. Both will remain in office until the next General election in August 2022 (Government of Kenya, n.d.). Kenya's constitution, which established a republic form of government, was adopted in 2010 and instilled a separation of the three branches of government, sovereignty of the people, and a bill of rights.

##### 5.1.1.1 *Legislature:*

bicameral parliament. It consists of the senate and national assembly, who are in charge of creating laws and policies (Michigan State University, n.d.).

### 5.1.1.2 Judiciary:

Independent of other branches and has unlimited jurisdiction to hear and decide on any case.

## 5.1.2 Economic Data

Table 5: Kenya's relevant key economic 5-year data. (Source: International Monetary Fund, World Economic Outlook Database, October 2020)

Main Indicators	2016	2017	2018	2019	2020 (e)
GDP (U.S. dollars, Billions)	69.19	78.896	87.801	95.41	101.05
GDP (Annual % change)	5.88	4.81	6.32	5.37	1.05
General Government Gross Debt (% of GDP)	50.53	56.88	60.24	62.10	66.39
General Government Revenue (% of GDP)	19.18	18.23	18.22	17.68	16.74
Inflation Rate (%)	6.32	7.99	4.69	5.20	5.30
Current Account (billions USD)	-4.04	-5.69	-5.05	-5.55	-4.95
Population (Million)	44.30	45.40	46.50	47.60	48.69

Kenya is the largest economy in East Africa. Kenya's economy is primarily based on agriculture which contributes approximately 24.9% of GDP and employs about 57% of the Kenyan workforce. The majority(>75%) of farming activities are small-scale, rain-fed farming, and livestock. Exports are dominated by Tea, Coffee & Spices, Live Plants, and Oil & Mineral Fuels. The top industries in Kenya are Small-Scale Consumer Goods (Plastic, Furniture, Batteries, Textiles, Clothing, Soap, Cigarettes, Flour); Agricultural Products; Horticulture; Oil Refining. Kenya's main trading partners are China, India, and Saudi Arabia.

### 5.1.3 Support and relevance

Owning and operating a business in Kenya is relatively easy compared to the other Sub-Saharan African nations, according to The World Bank's Doing Business 2019 report, which

ranked Kenya in 3<sup>rd</sup> place. It also ranked 3<sup>rd</sup> when compared to other low-middle income countries globally. When considering entrepreneurship, the first step is to start a business. According to the same report, it is far harder to start a business in Kenya than in the other Sub-Saharan African nations. Kenya's Ease Of Starting Business was ranked 25<sup>th</sup> out of the 48 Sub-Saharan countries. The total number of days required to register a business is significant between men and women. Men, on average, can register a business in 7 days, while the average for women is 23 days. This might not be due to any administrative and policy challenges but could be attributed to Kenya's socio-economic challenges and cultural circumstances.

Once started, entrepreneurs and small businesses face significant challenges, including access to capital, laws protecting small business owners or minority capital investors: mainly high interest rates, and the lack of funding sources. The significant successes are related to owning properties and enforcing contracts.

#### **5.1.4 Taxes and bureaucracy**

The Kenya Revenue Authority (KRA) is in charge of collecting and receiving all revenue on behalf of the Kenyan Government. As an entrepreneur/start-up, various tax laws will have to be followed. Once an individual is registered and they have a Personal Identification Number (PIN), they will be able to file and complete most tax-related actions online;

- **Pay-As-You-Earn:** This is a tax applied to employment-generated income. It is the manager or employer's responsibility to remit this tax on a monthly basis for each employee. The rate lies between 10 % - 35 % depending on the income.
- **Presumptive tax:** This is a tax applied to the maintenance of a business permit. It is charged at the time of payment for business permit fee or trade license and equates to 15% of the fee
- **Corporate taxation:** This is a tax applied to the revenue generated by business corporations such as co-operative/ limited companies and privately-owned organizations. Under the Kenyan, Taxation Bill Local businesses are taxed at a rate of 40 %, whereas foreign investors and corporations are taxed at a rate of 42.5 %.

Companies established solely for poverty relief and the advancement of religion and education are exempt from paying corporate taxes.

- **Turnover Tax:** This is a tax applied to the revenue generated by private companies with a turnover of above KSh500,000 (\$4880) and below KShs. 5 million (\$48,800) per annum. This tax is aimed at bringing every business corporation in the informal segment into taxation (Zap Editorial, 2017). The turnover tax doesn't apply to individuals providing management or professional services, rental businesses, and incorporated companies. From 25 Apr 2020, the turnover tax rate was decreased from 3% to 1% to help ease the load on small businesses.
- **Value Added Tax:** This is a tax applied to the sale of goods and services collected by the business and submitted to the Kenya Revenue Authority. This tax is mandatory for businesses with a revenue of over Kshs. 5 million per annum. As of April 2020, the VAT rate was decreased from 16% to 14%
- **The Excise Duty:** According to the excise duty Act 2015, products such as alcoholic drinks, petroleum products, Automobile accessories, cell phone airtime, and also financial bank charges are to be subject to excise duty.

Besides the traditional tax instruments and the reduction in tax income, Kenya introduced taxes on digital services. COVID measures led to the Kenyan Government reducing some taxes to keep businesses afloat and people employed. Still, there was a boom in digital-related services, and these tax measures seem to be as a response and tax where growth is occurring. From January 2021, the Digital Services Tax was introduced, which is a tax on income generated from electronic means such as online marketplaces.

This issue highlighted with the digital services tax, and other newly introduced taxes is that they are based on the sales a business makes. Meaning that even if a company is making a loss, they would still be liable for taxes. For most technology-based start-ups that take a while to reach profitability, this might be a significant impediment to profitability.

### **5.1.5 Entrepreneurship programs**

In 1999 the Kenyan Government initiated the Kenya Local Government Reform Programme (KLGRP), aiming at improving local service delivery; enhance economic governance; and

alleviate poverty. The KLRP was not explicitly created to address entrepreneurship; however, there two policies that address the concerns related to entrepreneurship, mainly the Single Business Permit (SBP) and The Local Authority Transfer Fund (LATF) (Wanjohi, 2010).

When starting up, businesses had to get multiple licenses, and the SBP was intentioned to make the process easier. It quickly became the third most important source of revenue for Kenya. The SBP has been criticized for increasing the administrative burden on entrepreneurs (The Investment Climate Department of the World Bank Group, 2012).

The state has set up corporations such as keNia to drive science and technology innovation and commercialization. The Kenya National Innovation Agency (KeNIA) is a State Corporation established under the Science, Technology, and Innovation (STI) Act, No. 28 of 2013. The core mandate of the agency is to develop and manage the National Innovation System. The agency is responsible for coordinating, promoting, and regulating the National Innovation Ecosystem (Kenya National Innovation Agency, n.d.).

In 2020 the Kenyan Government gazetted "The Start-up Bill." Of the countries that are part of this report, Kenya was one of the first African countries to implement Start-up specific legislation. The bill's key focus is on incubators with the aim that the start-ups will benefit. The bill has been criticized for being vague on the direct action points that the government will take (Jackson, Kenya looks set to get its own "Startup Act" – what exactly does the proposed bill entail?, 2020). There is a fear that the legislation will follow The Enterprise Kenya initiative (2015), aiming to develop a technology entrepreneurship ecosystem. Through the initiative, the government had promised to invest in a minimum of 50 start-ups that year. By September 2020, there had been no investments had been made.

## **5.2 LARGE CORPORATIONS**

Although various international large corporations are operating in Kenya. Most of these organizations are not explicitly focused on Kenya, or at least the organizations that were found in researching this thesis were not specifically focused on Kenya. Some of the

organizations that were highlighted to be doing significant work in the Kenya ecosystems are: (Nairobi Garage, 2019)

- Seedstars Africa, an emerging markets Switzerland-based startup competition;
- The TEEP Fund focuses on supporting organizations in all 54 African countries on the African continent.
- African Women’s Development Fund (AWDF), the first pan-African women’s grant organization. It provides grants to the value of \$17 million to 800 women’s organizations in 42 African countries.
- Acumen Fund<sup>4</sup>, Cisco Systems Foundation, and three individual philanthropists. The Acumen is a member at Nairobi Garage and focuses on companies working on water, healthcare, housing, energy, and agriculture.
- CDC, the UK’s Development Finance Institution (DFI), supports businesses throughout Africa and South Asia,
- Bill and Melinda Gates Foundation has three offices in Ethiopia, Nigeria, and South Africa, which devotes the largest share of its resources and expertise. However, the foundation also has a presence in Kenya, Tanzania, Ghana, Senegal, Zambia, and Burkina Faso.
- The International Finance Corporation (IFC), a member of the World Bank Group, has invested more than \$25 billion in African businesses and financial institutions, and its current portfolio (in 2017) exceeds \$5 billion.

### **5.3 UNIVERSITIES**

Since 2003 Kenya has embarked on drastic changes to its education system. They have upgraded the existing colleges and launched on increasing the number of higher learning institutions from 5 in 2005 to 22 in 2015 and plans to add 20 more. The majority of higher learning institutions are private; however, the 20 planned universities are public, and most will serve underserved communities.

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<sup>4</sup> a charity organisation funded by the Rockefeller Foundation

Kenya's Vision 2030 initiative aims to make Kenya a globally competitive, industrialized, middle-income country providing a high quality of life to all its citizens in a clean and secure environment 2030." (Republic of Kenya, 2007)

Science, technology, and innovation (STI) forms one of the foundations for the programs. *"Vision 2030 proposes the intensified application of science, technology, and innovation to raise productivity and efficiency levels across the three pillars. It recognizes the critical role of research and development (R&D) in accelerating economic development in all the newly industrializing countries of the world.*

*The government will create the STI policy framework to support Vision 2030. More resources will be devoted to scientific research, technical capabilities of the workforce, and in raising the quality of teaching mathematics, science and technology in schools, polytechnics, and universities."*

Education and Training action plan: Under education and training, Kenya will provide a globally competitive and quality education, training, and research. Kenya aims to be a regional center of research and development in new technologies. Through:

1. integrating early childhood education into primary education;
2. reforming secondary school curricula;
3. modernizing teacher training;
4. strengthening partnerships with the private
5. sector;
6. developing essential programs for learners with special needs
7. rejuvenating ongoing adult training programs;
8. revising the curriculum for university and technical institutes to include more science and technology; and
9. in partnership with the private sector, the government will also increase funding to enable all these institutions to support activities envisaged under the economic pillar.

STEM integration, instructor development and evaluation and assessment to STEM teaching from early childhood through graduate education. The following projects will be implemented to deliver on the STEM requirements:

- Kenya Advanced Institute of Science and Technology: The establishment of an advanced research institute in Kenya will provide specialized training in various engineering and science fields.
- Repackage STEM in Education and Training: The project will promote experiential learning, innovation, creativity, and attraction to STEM-related disciplines. This will be achieved through well-coordinated programs in education, R&D, and training in all aspects of ST&I, starting from Early Childhood to Primary and Secondary Education levels up to university.
- Integration of Science, Technology, and Innovation in Education Management: The project will establish a Sector-Wide Education and Training Management Information System linking all education-related Agencies in the public and private sectors.
- Conduct a National Skills Inventory and Audit for ST&I: A National Critical Skills Development Strategy will be formulated and implemented to increase researchers, scientists, and engineers for the industry.

This project will include an audit on the existing SET skills and the country's requirements and draw up a strategy for closing the gap.

### 5.3.1 Organizations engaged in STEM education

- Africa Code Week
- AkiraChix
- Caplora STEM Academy
- Cosmos Education Kenya
- GlobalX Innovation Labs
- Hands On The Future Kenya Skills Show
- @iLabAfrica
- Little Einsteins East Africa
- Miss.Africa Digital Program
- NAIROBITS
- Pink Energy
- STEM Africa
- STEMCenter-Africa
- TEAM4TECH
- WAAW Foundation (Working to Advance STEM Education for African Women)
- Women in Engineering Kenya (WomEng Kenya)
- The Youth Cafe

## 5.4 RISK CAPITAL

In 2020 Kenya raised the vast majority of the money raised on the African continent by raising \$191,381,000.00. However, Kenya did not have the highest number of start-ups funded, with 52. Of that 52, 37.3% of them raised \$1 M or more in funding. See Figure 5.

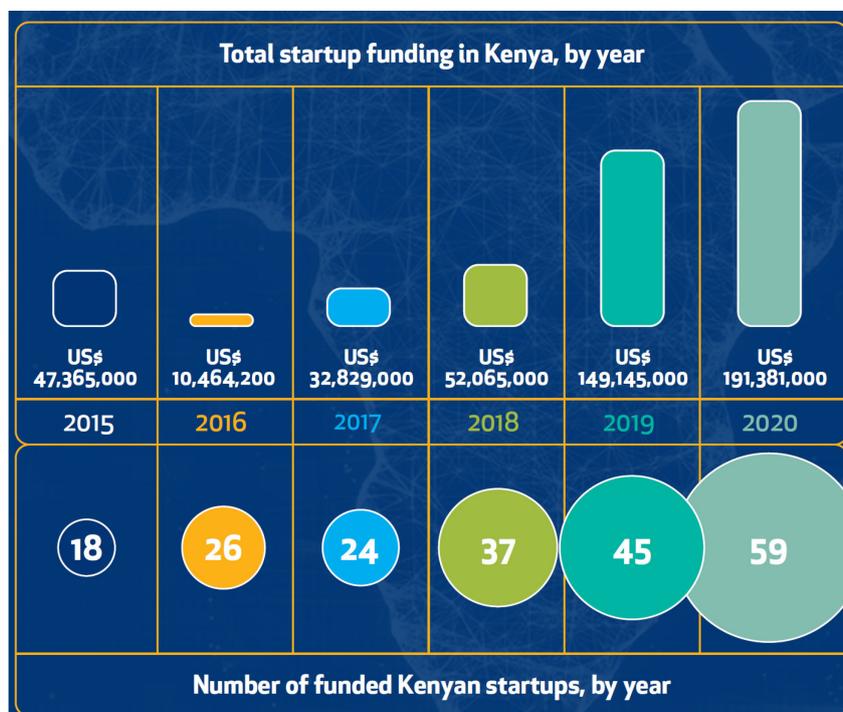


Figure 5: Total startup funding in Kenya, by year. (Disrupt Africa, 2021)

Kenya's funding mainly comes from accelerator-linked investors (Eg. MEST Africa, Villgro Africa), a few venture capital firms (Kepple Africa Ventures, Musha Ventures) but little in the way of Angel investors. It is, therefore, difficult for early-stage start-ups since the majority of investors favor later-stage start-ups.

## 5.5 ENTREPRENEURS

### 5.5.1 Featured tech start-ups

#### Twiga Foods Ltd.

**Founders:** Grant Brooke, Peter Njonjo

**Founded Location:** Nairobi, Kenya

<b>Employees:</b>	1000	<b>Founded year:</b>	2013
<b>Sector(s):</b>	Agritech, B2B platform	<b>Funding raised:</b>	\$107.1 M
<b>Markets(s):</b>	Kenya		

Twiga Foods is a business-to-business marketplace platform that sources produce directly from farmers and delivers it to urban retail outlets, kiosks, and market stalls (Crunchbase, n.d.). The company works with more than 17,000 farmers and 8,000 vendors. Their online marketplace offers quality fresh and processed food from farmers and food manufacturers and delivers it to vendors at below-market prices. Their service is mobile-based and cashless, allowing them to reach market stalls as well as retail outlets. They have innovative services such as a fintech product where vendors can access credit to start their businesses. This product is a collaboration with IBM and is built using blockchain technology.

The original idea for Twiga, was to export bananas from Kenya to Dubai. However, that business model did not take off. Twiga pivoted once in its lifetime at the very beginning to its current business model, which has gained significant traction in the market. Twiga came out of Nairobi Garage and was able to get VC traction after the 1776 Pitch Competition in early 2015. The founders self-financed the first \$500,000, which was raised by selling the founder's home. The early-stage financing was a minefield of bad offers until they reached a level of standard VC term-sheets. They didn't take part in any accelerators (VC4A, 2018).

### 5.5.2 Focus industries

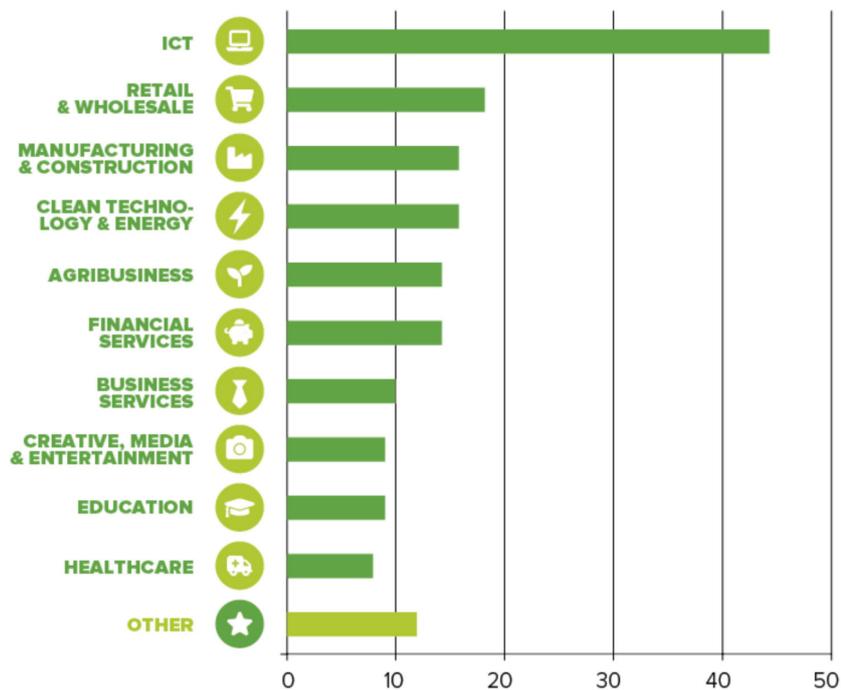


Figure 6: Registered ventures in Kenya, 2018. N=1333 (VC4A, 2018)

### 5.5.3 Culture

The Kenyan government's drive for ICT development has come with examples of business that have attained worldwide acclaim. Kenya has very confident potential entrepreneurs that are seeing opportunities around them to start businesses and have networks of other entrepreneurs to look to (Acs & Ortman, 2015). The Kenyan populations seem to open and keen to engage in entrepreneurial activities. The restrictions on the growth of the entrepreneurship ecosystems tend not to be attributed to social and cultural attitudes. Still, they are attributed to the lack of education, infrastructure, and financial support. Although Kenya is collectivist and there is societal pressure to engage in stable employment, small and micro enterprises play a big part in the Kenyan economy.

## 6 NIGERIA

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### 6.1 GOVERNMENT

#### 6.1.1 Government Structure

Nigeria is a federal presidential republic<sup>5</sup> made up of 36 states, one federal territory, and run by one central government. The Nigerian president is elected directly via a democratic vote. The president is elected to serve a four-year term and is eligible for a second term. Nigeria's federal executive council (cabinet) is appointed by the president but should comprise at least one representative from each of the states.

##### 6.1.1.1 *Legislature:*

Nigeria has a bicameral parliament. It consists of the senate and the House of Representatives.

##### 6.1.1.2 *Judiciary:*

The highest court is the Supreme Court. Court of Appeal; Federal High Court; High Court of the Federal Capital Territory; Sharia Court of Appeal of the Federal Capital Territory; Customary Court of Appeal of the Federal Capital Territory; state court system similar in structure to the federal system.

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<sup>5</sup> A state in which the powers of the central government are restricted and in which the component parts (states, colonies, or provinces) retain a degree of self-government; ultimate sovereign power rests with the voters who chose their governmental representatives.

### 6.1.2 Economic Data

Table 6: Nigeria's relevant key economic 5-year data. (Source: International Monetary Fund, World Economic Outlook Database, October 2020)

Main Indicators	2016	2017	2018	2019	2020 (e)
GDP (U.S. dollars, Billions)	404.65	375.75	398.16	448.12	442.98
GDP (Annual % change)	-1.62	0.81	1.92	2.21	-4.28
General Government Gross Debt (% of GDP)	23.41	25.34	27.66	29.14	34.98
General Government Revenue (% of GDP)	5.95	6.61	8.51	7.86	5.92
Inflation Rate (%)	18.55	15.37	11.44	11.98	13.70
Current Account (billions USD)	0.67	2.77	0.97	-3.80	-3.65
Population (Million)	185.96	190.87	195.88	200.96	206.14

Nigeria's economy is the largest on the African continent and 30<sup>th</sup> in the world. It is mainly dependent on oil, responsible for 10% of the GDP and 70% of the countries revenues. Nigeria is the 8<sup>th</sup> largest oil producer globally. The oil revenues are pooled into a central federal account then portions are allocated back to the states where the oil was collected, with the state getting a minimum of 13% of the revenues.

Nigeria has natural resources such as minerals and precious stones. The 2008-9 financial crisis led to the recapitalization of the banking sector and an enhancement of regulations. This led to the emergence of other industries such as agriculture and telecommunications.

The lack of infrastructure and reliable power and other inefficiencies in the market have restricted the economy's growth from attaining its potential.

### 6.1.3 Support and relevance

- The National Information Technology Development Agency (NITDA) was formed to implement the Nigerian Information Technology Policy and ensure adequate ICT

infrastructure. The Federal Government signed the National Broadband Plan for 2020-2025 to achieve 70% broadband penetration by 2025 (Paul, 2021).

- The Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) was founded to support SMEs through rural industrialization, poverty, and new job creation. The agency connects SMEs with internal and external finance and appropriate technology sources. Agriculture was the main focus of the agency. More recently, tech entrepreneurs have been among the majority receiving these grants.

Recent actions to reduce or eliminate the right-of-way (RoW) charges for fiber optic cables across most states have been an effort to reach the 70% broadband penetration by 2025 that the government had promised (Paul, 2021).

On 6 Aug 2020, the Nigerian president signed the Companies and Allied Matters Act 2020 into law. One of its key provisions is that it allows individuals to incorporate a company (Limited Liability Company) therefore removing the requirement that multiple people are required. A one-person business would now be able to receive tax incentives from the Finance Act as businesses previously did. Although this law may make the tax conflicts between state and federal levels more complex on conflict-ridden, it could make it easier for single founder start-ups to attract funding.

#### **6.1.4 Taxes and bureaucracy**

When starting a business in Nigeria, one can register the business as a corporate entity (e.g., company) and pay taxes to the federal government or register as a non-incorporated entity (e.g., partnerships and enterprises) and pay taxes state. This incentivizes states to encourage businesses to register as non-incorporated entities creating tensions at a state and federal tax revenue collection level. These tensions can be noted in some of the clauses of newly passed legislation, such as the recent Finance Act. The Finance Act, which is Federal level legislation, states that companies with less than ₦25m (\$68,900) annual turnover do not pay income tax. In comparison, companies with a turnover between ₦25m to ₦100m (\$277,000) will pay income tax at a reduced rate of 20%.

This is a reduction from the previous 30%, which now only applies to companies with revenues above ₦100 million (\$277,000).

For every equity investment made by a venture capital company in a startup in Nigeria, there are deductions from the amounts to be paid as tax from the startup company's income tax, each year until five years after each investment. For the first year, 30% will be deducted. For the second year, another 30% deduction will be made, 20% in the third year, 10% in the fourth year, while a 10% deduction will be made in the fifth year (Udoh, 2021).

Nigeria also offers incentives for VCs in the form of capital gains taxes associated with the sale of start-ups. The equity investment of the venture capital firm in a Nigerian startup company is sold or disposed of. The gains made by the venture capital firm on the equity investment are not liable to capital gains tax by the provisions of the Nigerian Capital Gains Tax (Udoh, 2021).

#### **6.1.5 Entrepreneurship programs**

Nigeria has a dedicated subsidiary called The Office for ICT Innovation and Entrepreneurship (OIIE), which focuses on enabling start-up growth. The OIIE aims to eliminate the barriers to nurture and support innovation and entrepreneurship by addressing the systemic barriers that start-ups face. This is done through programs such as The ICT for Change Empowerment Program, which focuses on ICT and innovation and entrepreneurship.

## **6.2 LARGE CORPORATIONS**

- Ecosystem supporting activities by international companies:
  - **Siemens:** Together with the foundation "Haus der kleinen Forscher" (Little Scientists' House), the Associate Professorship of Life Sciences Education at T.U. Munich, and experts Dieter Arnold and Dr. Lutz Stäudel, we have developed training seminars and teaching materials that provide educators with the tools they need for experimenting in the classroom.

- **GE:** In partnership with the Dangote Foundation and Points of Light, GE created pop-up innovation workshops in Lagos as part of the GE Garages. They aim to drive innovation into production and find creative ways to solve local problems such as the irregular power supply in Nigeria.
- In November 2019, **Visa** invested \$200 million in Nigerian payments firm Interswitch. At around the same time, OPay, a Norwegian-owned but Lagos-based mobile payment service, raised \$120 million from high-profile investors, including Sequoia Capital China and SoftBank Ventures Asia. Meanwhile, in May, Microsoft opened offices in Kenya and Nigeria for engineers working on artificial intelligence, machine learning, and mixed reality. A month earlier, Google opened an A.I. lab in Ghana.
- **Carnegie Mellon University** opened its campus for 300 graduate students in 2011 and upgraded to a new campus in November.

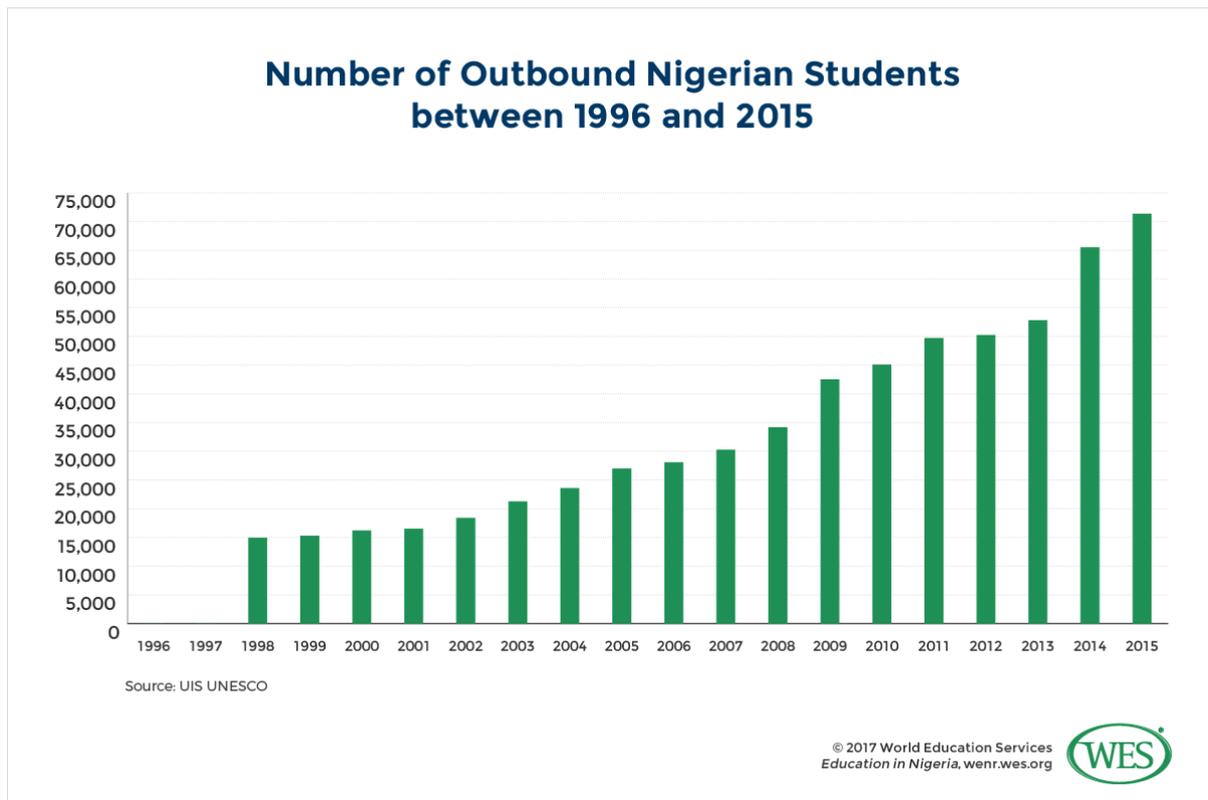
Data related to large local corporations in Nigeria contributing to the startup ecosystem was not found. This could be due to the research methodologies of the author and not the lack of participation. The international corporation programs identified were part of a more extensive African program and were not explicitly included under Nigeria.

### **6.3 UNIVERSITIES**

Almost one in four Sub-Saharan people live in Nigeria, and 60% of them are below the age of 24. This means there is a high demand and need for decent education services in Nigeria. Most of the international students from the African continent hail from Nigeria.

According to data from the UNESCO Institute of Statistics (UIS), the number of Nigerian students abroad increased by 164 percent in the decade between 2005 and 2015 alone (see Figure 7) from 26,997 to 71,351. The main reasons cited for the high number of outbound students are:

- The number of students exceeding the number of institutions that can accommodate them.
- The poor quality of education (specifically higher education)
- The growth of the middle class, increasing the number of families who can afford to send their children overseas



*Figure 7: Number of Nigerian students studying abroad from 1996 to 2015 (WES Staff, 2017)*

Nigeria's governmental spending on education is one of the lowest on the African continent, with the government spending 7% of its budget on education. This is said to be less than half of the Sub-Saharan average. As a result, the education standards are deemed to be low, suffering from inadequate funding and deteriorating teaching capabilities.

Complaints about the education system revolve around the outdated degree program curricula that do not prepare students for the marketplace and do not meet the marketplace needs. 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 (OC&C Strategy Consultants, 2018).

Nigeria has 130 higher education institutions. Fifty of which are private institutions, while the remainder are public. None of the universities are featured in the Q.S. World University Rankings top 1000. There are four universities listed in the top 1000 according to the IMES Higher Education World University Rankings 2021. These are listed in Table 7 below.

*Table 7: Nigerian universities listed in the top 1000 IMES Higher Education World University Rankings 2021*

	Ranking	University
1	401–500	University of Ibadan
2	501–600	Lagos State University
3	601–800	University of Lagos
4	801–1000	Covenant University

Nigeria's World Economic Forum Ranking for Maths and Science Education is 118 out of 137 nations (2016-2017)

### 6.3.1 Organizations engaged in STEM education

- Africa Code Week
- Africa STEM and Video Game Research
- African Research Academies for Women
- African University of Science and Technology
- Audax Code School
- Carisma4U Educational Foundation
- Cedar STEM and Entrepreneurship Hub (CSEH)
- Center4Tech
- Christopher Kolade Foundation
- Coderina Education & Technology Foundation
- Creative Builders Club
- Royalty Children's Network
- Science Ambassadors Foundation
- Science Ambassadors Foundation
- Science Ignite Africa Initiative
- SMOG Eudtech
- STEM Foundation Nigeria
- STEM Nigeria
- STEM-Ed Enterprises
- The Science, Technology, Engineering, Mathematics and Innovation Makers of Africa (STEMi Makers Africa)
- STEMres Learning Initiative
- Tanteeta

- Dhack Institute
- Geek Girls Collaborative
- Hamoye – Developing Competencies for Tomorrow's Economy
- iDux Academy
- Premier Coders Club
- Premier Coders Club
- Rainbow Gate Foundation
- re:learn by CcHUB
- Teaching and Research in Natural Sciences for Development in Africa (TReNDs)
- Technology for Inspiration Initiative
- Technovation
- TechQuest STEM Academy
- The Visiola Foundation
- Women's Technology Empowerment Centre (W.TEC)
- World Digital Exhibition (Worldex)
- Youth for Technology Foundation Nigeria

## **6.4 RISK CAPITAL**

### **6.4.1 Debt**

In July 2020, the Central Bank of Nigeria (CBN) introduced the Global Standing Instruction (GSI) to help banks recover loans from chronic debtors; it allows banks to debit their BVN-linked accounts (Paul, 2021). In October 2020, they also introduced charges on failed direct debit transactions, another feature used by loan providers for those looking to borrow from them.

### **6.4.2 Equity**

Most innovation hubs provide Initial and seed funding to their program participants but cannot continue with later-stage investments.

The Nigerian Stock Exchange introduced an Alternative Securities Market (ASeM) platform 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 in other markets, limiting high-net-worth individuals' inclination to invest in riskier options such as tech entrepreneurship.

### 6.4.3 Grant funding

Public funding is scarce, and the geographic coverage of existing programs is limited. It is also said that available grants are not inclusive, well communicated, and their application process is unclear and complicated.

On the other hand, Nigerian tech entrepreneurs are informed and active participants in international grant programs. However, most of these grants are philanthropic with limitations in addressing the needs of a wider audience, and their scope does not cover later-stage funding (OC&C Strategy Consultants, 2018).

## 6.5 ENTREPRENEURS

### 6.5.1 Featured tech start-ups

#### Paystack

<b>Founders:</b>	Ezra Olubi, Shola Akinlade	<b>Founded Location:</b>	Lagos, Nigeria
<b>Employees:</b>	50	<b>Founded year:</b>	2015
<b>Sector(s):</b>	Financial services, Fintech	<b>Funding raised:</b>	\$10.4 M
<b>Markets(s):</b>	Nigeria, Ghana, Kenya	<b>Acquired for:</b>	\$200M (Stripe)

Paystack lets businesses accept payments via credit card, debit card, money transfer, and mobile money on their websites or mobile apps. Paystack is the first Nigerian startup to enter Y Combinator<sup>6</sup>. They believe in sharing their journey as a startup and have kept it public, sharing the details of their path. "(We)believe strongly that for African businesses to become the global behemoths we aspire to be, we need to set aside the culture of intense secrecy and share what we're learning and how we're doing." -founders, (VC4A, 2018)

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<sup>6</sup> Y Combinator (YC) is an American seed money startup accelerator launched in March 2005. Responsible for assisting renowned companies such as Stripe, Airbnb, Cruise Automation, DoorDash, Coinbase, Instacart, Dropbox, Twitch, and Reddit. (Wikipedia, n.d.)

## 6.5.2 Focus industries

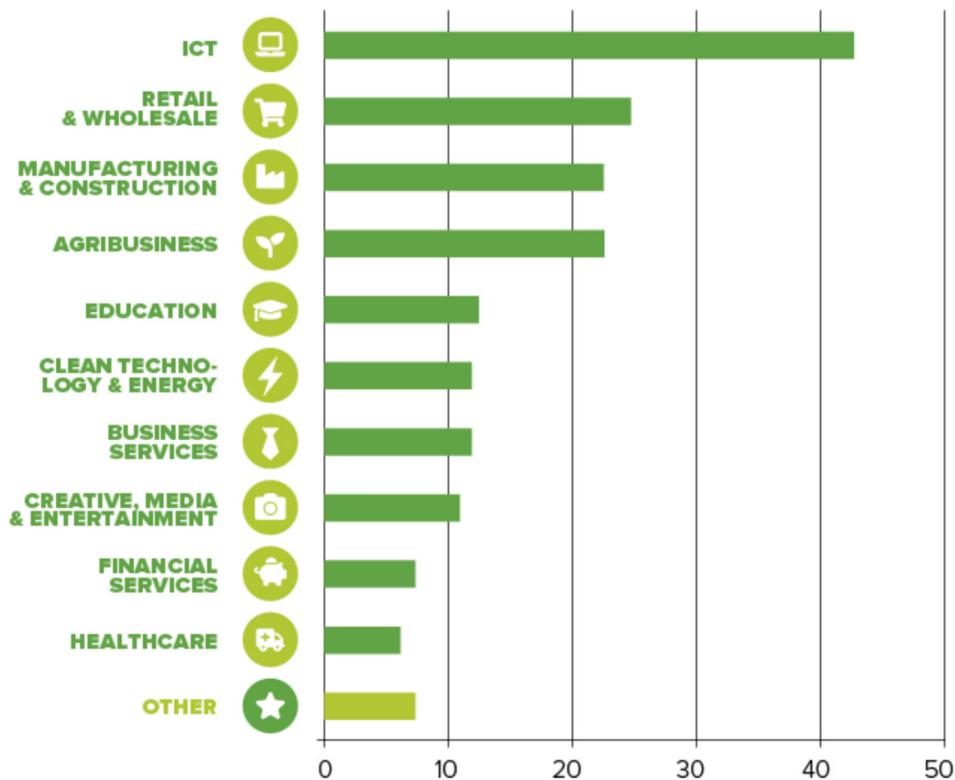


Figure 8: Registered ventures in Nigeria, 2018. N=3360 (VC4A, 2018)

## 6.5.3 Culture

The Nigerian society seems to value achievement and success. They have a solid and undeniable 'Hustle' spirit. The overriding Nigerian culture appears to be highly entrepreneurial, optimistic, resilient, and open to taking risks. As in many developing nations, the majority of entrepreneurship occurs from necessity. The innovation is centered on solving social issues and gaps in social infrastructure. The Nigerian population seems to have a robust pan-African spirit, resulting in Nigerian start-ups' early drive for expansion across the continent and their eagerness and ability to see low-income, under-developed communities ripe for opportunity.

As with many African societies, the Nigerian community is mainly collectivistic rather than individualistic. One would expect that this would translate into entrepreneurship focused on building the Nigerian society as a whole rather than individuals.

Nigeria has one of the largest fleets of private planes on the African continent, but the country lacks comparable social infrastructure such as widely distributed electricity. This seems at odds with the collectivist ethos expected to feed the entrepreneurs' motivation to do good for the Nigerian people. Society seems to cluster around specific social circles or families. It could be that collectivism centers around what's best for that circle and only after that what's best for society.

## 7 RWANDA

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### 7.1 GOVERNMENT

#### 7.1.1 Government Structure

Rwanda is a presidential republic<sup>7</sup>. The president appoints a prime minister as the head of government. The president is democratically elected to serve a five-year term. Up until 2015, the president could serve a maximum of two terms. This was changed in December 2015 to allow the current president to serve a third term for seven years. The next presidential elections will be held in August 2024

##### 7.1.1.1 *Legislature:*

Rwanda has a bicameral parliament.

##### 7.1.1.2 *Judiciary:*

The highest court is the Supreme Court. The subordinate courts are the Court of Appeal, the High Court, intermediate courts, and primary courts. Specialized courts comprise commercial courts and military courts.

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<sup>7</sup> **Presidential** - a system of government where the executive branch exists separately from a legislature (to which it is generally not accountable).

**Republic** - a representative democracy in which the people's elected deputies (representatives), not the people themselves, vote on legislation.

## 7.1.2 Economic Data

Table 8: Rwanda's relevant key economic 5-year data. (Source: International Monetary Fund, World Economic Outlook Database, October 2020)

Main Indicators	2016	2017	2018	2019	2020 (e)
GDP (U.S. dollars, Billions)	69.19	78.896	87.801	95.41(e)	101.05
GDP (Annual % change)	5.97	3.99	8.58	9.40(e)	1.99
General Government Gross Debt (% of GDP)	36.38	41.32	44.99	51.36	61.60
General Government Revenue (% of GDP)	22.76	22.58	23.83	23.64	20.09
Inflation Rate (%)	7.28	0.67	1.14	6.73	5.00
Current Account (billions USD)	-1.35	-0.69	-0.76	-0.94	-1.75
Population (Million)	11.50	11.80	12.10	12.40	12.67

Rwanda's economy is based on agriculture which contributes approximately 63% of export revenue. The following dominant sectors are energy, financial services, hospitality, and trade. Rwanda has been experiencing strong economic growth since the reforms initiated after the genocide. The services, construction, and tourism sectors have been the primary sources of economic growth.

Rwanda's main exports are minerals, coffee, tin, and hides. Their main export partners are the United Arab Emirates, Kenya, Switzerland, the Democratic Republic of the Congo, the United States, and Singapore.

The Patriotic Front maintains an absolute majority in the Chamber of Deputies and, for the first time, two opposition parties, the Democratic Green Party of Rwanda and Social Party Imberakuri, winning two seats each in the parliament. President Paul Kagame was re-elected to a seven-year term in August 2018, following an amendment to the constitution in December 2015, allowing him to serve a third term.

### 7.1.3 Support and relevance

Rwanda ranks highly in the Doing Business 2020 report from the world bank. The number of procedures to start a business is below the Sub-Saharan Africa average. The time it takes is below the Sub-Sahara average and below the OECD High-income countries. However, once started, entrepreneurs and small businesses face significant challenges, some of which arise from capital access: mainly high-interest rates and the lack of funding sources. On 30 Nov 2020, the Rwandan government issued a new Entrepreneurship Development Policy to address the challenges above and more.

Rwanda's Entrepreneurship Development Policy (EDP) aims to provide support to entrepreneurs by creating a conducive environment that facilitates innovation and encourages risk-taking associated with typical entrepreneurship activities.

The EDP aims to complement existing policies that were put in place to address the private sector's growth by focusing on entrepreneurship. The key stakeholders for the implementation of the EDP are:

*Table 9: Key stakeholders of Rwanda's Entrepreneurship Development Policy implementation plan*

Stakeholder	Acronym	Role
Ministry of Finance and Economic Planning	MINECOFIN	oversees financial resources to support government initiatives to promote entrepreneurship, SME growth, and job creation.
Ministry of Information Technology and Communication and Innovation	MINICT	addresses national priorities for economic growth and poverty reduction through development and coordination of national information technology, communication and innovation policies and programs.
Ministry of Trade and Industry	MINICOM	plays an oversight and coordination role in the development and implementation of SME policies in collaboration with different stakeholders.
Ministry of Youth and Culture	MYCULTURE	acts as a catalyst and facilitator for socio-economic empowerment of young entrepreneurs.
National Industrial Research and Development Agency	NIRDA	conducts R&D in new and innovative industrial technologies, incubates entrepreneurs, as well as promotes the adoption of improved technologies by Rwanda's private sector.
Rwanda Cooperative Agency	RCA	registers and regulates co-operatives in Rwanda and promotes entrepreneurship among co-operative members.

Rwanda Development Board	RDB,	focuses on accelerating targeted export-oriented investments, fostering an attractive business environment, and forming private sector partnerships in key value chains.
Rwanda Information Society Authority	RISA	ensures the smooth implementation of all ICT projects and streamlines research, infrastructure, and innovation within the ICT sector.
Rwanda Revenue Authority	RRA	collects taxes oversees and implements regulations related to taxes and duties, and ensures compliance with the tax program.
Rwanda Standards Board	RSB	provides standard-based solutions for entrepreneurs, develops and awards quality certifications, and enforces standards for Rwandan products to ensure high quality of domestic production.
Business Development Fund	BDF	
Development Bank of Rwanda	BRD	
Minister of Local Government	MINALOC	
Private Sector Federation	PSF	

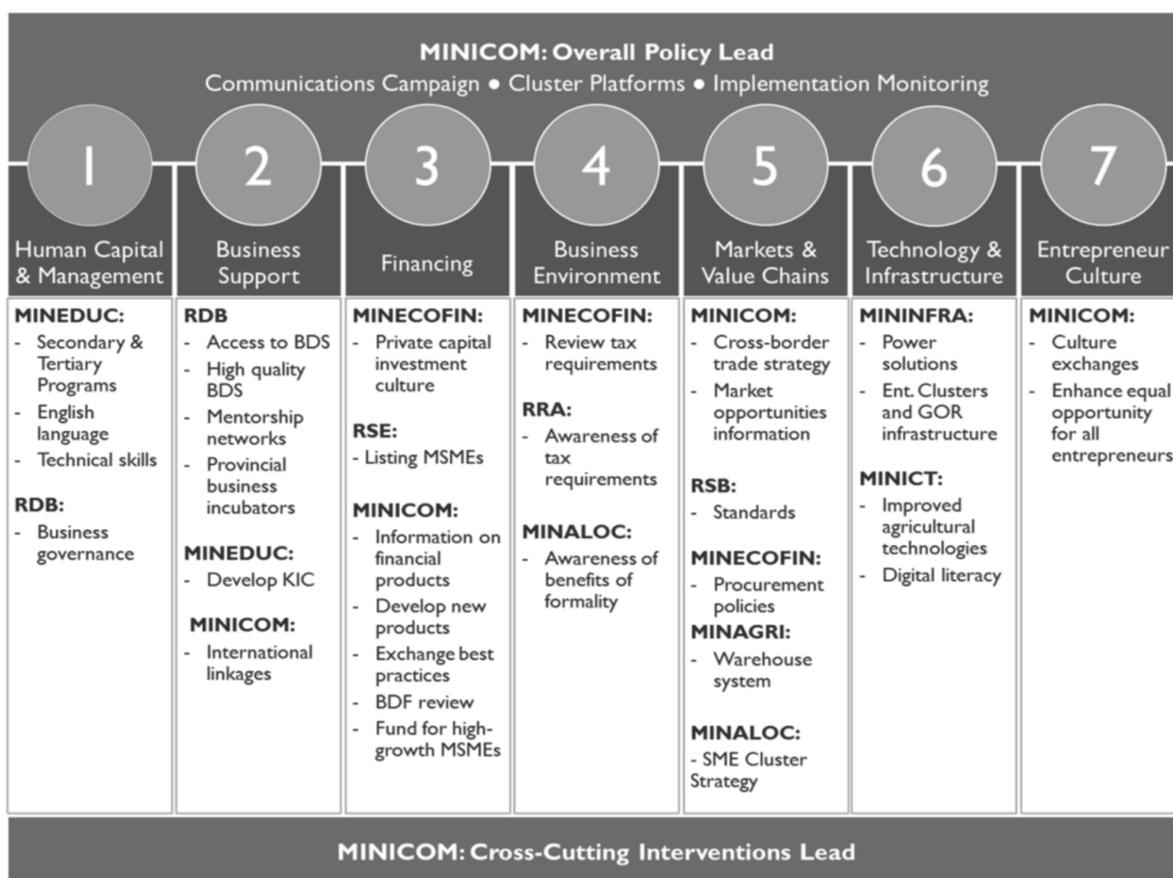


Figure 9: Rwanda's Entrepreneurship Development Policy implementation plan organogram

#### **7.1.4 Taxes and bureaucracy**

Rwandan residents are subject to tax, paid to the Rwanda Revenue Authority (RRA), on their income, including income from non-local sources. Foreign nationals are subject to tax only on their Rwandan-sourced income. A company is deemed to be resident in Rwanda if it:

- is established according to Rwandan law;
- has its place of effective management in Rwanda; or
- is a Rwandan government company.

(ENSAfrica, 2020)

A resident company is subject to a 30% corporate income tax rate unless the business revenue is below 50 Frw Million per year. In such situations, companies are charged a flat rate. Newly listed companies, venture capital, international and micro-finance companies are entitled to preferential tax rates.

#### **7.1.5 Entrepreneurship programs**

MINICOM will hold an Annual Rwandapreneurship Summit. The summit is organized in partnership with entrepreneurs, academia, civil society, and development partners. It provides entrepreneurs the opportunity to network, share experiences, exhibit, pitch businesses, and participate in mentorship sessions (Ministry of Trade and Industry, 2020).

YouthConnekt Africa (YCA) is a youth socio-economic transformation platform to increase entrepreneurial awareness of existing local, regional, and international exchange, exposure, and mentorship programs in regional and international markets. (Ministry of Trade and Industry, 2020)

## **7.2 LARGE CORPORATIONS**

- Ecosystem supporting activities by local companies:
- Ecosystem supporting activities by international companies:

- At present, Rwanda's Government, in partnership with **Microsoft**, is building "smart" classrooms across the country and plans to bring computers, internet connectivity, and basic software packages to all of Rwanda's schools by 2020. The country's development strategy prioritizes "science and technology education and ICT skills." It emphasizes "vocational and technical training in technology, engineering, and management" to develop human capital and turn Rwanda into a "sophisticated knowledge-based economy."
- Rwanda has also partnered with China's **Alibaba** to establish Africa's first electronic world trade platform, which provides Rwandan enterprises with cloud computing and mobile payment services to enable local companies to sell their products and services outside of Rwanda. This last example also highlights China's investment in African countries in general. Its timing — at the height of the U.S.-China trade war — demonstrates how China is looking to expand its trading partners.
- The **Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)**, a German development agency, has created a smart cities program that aims to support 30 African start-ups focusing on Smart Mobility, Smart Housing, and Fintech for Affordability. The start-ups will benefit from individual mentoring, training, and intensive networking and matchmaking with international business partners and investors, including Volkswagen, Siemens, and the African Business Angels Network (ABAN). Although the start-ups will be selected from across the African continent, the idea is for them to use Green City Kigali, Rwanda's flagship smart city project, as a sandbox to test their solutions and enter the Rwandan market (VC4A, n.d.).

### 7.3 UNIVERSITIES

The Government of Rwanda spends 11 percent of its total government budget on education. This represents 3.2 % of the country's GDP and is a reduction of 1.7% from 2013 to 2017. Rwanda's spend is below the sub-Saharan average expenditure of 4%.

The University of Rwanda (U.R.) started to offer Ph.D. programs in 2014, and by 2018 only 22% of its instructors held PhDs. The graduate program enrollments are only at a low 5%. 25.7% of all tertiary graduates are unemployed; this has been attributed to two main factors:

1. 6% of tertiary students are enrolled in technical fields of studies such as engineering, and only 9% are enrolled in the sciences. This has contributed to the lack of technical skills within the Rwandan population.
2. The tertiary education in Rwanda has been criticized for mainly theoretical study and not providing students with skills required for the job market, leaving graduates with qualifications and skills that do not apply to the job market. For the same reason, instructors cannot transfer practical skills to students due to their limited technical skills.

Entrepreneurship education is limited, and only recently has it been included in secondary school. The entrepreneurship curriculum that has been formed has not focused on skills suited for the advancement of the Rwandan industries or the economy. Practical entrepreneurial concepts, such as lean start-up, business canvas, strengths, weaknesses, opportunities, and threats (SWOT) analyses, are not adequately covered in the curriculum in terms of depth of content and time to practice (Ministry of Trade and Industry, 2020).

To address the issues above, Rwanda introduced a teacher training program supported by interactive instruction and business skills in secondary education entrepreneurship curriculum. An NGO also provided an intensive two-year teacher training program to a random selection of schools. These interventions have not successfully achieved improvements in student academic outcomes or skills—however, a 5% improvement in the number of students who participated in businesses (Blimpo & Pugatch, 2020).

Between 2017-2018 Rwanda merged its eight regional Integrated Polytechnic Regional Colleges into the Rwanda Polytechnic. They also closed private Higher Education Institutions, which were deemed to be providing education below the mandated quality standards. In 2019, the government also closed two departments of the private University of Gitwe because of inadequate facilities and teaching staff.

Most Rwandan HEIs—37 out of 40—are private. For the most part, these institutions are relatively new, smaller, specialized universities and HEIs and religiously affiliated institutions and transnational providers like the Cyprus-based Unicaf, Mount Kenya University, or

Carnegie Mellon University Africa. Together, private institutions enrolled 57 percent of all tertiary students in 2018 (Trines, 2019).

In 2009 the Rwandan Government switched the primary language of education from French to English after its post-genocide increasing involvement in the East African Community (EAC). Since most of the teaching staff were French-speaking educators, this forced the government to recruit teachers from neighboring countries. The drastic actions the Rwandan Government has taken to reshape their education system have increased the number of international students in Rwanda, quadrupling from 2015 to 2018. Most of the students hailing from the DRC, Burundi, and Uganda. The number of Rwandan students leaving to study abroad decreased from above 15% in the early 2000s to approximately 6% by 2017. Most of these students departing to study in France (8.5 percent), Canada (6 percent), India (5.6 percent), and South Africa (4.5 percent).

### 7.3.1 Organizations engaged in STEM education

- Africa Code Week
- African Institute for Mathematical Sciences (AIMS)
- Her2Voice
- Little Einsteins East Africa
- TEAM4TECH
- Women in Science Girls STEAM Camp

## 7.4 RISK CAPITAL

Table 10: Getting credit, doing business in Rwanda (The World Bank Group, n.d.)

#### Getting Credit - Rwanda

Indicator	Rwanda	Sub-Saharan Africa	OECD high income	Best Regulatory Performance
Strength of legal rights index (0-12)	11	5.1	6.1	12 (5 Economies)
Depth of credit information index (0-8)	8	3.9	6.8	8 (53 Economies)
Credit registry coverage (% of adults)	10.4	8.3	24.4	100.0 (2 Economies)
Credit bureau coverage (% of adults)	15.8	11.0	66.7	100.0 (14 Economies)

The Rwandan government asserts that the complaints about funding challenges for entrepreneurs come from market inefficiencies rather than institutions that are failing for

poorly managed. Based on the Doing Business report, Rwanda seems to have the necessary institutions and legal framework to provide a healthy financial sector.

#### **7.4.1 Debt**

The banks in Rwanda require 120 % of the loan amount as collateral as per the BNR regulations. This makes traditional financing inaccessible for the average Rwandan. There are programs to assist with the collateral requirements, such as the BDF program, which works with financing institutions to cover 50-75% of the collateral required. This and other similar programs still do not assist the average person on the street since they still need one to qualify for the loans and therefore meet the collateral requirements. They are effective in helping medium-sized businesses. Entrepreneurs and companies can use an invoice, contract, or leased asset in place of collateral. However, most people do not know that this is an option and how it works from a regulatory perspective.

Funding for early-stage businesses is limited since more lenders require a track record and revenues. Business plans and financial projections are not considered to be adequate.

There is a lack of options for the duration of loans, and grace periods are a standard inclusion in business loans. Interest rates are high, driven by the high cost of capital and lack of competition in the lending space.

#### **7.4.2 Equity**

The market doesn't generally understand equity capital, resulting in distrust of external partying investing and taking equity. There is a fear of losing control of their businesses.

Bootstrapping is difficult due to the low-income status of the country. Getting funding from friends and family is not a viable option for the ordinary citizen.

The general appetite for risk is low. Therefore, Angel investors require significant control and large returns for their investments. This is unreliable and undesirable for many. It also burdens the company, reducing its ability to succeed in the long term.

There are limited options for private-equity and V.C. funding

## 7.5 ENTREPRENEURS

Fourteen of Rwandas private companies were highlighted as part of London Stock Exchange Group's top private firms in its latest 'Companies to Inspire Africa' report (Bizimungu, 2019 ). These companies that are considered capable of driving transformative economic growth in their home countries and beyond were selected by reviewing 360 private businesses from 32 countries on the African continent, representing 50% of Africa's population.

### 7.5.1 Featured tech start-ups

#### GET IT:

<b>Founders:</b>	Lauren Russell Nkuranga	<b>Founded Location:</b>	Kigali, Rwanda
<b>Employees:</b>	70	<b>Founded year:</b>	2014
<b>Sector(s):</b>	Agritech	<b>Funding raised:</b>	\$1.5 M
<b>Markets(s):</b>	Rwanda		

GET IT is a food and grocery delivery startup that procures groceries and food from farmers and delivers them to hotels, restaurants, and frontier markets. They started as a household grocery delivery distribution company and evolved to a text-to-order business servicing commercial kitchens and hospitality outlets. They also are a distributor of Kimberly Clark products. GET IT has a primary production arm that grows its fresh produce. They partner with manufacturers for the processing produce before domestic distribution and export. GET IT started life as a household retail distribution company, specializing in grocery delivery.

“I did the first 500 deliveries out of the back of my car in Kigali. Through 2015 we discovered that there was no “broad-line” foodservice distribution company, not only in Rwanda but in all of East, West, and Central Africa. In 2016 we transitioned the company to be solely dedicated to broad-line foodservice distribution, specializing in fresh fruits and vegetables.

We built a network of growers to provide over 100 varieties of produce to high-end hotels, restaurants, and commercial catering companies” - Lauren Russell Nkuranga (Jackson, 2020).

### 7.5.2 Focus industries

Entrepreneurship support organizations (ESO) have tailored their specialization according to the market needs. One can look at the ESOs as a proxy of the market activity and focus industries. See Figure 10

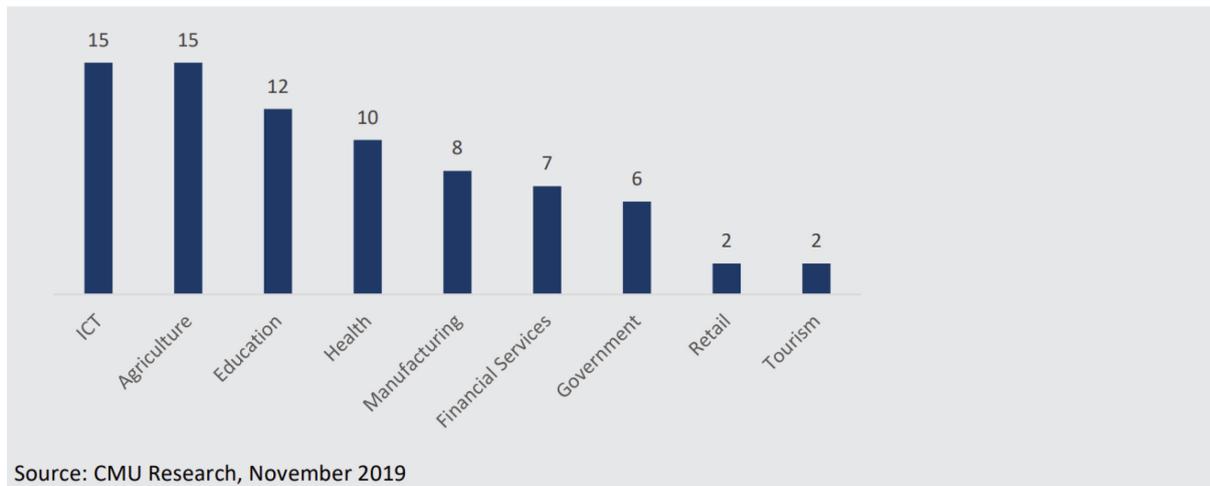


Figure 10: The number of ESOs in each sector in Rwanda

### 7.5.3 Culture

According to the EDP, Rwanda has a limited entrepreneurial culture resulting in the following:

- The Rwandan population has shifted from seeing government jobs as a road to financial freedom to seeing the work in the private sector as a way to success. Entrepreneurship is mainly embarked on due to necessity rather than actively sought and is not considered high regard as a path to success.
- Failure is not considered positively, and there is little appetite for risk. This has made entrepreneurship by choice undesirable and unlikely to be supported by most families. The idea of studying and getting a good-paying job in the private sector is encouraged in the youth.

- Women, youth, and people living with disabilities have significantly higher failure rates in business due to the lack of access to funding and general support for their entrepreneurship endeavors.

## 8 SOUTH AFRICA

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### 8.1 GOVERNMENT

#### 8.1.1 Government Structure

South Africa is a parliamentary democratic republic<sup>8</sup> with a three-tier system. The national, provincial, and local governments all have distinctive, interdependent, and interrelated legislative and executive authority (as part of the country's constitution). Operating at both national and provincial levels are advisory bodies drawn from South Africa's traditional leaders (Government of South Africa, n.d.). The President is the Head of State and the Head of Government. The members of the National Assembly elect the president. The president serves a fixed term of 5 years and can be re-elected only once for a second term. After being elected, the president is no longer a member of parliament. The president appoints the Cabinet of Ministers. The country's executive branch is comprised of The President, the cabinet of ministers, and the deputy president, who the president also appoints.

##### 8.1.1.1 *Legislature:*

South Africa has a bicameral parliament which consists of the 400 member National Assembly and the National Council of Provinces, which has 90 delegates. The National Assembly is elected by popular vote using a system of party-list proportional representation. Half of the members are elected from parties' provincial lists, and the other half from national lists (Wikipedia, n.d.). The legislature has the power to create laws and has oversight over the other two branches of government.

##### 8.1.1.2 *Judiciary:*

An independent judiciary forms the third branch of government along with the executive and legislative branches. The judiciary interprets the laws, using the laws as

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<sup>8</sup> **Presidential** - a system of government where the executive branch exists separately from a legislature (to which it is generally not accountable).

**Republic** - a representative democracy in which the people's elected deputies (representatives), not the people themselves, vote on legislation.

enacted and explanatory statements made in the legislature during the enactment (Michigan State University, n.d.). The highest court is the Constitutional Court. The subordinate courts are the Supreme Court of Appeal, the High courts, and the Magistrates' courts.

### 8.1.2 Economic Data

Table 11: South Africa's relevant key economic 5-year data. (Source: International Monetary Fund, World Economic Outlook Database, October 2020)

Main Indicators	2016	2017	2018	2019	2020 (e)
GDP (U.S. dollars, Billions)	296.27	349.43	368.14	351.35	282.59
GDP (Annual % change)	0.40	1.42	0.79	0.15	-8.00
General Government Gross Debt (% of GDP)	51.47	53.02	56.71	62.15	78.82
General Government Revenue (% of GDP)	28.59	28.22	29.04	29.07	27.05
Inflation Rate (%)	6.72	4.72	4.92	3.75	3.33
Current Account (billions USD)	-8.50	-8.88	-13.06	-10.60	-4.58
Population (Million)	56.25	57.10	57.94	58.78	59.67

South Africa is classified as an Upper-Middle Income market and has Africa's largest stock exchange among the top 20 in the world. The South African economy is mainly dependent on private enterprise and diversified with mining, agriculture and fisheries, vehicle manufacturing and assembly, food processing, clothing and textiles, telecommunication, energy, financial and business services, real estate, tourism, manufacturing, I.T., transportation, and wholesale and retail trade being the key economic sectors

Their main export partners are China, Germany, and United States, and the top exports are Precious Stones & Metals, Ores, and Motor Vehicles & Parts.

Since the end of apartheid in 1994, the African National Congress (ANC) has been the ruling party in the national legislature and eight of the nine provinces (the Democratic Alliance

governs Western Cape). The country's president is Cyril Ramaphosa, who was interim President from February 2018 and then voted in after the 2019 general election.

### **8.1.3 Support and relevance**

South Africa has straightforward business regulations that are complicated by significant bureaucracy. South Africa ranks 74<sup>th</sup> in the World Bank's Ease of Doing Business assessment, reflecting high regulatory mandates and similarly high costs of doing business for basic business procedures (OC&C Strategy Consultants, 2018).

South Africa has very protective and enforced labor laws that are difficult or expensive for small businesses to comply with. This encourages small businesses to delay the full-time hiring of personnel, slows job creation, and slowing down start-up businesses' growth.

South African policies and the constitution favor fair competition and freedom of expression. Net neutrality, as detailed in the National Integrated ICT Policy whitepaper and in general, the country's digital policies are in line with international standards. This includes cybercrime laws and data privacy.

South Africa has strong I.P. protection legislation but faces challenges in enforcing the laws. This and the lack of a centralized system to identify infringements create a challenging context for start-ups.

South Africa allocated a large amount of funding at R&D ( 0.7% of GDP). Publicly-funded R&D focuses on basic research and human capital development, while the private sector invests for product development and competitiveness. Collaboration of the public and private R&D is yet to be achieved. To address this, the government has set in place incentives to encourage the private sector to embark on R&D and ease relations between the public and private sectors. These incentives include tax relief of up to 150% of qualified spending. However, the fraud prevention controls have proved to be cumbersome and have led to few companies taking advantage of this program. South Africa has sought assistance from the World Bank on reducing addressing this issue.

#### **8.1.4 Taxes and bureaucracy**

The 2002 report showed that a high proportion of informal entrepreneurs lack the skills to comply with registered businesses' legal and tax requirements (Bowmaker-Falconer & Herrington, 2020). The business registration process can be done online but is highly bureaucratic and time-consuming. The government has made available various small business incentives; however, communication around these is not ideal. The offices providing these services are only open on weekdays leading to fewer than expected start-ups utilizing these services or taking advantage of the incentives.

A study by the SBP (2004) showed that South Africa's compliance costs represent 8.3% of turnover for enterprises with annual sales of less than R1 million and 0.2% of turnover for corporations with sales of R1 billion or more. The study showed that regulatory compliance costs in South Africa in 2004 were about R79 billion or 6.5% of GDP. This is prohibitive, and these costs act as a severe constraint to business at both a provincial and local level. (Bowmaker-Falconer & Herrington, 2020)

#### **8.1.5 Entrepreneurship programs**

South Africa has many entrepreneurship, innovation-targeted programs such as incubators, accelerators, training programs, and other support services. It is mainly aimed at entrepreneurs from disadvantaged backgrounds.

Innovation hubs, incubators, and accelerators provide high-speed internet access, coworking space, innovation support, mentorship, salary support, training, and even stipends. However, it is difficult for entrepreneurs and start-ups to find out about all the services or take advantage of them since no single portal collates all the information. This also creates overlaps in the market, with conflicting programs adding to the confusion.

As with other governmental services, there are high bureaucracy levels to prevent fraud and corruption and burden start-ups with lengthy approval and distribution times, even for basic funds. The programs also seem to lack evaluation and impact assessments ensuring their effectiveness.

In the Gauteng province's ecosystem, the service providers' community is close and tight-knit, servicing the same entrepreneurs and collaborating on some projects. This has allowed start-ups to take advantage of many innovation hubs and government programs, graduating from one program and entering another. This adverse effect of this is that start-ups can get caught in these systems for years, not graduating and facing actual market conditions and product-market fit tests to their business.

Service providers for Enterprise and Supplier Development (ESD) far outnumber the number of experienced entrepreneurs in the ecosystem. Many have begun training programs in response to the opportunity created by available funding. Many ESD service providers are unfamiliar with start-ups' needs, and few established entrepreneurs exist to advise budding entrepreneurs.

The sprawling Innovation Hub, located near CSIR and the University of Pretoria, contains numerous programs and departments to foster innovation, including the national space agency and various hubs for innovation, including mobile apps and health.

Entrepreneurs in the Western Cape maintain connections to international markets, often leveraging cultural links to foreign countries. Many entrepreneurs establish relationships with investors and customers in the U.S., U.K., and Israel.

Cultural similarities between Silicon Valley and the Western Cape ecosystem highlight shared behaviors such as informal meetings between academia, wealthy individuals, and tech entrepreneurs (Innovus Technology Transfer, 2017).

## **8.2 LARGE CORPORATIONS**

- Ecosystem supporting activities by local companies:
  - **FNB's** FinTech incubator Alphacode features a large number of financial services start-ups. FNB also holds the FNB Business Innovation Awards that have been running since 2015 and are aimed at businesses that can demonstrate real innovation with the potential to change the way an industry operates both locally and internationally (Ventureburn, 2019).

- **Standard Bank's** coworking space offers an open atmosphere for aspiring entrepreneurs and free Wi-Fi.
- The **MTN Business App Academy** aims to mentor and upskill aspiring talent for a career in app development. It runs a six-week online coding program that feeds into a new category for the app awards, specifically for the developers who went through the academy. At its core, the MTN Business App Academy is really about upskilling South Africans, particularly the youth, for a future in ICT, software, and mobile app development (MTN, n.d.).
- **Naspers** pledged \$314 million to fund and grow South African tech businesses, dedicating a \$92 million slice to a startup fund called Naspers Foundry (Ngcuka, 2021).
- Ecosystem supporting activities by international companies:
  - In 2016, **IBM** launched the USD 61 million IBM Research Lab in Johannesburg, which focuses on healthcare, digital ecosystems, and astronomy. The lab collaborates with the University of Witwatersrand, the Department of Trade and Industry, and the Department of Science and Technology.
  - **MAN** Impact Accelerator is built to scale social ventures in transport and logistics with a considerable impact on society. MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers specialising in services, vans, trucks, buses, diesel and gas engines.
  - **Shell LiveWIRE** South Africa is a social investment initiative that focuses on training and equipping young people with the necessary entrepreneurial skills to combat high levels of youth unemployment and poverty (Shell, n.d.).

### 8.3 UNIVERSITIES

South Africa has 45 universities funded by the central government, offering STEM courses, and has research programs. These research programs' quality has been questioned since only nine of the university R&D programs well-ranked globally and were well resourced, going back to the apartheid era. The expensive laboratories, instruments, and database access required

make research costly, and the limited results raise questions about the return on investments made in this area (OC&C Strategy Consultants, 2018).

The country has yet to develop true proficiency in Software development as an industry. Still, the country's development in this industry benefits from a well-developed infrastructure and coverage, English as a national language, and the ability to draw foreign skilled talent from neighboring countries to South Africa.

### **8.3.1 Organizations engaged in STEM education**

- Africa Code Week
- Africa Teen Geeks
- African Institute for Mathematical Sciences (AIMS)
- Bunengi STEM
- Centre for the Advancement of Science and Mathematics Education (CASME)
- COSAT
- Crawford College Sandton
- Learning Innovation Design Lab
- MATHAFRICA
- Meta Economic Development Organisation (MEDO) Young Women in STEM
- Play Africa
- The P-STEM Foundation
- Regional Science Expos in South Africa
- SASOL INZALO Foundation
- Science Circus Africa
- South African Mathematics
- STEM Innovation Camps in South Africa
- Taungana STEM Expo
- TEAM4TECH
- WAAW Foundation (Working to Advance STEM Education for African Women)
- Women in Engineering (WomEng)
- Young Scientists Africa

## **8.4 RISK CAPITAL**

Government and government-mandated sources put direct funding from public and private sources into innovation hubs, innovation grants, and direct investment. Corporate funding is also going into corporate investment-backed venture funding or corporate-branded innovation hubs.

#### **8.4.1 Debt**

South Africa offers bankruptcy protection to entrepreneurs, but it can affect an entrepreneur's ability to get credit and investment for up to 10 years afterward (OC&C Strategy Consultants, 2018).

#### **8.4.2 Equity**

The private equity market is quite vibrant in South Africa, but venture capital firms are less active, and over 50 percent of the start-ups in the country are bootstrapped (self-funded) by entrepreneurs (PricewaterhouseCoopers, 2015).

The South African Government set up the 12J Venture Capital Companies (VCC) government program to encourage V.C. funding. It allows angel investors to deduct venture capital investments from their taxable income. However, the number of Private, independent V.C. companies is not significant, and neither is their impact. There are also a few corporate venture capital (CVC) funds operating. Corporates have typically not invested in pre-acquisition stage start-ups or directly invested in start-ups. South Africa's total V.C. investment in 2015 was ZAR 146.3 million (USD 10 million), of which 26 percent went to software and 10 percent to e-commerce businesses (Morris, 20). Corporate funding mainly focuses on supporting innovation hubs, incubators, and acceleration programs.

Angel investment is mainly absent from the Gauteng ecosystem, though more present in the Western Cape ecosystem, and the investment typically happens via the entrepreneur's networks (OC&C Strategy Consultants, 2018). There have been significant changes recently with the emergence of Jozi Angels and South Africa Business Angels. These groups are not only offering much-needed funding but also providing investor education and improving deal flow.

Alternative funding sources such as crowdfunding and initial coin offerings are absent from the ecosystem (OC&C Strategy Consultants, 2018).

### 8.4.3 Grant funding

There is a significant amount of grant funding available directly to the public and indirectly through vessels such as innovation hubs. The majority of the budget is said to go to the Gauteng ecosystem. The lack of a central information hub and adequate marketing have made it difficult for start-ups to gain funding.

## 8.5 ENTREPRENEURS

### 8.5.1 Featured tech start-ups

#### Pineapple Tech (PTY) Ltd

<b>Founders:</b>	Marnus van Heerden, Matthew Elan Smith, Ndabenhle Junior Ngulube	<b>Founded Location:</b>	Johannesburg, South Africa
<b>Employees:</b>	12	<b>Founded year:</b>	2017
<b>Sector(s):</b>	Insurtech <sup>9</sup>	<b>Funding raised:</b>	\$3,6 M
<b>Markets(s):</b>	South Africa		

Pineapple makes insurance easy, fair, and accessible by providing users with the ability to insure items with an image upload. The image is analyzed by AI to determine what the item is and the underwriting and quotation generation. The premiums that one pays are placed into the customer's Pineapple Wallet, which is then used to help pay the claims of the Pineapple community. A small fee from the wallet pays for complete protection so that valid claims will always be paid, even if the wallet runs out. At the end of each year, all money left over in your Pineapple wallet is yours to withdraw in cash (BusinessTech, 2019). This model provides insurance while creating community incentives to decrease risk and false claims.

The founders met in a Hannover-Re innovation in 2016. Through a design-thinking-based program, the idea of Pinanple was birthed. The team stayed together after the competition and pursued the development of Pinanple as a business. By 2020 the business had over 50 000

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<sup>9</sup> Insurtech refers to the use of technology innovations designed to squeeze out savings and efficiency from the current insurance industry model. Insurtech is a combination of the words "insurance" and "technology," inspired by the term fintech. (Hargrave, 2020)

paying customers. Pineapple took part in Google’s Launchpad Africa accelerator and the US-based Hartford Insurtech Hub’s accelerator during its development.

After being named a finalist in the VentureClash competition, they were named the overall winner. They were awarded US\$1.5 million, which is the biggest prize from the \$5M pool. VentureClash is a global venture challenge that identifies early-stage companies in digital health, fintech, insurtech<sup>9</sup>, and the Internet of Things (IoT).

### 8.5.2 Focus industries

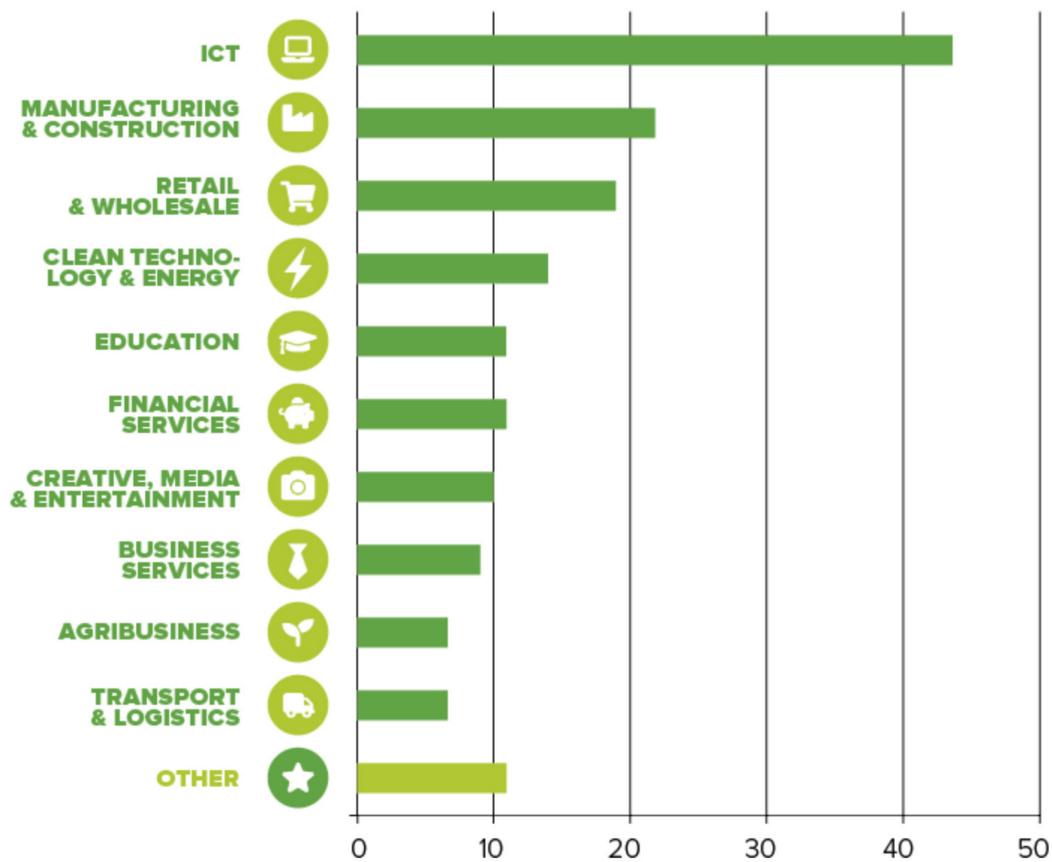


Figure 11: Registered ventures in South Africa, 2018. N=686 (VC4A, 2018)

### 8.5.3 Culture

The 2001 GEM report recognized that entrepreneurship was not sufficiently reported on and celebrated in the public press while sporting heroes received much coverage and respect. This meant that there were few role models for aspiring entrepreneurs, particularly in the black African community (Bowmaker-Falconer & Herrington, 2020). However, this has not

influenced the low acceptance of individual failure, which is a barrier for many potential entrepreneurs.

Although South Africa has a strong sense of hierarchy, a similarly high sense of individuality suggests that entrepreneurs are regarded well for building wealth for themselves and their families. This is in contrast to the collectivist promoted in most African cultures. However, similar to many African countries and countries which have struggled with poverty, South Africans value the present over the future, which has resulted in a short-term thinking approach to entrepreneurship.

In the Gauteng ecosystem, entrepreneurs take full advantage of various government funding and support programs for long periods, sometimes without launching an initiative (OC&C Strategy Consultants, 2018). This could reflect the sense of entitlement and an expectation that big business, government, and others should create opportunities and jobs rather than one depending on themselves.

One expert noted: "In West Africa, there is little reliance on government assistance and a realistic expectation on the part of small business owners of what the financial returns on the business will be. In South Africa, small businesses and start-ups appear to have unrealistic expectations of both what the financial turnover will be as well as the time it will take to break even." (Bowmaker-Falconer & Herrington, 2020).

## 9 COMPARISON & CONCLUSION

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The nations covered in this report have a unique approach to building their ecosystems and sitting at various locations in the development spectrum, yet they all share common challenges. Education, infrastructure, and prioritization of entrepreneurship support policies and programs are a challenge for all.

Most, if not all, developing nations will struggle with the same challenges, and there is much that can be gained in understanding how different ecosystems are overcoming these challenges. Below is a summary of the research and the recommendations that have subsequently been identified.

### 9.1 GOVERNMENT

Governments that have proven to have successful programs have created programs that are detailed and time-bound. We see in Kenya and Rwanda the policies are created with implementation plans and responsibilities assigned. These are publicly communicated, and resources are attached. Governments should develop policies and programs after consultation with the stakeholders involved. In South Africa, the policies and programs created are effective in theory, yet the bureaucracy associated with them makes them somewhat ineffective. In Nigeria, South Africa, and Egypt, the lack of communication of the programs available have limited their reach, only allowing a few people to benefit.

All the countries covered in this report have technology, entrepreneurship, and innovation policies and programs. Most of the countries' policies are attached to a timeframe such as 'Vision 2030'. It was challenging to find the details associated with some of these programs.

Government is the key stakeholder in the entrepreneurship ecosystems of developing nations. The success of the ecosystems is dependent on collaboration and public-private partnerships.

Governments are the only levels that can drive collaboration and ensure cooperation between states and provinces. In almost all the countries covered, we see pockets of

excellence that keep getting more and more support. This has created competition in some cases that is not building the ecosystems. This can be observed in the tax and business registration conflicts at the state and federal levels in Nigeria. We see this in the support provided to Lagos, Cairo, Nairobi, Kigali, Johannesburg, and Cape Town.

Infrastructure is critical to the development of entrepreneurship ecosystems. The Kenyan government's approach in driving the development of their ICT sector has revolutionized several industries and has helped the country gain direct foreign investment. In Nigeria, the lack of stable power infrastructure has limited the growth potential of every industry.

**Recommendations:** *Creating dedicated ministries for entrepreneurship/innovation ensures that the government's (as the primary stakeholder) responsibility has been taken seriously. Policies and programs to address the gaps and incentivize change are essential. Still, all the policies and programs should have implementation plans and have specific responsible persons or institutions assigned and communicated. Ensuring transparency help keep accountability.*

*Communication of these plans is critical in ensuring that the public is aware of the available programs and that every stakeholder understands how to utilize the resources available. There should be a central platform where all the known programs can be found.*

*Johannesburg and Cape Town are two ecosystems that have different strengths and could benefit from collaboration. Policies and programs could drive this collaboration at a governmental level.*

*Governments should consider initiatives that spread the support beyond the cities that are already getting international acclaim and funding. A pan-African approach should also be encouraged. The bubbles such as that of South Africa limit the start-ups within from potential growth and collaboration. A push should be made that encourages the African Union to drive entrepreneurship on the African continent in a country-level collaboration way.*

*Governments must make a direct effort to prioritize installing basic infrastructure such as power, ICT services, and a regulatory framework that protects and serves the small business sector.*

## 9.2 LARGE CORPORATIONS

Large international organizations and development organizations are providing entrepreneurship support in the form of aid and building institutions to promote innovation. Many of these countries have large local corporations, which can also be pushed to participate. In South Africa, the regulations around B-BBEE<sup>10</sup> have spurred local industries to participate in the ecosystem. This has created collaborations that serve to keep incumbent established companies from falling behind innovation trends. An example of this is the large banks that have been working closely with the FinTech startup industries. This has resulted in cross-contamination and has opened up opportunities for startup companies to gain traction by offering services to the banks or leveraging the banks' footprint to gain customers.

### **Recommendations:**

*Legislation that connects governmental procurement processes with the private sector's activities in addressing social inequalities must be created. Tax-related policies for the same purpose should also be included. Both suggestions could drive the private sector to be more involved, as seen in the South African example.*

## 9.3 UNIVERSITIES

Creating a skilled population is critical for technology innovation. Building a solid STEM curriculum from primary through to tertiary education is vital. Looking at the five countries, South Africa seems to have good educational institutions and R&D centers. However, the country sees no benefit if there is not equal access to these services.

As universities and other higher learning institutions produce more skilled labor (software developers and the like), there is a critical element missing. Startup founders lack business knowledge. Not only is it an issue in South Africa but in almost all of the countries covered in

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<sup>10</sup> Broad-based Black Economic Empowerment (B-BBEE) is an integration programme launched by the South African government to reconcile South Africans and address the inequalities of apartheid by attempting to compensate for land that was repossessed from Africans. (Wikipedia, n.d.)

this thesis. Basic business skills often make a difference in the survival of start-ups. In most countries, the education systems do not impart business knowledge as part of their primary or secondary schooling curriculum. Almost all the countries covered have made commitments to addressing the lack of entrepreneurial education. Educational improvements tend to manifest the results, so time will tell if the policies and actions implemented are ideal.

**Recommendations:** *STEM education is critical should be a focus throughout the education lifecycle. R&D should also be a focus. With every effort or policy, there should be monitoring mechanisms to ensure that the policies are effective, research is commercialized, and that the services reach most of the public.*

*Changes in educational systems must be accompanied by staff that can teach the introduced concepts. The countries need to prioritize the recruitment of specially skilled teaching staff. Visa policies and immigration incentives are an excellent option to address the skills shortages in a short amount of time.*

*Apart from the technical skills-based education, there should be entrepreneurship and management education in technical qualifications curricula. Preferably entrepreneurship education should be introduced at a primary school level. Not only will this help in creating a future society that is more comfortable with entrepreneurial concepts, but studies have also suggested that entrepreneurial education can aid the improvement of general education. Entrepreneurial education can foster the development of non-cognitive competencies (see Figure 12) leading to increased academic performance (Lackéus, 2015 ).*

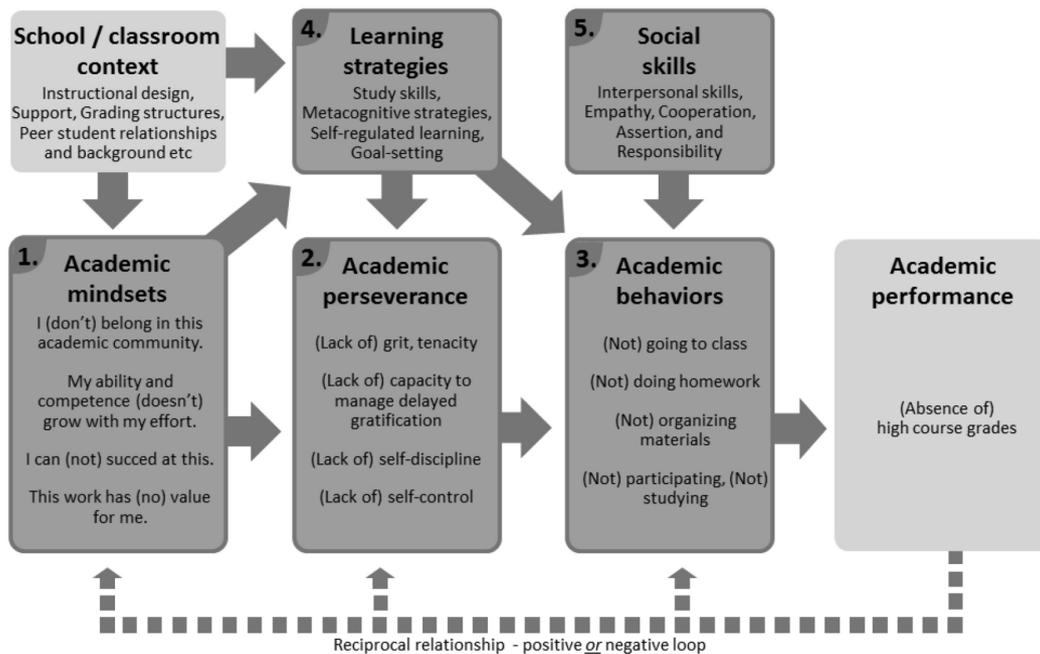


Figure 12: Non-cognitive factors. Five categories of non-cognitive factors impacting academic performance. Adapted from (Farrington, 2012) (Lackeus, 2015)

## 9.4 RISK CAPITAL

As countries develop their ecosystems, funding becomes easier to attain. We see this in Nigeria and Egypt, where the VC funding market is promising. The difficulty is that in developing countries, the country's risk is a contributing factor to the risk associated with start-ups. Private seed funding is risk-averse.

In South Africa, we see that the private sector and individuals mainly provide VC funding. This limits the amount of funding that is available for the ecosystem. Alternative sources of funding such as institutional funding could increase the money available in the market.

In the markets where VC funding is quite established, such as Egypt, Nigeria, and South Africa, there are gaps in the market in the seed stages and the series B stage. VCs do not seem to be buying from other VCs, limiting the number of exits and liquidity in the market (VC4A, 2018).

**Recommendations:** *The South African government has implemented incentive policies to encourage corporate funding of start-ups, resulting in corporate VC funding through incubators. One of these is the 12J legislation which provides tax breaks for investors in VC companies. This could be a recommended strategy for ecosystems to drive seed-stage private*

*funding. Although grant funding seems to be the best approach for public funding, governments could look at funding matching as a method of fostering public-private collaboration and reducing the risk for private sector investors.*

*Nigeria has taken a different approach which can be recommended too. They offer tax incentives for the start-ups that have received investment and the VCs at the point of exit/sale of their investment (Capital gains tax).*

*Investor education is required to help investors see opportunities where gaps there are gaps in the market. This education should not only be provided to the private sector but to the government too. Many of the financing policies and grants are not aligned with the lifecycle of start-ups. We see this in South Africa, where some of the grants could take over a year to complete the review process and payout. However, to qualify for these incentives, the investments from the VCSs must make up at least 25% of the total funding required by the startup. That might be a clause that needs to be evaluated for its efficacy and success rates. Alternative strategies for VC fundraising are required, such as driving institutional funding to VCs by encouraging pension funds and endowment funds.*

*Tax-free havens might be a concept to consider in support of the government recommendations of investing in other locations than the prominent ones. A model similar to the tax-free zone that Egypt has created could drive investment in regions that lack support and could drive job creation as a consequence.*

## **9.5 ENTREPRENEURS**

Most African countries are collectivistic, which tends to limit the entrepreneurial spirit of the population. Yet what we see in developing nations is that what matters most is poverty alleviation, stability, and the drive for a better life. In most countries covered in this thesis, public perception was that people should seek good jobs with good companies. As the startup market grows and there are more examples of successful entrepreneurs for the public to gain inspiration from, we see the change in public perception. Egypt has seen a drastic shift in less than ten years from being a population that viewed entrepreneurship negatively to a population with a high entrepreneurial drive.

The success of M’pesa has brought with it the perception that success as an entrepreneur is attainable. Jumia, the Nigerian startup that was the first unicorn<sup>1</sup>, also serves to help the public feel its possible.

The challenge on the African continent is that most entrepreneurs are driven to start businesses because of necessity and not from passion. This affects the drive and ambition that these business founders exhibit. Driven and ambitious founders tend to be the founders that seek incubation opportunities and other support resources rather than just pursuing funds for operational requirements and making ends meet. They desire more, and to reach exponential growth, start-ups need to be based on innovative ideas and need founders who seek to build unicorns<sup>1</sup> or at the least seek to build businesses that can maximize job creation and investor returns.

In most of the researched countries, the lack of a solid Angel investor market was noted. Some have suggested it is a reflection of the general wealth of a nation.

**Recommendations:** *The local startup success stories should be highlighted and used to encourage entrepreneurship in the youth. It is also essential to share the failure stories, especially with serial entrepreneurs that have proved to be more successful after a few failures.*

*Successful entrepreneurs should be encouraged to become angel investors. Countries should consider individual tax policies to drive Angel investment.*

*Creating and implementing more programs such as the Mentor-Driven Capital program in Nigeria, which aims to connect new entrepreneurs with mentors who will share their knowledge, experience, and networks. These mentors come from the pool of established business professionals, entrepreneurs, and investors who’ve volunteered for the program.*

## **9.6 CLOSING STATEMENT**

This thesis aims to provide the primary entrepreneurship ecosystem stakeholders in developing nations a starting point of how to build an ecosystem with limited resources and support. In most developing countries, this primary stakeholder will be Government.

Hopefully, this thesis will guide and inspire policymakers in thinking through how they set objectives and the following policies in their ecosystems. It also aims to guide their approach in fostering collaboration among the five stakeholders. This thesis does not provide a comprehensive step-by-step guide of what steps should be taken to guarantee a successful result but will help bring conscious awareness to the ecosystem-building process regardless of the context and resources available.

As developing or growth markets progress, their relative performance is dynamic. There is always an opportunity for a country to perform better than another in a short space of time. At the time of compiling this thesis, Ghana appeared to be a dark horse in the race. The potential next step of this research would be on the ground research into these countries. Research that would provide comparable and quantitative data. This research should include a study on what Ghana is doing to gain a position in the race.

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# 11 APPENDIX

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## 11.1 GSER'S ANALYSIS VARIABLE CALCULATIONS

### 11.1.1 Performance (P)

$$P = 0.7E_v + .0.2E_x + 0.1S_s$$

Where

$$\text{Ecosystem Value } (E_v) = \log\left(\sum \text{exits and unique valuations}\right)$$

$$\begin{aligned} \text{Exits } (E_x) = & 0.8(0.8 \times \log(\# \text{exits over } \$50M +) \times 0.2 \times \log(\# \text{exits over } \$1B)) \\ & + 0.2 (\text{Exit growth index}) \end{aligned}$$

*Start – up Success (S<sub>s</sub>)*

$$\begin{aligned} = & 0.8 \left( 0.5 \left( \frac{\# \text{Series C}}{\# \text{Series A}} \right) + 0.5 \log(\# \text{unicorns } *) \right) \\ & + 0.1( 0.5 (\text{average age at exit} + \text{average age at IPO})) \\ & + 0.1 \left( \frac{\# \text{Series B}}{\# \text{Series A}} \right) \end{aligned}$$

\*Unicorns count for the period of 2017 to the first half of 2019

### 11.1.2 Funding (F)

$$F = A$$

Where

$$\begin{aligned} \text{Access } (A) = & 0.9 \left( 0.8 \log(\# \text{ Early – stage funding } ) \right. \\ & \left. + 0.2 \log\left(\sum \text{ Early – stage funding}\right) \right) \\ & + 0.1 \log(\text{Early – stage funding growth}) \end{aligned}$$

### 11.1.3 Market Reach (M.R.)

$$R = G$$

Where

*Global Leading Companies (G)*

$$= 0.5 \times \frac{\#Billion\ dollar\ companies}{GDP} + 0.3 \times \frac{\#Exits\ over\ \$1B}{Metro\ population\ *}$$
$$+ 0.2 \log\left(\frac{\#Exits\ over\ \$50M}{Total\ Series\ A\ funding}\right)^*$$

\*Measured in Millions. Exit and funding values for the period of 2017 to the first half of 2019

### 11.1.4 Talent and Experience (T.E.)

$$TE = 0.5 T + 0.5 E$$

Where

$$Talent\ (T) = 0.8 \left( 0.5(0.7 \log(\#exits\ over\ \$50M)) \right.$$
$$+ 0.1 \log\left(\frac{\#GitHub\ top\ coders}{\#Total\ GitHub\ coders}\right)$$
$$+ 0.2 \log(\#GitHub\ coders\ with\ more\ than\ 10\ followers) )$$
$$+ 0.5(0.5 \log(\text{software engineer salary})$$
$$+ 0.5 \log\left(\frac{\text{median series A funding}}{\text{software engineer salary}}\right)) + 0.2 \log(\#STEM\ students)$$

Data from PayScale, Glassdoor and Salary.com

*Experience (E)*

$$= 0.8 \log\left(\sum Series\ A\ funding\right) + 0.2(0.6 \log(\#Exits\ over\ \$1B)$$
$$+ 0.4 \log(\#Exits\ over\ \$50M))$$

Exit and funding values for the period of 2017 to the first half of 2019.

## 11.2 EASE OF DOING BUSINESS COMPARISON

Table 12: Comparative summary of Doing Business 2020 scores (The World Bank Group,, n.d.).

	Egypt	Kenya	Nigeria	Rwanda	South Africa
<b>Ease of doing business (WB)</b>	60.1 %	73.2 %	56.9 %	76.5 %	67.0 %
<b>Starting a business (WB)</b>	87.8 %	82.7 %	86.2 %	93.2 %	81.2 %
<b>Paying taxes (WB)</b>	55.1 %	72.8 %	53.7 %	84.6 %	81.2 %
<b>Resolving Insolvency (WB)</b>	42.2 %	62.4 %	30.6 %	57.2 %	54.6 %
<b>Enforcing contracts (WB)</b>	40.0 %	58.3 %	61.5 %	69.1 %	56.9 %
<b>Property Rights (IEF)</b>	48.5 %	63.2 %	38.1 %	58.4 %	76.5 %
<b>Government Integrity (IEF)</b>	34.0 %	28.2 %	22.3 %	46.6 %	57.6 %
<b>Labor Freedom (IEF)</b>	51.5 %	55.8 %	84.0 %	58.8 %	81.8 %
<b>Trade freedom (IEF)</b>	70.2 %	60.4 %	62.4 %	75.8 %	70.4 %
<b>Corruption Perceptions Index (TI)</b>	80.56%	84.44%	85.56%	71.67%	75.56%

The ease of doing business scores benchmark economies with respect to regulatory best practice, showing the proximity to the best regulatory performance on each Doing Business indicator (The World Bank Group, 2020).

An economy's ease of doing business score is reflected on a scale from 0 to 100, where 0 represents the lowest and 100 represents the best performance. For example, an ease of doing business score of 75 in Doing Business 2019 means an economy was 25 percentage points away from the best regulatory performance constructed across all economies and across time. A score of 80 in Doing Business 2020 would indicate the economy is improving. (The World Bank Group,, n.d.)