



The **first** trans-continental **Networking Academy** for **African and European Digital Innovation Hubs.**

D2.1 State of play in African DIHs: The case of Ghana, Nigeria, Tanzania and Uganda



This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101016687.

Document details

Document details	
Project Acronym/ Name:	AfriConEU
Project URL:	www.africoneu.eu
Project Type:	Innovation Action (IA)
EU CALL:	H2020-ICT-2018-20 (Information and Communication Technologies)
Grant Agreement No.:	101016687
Project Start Date:	February 2021
Project End Date:	January 2024
Work package:	WP2 Context and state of the art analysis
Deliverable:	D2.1 State of play in African DIHs: The case of Ghana, Nigeria, Tanzania and Uganda
Due date of Deliverable:	31/08/21
Actual Submission Date:	18/08/21
Name of Lead Beneficiary for this deliverable:	Report Authors: Eunice Baguma Ball, Dr. Kui Kihoro Mackay, Stav Bar-Shany (Africa Technology Business Network - ATBN) Contributors: Sam Ajadi, Gosbert Chagula
Reviewed by:	Ana Solange Leal, Marta Coto (Inova+)
Revision:	5.0
Dissemination Level:	Public

Document History			
Version	Date	Comment	Modifications made by
1.0	22.07.2021	First draft of the document	Eunice Ball (ATBN)
2.0	26.07.2021	Revision of document and inputs to draft	Ana Solange Leal (INOVA+)
3.0	04.08.2021	Second version of completed report	Eunice Ball (ATBN)
4.0	09.08.2021	Final Revision	Ana Solange Leal, Marta Coto (INOVA+)
	16/08/2021	Final version	Eunice Ball (ATBN)

Disclaimer

Any dissemination of results reflects only the author's view and the European Commission is not responsible for any use that may be made of the information it contains.

Copyright message

© Partners of the AfriConEU Consortium, 2021

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both. Reproduction is authorized provided the source is acknowledged.

Acknowledgements

This report was made possible because of the collective efforts of several individuals and organisations. We extend our gratitude to the members of the AfriConEU consortium, survey respondents, interview participants, roundtable panellists and attendees, consultants and EU representatives for their valuable contributions.

Glossary and Abbreviations	
AFRICONEU	The first Trans-continental Networking Academy for African and European DIHs
DIH	Digital Innovation Hub
ESO	Entrepreneurship Support Organisation
EU	European Union
FMCG	Fast Moving Consumer Goods
GDP	Gross Domestic Product
GEM	Global Entrepreneurship Monitor
GIZ	German Agency for International Cooperation
ICT	Information and Communications Technology
SDGs	Sustainable Development Goals
SME	Small and Medium-sized Enterprise
STI	Science, Technology and Innovation
VC	Venture capital

TABLE OF CONTENTS

EXECUTIVE SUMMARY	8
INTRODUCTION	8
KEY FINDINGS	9
METHODOLOGY	15
RESEARCH BACKGROUND.....	15
GOALS AND OBJECTIVES	15
SCOPE	15
TARGET GROUPS.....	16
RESEARCH QUESTIONS	16
METHODS	17
SECTION 1: OVERVIEW OF AFRICAN DIGITAL INNOVATION ECOSYSTEMS	19
1.1 GHANA	21
1.2 NIGERIA	28
1.3 TANZANIA	35
1.4 UGANDA	42
1.5 KEY INSIGHTS.....	49
SECTION 2: IMPACT OF COVID-19 ON AFRICAN DIGITAL ECOSYSTEMS.....	57
2.1 INTRODUCTION	57
2.2 IMPACT ON MARKETS.....	60
2.3 IMPACT ON POLICY	61
2.4 IMPACT ON FINANCE	63
2.5 IMPACT ON CULTURE	64
2.6 IMPACT ON INFRASTRUCTURE AND SUPPORT.....	65
2.7 IMPACT ON HUMAN CAPITAL.....	69
SECTION 3: CHALLENGES & OPPORTUNITIES FOR STRENGTHENING AFRICAN DIGITAL INNOVATION HUBS	72
3.1 THE ROLE OF DIGITAL INNOVATION HUBS.....	72
3.2 CHALLENGES FACING AFRICAN DIHS	77
3.3 RECOMMENDATIONS FOR CAPACITY BUILDING AND STRENGTHENING AFRICAN DIHS	88



SECTION 4: RECOMMENDATIONS FOR THE AFRICONEU PROJECT	95
4.1 CONSIDERATIONS FOR DESIGNING EFFECTIVE CAPACITY BUILDING PROGRAMMES FOR AFRICAN DIHS.	95
4.2 OPPORTUNITIES AND CHALLENGES FOR BUILDING EU-AFRICA DIH PARTNERSHIPS.....	97
4.3 RECOMMENDATIONS FOR BUILDING EFFECTIVE EUROPE-AFRICA DIH PARTNERSHIPS	102
CONCLUSION	103
REFERENCES	104
APPENDICES	112
APPENDIX 1: INTERVIEW SCHEDULE.....	112
APPENDIX 2: ROUNDTABLE SESSIONS INFORMATION	114
APPENDIX 3: SURVEY FORMS	116

LIST OF FIGURES

Figure 1: Ecosystem Analysis Framework	19
Figure 2: Stakeholder perceptions on impact of COVID-19 on digital innovation ecosystems.	59
Figure 3: Roles of DIHs in the innovation ecosystem.....	73
Figure 4: DIHs' yearly turnover	81
Figure 5: DIHs' number of years in operation.....	83
Figure 6: Number of respondents who have been part of a Europe-Africa partnership.	98

LIST OF TABLES

Table 1: Overview of African Digital Innovation Ecosystems.....	10
Table 2: Summary - Impact of COVID-19 on African Digital Economies	10
Table 3: Challenges and Recommendations for Strengthening African DIHs.....	13
Table 4: Recommendations for Building Effective Europe-Africa DIH Partnerships	14
Table 5: Number of Interviews Conducted by Country	18
Table 6: Overview of Ecosystem Factors Framework	20
Table 7: Ghana - Summary of Digital Snapshot	21
Table 8: Nigeria - Summary of Digital Snapshot	28
Table 9: Tanzania - Summary Digital Snapshot.....	35
Table 10: Uganda - Summary Digital Snapshot.....	42
Table 11: Summary of common factors across the four countries.....	49
Table 12: Impact of COVID-19 - Findings	58
Table 13: Opportunities for value exchange between African and European digital ecosystems	100

EXECUTIVE SUMMARY

Introduction

Over the last few years, digital innovation has increasingly become an important driver for Africa's social and economic development. Digital technologies are enabling solutions to address the region's pressing social challenges and creating a growing number of economic opportunities. At the centre of this digital transformation are innovative entrepreneurs supported by an ecosystem of investors, international development and philanthropic partners, policy makers and government actors, corporate partners, ecosystem enablers and Digital Innovation Hubs (DIHs). DIHs in particular are not only directly supporting entrepreneurs but are also playing a central role in connecting the various actors and developing the ecosystem. However, African DIHs continue to face a number of systemic challenges that are limiting their potential as catalysts for digital innovation. Building the capacity of African DIHs to play their role more effectively is therefore crucial to driving digital growth and economic development in the region.

At the same time, the digital economy presents a unique opportunity to enhance trade and economic relations between Europe and Africa. On one hand, Europe's more advanced digital ecosystems present opportunities for transferring technological expertise and investment. On the other, Africa's growing digital markets and youthful population provide investment and human capital opportunities for European businesses and investors. Therefore, enabling collaboration and developing stronger partnerships between European and African digital innovation ecosystems has the potential to create immense benefits for both regions.

This report examines the digital ecosystems in four African countries namely Ghana, Nigeria, Tanzania and Uganda, with the goal of identifying the challenges and opportunities for strengthening digital innovation in these countries. In light of the ongoing COVID-19 pandemic, it also seeks to understand the impacts that the pandemic has had on African digital economies. Thirdly, it looks specifically at the challenges and needs of African DIHs and provides recommendations for their capacity building. And lastly, it identifies the challenges and opportunities for transcontinental partnerships between African and European digital actors.



The findings contained in this report are the result of a 6-month research process that took place between February and July 2021. It encompassed desk-based research, qualitative interviews with 60 hub leaders, entrepreneurs, investors, ecosystem enablers and policy makers and two quantitative surveys; an ecosystem with overall 266 respondents across Ghana, Nigeria, Uganda and Tanzania and a DIH capacity needs survey which was completed by 32 digital hub leaders in the four countries.

The report has been written as part of the activities to establish AfriConEU – The first trans-continental networking academy for African and European Digital Innovation Hubs (DIHs). The AfriConEU project aims to support the strengthening of Digital Innovation Hubs in Africa by boosting their capacity to foster innovation and growth and empower women and youth through the digital economy. Additionally, it seeks to facilitate the collaboration between EU and African DIHs to strengthen a common EU- Africa innovation and Startup ecosystem. The project is funded by the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101016687.

Key Findings

The report is divided into four main sections. Section 1 introduces the findings from the desk-based research to provide snapshots of the digital ecosystems in our four focus countries. To contextualise this information the section also incorporates data gathered from our roundtables and interviews to provide an overview of African digital innovation ecosystems. Section 2 relies on interviews, surveys roundtable discussions to explore the impact of COVID-19 on African digital innovation ecosystems. In Section 3, we consider the roles of DIHs as well as the challenges they face and potential recommendations to address these challenges. Finally, Section 4 presents a set of recommendations for the AfriConEU project specifically around designing effective capacity building programmes for African DIHs and enabling Africa-EU collaboration.

Section 1: Overview of African Digital Innovation Ecosystems

In assessing the landscape of African Digital Innovation ecosystems, we focused on six areas: markets, policy, finance, culture, infrastructure and human capital. The data and the framework are combined to provide individual country snapshots. We further highlight key insights emerging across the four countries, as summarized in Table 1 below.

Table 1: Overview of African Digital Innovation Ecosystems

While we elaborated on the differences between each of the four countries, we found the following common factors:	
Markets	Driven by mobile adoption, digital markets are growing but affordability and access remain limiting factors. These factors combined with gender and geographical gaps results in women and those in rural areas being excluded from participating in the digital economy.
Policy	Broad level ICT frameworks exist but policy gaps remain with regards to enabling digital adoption and innovation. In some instances, the impacts of positive policy initiatives are diminished by restrictive and punitive government regulations.
Finance	Investment into African tech markets continues to grow. However, driven by a lack of patient, catalytic capital, early stage startups and certain key sectors remain under-funded
Infrastructure & Support	Addressing infrastructure gaps particularly in rural areas is high on the agenda for both private and public actors. The number of digital innovation hubs is growing but funding constraints limit the support they provide to startups.
Culture	On the whole entrepreneurship is regarded as a positive solution to unemployment and a way to increase financial and economic participation. However cultural and socio-economic barriers prevent many women and youth from pursuing digital entrepreneurship.
Human Capital	There is increasing emphasis on digital skills development. However, education systems are not adapting and meeting the demand for advanced digital skills.

Section 2: Impact of COVID-19 on African Digital Innovation Ecosystems

In analysing and discussing our data and findings we rely on the six-factor framework introduced in the previous section. Our data on the impact that COVID-19 has had on digital innovation ecosystems in Africa shows that COVID-19 has had both positive and negative effects on the digital economies of the four countries we researched. A top-line summary of the findings is contained in Table 2 below.

Table 2: Summary - Impact of COVID-19 on African Digital Economies

Our findings show that COVID-19 has had both positive and negative effects on African digital economies:

Markets	Accelerated adoption of digital tools, boosting demand for businesses in digitised sectors. In contrast, non-digitised businesses and traditional sectors such as hospitality and tourism were hard hit.
Policy	Increased prioritisation of digital innovation and entrepreneurship by governments.
Finance	Highlighted and widened existing financing gaps, prompting new solutions by traditional investors and governments targeting startups and small and medium businesses.
Infrastructure & Support	Increased strain on digital infrastructure prompting prioritisation of infrastructural investments. Created new opportunities for hubs and helped them to scale through online programmes. However, funding cuts and loss of revenues from office space rental and events has exacerbated sustainability challenges for hubs
Culture	Lowered cultural barriers to the use of technology and driven adoption. However, widened digital divides particularly for women and youth.
Human Capital	Tech jobs are being extended to secondary cities and there is an increased interest in digital jobs and online economic opportunities.

Section 3: Challenges and opportunities for strengthening African Digital Innovation Hubs

Our study foregrounds the vital role that DIHs are playing in supporting the development of startups and the digital innovation ecosystem. We identified the following six main roles that hubs are playing to catalyse local innovation ecosystems in Africa.

1. Creating a community and space where like-minded innovators and other ecosystem actors can connect.
2. Developing the talent pool and skills needed to drive innovation they are also playing an important role in addressing digital divides for women and youth.
3. Providing spaces and infrastructure (internet and electricity) for entrepreneurs to innovate.
4. Connecting startups to investment.
5. Accelerating and incubating startups and supporting entrepreneurs to develop their business ideas into viable ventures.

6. Educating governments and bringing ecosystem actors together to develop enabling policies for innovation and technology.

However, our findings also reveal four key challenge areas that are limiting the impact of hubs as catalysts for digital innovation in Africa. We highlight these challenges while also proposing recommendations to address them as summarised in Table 3.

Table 3: Challenges and Recommendations for Strengthening African DIHs

Challenges	Main Recommendations
<p>Current funding approaches limit the impact of hubs. Specifically, funding is focused on short-term programme delivery and does not recognise the longer-term, ecosystem-building work that hubs are doing. Moreover, Funders’ emphasis on outputs limits hubs’ potential to create systems change.</p>	<p>New funding approaches are needed to support DIHs more effectively. Funding for hubs should support their sustainability and long-term impact. Specifically, more funding needs to be allocated towards covering hubs core costs as well as developing their internal capacity and infrastructure. Additionally, funding for hubs should focus on long-term outcomes and place less emphasis on maximising short-term outputs.</p>
<p>Many hubs lack sustainable business models and are heavily reliant on grants which leaves them financially vulnerable.</p>	<p>There is a need to provide hubs with funding and expertise to develop sustainability models. Those business models need to complement and build on rather than take away from the hubs’ core mission to support startup and innovation ecosystems.</p>
<p>Hubs face capacity and expertise gaps in key areas of business development, fundraising, investment facilitation and gender-responsive programme design. This is negatively affecting the level of the support that they provide to startups and women as well as limiting their ability to tap into investment opportunities and drive investment into the ecosystem.</p>	<p>There is a need to build hubs capacity around business development, investment facilitation, fundraising and developing gender-responsive programmes as key areas where many hubs have capacity gaps</p>
<p>Hubs face challenges in building effective ecosystem partnerships with corporates, governments, investors and fellow hubs which is limiting hubs’ ability to scale their impact, influence policy and more effectively contribute to developing the digital innovation ecosystem</p>	<p>Support and facilitate partnerships between hubs and diverse actors across the ecosystem. For instance, by facilitating investment into the digital ecosystem by corporate actors; building evidence and data to support better policy making; supporting hubs to develop investment strategies and strengthening hub networks.</p>

Section 4: Recommendations for the AfriConEu Project

In light of the various roles and challenges of African DIHs, the design of capacity building programmes should take into consideration the time and resource constraints that may hinder the ability of hubs to fully benefit from these efforts. Therefore, capacity building programmes should -

- Be co-created together with hub leaders and provide a sense of ownership.
- Focus on clear outcomes and tangible outputs.

- Provide funding and support to enable concrete implementation of recommendations and learning outcomes.
- Incorporate peer-to-peer learning.
- Include face-to-face interaction when possible.
- Run in short sprints, spread out over a longer period of time.
- Target both hub leaders as well as their teams.

In line with the objectives of this research this section also identifies opportunities and challenges for building effective EU-Africa DIH partnerships. These opportunities for exchange exist around market access, knowledge exchange, and human resources and capital. However, certain barriers limit how digital actors in Africa can effectively collaborate with EU partners, including cultural differences, lack of trust, restrictive policy environment, and gaps in skills, infrastructure and information. Based on the above the section concludes with the following recommendations.

Table 4: Recommendations for Building Effective Europe-Africa DIH Partnerships

Recommendations for building effective Europe-Africa DIH partnerships.	
1	Deeply examine and take into consideration power imbalances, trust issues and cultural differences in the design of programme activities.
2	Generate and aggregate information on market needs and opportunities that are relevant for digital stakeholders in both regions.
3	Facilitate networking and knowledge sharing based on clearly defined needs and working towards mutually beneficial goals.
4	Advocate and support development of policies focused on enabling Europe-Africa collaboration around digital innovation.
5	Take into consideration infrastructure and skills gaps and support actors to navigate these challenges.



METHODOLOGY

Research Background

This research is carried out as part of the establishment of AfriConEU – The first trans-continental networking academy for African and European Digital Innovation Hubs (DIHs). The study aims to analyse the digital innovation ecosystems in Ghana, Nigeria, Tanzania and Uganda in order to gain a deep understanding of the different stakeholders, challenges and opportunities on the ground. Second, it aims to analyse the specific needs of the DIHs within these ecosystems and bring to light the challenges they face. The findings will provide insights and highlight key points that should be considered for the development of the AfriConEU networking academy programmes so as to meet local needs and address local tech ecosystems challenges.

Goals and Objectives

There are three goals and objectives that guide our research. These being to:

- Investigate digital innovation ecosystems in Ghana, Nigeria, Tanzania, and Uganda. To contextualise this investigation, we provide a brief overview of each country's digital ecosystem across six critical factors namely, policy, markets, support and infrastructure, funding, human capital and culture
- Carry out an in-depth analysis of the challenges and needs of DIHs and provide recommendations for their capacity building and strengthening.
- Explore challenges and opportunities for building transcontinental partnerships between African and EU DIHs.

Scope

Broadly speaking, our study examines Africa's digital and tech sectors. More specifically however we focus our investigation on the following:

Geographic Scope: This study looks specifically at four Sub-Saharan African countries: Ghana, Nigeria, Tanzania, and Uganda.

Thematic Focus: There are three thematic focus areas:

- COVID-19 impacts on African digital ecosystems;
- The challenges and needs of African DIHs;
- Enabling EU-Africa collaboration around digital innovation.

Target groups

For our study, we identify and target four groups of digital ecosystem actors including:

- DIHs (this includes tech hubs, entrepreneurship support organisations such as accelerators and incubators) and entrepreneur support networks,
- Investors,
- Startups,
- Ecosystem enablers (e.g., policy makers, development partners, universities, ecosystem networks and corporates).

Research Questions

Our research aims to answer four broad research questions:

Research Question 1

What is the current state of play within the digital innovation ecosystems in Ghana, Nigeria, Tanzania and Uganda?

Research Question 2:

How has COVID-19 affected digital innovation ecosystems?

- What new opportunities and challenges has it created?
- How has it affected DIHs and how have they responded?
- How has it affected the participation of women and youth?

Research Question 3:

What challenges and needs do DIHs face with regards to:

- becoming sustainable?
- supporting innovative SMEs and startups more effectively?
- supporting the employability potential of youth and women?

How can DIHs be strengthened to further catalyse digital innovation within their ecosystems?

Research Question 4

What opportunities and challenges exist around connecting and enabling collaboration between EU and African DIHs and ecosystems?

Methods

Overview

The data gathering phase of our study lasted six months, starting in February 2021 and ending in July 2021. Data was collected using a range of methods including:

- Desk-based research
- One-to-one virtual interviews
- Country-specific virtual roundtables
- Surveys – Ecosystem survey and DIH capacity needs survey.

In this section, each data gathering exercise is introduced and discussed in more detail providing greater insights into our methodology.

Desk research

The primary purpose of the desk-based research was to conduct a literature review that would help contextualise this project. The information obtained was used to write the Country Snapshot of this report. With this in mind, this phase of the study was concerned with literature that provided insight into the tech and innovation ecosystems of the four countries that are at the centre of this study. The data gathered was obtained from several sources including, government policies, NGO and international NGO reports, newspaper articles, academic journals, and blogs.

Interviews

Between March and July 2021, 60 virtual semi-structured one-to-one interviews were conducted with hub leaders and managers, entrepreneurs, investors, ecosystem builders and network organisations as summarised in Table 5. To find participants, key ecosystem actors were identified and approached by leveraging relationships with local AfriConEU partners in each country. The interviews were guided by our four main research questions outlined previously (See Appendix 1 for the interview schedule). The responses were summarised and analysed thematically looking at our three key focus areas discussed above.

Table 5: Number of Interviews Conducted by Country

Interviewed	Uganda	Ghana	Tanzania	Nigeria	Total
Hubs	8	6	4	8	26
Ecosystem Enablers	4	8	1	4	17
Startups	2	1	3	2	8
Investors	1	2	3	3	9
Total	15	17	11	17	60

Roundtables

Between May and June 2021, four virtual ecosystem roundtables were hosted by ATBN in partnership with local DIH partners of the AfriConEU project including HapaSpace (Ghana), Emerging Communities Africa (Nigeria), Buni Hub (Tanzania) and Outbox (Uganda). The roundtables were attended by a cross-section of actors from across the digital innovation ecosystem including hub leaders and managers, entrepreneurs, development partners, investors and policy makers. During each roundtable, there was a panel discussion about the impacts that COVID-19 has had on digital ecosystems followed by a co-creation workshop in which participants interactively shared ideas about how to build the capacity of African DIHs, promote inclusion of youth and women within the digital economy and enable effective innovation partnerships between Europe and Africa (see Appendix 2 for details of the speakers and agenda).

Surveys

Additional data was collected by administering two surveys:

- an ecosystem survey targeted at diverse actors within the four ecosystems which was completed by 266 respondents: and,
- a DIH capacity needs survey that was completed by 32 hub leaders across the four countries.

Survey forms can be found in Appendix 3.

SECTION 1: OVERVIEW OF AFRICAN DIGITAL INNOVATION ECOSYSTEMS

This section introduces the four countries that are the focus of this report (Ghana, Nigeria, Tanzania and Uganda). By providing a snapshot of each country, this section lays the foundations for and contextualises the data and findings that will be discussed in the subsequent sections. The information contained in this section was primarily obtained as a result of desk-based research that included a literature review of relevant material. The literature review findings are further supplemented by data obtained during our roundtables and interview phases of the research. To guide and standardise the process the literature was reviewed and aggregated according to a framework. The framework that structures this section is based on Isenberg’s Entrepreneurial Ecosystem Analysis Framework¹. It contains six focus areas as depicted in Figure 1:

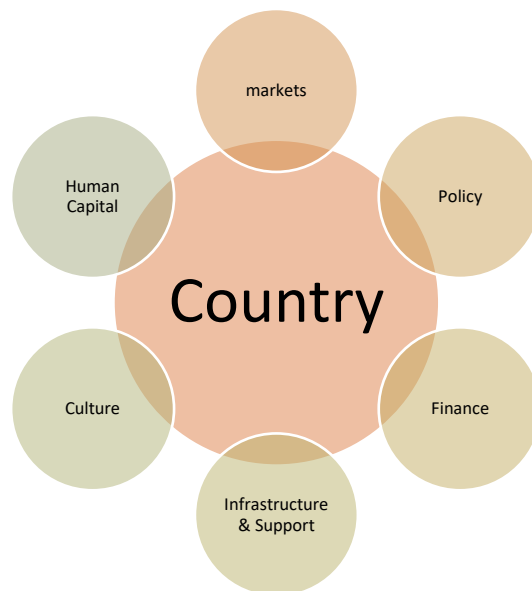


Figure 1: Ecosystem Analysis Framework

¹ Isenberg.

Table 6: Overview of Ecosystem Factors Framework

Ecosystem Factor	Overview
Markets	Provides an overview of a country’s digital markets and their contribution to the general economy as well as some of the factors influencing digital growth including technology adoption, affordability and access, digital literacy and income levels.
Policy	Introduces the policy environment and political factors affecting entrepreneurship and innovation in each of the four countries. Examines the role that governments are playing in providing an enabling environment for digital innovation including regulatory frameworks and policies affecting entrepreneurs, investors and startups.
Finance	Explores the funding landscape for digital innovation and startups including identifying the major sources of financial support and the key investment sectors. This section also considers the challenges faced by startups and entrepreneurs when it comes to securing financial support.
Infrastructure & Support	Reviews the state of each country’s technology and digital infrastructure including internet connectivity and digital innovation spaces. This section also explores the country’s tech and innovation hubs, highlighting the role they play in supporting the development of the digital ecosystem while also documenting the challenges they face.
Culture	Examines some of the cultural factors that either enable or impede entrepreneurship as well as digital adoption and innovation in each country. Emphasis is placed on youth and gender, specifically how and to what extent the prevailing attitudes and societal norms affect young people and women’s relationship with entrepreneurship and technology.
Human Capital	Highlights the level of digital skills and knowledge present in each ecosystem. It also explores any challenges and gaps in the development of knowledge and skills for the digital economy while highlighting the role that education institutions and other ecosystem actors are playing to address these gaps.

1.1 Ghana

Table 7: Ghana - Summary of Digital Snapshot

Ecosystem Factor	Ghana Snapshot Summary
Markets	<ul style="list-style-type: none"> ▪ In 2017, the ICT sector contributed \$1.7 billion (3.6 percent) to the country's GDP. ▪ Top 6 ICT sub-sectors: FinTech, EdTech, HealthTech, AgTech/Agrifood, eCommerce and logistics. ▪ Mobile market - 16 million unique mobile subscribers; (53% of the population). ▪ Internet penetration 45% (2018)
Policy	<ul style="list-style-type: none"> ▪ A wide range of ministries and agencies committed to tech and/or entrepreneurship ▪ National Entrepreneurship and Innovation Plan (NEIP) launched by the government in 2017 to support startups and small businesses.
Finance	<ul style="list-style-type: none"> ▪ Among the top 5 of VC investment destinations in Africa ▪ E-health is Ghana's best funded sector
Infrastructure & Support	<ul style="list-style-type: none"> ▪ \$83 million Eastern Corridor Fibre-Optic Backbone project, launched in 2015 ▪ 36 hubs across the country, mainly in Accra but increasingly in other regions ▪ Ghana Hubs Network is connecting and strengthening hubs
Culture	<ul style="list-style-type: none"> ▪ High unemployment driving entrepreneurialism among youth ▪ Women remain under-represented in the digital sectors, representing only 15%
Human Capital	<ul style="list-style-type: none"> ▪ Strong regulatory and higher education foundation for technology skills ▪ Few Ghanaians have advanced digital skills ▪ Coding programmes and bootcamps addressing the digital skills gap

1.1.1 Markets

Ghana's economic growth is driven by a diverse range of sectors. Of particular importance is the role of ICT in growing and shaping Ghana's economy. In 2017 Ghana's ICT sector contributed \$1.7 billion (3.6 per cent) to the country's GDP². Within this sector, there are six sub-sectors that dominate: FinTech, EdTech, HealthTech, AgTech/Agrifood, eCommerce and Logistics³.

The number of people in Ghana subscribed to a mobile network has grown significantly, with GSMA⁴ estimating a five-fold increase in the last ten years. With 16 million unique mobile subscribers (53% of the population), the country's mobile penetration rate is above the average of 44% for Sub-Saharan Africa. Along with a high number of mobile subscribers, Ghana also has a significant number of adults who rely on these networks for their mobile money accounts. The adoption of mobile money has created a means to bring underserved populations into the formal financial system and extend critical services like healthcare and education more widely.

While more and more Ghanaians are getting online (mobile internet increased from 2 per cent in 2005 to 45 per cent in 2018), the high cost of data continues to exclude many from the digital economy with 1GB of data estimated to cost over 2% of the average Ghanaian's monthly income. A study by Alliance for Affordable internet ranked Ghana 23rd out of 73 countries on its Affordability Drivers Index which looks at a number of factors related to internet access.

1.1.2 Policy

Over the years the Government of Ghana, mainly through the Ministry of Communication and Digitalisation has introduced various reforms and policies related to technology, digital innovation, and entrepreneurship. Some of these include the ICT for Accelerated Development Policy (ICT4AD) 2003; the Electronic Transaction Act 2008; the National Technology Agency Act 2008; and the Electronic Communications Act 2008. The intended purpose of these reforms being to facilitate a more competitive digital market in Ghana. More recently, at the 2019 Ghana Digital Roadmap Conference⁵ the government

² World Bank, *Ghana Digital Economy Diagnostic*.

³ World Bank.

⁴ GSMA, *The Mobile Economy West Africa 2018*.

⁵ Annang, 'Ghana Digital Roadmap Conference 2019 Begins Today'.



outlined how its Beyond Aid strategy along with an updated ICT4AD policy would enable the nation to become an ICT innovation leader by 2023⁶. The updated ICT4AD policy is intended to signal Ghana's commitment to advancing ICT and in turn making the country an attractive destination for ICT related Foreign Direct Investment⁷.

Recognising the importance of technology and innovation hubs, the government of Ghana's National Entrepreneurship and Innovation Plan (NEIP) was launched in June 2017. NEIP's main objective is to provide support for startups and small businesses⁸ and was established under the jurisdiction of the Ministry of Business Development, which provided the NEIP with a \$10M seed fund⁹. The agency is expected to leverage this to raise a further \$100 Million to support start-ups and SMEs in Ghana. Since its inception NEIP has worked through tech hubs to provide support and training to young entrepreneurs across the nation¹⁰.

1.1.3 Finance

Ghana is ranked as Africa's fifth most active funding market¹¹. In 2020, the total amount of Venture Capital investment in Ghana was \$111M, 101% more than the \$55M raised in 2019. The average size of the deals in 2020 (\$8.54M) was also 55% higher than the average deal size in 2019 (\$5.5M). The number of deals increased as well, by 30%, from 10 in 2019 to 13 in 2020¹². The key sectors attracting investment include e-health, fintech, e-commerce and logistics. E-health is Ghana's best funded sector with two of the top 5 funded startups, m-pharma and African Health Holdings, in 2019¹³. Despite the impressive growth, funding remains a challenge for most Ghanaian startups. This has been attributed to a lack of knowledge of how to build viable and scalable business models on the part of entrepreneurs as well as a shortage of patient financing that understands the needs of local startups¹⁴.

⁶ World Bank, *Ghana Digital Economy Diagnostic*.

⁷ Ministry of Communications, 'The Ghana ICT for Accelerated Development (ICT4AD) Policy'.

⁸ NEIP, 'National Entrepreneurship & Innovation Programme'.

⁹ NEIP.

¹⁰ GSMA, *A Deep Dive into the Ghanaian Start-up Ecosystem*.

¹¹ Disrupt Africa, 'African Tech Startups Funding Report 2020'.

¹² AfricArena, 'The State of Tech Innovation in Africa', 77.

¹³ Kuuire, 'VC Investments Top \$90 Million For Ghana's Tech Ecosystem In 2020'.

¹⁴ Armah, 'Addressing Ghana's Startup Funding Challenges'.

1.1.4 Infrastructure and Support

Infrastructure

In recent years, the Ghanaian Government in partnership with development and private sector actors has made significant investments into the country's digital infrastructure. For example, the \$83 million, 800km Eastern Corridor Fibre-Optic Backbone project launched in 2015 through a collaboration between the Ghanaian government, France's Alcatel-Lucent and the Danish International Development Agency¹⁵.

Despite these investments, internet infrastructure and access particularly in the rural areas remains a challenge. To bridge the gap for under-served regions in the country, the government established the Ghana Investment Fund for Electronic Communications (GIFEC)¹⁶. Funded through contributions from Mobile Network Operators, Internet Service Providers and government, GIFEC is running a number of infrastructure projects including establishing Community Internet Centres within rural communities and setting up solar powered satellite hubs to extend basic internet and telephony services under the Rural Telephony Project¹⁷.

Digital Innovation Hubs

Ghana has an active digital innovation support ecosystem with 36 hubs according to Ghana Hubs Network. While the majority of the country's hubs are concentrated in the capital city Accra, there has been an uptick in hubs operating in other regions of the country. Some of the most active and established hubs in the country include iSpace, Meltwater Entrepreneurial School of Technology (MEST), Kumasi Hive and HapaSpace.

Despite the growing number of technology and innovation hubs in Ghana, their success and sustainability has remained an issue. A number of challenges including a lack of collaboration and funding are seen to be limiting the potential of Ghanaian hubs to effectively support innovators¹⁸.

¹⁵ NITA, 'President Inaugurates a \$38 Million Fiber Optic Backbone Project'.

¹⁶ GIFEC, 'Ghana Investment Fund for Electronic Communications'.

¹⁷ GIFEC.

¹⁸ Ball, Adereth, and Bar-Shany, 'Catalysing Local Innovation Ecosystems in Kenya and Ghana'.



The Ghana Hubs Network (GHN), an umbrella organisation bringing together the business, technology and innovation hubs in the country was established to support collaboration, knowledge sharing and address the challenges of hubs. The network runs a number of capacity building programmes for hub managers, coordinates joint initiatives and provides networking opportunities¹⁹.

1.1.5 Culture

Entrepreneurship

Attitudes towards entrepreneurship are generally positive in Ghana. A GEM study found that 37 per cent of Ghanaians between the ages of 18 and 64 were in the process of or had recently started their own business²⁰. Entrepreneurial participation is particularly high among the youth. This is in part driven by the high youth unemployment rate which at 12% is higher than the average in Sub-Saharan Africa²¹ and has led many young people to turn to entrepreneurship.

Youth

Ghana's population is primarily young and urban. In 2019, under 25-year-olds accounted for 56.8 per cent of the population²² while the urban proportion has increased from 15 per cent in 1950 to 56 per cent in 2018²³. Highly entrepreneurial and increasingly technology-savvy, the urban youth population hold a lot of promise for driving innovation and harnessing the country's entrepreneurial opportunities²⁴. However, as discussed in section 2.2.5 and 2.2.6, this potential is limited by a lack of digital and business skills as well as a shortage of early-stage funding to establish their businesses. In 2015, the Youth Employment Agency (YEA) was established by the government to support youth entrepreneurship and skills development.

Gender

¹⁹ GHN, 'Ghana Hubs Network'.

²⁰ Herrington and Kelley, 'African Entrepreneurship: Sub-Saharan African Regional Report'.

²¹ World Bank, 'Addressing Youth Unemployment in Ghana Needs Urgent Action, Calls New World Bank Report'.

²² United Nations, Department of Economic and Social Affairs, Population Division, 'World Population Prospects 2019, Volume II: Demographic Profiles'.

²³ United Nations, Department of Economic and Social Affairs, Population Division, 'World Urbanization Prospects: The 2018 Revision'.

²⁴ World Bank, *Ghana Digital Economy Diagnostic*.

Ghanaian women are some of the most entrepreneurial on the continent. In fact, Ghana is one of only two Sub-Saharan African countries where female entrepreneurs outnumber male²⁵. When it comes to the Science, Technology and Innovation (STI) however, women remain highly under-represented, making up only 15% of the sector²⁶. This gender gap has been attributed to cultural factors such as the gendered notion that science and technology is a male industry and the adverse effect it has on women's willingness to consider a career in this industry; the burden of family obligations and domestic labour that is unduly placed on women thereby limiting the time they have to pursue careers outside the home; and gender-bias and discrimination which women face within the sector²⁷.

A number of public and private initiatives have been launched in the country to address this issue. For example, the Ms Geek competition was launched by the Ministry of Communication and Digitalisation in 2019 with the goal of developing technology related skills amongst girls and young women. Other notable gender inclusion initiatives include eSkills for Girls by GIZ, Unlocking Women and Technology run by iSpace Foundation and Tech Needs Girls by Soronko Academy among others.

1.1.6 Human Capital

Ghana has a strong foundation for digital skills development. Increasingly a priority for the government, the ICT in Education Policy²⁸ outlines the government's strategy for integrating ICT into education. Furthermore, the country boasts a number of public and private universities such as the Kwame Nkrumah University of Science and Technology (KNUST), the University of Ghana and Ashesi University which are producing technological talent. A testament to the growing digital talent pool in Ghana was the establishment of an artificial intelligence research centre in Accra by global technology giant Google in 2018²⁹.

²⁵ GEM, 'Women and Youth Spearheading Business Creation'.

²⁶ Quaye, Yamga, and Tetteh, 'National Framework for Research, Innovation, and Commercialisation in Ghana'.

²⁷ Coalition for Digital Equality, 'Bridging the Digital Gender Divide in Africa: Insights from Ghana and Uganda'.

²⁸ Ministry of Education, 'ICT in Education Policy'.

²⁹ Dean and Cisse, *Google AI in Ghana*.



This positive outlook is however tempered by the fact that few Ghanaians possess advanced digital skills which are increasingly becoming a necessity as the nation develops digitally³⁰ and demand for coders, developers and cybersecurity professionals in both the private and public sectors continues to grow³¹.

To address the digital skills gap, a growing number of specialist coding programmes and bootcamps have emerged. Many of the programmes offer short-term, intensive training models of three to six months intending to rapidly train developers, software engineers and other in demand digital skills. Some of the active programmes in the country include Andela, Developers in Vogue which is focused on upskilling women developers and Soronko Academy.

³⁰ International Finance Corporation, 'Digital Skills in Sub-Saharan Africa: Spotlight on Ghana'.

³¹ World Bank, *Ghana Digital Economy Diagnostic*.

1.2 Nigeria

Table 8: Nigeria - Summary of Digital Snapshot

Ecosystem Factor	Nigeria Snapshot Summary
Markets	<ul style="list-style-type: none"> ▪ In 2017, the ICT sector contributed 17.83% to the country's GDP. ▪ Mobile market – in 2018, there were 172 million mobile subscribers, equal to a penetration rate of 87% of population ▪ Over 112 million Nigerians had access to the internet in 2018, representing 56% of the population
Policy	<ul style="list-style-type: none"> ▪ Nigerian government amongst the first in Africa to set up a national body responsible for ICT. ▪ Broad mix of ICT-specific policies and legislations as well as more general policies and laws. ▪ Focused on tech and innovation ecosystem environment digital skills and literacy gaps and improving digital infrastructure.
Finance	<ul style="list-style-type: none"> ▪ Ranks one of Africa's leading ecosystems for VC investments ▪ Received Venture Capital investment totalling an estimated \$307M In 2020 (897M in 2019) ▪ FinTech is Nigeria's best funded sector
Infrastructure & Support	<ul style="list-style-type: none"> ▪ Nigeria is one of Africa's most advanced eco-systems with 90 active tech hubs. ▪ Home to over 40 hubs, Lagos is the continents' top innovation city. ▪ Telecommunication company Globacom expanded its 4G network to cover all 36 Nigerian states ▪ Anticipated that mobile operators in Nigeria will spend \$8.5B to improve network infrastructure and services.
Culture	<ul style="list-style-type: none"> ▪ One of the highest entrepreneurship rates in the world. ▪ 18–64-year-olds make up 35% of total early entrepreneurial activity. ▪ Women entrepreneurs (36%) are more likely to be involved in business than men (34%). ▪ Women remain underrepresented in the tech sector owning 30% of the nation's tech firms.
Human Capital	<ul style="list-style-type: none"> ▪ Large concentration of tech related institutions in urban parts of Nigeria. ▪ Many 18-24 graduates entering the digital job market require 1-4 years of further training. ▪ Nigeria also has several universities that are actively working to improve digital literacy and support skill development.

1.2.1 Markets

The Nigerian ICT sector is a key driver of the nation's economic growth contributing 17.83% to the Nigeria's national GDP³². In Nigeria, there were over 172 million mobile subscribers, accounting to a penetration rate of 87% of the population. This figure represented a 6.4% growth increase, compared to 162 million subscribers in 2017. Over 112 million Nigerians had access to the internet in 2018, representing 56% of the population³³.

Until fairly recently the cost of internet data was high which has meant that Nigerian men who are more likely to have higher incomes are more likely to adopt ICTs. This is evident in both Internet use and mobile phone ownership, with men in comparison to women, are 17% more likely to use the internet and 13% more likely to use a mobile phone³⁴. According to the Alliance for Affordable Internet³⁵ Nigeria ranks 19th out of 73 countries on its Affordability Drivers Index.

1.2.2 Policy

The Nigerian government was among one of the first in Africa to set up a national body responsible for ICT. The "National Information Technology Development Agency (NITDA), was established in 2007 to plan, develop, and promote the use of ICT³⁶. Since then, the government has gone on to establish a broad mix of ICT-specific policies and legislations as well as more general policies and laws that make reference to ICT, technology and innovation in relation to wider national goals³⁷. More recently, through its Ministry of Communications and Digital Economy (FMoCDE)³⁸ the government has developed three policy documents of interest to this study. These being the 2017 Nigeria ICT Roadmap 2017-2020³⁹; the Nigeria ICT Innovation and Entrepreneurship Vision (NIIEV)⁴⁰; and the National Digital Innovation and Entrepreneurship Policy (NDIEP)⁴¹. Collectively these actions are intended to create an enabling environment for the nation's tech and innovation ecosystem, to address digital skills and literacy gaps and

³² Jobberman, 'Digital Sector Skills Gap'.

³³ Kolawole, 'Nigeria Mobile Report 2019'.

³⁴ Gillwald, Odufuwa, and Mothobi, 'The State of ICT in Nigeria 2018'.

³⁵ Alliance for Affordable Internet, 'Africa Regional Snapshot: Affordability Report 2020'.

³⁶ Viik et al., 'Guidelines and Roadmap for Full Deployment of E-Governance Systems in Africa'.

³⁷ Lixi et al., 'Nigeria Digital Economy Diagnostic Report'.

³⁸ FMoCDE, 'Federal Ministry of Communications and Digital Economy'.

³⁹ FMoC, 'Nigeria ICT Roadmap 2017-2020'.

⁴⁰ NITDA, 'Nigeria ICT and Entrepreneurship Vision'.

⁴¹ Borokini, 'Review Of National Digital Innovation and Entrepreneurship Policy'.

to improve digital infrastructure. The NDIEP in particular was specifically introduced in response to COVID-19 with the intention of laying out how digital innovation can be utilised to mitigate the impact of the pandemic⁴².

Paradoxically however, for a nation that has a wide range of policies and initiatives dedicated to supporting and advancing the tech and digital ecosystem; the government has at times adopted a stance that runs counter to its overall technology and innovation aims. For instance, until 2018 and in accordance with the Central Bank of Nigeria's policies, mobile network operators were barred from offering mobile money services in Nigeria⁴³. As a result, there has been low penetration and uptake of mobile money services in Nigeria.

1.2.3 Finance

Nigeria consistently ranks as one of Africa's leading ecosystems for VC investments. In 2020, the country received Venture Capital investment totalling an estimated \$307M, a decline of 49% compared to the \$747M raised in 2019⁴⁴. The average size of the deals in 2020 (\$4.32M) was also 78% lower than the average deal size in 2019 (\$19.66M). Interestingly, while overall funding declined, the number of startups raising funding increased by 71%, from 38 in 2019 to 71 in 2020⁴⁵.

Regarding the distribution of funding, FinTech emerges as the sub-sector that receives the most funding. Between 2019 and 2020 62% of Nigeria's total funding was in FinTech⁴⁶. Flutterwave a FinTech startup raised \$170 million with an over \$1 billion valuation, making it the third Nigerian start-up to achieve unicorn status⁴⁷. Driving these investments is an active funding ecosystem made up of local and international investors including Y Combinator, Ventures Platform, Microtraction, Acuity Ventures, Ingressive Capital, Kepple Africa Ventures and Sherpa Ventures⁴⁸.

⁴² Borokini.

⁴³ GSMA, *The Mobile Economy West Africa 2018*.

⁴⁴ Disrupt Africa, 'African Tech Startups Funding Report 2020'.

⁴⁵ AfricArena, 'The State of Tech Innovation in Africa'.

⁴⁶ Partech Africa, '2020 Africa Tech Venture Capital Report'.

⁴⁷ Kene-Okafor, 'African Payments Company Flutterwave Raises \$170M, Now Valued at over \$1B'.

⁴⁸ Disrupt Africa, 'African Tech Startups Funding Report 2020'.



A look beneath the high investment figures however reveals the fact that a significant portion went to Nigerian startups that are incorporated and registered outside of Nigeria, primarily in the United States of America⁴⁹. This, together with the country's low ranking on the Ease of Doing Business index (131st out of 190 countries globally) suggests that the investment climate in the country remains challenging resulting in investors preferring to work with startups domiciled abroad⁵⁰.

1.2.4 Infrastructure and Support

Infrastructure

As evidenced in section 1.2.2 above, Nigeria is committed to improving its digital and tech ecosystem. In the context of infrastructure this has meant addressing issues such as quality of service and network congestion⁵¹. The telecommunication company Globacom (commonly referred to as Glo) expanded its 4G network to cover all 36 Nigerian states⁵². In 2019, another telecommunication company, Airtel, extended its 4G network and now covers an additional 100 towns⁵³. Overall, it is anticipated that Airtel in Nigeria will spend \$8.5B to improve network infrastructure and services⁵⁴.

Digital Innovation Hubs

With 90 active tech hubs, Nigeria is one of Africa's most advanced eco-systems and Lagos, home to over 40 hubs, is the continent's top innovation city⁵⁵.

A hub of note is the Lagos based Co-Creation Hub (CcHub)⁵⁶ that has emerged as a centre for knowledge production and job creation⁵⁷. Over the course of just under 10 years, CcHub has functioned as a pre-incubation program (2012-13); a full incubator (2013); an accelerator (2014); and Seed Fund – serving as

⁴⁹ AfricArena, 'The State of Tech Innovation in Africa'.

⁵⁰ AfricArena.

⁵¹ Gillwald, Odufuwa, and Mothobi, 'The State of ICT in Nigeria 2018'.

⁵² GSMA, *The Mobile Economy West Africa 2018*.

⁵³ GSMA.

⁵⁴ GSMA.

⁵⁵ Giuliani and Ekeledo, 'Building a Conducive Setting for Innovators to Thrive a Qualitative and Quantitative Study of a Hundred Hubs across Africa'.

⁵⁶ Co-Creation Hub, 'Co-Creation Hub'.

⁵⁷ Atiase, Kolade, and Liedong, 'The Emergence and Strategy of Tech Hubs in Africa: Implications for Knowledge Production and Value Creation'.



a bridge round for entrepreneurs and innovators that need smaller investments⁵⁸. In 2018 CcHub in partnership with Facebook launched NG Hub and in 2019 it began operating as a design lab.

However, few hubs in the country have been able to achieve the level of success of CcHub. For many technology and innovation hubs in Nigeria, particularly those outside of the capital city, funding and capacity remain a primary concern. To connect and support the development of hubs in the country, the Innovation Support Network– Hubs (ISN-HUBS) was formed. The organisation is working to build hubs' capacity, provide access to funding and knowledge sharing opportunities as well as setting standards for best practices in entrepreneur support⁵⁹.

1.2.5 Culture

Entrepreneurship

Nigeria is among the countries with the highest entrepreneurship rates in the world⁶⁰. Nigerians have a positive attitude towards entrepreneurship with 82% considering entrepreneurship to be a good career choice. Around 82% believe that there are good opportunities for entrepreneurship in Nigeria with only 21% being deterred by a fear of failure⁶¹.

Youth

In 2019, under 25-year-olds accounted for 63 per cent of the population⁶² and 21.4 per cent of youth were unemployed and/or not in training or education⁶³. The youth population in Nigeria is also an entrepreneurial population with 35% of 18–64-year-olds⁶⁴ in Nigeria making up what is described as total early entrepreneurial activity (TEA). This TEA figure is amongst the highest in Sub-Saharan Africa⁶⁵.

⁵⁸ Wangari and Crawford, 'Unlocking Pipeline: A Playbook for Entrepreneur Support in Africa'.

⁵⁹ ISN Hubs, 'ISN Hubs'.

⁶⁰ Olarewaju, 'Can Equalizing Educational Endowments Between Men and Women Create More Female Self-Employed Value in Nigeria?'

⁶¹ Herrington and Kelley, 'African Entrepreneurship: Sub-Saharan African Regional Report'.

⁶² United Nations, Department of Economic and Social Affairs, Population Division, 'World Population Prospects 2019, Volume II: Demographic Profiles'.

⁶³ Lixi et al., 'Nigeria Digital Economy Diagnostic Report'.

⁶⁴ Herrington and Kelley, 'African Entrepreneurship: Sub-Saharan African Regional Report'.

⁶⁵ Herrington and Kelley.

However, barriers including lack of access to funding and low skills continue to impede many young Nigerians from successfully pursuing entrepreneurship⁶⁶.

Gender

Nigeria is one of only two Sub-Saharan African countries where female entrepreneurs outnumber males, with women (36 per cent) being more likely to be involved in business than men (34 per cent)⁶⁷. However, within the tech sector, women's participation is significantly lower than men with only 30% of tech firms being owned by women⁶⁸. A factor that has affected this is that women in Nigeria are not afforded the same access to finance as men due to a financial system that is biased in its approach to lending and credit⁶⁹. A non-financial reason that contributes to this inequality is a culture that prioritises celebrating successful men⁷⁰ and research supports the idea that there is a correlation between entrepreneurship receiving positive media attention and people perceiving entrepreneurship in a positive light⁷¹.

To address this inequality the Nigerian government has undertaken steps to make the teaching of STEM subjects more gender inclusive. Within the NGO sector organisations like TechHer and projects like the 1000 Girls in Training are working to increase the number of women in tech. Finally in 2019 the Gender and Equal Opportunities Bill was reintroduced to Nigerian National Assembly and while its remit is broader than tech, its passage would contribute to a fairer tech sector for women⁷².

1.2.6 Human Capital

Nigeria has a number of longstanding and prestigious educational institutions and as previous sections have demonstrated Nigeria is a key player within the continent's tech and innovation ecosystem. However, 18-24% of graduates enter the digital job market requiring 1-4 years of further training in order to gain the relevant skills required to become employable⁷³.

⁶⁶ Ezeani, 'Barriers to Graduate Employment and Entrepreneurship in Nigeria'.

⁶⁷ Herrington and Kelley, 'African Entrepreneurship: Sub-Saharan African Regional Report'.

⁶⁸ Ramachandaran and Omakwu, 'Nigeria's Tech Sector May Be Booming, but Where Are the Women?'

⁶⁹ Ramachandaran and Omakwu.

⁷⁰ Olarewaju, 'Can Equalizing Educational Endowments Between Men and Women Create More Female Self-Employed Value in Nigeria?'

⁷¹ Herrington and Kelley, 'African Entrepreneurship: Sub-Saharan African Regional Report'.

⁷² Ramachandaran and Omakwu, 'Nigeria's Tech Sector May Be Booming, but Where Are the Women?'

⁷³ Jobberman, 'Digital Sector Skills Gap'.



To address this gap in digital literacy, the Universal Service Provision Fund (USF) runs programs such as the School Knowledge Centres (SKC) and the E-accessibility project. The SKC project has provided 396 public secondary schools with connectivity, computers, and power backup and ICT skills training. The E-accessibility project is focused on improving access for those with disabilities. Nigeria also has several universities such as the Federal University of Technology Akure that are actively working to improve digital literacy and support skill development.

As discussed in previous sections, there is a large concentration of tech related institutions in urban parts of Nigeria. This urban/rural divide also contributes to the digital literacy gap. Steps to address this include the Grand Alliance project aimed at advancing innovation being run by the American University of Nigeria in the north-eastern state of Adamawa. Similarly, In the south-western state of Osun, Obafemi Awolowo University is host to the African Institute for Science Policy and Innovation that aims to establish a campus-based innovation hub⁷⁴.

⁷⁴ Dalberg Global Development Advisors, 'Catalysing Growth in Nigeria'.

1.3 Tanzania

Table 9: Tanzania - Summary Digital Snapshot

Ecosystem Factor	Tanzania Snapshot Summary
Markets	<ul style="list-style-type: none"> ▪ The ICT sector is one of the fastest growing sectors in Tanzania (grew 11.7% in 2019 despite 6.8% GDP growth) ▪ 25 million unique mobile subscribers as of 2020. ▪ Internet penetration: 55.4% in urban areas, 14% in rural areas
Policy	<ul style="list-style-type: none"> ▪ Overall ICT strategy contained in the 2016 National ICT Policy ▪ Innovation and entrepreneurship policies fall under the purview of the Ministry for Works, Transport and Communication, and the Ministry of Education, Science and Technology. ▪ In 2017, Tanzania’s National Economic Empowerment Council published the Tanzania Inclusive National Entrepreneurship Strategy.
Finance	<ul style="list-style-type: none"> ▪ Ranked 11th in Africa for VC funding with \$4.6m raised in 2020. ▪ Agritech is Tanzania’s best funded sector
Infrastructure & Support	<ul style="list-style-type: none"> ▪ 23 active hubs in 2019 (35% increase from 2018) ▪ The National ICT Broadband Backbone, a fibre optic network, is 95% complete as of 2019. ▪ World Bank’s Digital Tanzania Project has committed \$150m to improving Tanzania’s technology ecosystem.
Culture	<ul style="list-style-type: none"> ▪ Youth entrepreneurship programs implemented to reduce youth unemployment. ▪ Under 25s unemployment reduced from 6.8% in 2011 to 3.48 in 2019. ▪ 54.3% of SMEs are owned by women, most aged 25 to 40
Human Capital	<ul style="list-style-type: none"> ▪ Tanzania Entrepreneurship and Competitiveness Centre (TECC) launched in 2016 to train potential entrepreneurs. ▪ National Entrepreneurship Training Framework (NETF) is addressing skills gap. ▪ College of Engineering and Technology in partnership with the University of Dar es Salaam received funding to establish incubators across Tanzania.

1.3.1 Markets

Tanzania's ICT sector is one of the nation's fastest growing sectors; growing by 11.7% in 2019, whereas in the same year GDP growth was 6.8%⁷⁵. Contributing to this is Tanzania's growing mobile market. In 2020 Tanzania had 25 million unique mobile subscribers compared to 12 million in 2010⁷⁶. Unique subscriber penetration at the end of 2020 was 41% and unique subscriber mobile internet penetration for the same period was 18%⁷⁷. In terms of access, a significant number (86%) of Tanzanians living in rural areas do not have internet connectivity. By comparison, 44.6%⁷⁸ of urban dwelling Tanzanians are not connected to the internet.

Ranked 41 of 73 countries in terms of internet affordability it is no surprise that high costs, low quality of networks and lack of digital skills have had a significant effect on mobile uptake, especially among women⁷⁹. Furthermore, amongst women who own mobile devices, they are less likely to use them for services such as mobile money. One initiative, Project Tigo, is working to address this and so far, the project has resulted in a 2% increase in the proportion of women who use mobile money⁸⁰.

1.3.2 Policy

Tanzania's ICT innovation and entrepreneurship policies and regulations fall under the purview of two ministries: the Ministry for Works, Transport and Communication and the Ministry of Education, Science and Technology (MoEST)⁸¹. MoEST oversees a number of divisions including the Tanzanian Commission for Science and Technology (COSTECH)⁸² and the ICT Commission⁸³. In addition to these government bodies, Tanzania's overall ICT strategy is contained in the 2016 National ICT Policy⁸⁴.

⁷⁵ NACTE, 'Mapping Skills Gap and Skills Needs for Technician Graduates In The Selected Economic Sectors for Industrial Growth in Tanzania'.

⁷⁶ GSMA, 'Tanzania: Driving Social and Economic Value through Mobile-Sector Tax Reform'.

⁷⁷ GSMA, 'Digital Transformation in Tanzania'.

⁷⁸ O'Grady, 'Tanzania Hopes to Accelerate Internet Access'.

⁷⁹ GSMA, 'Digital Transformation in Tanzania'.

⁸⁰ GSMA, 'Tanzania: Driving Social and Economic Value through Mobile-Sector Tax Reform'.

⁸¹ MoEST, 'Ministry of Education, Science and Technology'.

⁸² COSTECH, 'Tanzania Commission for Science and Technology'.

⁸³ ICT Commission, 'Information and Communication Technology Commission'.

⁸⁴ Ministry for Works, Transport & Communication, 'National ICT Policy 2016'.

To support entrepreneurs, in 2017 Tanzania’s National Economic Empowerment Council (NEEC) published the Tanzania Inclusive National Entrepreneurship Strategy (TINS)⁸⁵. The Strategy acknowledges and commits to addressing some of the factors that may adversely affect entrepreneurship including insufficient funding, not enough legislative support and a skills gap.

1.3.3 Finance

In 2020, Tanzania ranked 11th in Africa in terms of Venture capital funding with \$4.6m raised⁸⁶. Even though it is relatively a small number, it is significant given that in 2019 Tanzania didn't receive any VC investment. The average size of the deals in 2020 was \$1.15M for an overall 4 deals⁸⁷. Agritech was the sector that received the most funding⁸⁸ with East African Fruits securing \$3.1m⁸⁹.

Compared to other tech ecosystems in Africa, Tanzania’s ecosystems can best be described as nascent. Most startups and entrepreneurs still have to rely on self-funding or family and friends to get their businesses off the ground⁹⁰. While limited, a growing number of funding opportunities do exist. A number of funders and investors that are active in the ecosystem including AHL Venture Partners, Atraxx Group, Beyond Capital Fund, TBL Mirror Fund, and Lundin Foundation are providing grants, angel investment, debt and equity to startups in the country⁹¹.

However, several factors are still limiting the growth of the Tanzania investment ecosystem including a policy and regulatory framework that is seen to be prohibitive to foreign investment⁹².

⁸⁵ NEEC, ‘Tanzania Inclusive National Entrepreneurship Strategy’.

⁸⁶ Partech Africa, ‘2020 Africa Tech Venture Capital Report’.

⁸⁷ AfricArena, ‘The State of Tech Innovation in Africa’.

⁸⁸ AfricArena; Disrupt Africa, ‘African Tech Startups Funding Report 2020’.

⁸⁹ Jackson, ‘Tanzania’s East Africa Fruits Closes Series A Funding Worth \$3.1m’.

⁹⁰ Sahara Ventures, ‘A Startup in Tanzanian Context, Challenges and Opportunities’.

⁹¹ Antoun, ‘The Great Debate’.

⁹² World Bank, ‘World Bank in Tanzania’.

1.3.4 Infrastructure and Support

Infrastructure

In 2009 Tanzania launched the National ICT Broadband Backbone (NICTBB), a fibre optic network, and as of 2019 it is 95% complete⁹³. The NICTBB has contributed to greater access and lower costs⁹⁴ and recently the Tanzanian government has agreed to extend the NICTBB into Mozambique⁹⁵.

Mobile operators continue to invest in Tanzania and, in 2019, that investment was approximately \$2.6bn⁹⁶. For instance, Vodacom invested \$66m in 2017, to improve data and voice network capacity. In the same year, Halotel committed to investing \$1.7bn to improve network infrastructure. Additionally, the World Bank through its Digital Tanzania Project has committed \$150m to improve Tanzania's technology ecosystem⁹⁷. Divided into two phases; Phase I (2018-2022) and Phase II (2021-2026) the project will result in increased and improved access to broadband internet services.

Digital Innovation Hubs

In 2019 there were 23 active hubs in the country⁹⁸, signifying an increase of 35%⁹⁹ from the previous year. Tanzania's former capital city, Dar es Salaam is referred to as "Silicon Dar" on account of it being home to significant number of hubs and tech startups¹⁰⁰. Recently there has also been a rise in hubs outside of Dar es Salaam¹⁰¹. Rlabs Iringa and Mkwawa Community Art Space are based in Iringa, Twende Makerspace is in Arusha and Zanzibar Technology Business Incubator (ZTBI) in Zanzibar to name a few¹⁰².

Challenges to hubs in Tanzania and to the national tech ecosystem more broadly, include sustainability, opportunities for collaboration, funding and, policies and regulations that stifle growth and investment

⁹³ Viik et al., 'Guidelines and Roadmap for Full Deployment of E-Governance Systems in Africa'.

⁹⁴ GSMA, 'Digital Transformation in Tanzania'.

⁹⁵ Malakata, 'Tanzania Extends National Broadband Backbone to Mozambique'.

⁹⁶ GSMA, 'Digital Transformation in Tanzania'.

⁹⁷ GSMA, 'Tanzania: Driving Social and Economic Value through Mobile-Sector Tax Reform'.

⁹⁸ Giuliani and Ekeledo, 'Building a Conducive Setting for Innovators to Thrive a Qualitative and Quantitative Study of a Hundred Hubs across Africa'.

⁹⁹ Giuliani and Ajadi, '618 Active Tech Hubs: The Backbone of AFRICA'S Tech Ecosystem'.

¹⁰⁰ Materu, 'Tanzania's Self-Formed "Silicon Dar" Turning City into Smart Hub'.

¹⁰¹ Mtambalike, 'What You Need to Know about Tanzania Innovation Ecosystem. Why Are We the Fastest?'

¹⁰² Mtambalike.

and fail to prioritise innovation¹⁰³. To mitigate this there are stakeholders within the ecosystem e.g., Sahara Ventures, Robotech Labs, and Ennovate Hub who offer primarily non-financial support, including, mentoring, providing shared workspaces and business support¹⁰⁴. In addition, the Tanzania Startup Association (TSA), an umbrella membership-based organization, is working to strengthen the ecosystem by bringing together the various stakeholders including startups, innovation hubs, venture capital, and private equity funds in Tanzania¹⁰⁵.

1.3.5 Culture

Entrepreneurship

Supported by government agencies and organisation such as the Tanzania Entrepreneurship and Competitiveness Centre (TECC)¹⁰⁶ entrepreneurship is increasingly becoming popular as an employment option for Tanzanians. However, cultural attitudes in the country tend to hold salaried employment in high regard and for many, entrepreneurship is still perceived as a consequence of not being able to find opportunities elsewhere¹⁰⁷. However, it has been suggested that these attitudes are rooted in Tanzania's socialist past which contributed to an attitude of dependency on the government rather than cultivating entrepreneurial self-drive¹⁰⁸. Government initiatives such as Tanzanian National Entrepreneurship Training Framework (NETF) are now aiming to embed entrepreneurship within the country's education system and nurture entrepreneurialism¹⁰⁹.

Youth

Tanzania's under 25-year-olds accounted for 63 per cent of the population based on 2019 figures¹¹⁰. Youth unemployment rates peaked in 2011, at 6.75%. In response to this the government in partnership with organisations such as the International Labour Organisation (ILO) and the African Development Bank implemented a range of youth entrepreneurship programs. Tanzanian youth engagement with these

¹⁰³ Mtambalike.

¹⁰⁴ Antoun, 'The Great Debate'.

¹⁰⁵ TSA, 'Tanzania Startup Association'.

¹⁰⁶ TECC, 'Tanzania Entrepreneurship and Competitiveness Centre'.

¹⁰⁷ Rusinov, 'Entrepreneurial Education and Attitudes in Tanzania'.

¹⁰⁸ Kushoka, 'Encouraging Entrepreneurship in Tanzania. Start-Ups and Growth Barriers'.

¹⁰⁹ Rusinov, 'Entrepreneurial Education and Attitudes in Tanzania'.

¹¹⁰ United Nations, Department of Economic and Social Affairs, Population Division, 'World Population Prospects 2019, Volume II: Demographic Profiles'.

programs has resulted in a steady decline in youth unemployment as of 2019 the figure stood at approximately 3.48%¹¹¹.

Gender

In Tanzania 54.3% of SMEs are owned by women, with most aged between 25 and 40. However, women still face barriers and exclusion that limit their ability to become entrepreneurs. These include patriarchal norms that dictate women must prioritise domestic and family responsibilities, misogyny and harassment in the workspace, unequal access to skills training and access to finance^{112 113}. Initiatives to address this include training provided by Vodacom’s Business Women Connect (BWC) in the use of mobile money services (M-Pesa and M-Pawa)¹¹⁴

Worthy of note is the number of hubs either founded and led by women or focused on empowering women¹¹⁵. Both Safe Space Co and Ndotu Hub, are Dar es Salaam based hubs founded by women in 2017¹¹⁶. In April 2021 Ndotu Hub announced two new spaces the Ndotu Innovation College and Ndotu Hub Arusha¹¹⁷. These two hubs join SheCodesForChange and Apps and Girls as examples of how women in Tanzania are creating spaces for using technology as a tool for women’s empowerment.

1.3.6 Human Capital

Tanzania is emerging as a key player in the African tech ecosystem and part of that is attributable to the nation’s human capital¹¹⁸. However, there is still a mismatch between available and required skills. During a 5-year period (2014/15 – 2019/20), of 95,771 graduates who entered the job market with the necessary skills for their chosen sector, only 27% were skilled in ICTs¹¹⁹. One of the ways the skills gap is being addressed in Tanzania is through a National Entrepreneurship Training Framework (NETF) that is overseen

¹¹¹ O’Neill, ‘Tanzania - Youth Unemployment Rate 1999-2019’.

¹¹² Kapinga et al., ‘Exploring the Contribution of Business and Technology Incubators to Women Entrepreneurs’ Business Development in Dar Es Salaam, Tanzania’.

¹¹³ Sahara Ventures, ‘Digital and Financial Inclusion for Women-Led Business in Tanzania’.

¹¹⁴ GSMA, ‘Digital Transformation in Tanzania’.

¹¹⁵ Materu, ‘Tanzania’s Self-Formed “Silicon Dar” Turning City into Smart Hub’.

¹¹⁶ DigestAfrica, ‘These Are the 3 Latest Tech Hubs in Tanzania’s Eco-System’.

¹¹⁷ Ndotu Hub, ‘We Are Excited to Introduce Ndotu Innovation College and Ndotu Hub Arusha.’

¹¹⁸ Mtambalike, ‘What You Need to Know about Tanzania Innovation Ecosystem. Why Are We the Fastest?’

¹¹⁹ NACTE, ‘Mapping Skills Gap and Skills Needs for Technician Graduates In The Selected Economic Sectors for Industrial Growth in Tanzania’.



by the NEEC with support from the International Labour Organisation (ILO)¹²⁰. Universities have also teamed up with government agencies and international organisations to address the gap in digital and entrepreneurship skills. For instance, the College of Engineering and Technology in partnership with the University of Dar es Salaam Entrepreneurship Centre (UDEC), Small Industries Development Organization (SIDO), and the Ministry of Industry and Trade received funding from the Gatsby Charitable Foundation, the Ashden Trust (UK) and the Carnegie Corporation to establish incubators across Tanzania¹²¹. More recently the Tanzania Entrepreneurship and Competitiveness Centre (TECC) launched in 2016¹²², as a government, private and academic partnership to train potential entrepreneurs¹²³.

¹²⁰ Rusinov, 'Entrepreneurial Education and Attitudes in Tanzania'.

¹²¹ COSTECH, 'Rolling Strategic Plan 2016/17- 2021/21'.

¹²² TECC, 'Tanzania Entrepreneurship and Competitiveness Centre'.

¹²³ TECC.

1.4 Uganda

Table 10: Uganda - Summary Digital Snapshot

Ecosystem Factor	Uganda Snapshot Summary
Markets	<ul style="list-style-type: none"> ▪ The ICT sector's contribution to Uganda's GDP was 10.5% ▪ 27 million mobile subscriptions and a penetration rate of 69.2% ▪ With 12.6 million internet users, internet penetration stands at 26.2%
Policy	<ul style="list-style-type: none"> ▪ The Ugandan Ministry of ICT and National Guidance (MoICTNG) – the ministry dedicated to ICT ▪ National ICT Policy established in 2014 ▪ In July 2021 the government introduced a 12% tax on mobile data, which in turn increased the costs of mobile internet use for Ugandans
Finance	<ul style="list-style-type: none"> ▪ Ugandan ranked 7th in Africa as a destination for venture capital funding. ▪ In 2020, the total amount of Venture Capital investment in Uganda was \$11.3M, ▪ The average size of the deals in 2020 was \$2.83M ▪ FinTech is the dominant sector for startup investment.
Culture	<ul style="list-style-type: none"> ▪ In 2019, under 25-year-olds accounted for 67.3 per cent of the population. ▪ 30% of Uganda's youth population are involved in the early stages of starting a business ▪ Four out of ten business owners in Uganda are women. However cultural norms still hinder women's entrepreneurship particularly within the digital sector.
Infrastructure & Support	<ul style="list-style-type: none"> ▪ State-owned National Backbone Infrastructure introduced by the government in 2007. ▪ Government (e.g., Rural Communications Development Fund) and private actors (e.g., Connected Society Innovation Fund for Rural Connectivity) are working to extend ICT infrastructure to rural areas ▪ 10 active tech hubs in Uganda as of 2019. ▪ Startup Uganda, the umbrella body for ecosystem actors is working to build cohesion and develop the ecosystem.
Human Capital	<ul style="list-style-type: none"> ▪ Mismatch between what the market requires and what skills exist within the population. ▪ Women have historically been excluded from STEM related education and employment.

1.4.1 Markets

In 2019, the ICT sector's contribution to Uganda's GDP was 10.5%¹²⁴. Uganda's digital market is considered one of the most dynamic in Africa on account of the number of operators¹²⁵. There are an estimated 27 million mobile subscriptions and a penetration rate of 69.2% of the population¹²⁶. In 2021, internet penetration was 26.2% and Uganda had 12.6 million internet users an increase of 14% between 2020 and 2021¹²⁷. A study by Alliance for Affordable Internet¹²⁸ ranked Uganda 31st out of 73 countries on its Affordability Drivers Index.

There are inequalities in relation to access with women and those in rural parts of Uganda being the most affected by this. In 2019, 9% of those who lived in rural areas have internet access compared to 30% of those in living in urban areas¹²⁹. A 2018 Finscope study revealed that 46% of women had access to mobile phones, 12% less than men¹³⁰. This lack of access means that many women cannot fully engage with all the opportunities that tech offers, and they remain excluded from participating in the digital economy¹³¹. However, it is also worth noting the gender gap in internet use is much lower in Uganda than it is in almost every other African country¹³².

1.4.2 Policy

Over the years the Ugandan government has introduced and implemented a number of laws and policies that demonstrate its commitment to growing its ICT sectors¹³³. The Ugandan Ministry of ICT and National Guidance (MoICTNG) established in 2006 is the main body responsible for the nation's ICT sector¹³⁴. Outlined in Uganda's Vision 2040 document is the government's commitment to building a Hi-tech ICT city and associated infrastructure¹³⁵. To support Vision 2040, the MoICTNG introduced the Digital Uganda

¹²⁴ Government Citizen Interaction Centre, 'From an Economic Perspective[...]'

¹²⁵ Gillwald et al., 'The State of ICT in Uganda'.

¹²⁶ World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹²⁷ Kemp, 'Digital in Uganda'.

¹²⁸ Alliance for Affordable Internet, 'Africa Regional Snapshot: Affordability Report 2020'.

¹²⁹ Gillwald et al., 'The State of ICT in Uganda'.

¹³⁰ Agaya, 'FinScope 2018'.

¹³¹ EU, 'Jobs and Growth Compact for Uganda'.

¹³² World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹³³ World Bank, 'Uganda Economic Update, 14th Edition'.

¹³⁴ Gillwald et al., 'The State of ICT in Uganda'.

¹³⁵ Government of Uganda, 'Uganda Vision 2040'.

Vision which provides a unified ICT policy for the nation¹³⁶. Supporting this is Uganda's National ICT Policy 2014 Outlines its commitment to universal ICT access and explicitly prioritises gender, people with disabilities and Uganda's youth¹³⁷.

While there are efforts by the Ugandan government to institute policies and laws that support the digital economy and the ICT sector there are a number of policy actions that seem to be in contrast with these goals¹³⁸. For instance, in July 2021 the government introduced a 12% tax on mobile data, which in turn increased the costs of mobile internet use for Ugandans¹³⁹. Given that the cost of mobile use was already unaffordable for a significant portion of the population, the recent tax increase will mostly likely exclude even more people from participating in the digital economy and continue to widen the digital divide. The overall view of the Ugandan government approach to ICT and its commitment to the ICT sector is that while it remains a work in progress in many aspects, the nation is on the right path to growing a vibrant and sustainable digital economy¹⁴⁰.

1.4.3 Finance

Uganda is ranked 7th in Africa as a destination for venture capital funding¹⁴¹. Aside from the decline in 2020, Uganda had seen a year-on-year increase in VC funding raised by startups over the last five years. In 2020, the total amount of Venture Capital investment in Uganda was \$11.3M, 70% less than the \$38M raised in 2019. The average size of the deals in 2020 (\$2.83M) was also 70% lower than the average deal size in 2019 (\$9.5M)¹⁴². However, the number of deals remained the same (4) across both years.

FinTech is the most dominant sector for startup investment. Fintech firms, for example Ensibuuko and Numida which raised \$1m and \$2.3m respectively in 2021, accounted for the biggest share of funding.

¹³⁶ World Bank, 'Uganda Economic Update, 14th Edition'.

¹³⁷ Ministry of Information and Communications Technology, 'National Information and Communications Technology Policy for Uganda'.

¹³⁸ Nesbitt-Ahmed, Scharwatt, and Daniels, 'Supporting the Growth of the Tech Start-up Ecosystem in Uganda: A Policy Outlook'.

¹³⁹ AFP, 'Outcry as Ugandans Hit with New Internet Tax'.

¹⁴⁰ World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹⁴¹ World Bank.

¹⁴² AfricArena, 'The State of Tech Innovation in Africa'.

Despite promising growth, startup funding overall and for digital firms in the country remains limited. Part of the reason for this is that many Ugandan startups lack financial support in the early stages to enable them to attain the level of maturity that is attractive to venture capitalists. In addition, many entrepreneurs lack knowledge about the investment process and the necessary legal support to meet funder requirements¹⁴³.

1.4.4 Infrastructure and Support

Infrastructure

In recent years there has been increased investment, both private and public, in Uganda's digital communication networks. In 2007, the Ugandan government introduced a state-owned National Backbone Infrastructure and more recently has made significant investments in "middle" and "last mile" networks¹⁴⁴. These have all contributed to increased access for many Ugandans. However, digital divides persist, particularly for those in rural areas. Initiatives such as the Rural Communications Development Fund have been established in order to extend ICT infrastructure to rural areas¹⁴⁵. Cost also continues to be a limiting factor. For example, despite 12000 kilometres of laid fibre-optic cable, different operators have duplicated routes thereby increasing costs¹⁴⁶. To address this the Ugandan National Broadband Policy is enforcing infrastructure sharing among operators¹⁴⁷. Alongside the government, agencies such as GSMA are also investing in Ugandan infrastructure. The Connected Society Innovation Fund for Rural Connectivity in partnership with mobile provider MTN and iSat Africa and was awarded £330,000 by the GSMA¹⁴⁸. As a result, communities who previously had no access have gained access to mobile internet for the first time¹⁴⁹.

¹⁴³ The Innovation Village, 'STARTUP FINANCING'.

¹⁴⁴ World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹⁴⁵ Gillwald et al., 'The State of ICT in Uganda'.

¹⁴⁶ Gillwald et al.

¹⁴⁷ Gillwald et al.

¹⁴⁸ Kiboi, 'Up to 50,000 People from Rural Communities Gain Access to Mobile Coverage through Newly Deployed Network Sites in Ghana and Uganda'.

¹⁴⁹ Kiboi.

Digital Innovation Hubs

Ugandan digital entrepreneurship ecosystem is described as nascent but expanding and ranks well in global rankings¹⁵⁰. Kampala, Uganda's capital city is host to most of Uganda's digital entrepreneurs and many have been successful in the growth of homegrown business; with some expanding beyond Uganda's borders¹⁵¹. For example, SafeBoda¹⁵² a Ugandan ride-hailing company that prioritises safety in the motorcycle mass transit industry began offering its services in Kenya in 2017 and in Nigeria in 2020¹⁵³.

Uganda's tech and innovation ecosystem is bolstered by a growing number of tech hubs and as of 2019 there were ten active hubs in Uganda¹⁵⁴. To facilitate their activities, tech hubs in Uganda have formed partnerships and networks with NGOs, government departments and international agencies. There is also a growing number of hubs working together to provide support to digital startups, e.g., Outbox, HiveColab and The Innovation Village. In 2019 the Innovation Village together with investment company Ortus Africa Capital launched the 97Fund in order to provide early capital to startups¹⁵⁵.

Funding however remains a barrier to entry and a challenge to the sustainability of Uganda's tech and innovation ecosystem. Other limitations include a lack of differentiation between hubs that offer incubation and acceleration services and the ability to achieve sustainability due to an over reliance on donor funding for operational costs. To address these challenges, Startup Uganda, the umbrella body for ecosystem actors including hubs, startups and investors is working to build cohesion and develop the ecosystem¹⁵⁶.

¹⁵⁰ World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹⁵¹ Gillwald et al., 'The State of ICT in Uganda'.

¹⁵² SafeBoda, 'SafeBoda'.

¹⁵³ World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹⁵⁴ Giuliani and Ekeledo, 'Building a Conducive Setting for Innovators to Thrive a Qualitative and Quantitative Study of a Hundred Hubs across Africa'.

¹⁵⁵ CK Japheth, 'One Small Step for Our Entrepreneurs, One Giant Leap for Our Ecosystem. Humbled to See #The97Fund Fall in Place. @The97Fund Is for the Missing Middle Unlocking the Positive Value of Technology in Society. See <https://t.co/9qSr0p2Syl> for More.. <https://t.co/W14v2pu9i1>'.

¹⁵⁶ Startup Uganda, 'Startup Uganda'.

1.4.5 Culture

Entrepreneurship

Uganda has some of the highest entrepreneurial rates in sub-Saharan Africa. Almost 50% of young Ugandans would like to pursue entrepreneurship and 30% are actually involved in the early stages of starting a business¹⁵⁷. However due to a number of skills, funding and support gaps, many of these remain informal, micro enterprises and have a high failure rate.

Youth

Uganda has one of the youngest populations in the world. In 2019, under 25-year-olds accounted for 67.3 per cent of the population¹⁵⁸. With over a million young people entering the job market each year and not enough formal jobs being created, the country also has one of highest rates of youth unemployment. 13.3% of young Ugandans are out of employment while an estimated 83% are underemployed or in unstable jobs that do not offer a decent standard of living¹⁵⁹. To address this challenge, the government of Uganda has established a number of youth employment initiatives under the auspices of the National Youth Policy (NYP). However, information in relation to support available is not effectively being accessed by the country's youth. One study found that 89% of young entrepreneurs had not received any support from policies and initiatives put in place by the government¹⁶⁰

Gender

Uganda ranks high amongst African nations in terms of the high number of women-owned enterprises. Nearly four out of ten business owners in Uganda are women¹⁶¹. However, women in Uganda are adversely affected by gender-based inequality which in turn affects their ability to pursue entrepreneurship as a career option and has historically excluded them from STEM related education and employment. When it comes to the digital sector, Ugandan women remain under-represented and face social cultural and institutional barriers to participating in digital entrepreneurship¹⁶².

¹⁵⁷ GEM, 'GEM Uganda: Supporting Africa's Young Entrepreneurs'.

¹⁵⁸ United Nations, Department of Economic and Social Affairs, Population Division, 'World Population Prospects 2019, Volume II: Demographic Profiles'.

¹⁵⁹ Kempner, 'Youth Unemployment in Uganda Has Been Misdiagnosed'.

¹⁶⁰ GEM, 'GEM Uganda: Supporting Africa's Young Entrepreneurs'.

¹⁶¹ World Bank, 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition'.

¹⁶² Ball, 'Examining Gender Barriers for Female Digital Entrepreneurs in Uganda'.



Organisations such as the Uganda Women Entrepreneurs Association Limited¹⁶³ and programs like Her StartUp run by Smart Girls Foundation Uganda¹⁶⁴ are working to create a more enabling and inclusive environment for women entrepreneurs. While initiatives like Women in Technology Uganda (WitU) are working to provide role models, build digital skills and support women to establish businesses in the digital sector¹⁶⁵. Additionally, institutions such as Makerere University recently passed an Affirmative Action Policy that establishes a 40 percent enrolment quota for female students in STEM¹⁶⁶. Other Ugandan universities have similar initiatives; Busitema University, Mbarara University of Science and Technology (MUST) (working with Google) and The African Rural University (a women-only university) all have programs aimed at increasing the number of women who enrol in STEM subjects¹⁶⁷.

1.4.6 Human Capital

As noted previously, Uganda has a sizeable young population and requires a large number of jobs to be created. Digital economies have immense potential to do this but there is still a gap in digital skills. Currently there is a mismatch between what the market requires and what skills exists within the population¹⁶⁸. Initiatives such as Refactory, a skills acceleration programme which aims to produce tech talent that is ready for the job market and FundiBots which provides practical science and ICT skills training in schools are working to bridge the technology skills gap from the ground up.

¹⁶³ UWEAL, 'Uganda Women Entrepreneurs Association Limited'.

¹⁶⁴ Smart Girls Foundation Uganda, 'Her Start Up'.

¹⁶⁵ WitU, 'Women in Technology Uganda'.

¹⁶⁶ World Bank, 'Uganda Economic Update, 14th Edition'.

¹⁶⁷ Clesensio, Florence, and Francis, 'Investing in Women as Drivers of Growth'.

¹⁶⁸ Mercy Corp, 'Competing in a Digital Age'.

1.5 Key Insights

While there are significant differences between each of the four countries there are several common factors that emerged both in the literature review as well as in the interviews and roundtable discussion. In this section, we build on the similarities that emerged from the literature review while introducing additional interview and roundtable insights.

Table 11: Summary of common factors across the four countries

Ecosystem Factor	Summary of common factors across the four countries
Markets	Driven by mobile adoption and digital markets are growing but affordability and access remain limiting factors. These factors combined with gender and geographical factors results in women and those in rural areas being excluded from participating in the digital economy.
Policy	Broad level ICT frameworks exist but policy gaps remain with regards to enabling digital adoption and innovation. In some instances, the impacts of positive policy initiatives are diminished by restrictive and punitive government regulations.
Finance	Investment into African tech markets continues to grow. However, driven by a lack of patient, catalytic capital, early stage startups and certain key sectors remain under-funded.
Infrastructure & Support	Addressing infrastructure gaps particularly in rural areas is high on the agenda for both private and public actors. The number of digital innovation hubs is growing but funding constraints limit the support they provide to startups.
Culture	On the whole entrepreneurship is regarded as a positive solution to unemployment and a way to increase financial and economic participation. However cultural barriers prevent many women and youth from pursuing digital entrepreneurship.
Human Capital	There is increasing emphasis on digital skills development. However, education systems are not adapting and meeting the demand for advanced digital skills.

1.5.1 Markets

Driven by mobile adoption and digital markets are growing but affordability and access remain limiting factors.

Emerging from the snapshots is the role and importance of mobile markets; in all four countries mobile markets were growing and contributing significantly to each nation’s economic growth. This mirrors what is happening across Sub-Saharan Africa where in 2019 mobile services contributed 9% to the regions’



GDP¹⁶⁹. COVID-19 has further accelerated the adoption of digital technologies with more people requiring access to mobile devices and internet data in order to keep up with the new ways of working, learning and socialising virtually.

However, access and affordability remain an issue and the high costs associated with smartphones and internet data is still excluding many from the digital economy¹⁷⁰. According to Alliance for Affordable Internet, Africa still lags behind the rest of the world when it comes to internet access and affordability¹⁷¹. They further note that addressing these gaps will require concerted efforts from governments in the form of enabling policy frameworks as well as investments into infrastructure and digital skills.

1.5.2 Policy

Broad level ICT frameworks exist but policy gaps remain with regards to enabling digital adoption and innovation.

As the country snapshots have shown, there is a strong foundation in terms of broad frameworks and government initiatives to support the adoption and use of ICTs in all of our focus countries. Our conversations with stakeholders also highlighted the fact that there is growing momentum around the development of policies to drive digital innovation and entrepreneurship. For example, in Ghana, Nigeria and Uganda, and there's ongoing dialogue between private sector and policy makers about the development of Startup Acts to address the specific challenges of digital startups¹⁷². While in Tanzania there are plans to establish a dedicated ministry to champion local innovation.

However, our research also revealed that the existing policy environment in these countries is not effectively supporting digital adoption and innovation. For example, speaking on the Ugandan government's recent implementation of a 12% tax on internet data one hub leader noted,

Five or six years ago, I would have said that we were on a trajectory whereby policies were enabling more people to get online, for example allowing imports of mobile devices at affordable prices. But now, we have things like a digital tax and so many

¹⁶⁹ GSMA, 'The Mobile Economy: Sub-Saharan Africa 2020'.

¹⁷⁰ GSMA.

¹⁷¹ Alliance for Affordable Internet, 'Africa Regional Snapshot: Affordability Report 2020'.

¹⁷² Chijioke, 'A Review of Startup Act Policy In Africa'.

other taxes, for instance, on transferring money between banks and digital platforms. So, the cost of joining the digital economy has increased.

While in Tanzania, several actors raised the issue of prohibitive regulations that are discouraging the flow of investment into Tanzanian tech startups. Similar to the sentiments from Uganda, some felt that the Tanzanian Government is prioritising the collection of Tax revenues over fostering a conducive environment for digital innovation. One hub leader decrying the high taxation on investments into the country said,

“To receive funds from an external vehicle in Tanzania, the capital gains tax is 30%. So, it is very frustrating for investors to invest when 30% of that money is going to where it is not intended.”

While another noted,

“One existing regulation, by the Tanzanian communication regulatory authority essentially mandates that all technology application businesses must get a licence and to do that they are charged a certain percent on the top line revenue. So, it can be quite unappealing not only to entrepreneurs, but also to investors because essentially with a top line tag, the regulator is actually more like a shareholder in the company.”

However, it also became clear that in addition to government action, digital actors and the private sector have a key role to play in creating an enabling policy environment for tech and innovation as a stakeholder in Nigeria explained,

“In Nigeria, a lot of our policies are driven and influenced by the private sector. If you look for example at telecoms, no one had any clue how to go about regulating that, but with the combination of the big players, like MTN and Airtel, we're far ahead of a lot of countries as far as telco regulations are concerned. And that's only because the actors put pressure, and we're able to provide some sort of guidance.”

1.5.3 Finance

Investment into African tech markets continues to grow. However, driven by a lack of patient, catalytic capital, early stage startups and key sectors remain under-funded.

Africa tech sector is increasingly attracting investment. In the last five years, investment has increased each year including in 2020 which despite the pandemic saw a 42% increase in investment into Africa tech startups compared to 2019¹⁷³. However, as the country snapshots have highlighted, a number of challenges and gaps persist within the Africa tech funding landscape.

First, funding is concentrated towards sectors that are popular with investors while some sectors that are crucial to serving local needs remain under-funded. For example, in 2020 the fintech, e-commerce, e-health and logistics sectors attracted most of the investments (see Figure 4) While other sectors such as agriculture or education - for which there is a growing need in many Africa economies - remain under-funded. Our conversations with African digital ecosystem actors highlighted this as a challenge noting that many locally relevant, high potential opportunities remain untapped as a result. Some have argued that this is driven by the unrealistically high return expectations of venture capital investors. This in turn is causing them to crowd into deals that they believe can deliver these returns quickly¹⁷⁴.

“They [investors] are interested in investing in products that they perceive to have demand and not necessarily what is needed locally” – Hub leader, Ghana.

Secondly, we see that access to finance remains a challenge particularly at the early stage. This has been attributed to a number of factors including the fact that 70% of investors are based outside of the continent¹⁷⁵. This has contributed to investor biases and investment models that are not well suited to the local context¹⁷⁶. One startup founder in Tanzania speaking on the issue of biases against local entrepreneurs by foreign investors noted,

“With regard to funding, there is a common dynamic which plays out. There are a number of startups from across the ecosystem who have raised investment. However, the unwritten rule is that the founder must have either a) white founder who came from Europe/USA b) or an African founder that is educated in the West. For many local founders, it is a challenge to raise seed funding.”

¹⁷³ Disrupt Africa, ‘African Tech Startups Funding Report 2020’.

¹⁷⁴ Akinyemi and Osamuyi, ‘Chasing Outliers: Why Context Matters for Early Stage Investing in Africa’.

¹⁷⁵ Cuvellier, ‘All Eyes on Africa’.

¹⁷⁶ Akinyemi and Osamuyi, ‘Chasing Outliers: Why Context Matters for Early Stage Investing in Africa’.



Furthermore, the focus on quick returns and a lack of patient, catalytic capital is contributing to funding constraints for local startups. During our Ghana roundtable, Amma Sefa-Dedeh Lartey, the CEO of Impact Investing Ghana surmised the funding gap within the ecosystem as follows,

“We’re missing catalytic capital. That is, capital which is not just looking for a return now or in the next 10 years, but says, ‘I want to develop the ecosystem.’ Because if you come in looking specifically for investments, you’re being efficient, you just want to find some good companies, invest in them and move out. We need people who are willing to invest in the ecosystem. They don’t because the popular model, which is the venture capital model, is expensive. It is expensive because of the skill sets of the people that are needed for it to work well. And that means that you can only do big deals, you can only invest \$500,000 or \$1million at the minimum. However, the needs of the ecosystem are much smaller than that. And so, we need investors who are willing to experiment and who invest in experiments.”

1.5.4 Infrastructure and Support

Addressing infrastructure gaps particularly in rural areas is high on the agenda for both private and public actors.

A recurring theme across all four countries is the existence of infrastructure gaps that are driving a rural/urban divide when it comes to digital and mobile connectivity. This is also the case across Sub-Saharan Africa where 49% of the region’s, largely rural population remains unconnected to mobile internet¹⁷⁷. Reassuringly, it appears that despite the economic uncertainty caused by the pandemic, mobile operators in the region are committed to investing \$52 billion in infrastructure between 2019 and 2025¹⁷⁸. Additionally, as we expand on in the next section, the pandemic has catalysed greater prioritisation of infrastructure investments by the regions’ governments.

The number of digital innovation hubs is growing but funding constraints limit the support they provide to startups.

¹⁷⁷ GSMA, ‘The Mobile Economy: Sub-Saharan Africa 2020’.

¹⁷⁸ GSMA, 20.

Data across the four ecosystems indicates that there's a proliferation of digital innovation hubs and as of 2019, there were 643 active tech hubs across Africa¹⁷⁹. However, data also shows that funding remains a major concern for hubs and that this is limiting the level of support that hubs are able to provide to startups. As we discuss in section three, our findings support this view and further reveal that many of the financial challenges of hubs are rooted in the predominantly programmatic, short-term grants model that many hubs rely on. Although we found that some hubs have developed diversified revenue streams, most hubs reported needing project-based grants to operate because their primary beneficiaries who are mainly young entrepreneurs and startups cannot necessarily afford to pay for the services offered by hubs. As we will discuss in the next section, these tensions have been further exacerbated by the COVID-19 pandemic.

1.5.5 Culture

Cultural barriers prevent many women and youth from pursuing digital entrepreneurship.

When it comes to attitudes towards entrepreneurship, all four countries exhibit high rates of entrepreneurialism and positive perceptions towards entrepreneurship. However, our findings revealed that perceptions towards digital entrepreneurship are less positive driven by a lack of understanding of the sector. This creates an additional barrier for young people to pursue digital entrepreneurship due to lack of support from their families and social pressure to find job opportunities in traditional sectors. Speaking about his experience one digital entrepreneur in Ghana said,

“As a typical Ghanaian when you graduate from school, you are expected to get a job and start your life. So, if you choose to become an entrepreneur, especially in the digital space, when most likely your parents do not have a higher education or may have low literacy levels, then it becomes very difficult for them to understand what you are trying to do. Personally, it has been really difficult for me, and it's a battle that I haven't even conquered yet.”

Additionally, as the country overviews have shown, cultural and socio-economic barriers to African women's participation within digital sectors remain a challenge. One study found that women constitute only 29% of entrepreneurs, 30% of ESO founders, and 25% of investors within the African innovation

¹⁷⁹ Giuliani and Ekeledo, 'Building a Conducive Setting for Innovators to Thrive a Qualitative and Quantitative Study of a Hundred Hubs across Africa'.

ecosystem¹⁸⁰. Our own findings corroborate this and in the next section we discuss how the pandemic has widened these gaps and threatened a lot of the progress previously made.

1.5.6 Human Capital

As noted in the snapshots, digital skills and digital literacy emerged as a concern, with all four countries experiencing some form of skills shortages. Likewise, our interviews and roundtable discussions reveal that a major challenge that is seen to be holding back the development of African digital ecosystem is the shortage of talent with relevant skills for the fast-evolving digital economy. One hub leader in Ghana explained,

“We are doing a lot of training programmes, but there is still a big gap when it comes to getting technical people who can build products. The few who are available are taken up by corporates or global freelancing companies. Existing tech startups cannot compete for this talent. So, getting talent and specifically, affordable talent is a big issue. And I’m not just talking about tech talent, but we need growth hackers, people who understand data, marketing and finance people who understand tech. There is a big challenge around the talent gap which needs to be fixed.”

To explain what is driving this gap, some actors we spoke to pointed to traditional education systems which do not put enough emphasis on practical skills, are too bureaucratic and slow to adapt and are out of touch with industry needs. One leader of a software skills development programme in Uganda said,

“Our higher education system emphasises more of the academic side of things. We have degrees in software engineering, computer science and information technology which are not really aligned to the context within the industry. I’ve seen so many students complete these degrees but are then not able to find meaningful employment which is very concerning. This is simply because we are not paying serious attention to how the industry is evolving”

Similarly, one academic in Ghana noted,

“Our traditional universities mostly focus on theory, more than practice. And what we know about tech is that it evolves very quickly. And especially in the COVID world.

¹⁸⁰ AfriLabs, ‘Needs Assessment Report’.



COVID has shown the challenges and the opportunities in depth. And many of those opportunities are beyond what our traditional universities teach. We're seeing universities take too long to update their curricula and introduce new concepts. So, universities lagging behind industry, especially in tech, and much more so in a COVID world"

SECTION 2: IMPACT OF COVID-19 ON AFRICAN DIGITAL ECOSYSTEMS

2.1 Introduction

The COVID-19 pandemic and the associated lockdowns and restriction of movement and interaction has negatively impacted African economies and businesses especially sectors such as tourism and hospitality¹⁸¹. At the same time, the new approach to social and professional interaction that has emerged during the pandemic has created growth opportunities for some businesses. In this section we introduce and discuss data relating to the impact that COVID-19 has had on digital innovation ecosystems in Africa. Our findings show that COVID-19 has had both positive and negative effects on the digital economies of the four countries we researched. In analysing and discussing our data and findings we rely on the six-factor framework introduced in the previous section. We begin this section with a summary of our findings (see Table 10). This is followed by a comparison of stakeholder perceptions of the impact of COVID-19 on digital innovation ecosystems (see Figure 2).

The rest of the section expands on the summary of these findings, drawing on the deep insights gained from our interviews and roundtable discussions, relying on the country snapshots to contextualise this information, and, where relevant, bringing in quantitative data extracted from the survey.

¹⁸¹ Saini, 'Impact of the Pandemic on African Capital Markets'.

Table 12: Impact of COVID-19 - Findings

Ecosystem Factor	Impact of COVID-19 - Findings
Markets	<ul style="list-style-type: none"> ▪ Accelerated adoption of digital tools by consumers, boosting demand for businesses in digitised sectors. ▪ Non-digitised businesses and traditional sectors were negatively impacted leading in some cases to job losses and business closures.
Policy	<ul style="list-style-type: none"> ▪ Increased prioritisation of digital innovation and entrepreneurship by governments.
Finance	<ul style="list-style-type: none"> ▪ Highlighted and widened existing financing gaps. Prompted new solutions by traditional investors and governments targeting startups and SMEs.
Infrastructure & Support	<ul style="list-style-type: none"> ▪ Increased strain on digital infrastructure prompting prioritisation of infrastructural investments ▪ Increased opportunities for hubs and expanded their reach through online programmes ▪ Exacerbated sustainability challenges for hubs and is contributing to an evolution in hub models
Culture	<ul style="list-style-type: none"> ▪ Lowered cultural barriers to technology use and driving adoption. ▪ Widened digital divides particularly for women and youth.
Human Capital	<ul style="list-style-type: none"> ▪ Tech jobs are being extended to secondary cities ▪ Increased interest in digital jobs and online economic opportunities ▪ Higher rates of women dropping out of the labour force

Would you say the COVID-19 pandemic has had an overall negative or positive impact on the digital innovation ecosystem in your country?

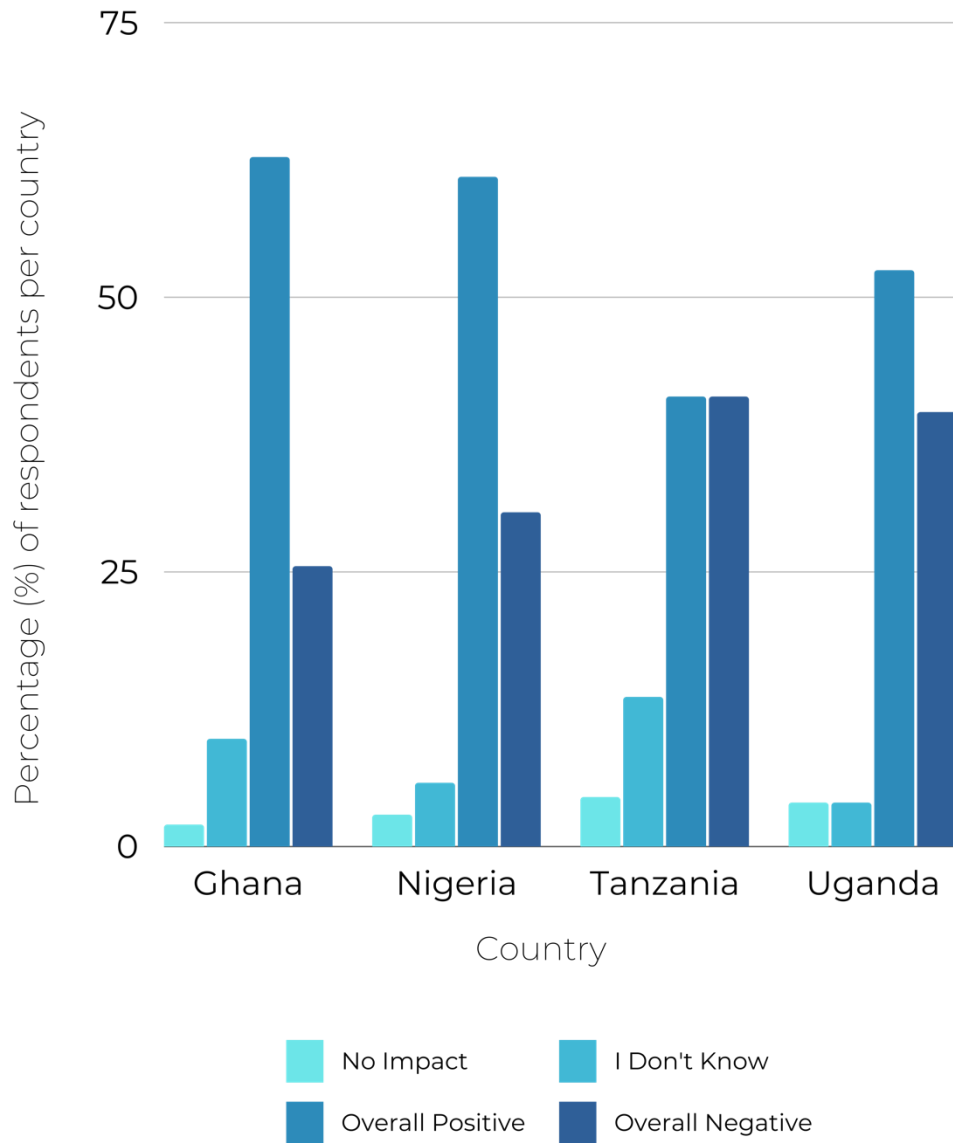


Figure 2: Stakeholder perceptions on impact of COVID-19 on digital innovation ecosystems.

2.2 Impact on Markets

2.2.1 Accelerated adoption of digital tools by consumers, boosting innovation and demand among businesses in digitised sectors.

A key finding from our data is that COVID-19 has led to accelerated adoption of digital tools by consumers and boosted innovation and demand among businesses providing digital products and services. Both consumers and businesses have had to rely on digital tools more than they did pre-pandemic. For consumers the adoption of technology has been driven by the need to communicate and access essential services during lockdowns. This has resulted in increased use of digital messaging platforms such as WhatsApp, online health or telemedicine apps and online learning platforms.

It was also noted that many users, now familiar with the convenience that digital platforms bring, would probably continue to use them even when restrictions were lifted. One interviewee in Ghana noted,

“People’s tastes and preferences have changed during the pandemic. People are now using digital tools more and now put a premium on convenience.”

Businesses, especially those operating in sectors with high digitalisation, particularly e-learning, e-health, e-commerce and fintech, have seen a big boost in demand. The pandemic has also catalysed innovation of new projects and services to meet unique emerging needs and the increase in demand.

This positive outlook is however tempered by the fact that in many cases businesses were not able to fully leverage these digital opportunities due to gaps in technology access, supply chains and digital literacy that still exist. One informant in Uganda explained,

“Businesses in financial services, e-commerce and logistics saw a boom in demand. But the challenge they faced was that while they could support on the supply side many of them did not have the capacity to provide an end-to-end service to meet the demand. For instance, SafeBoda, an Uber-like transportation app, was able to build stores on its platform so small businesses could set up a store on the app. But the demand side was a challenge, because people did not know how to order products online or did not have access to the necessary devices. Also, they [SafeBoda] did not scale up fast enough for example to have a large enough pool of delivery drivers to enable businesses to utilise their transportation logistics efficiently. So, in the end, business would be on the platform, but it did not expand their customer base that much. Because of such challenges, businesses were not able to harness the potential that this opportunity presented by COVID[-19] to the maximum”

2.3 Impact on Policy

2.3.1 Increased Prioritisation of Digital Innovation and Entrepreneurship by Governments

Our research indicates that the COVID-19 pandemic has catalysed increased prioritisation and interventions by African Governments towards supporting digital innovation and entrepreneurship. In Nigeria, in response to the pandemic the government of Ondo established the Ondo State Entrepreneurship Agency dedicated to directly supporting entrepreneurs by providing access to relevant skills, funding and resources. In 2021 the Ondo state government further launched a fund to support startups and SMEs negatively affected by the pandemic and is also exploring the possibility of tax holidays as an incentive to encourage tech companies to set up in the state's capital, Akure. Explaining why the Ondo state government decided to set up the entrepreneurship agency, Summy Smart Francis, the State Special Advisor on Entrepreneurship said,

“As a result of the pandemic, there was this awareness going on about what's going to happen post pandemic. One of the things that was highlighted was the employment pandemic that's going to shoot up due to the scarcity of jobs and a lot of people being laid off as a result of the pandemic. Also looking at the economy itself, it was really affected and as a state government, one of the things we recognised is that the soldiers of every economy are entrepreneurs. So, on that note, we realised that we need to promote and start creating a lot of entrepreneurs within the state, so as to tackle these two key problems: the economic development of the state, first of all, and secondly, for job creation. That was the reason behind the creation of the agency.”

In Ghana, Franklin Owusu-Karikari, Director of Business Development and Policy at NEIP notes, there has been increased prioritisation of their work by the Ghanaian government,

“Currently, because the government has adopted entrepreneurship and job creation as a key flagship policy initiative, NEIP which was previously under the Ministry of Business Development, is now directly under the office of the president [...]When we saw the statistics on the unemployment rates in the country, the president saw it as not just a social issue, but a security threat to the country, which, if we don't find pragmatic solutions, will one day explode.”

In Uganda, there has been increased dialogue and engagement between the digital ecosystem and the government. Elaborating on these developments, Richard Zulu, the chairperson of Startup Uganda, the umbrella body of digital hubs in Uganda said,

“We've now started seeing a lot of interest from the government and they are trying to figure out how best to contribute to the digital ecosystem of Uganda. The Ministry of ICT has built an incubation centre and set up a fund to support startups.”

Zulu further cites the Ministry of ICT's establishment of the National ICT Support Initiatives Programme which aims to support the growth of the ICT ecosystem in Uganda and enable scaling of digital innovations nationally, as evidence that the momentum has picked up. Furthermore, in 2021 there have been several consultative meetings led by Private Sector Foundation Uganda and Startup Uganda with government bodies including the ministries of finance, trade and ICT to discuss the establishment of a national Startup Act¹⁸². The main goal of the act will be to create a favourable innovation environment for startups by promoting investments and providing tax alleviations.

While in Tanzania there has been increased engagement between ecosystem actors and the government to review a number of regulations such as the capital gains tax which are seen to be stifling the development of the tech and innovation sector.

One hub leader in Tanzania commented,

“We saw that the current government of the late President Magufuli, he had planned to create a separate ministry for ICT in order to understand what is happening to local innovators because I think local innovators have been ignored for a long time. Especially people operating the FinTech space because there is a lot of regulation which is hindering local innovators, especially in the financial technology sector, but also in the mobile development sector.”

It is reassuring to note that some of the government initiatives that we discussed in our digital snapshots are responding to COVID-19 in a positive and proactive way. For instance, NEIP in Ghana was established before the pandemic to provide incubation and acceleration support and access to markets and funding

¹⁸² The Innovation Village, 'The Innovation Village'.

for startups and early-stage businesses. From our research it is evident that NEIP has not only continued its work, but it also adapted its approach in order to respond to the challenges brought on by the pandemic. On the whole these efforts and engagement by governments have been welcomed by digital ecosystem actors. However, previously discussed in section 1.5.2, we also found that many felt there was still a lot more that needed to be done particularly around creating an enabling environment for startups and innovation to thrive.

2.4 Impact on Finance

2.4.1 Highlighted and widened existing financing gaps, prompting new solutions by traditional investors and governments targeting small and medium businesses.

The economic downturn resulting from the COVID-19 crisis has aggravated existing financing gaps in the ecosystem. It was noted that businesses have come under a lot of stress as they struggle to manage COVID-19-induced revenue losses but at the same time still have limited access to credit because of prohibitively high interest rates. During our Ghana roundtable, Amma Sefa-Dedeh Lartey, the CEO of Impact Investing Ghana explained the situation facing businesses as follows,

“The gaps in the ecosystem have been highlighted by the COVID-19 crisis. So, for example, access to finance has always been a problem. But when you have an economic downturn, and your suppliers are affected, or your cash dries up, for example because you operate a physical space, or if you are a tech company selling services and suddenly your customers are paying a bit slower. And because interest rates in Ghana are so high and the tools like overdrafts etc that businesses would normally use to manage these situations come at a high cost. And so, businesses have had to really look at their cash flow, especially access to working capital, and many of them were under a lot of stress. The basic fundamental issues with the economy and with access to finance need to be addressed and COVID-19 has made that really clear.”

In turn, these challenges have prompted new solutions by traditional investors and governments to boost financing for businesses. For example, in Ghana, the government introduced low interest rate loans for entrepreneurs of \$500 via mobile money, for the first time. As Lartey further notes,

“COVID-19 has served as a wake-up call and catalyst for traditional investors to create products better tailored to the needs of SMEs. For example, Fidelity Bank launched a

Youth Fund and the Bank of Ghana developed crowdfunding guidelines. Additionally, there are ongoing discussions about encouraging Ghanaian pension funds which typically invest in low-risk government securities to channel their investments into the productive sector including SMEs. The ecosystem has started to realise that things must change”

2.5 Impact on Culture

2.5.1 Lowered cultural barriers to digital adoption

A finding of note, based on our research is that the pandemic has contributed to reducing cultural barriers to digital adoption. Some observed that the pandemic had changed consumers’ behaviour as many had overcome their mistrust of transacting digitally and having experienced the convenience of digital now placed a higher premium on convenience. One interviewee pointed to the influence on cultural leaders such as church leaders in Ghana who, before the pandemic had actively discouraged their congregations from using social media which they perceived to be evil or corrupting. The banning of large gatherings and closure of churches during lockdowns however forced many of these religious leaders to rely on digital platforms to reach members of their congregation. With the significant influence that religious bodies hold in many African societies, their increased adoption of digital tools could potentially have a trickle-down effect and contribute to the overall digitalisation of these economies.

2.5.2 Widened digital divides particularly for women and youth

The COVID-19 pandemic has widened the digital divide, particularly for women and youth. Our data strongly supports the notion that the pandemic has highlighted and increased barriers such as affordability, lack of infrastructure and skills that are excluding many from the digital economy. The shift towards a virtual world made data services more essential but also constituted an additional barrier for those unable to afford it or who do not have access to devices. A number of the hub leaders we spoke to reported a dramatic drop in the level of participation in digital programmes by women and the youth citing technology access, affordability and socio-cultural factors as barriers. During our Ghana roundtable, Josiah Eyison, Co-Founder and CEO of iSpace hub commented on some of the challenges facing their female participants noting that before the pandemic,

“...digital hubs and programmes provided an escape for young women and girls. However, during lockdowns many women have had to stay at home with household duties which leave little room for participating in programmes. Additionally, many of them may not have the financial means to buy the data needed to access online programmes. “

While, during the Uganda roundtable, Perez Masinde, from Outbox hub speaking on the barriers for youth said,

“Access and connectivity is actually a big issue. Very few Ugandan youth actually have access to an internet connection, mobile phone or smartphone. Even when a young person may have a smartphone, being able to afford an internet connection is still a challenge.”

2.6 Impact on Infrastructure and Support

2.6.1 Increased strain on digital infrastructure promoting prioritisation of infrastructural investments

Our research has revealed that the pandemic increased the strain on infrastructure due to the increased use of digital platforms. This in turn has led to a prioritisation of infrastructural investments by governments and private sector actors. One roundtable participant in Ghana noted,

*“Due to the COVID[-19] situation, we've seen a huge demand for digital services and data, which has put stress on the existing infrastructure. Many of us who have fibre connections have seen a huge fall in the quality of our connection. This provides opportunities for telcos to put more investment in infrastructure knowing that demand is going to surge, and it is going to lead to more profitability.” **Albert Opoku, co-Founder HapaWeb solutions, Ghana***

While in Nigeria, Olumbe Akinkugbe, the Senior Special Assistant to the Governor on ICT in Ondo State elaborated on the government's plans to develop the digital infrastructure in the state,

“A lot of what we're trying to do is deepen access from an infrastructure perspective. By deepening broadband penetration, access to the internet and providing opportunities to access digital skills, we ultimately hope to reduce the rates of unemployment...We are working on a huge infrastructure project right now, which is basically to see how we can extend last mile connectivity in terms of fibre to majority

of local governments within the state, including tertiary institutions and primary health facilities. So, I believe that when that does happen, it will take care of many of our access issues as far as access to internet broadband is concerned”

As our desk-based research already highlighted pre-pandemic, issues such as connectivity and access had been adversely impacted by poor infrastructure across all four countries. What our roundtable discussion and interviews have shown is that firstly, the experience of our participants supports existing literature, regarding poor infrastructure. Secondly, our research is able to shed new light on this issue as it captures the impact the pandemic has had on an already challenging situation. The pandemic has resulted in most people’s day-to-day activities shifting from face-to-face/in-person to virtual and online and there has been an increase in demand for online service. This has put a strain on infrastructure causing connectivity issues and limiting the ability of the ecosystem to fully harness some of these digital opportunities. This finding is perhaps not surprising; however, our research also shows a positive and unexpected outcome. This being that some governments and private sector actors have recognised the need to invest more heavily in infrastructure. We anticipate that this new information will be of significant importance to many stakeholders because it addresses one of the long-standing issues that those in the digital ecosystem have continually raised.

2.6.2 Increased opportunities for hubs and prompted a move to online programmes

A recurring theme in our data is the pandemic has increased opportunities for hubs and expanded their reach through online programmes. Since the start of the pandemic there has been an acceleration in the adoption of digital tools which in turn has created new opportunities for hubs. For example, as more businesses have turned to digital solutions in order to adapt to the changes brought on by the pandemic there has been an increase in demand for consulting services and digital skills training provided by hubs. Discussing the impact of COVID-19 on their hub’s activities one hub leader in Uganda told us,

“On a positive note, there has been an increase in demand for digital skills. A large number of people wanted to know how to utilise digital skills and platforms to keep their businesses running. We have been having back-to-back sessions trying to help small businesses get online.”

Additionally, while many hub programmes were initially disrupted, COVID-19 led to innovation and scaling of programme delivery through online platforms. This has enabled hubs to reach wider audiences and design new ways of supporting entrepreneurs as one hub leader in Ghana noted,

“For hubs, many of us had to shift to doing virtual training, and we were able to reach more people that way compared to when people had to come into physical spaces. So, from a knowledge sharing point of view, COVID[-19] was positive.”

While another hub leader in Ghana highlighted that the move to online had allowed them to experiment and innovate in the way they delivered support to startups,

“We are currently wrapping up a programme supporting 30 ventures in Lagos and Accra. And because we cannot physically meet, we had to use virtual spaces. The programme was wholly online. The communities were online, mentorship sessions, due diligence process and one on one sessions. Basically, everything was done online. And it was really exciting to be able to experiment with something that we've always thought about, but had never truly had the opportunity to pilot”

Challenges including affordability, connectivity, technology skills and access still limit the ability of hubs to monetize and scale these online offerings¹⁸³. In light of this, it remains to be seen if these opportunities will yield longer-term economic benefits for hubs. Further still, many of the hub leaders we spoke to felt that face-to-face interactions are still extremely important for programme effectiveness. It is therefore anticipated that in the future, these online programmes will co-exist alongside face-to-face interactions, and the dominant model will be one of blended programmes.

It is also worth pointing out that, unlike the other three countries in this study, the Tanzanian government did not enforce a period of lockdown in response to the pandemic. This meant that hubs were able to remain open. However, as subsection 2.6.3 will show, the pandemic has adversely affected funding. Tanzanian hubs, in this instance, like the estimated 70% of small and medium-sized businesses in

¹⁸³ Adjei, ‘COVID-19 Crisis’.

Tanzania¹⁸⁴ have felt the impact of the economic downturn which affected revenues and increased financial challenges.

2.6.3 Exacerbated sustainability challenges for hubs and is contributing to an evolution in hub models

Our data shows that COVID-19 has exacerbated sustainability challenges for hubs and is contributing to an evolution in hub models. One hub leader in Uganda explained the negative impact that the pandemic has had on their funding saying,

“The pandemic meant that many of our partners were trying to downsize on the activities they were doing and as a result we had some partners pull out. Also the political environment affected some of our biggest partners, especially during the election time, when we saw some of them being banned from operating in the country. And that meant that they also had to pull out. And so, this really showed us that it's just not sustainable to depend on these partnerships, because organisations shift focus, and unplanned situations may lead to them to pull out despite the goodwill that they might have. So, we are now trying to figure out how to tweak our strategy more towards sustainable, revenue generating activities together with our communities.”

These perspectives firstly support a key finding that emerged from our desk-based research, which is that funding remains a big concern for hubs. It is therefore perhaps expected but still an issue of concern that the pandemic has worsened the funding landscape for hubs. The knock-on effect of this is that hubs have had to pause or cancel programmes due to a change in priorities or the uncertainty on the part of funders. In addition to this, hubs, many of which rely on providing coworking spaces and events to generate income, saw their revenues severely affected by lockdowns and social distancing measures. Consequently, many hubs are having to pivot their models from primarily supporting startups to serving more established private companies that can afford to pay for their services. Hubs are also increasingly looking to work with corporate partners to support their activities. Emerging from this is the view that hubs are having to adapt and evolve as the hub leader in Uganda further notes,

“We're now trying to shift our strategy more towards more sustainable, revenue generating activities. For example, we are in conversations with a few education institutions about helping to prepare their graduates for the future of work. And in

¹⁸⁴ TSA, 'TSA Snapshot Survey on The Impacts of Covid-19 Pandemic on Startups & Small And Medium Enterprises In Tanzania'.

exchange, we can offer an apprenticeship period, where they would be able to work on actual tangible real-world projects.”

While it is still too early to determine the overall impact this evolution will have on the digital ecosystem; it underscores the importance of undertaking this kind of research in order to keep informed of this ever-changing environment.

2.7 Impact on Human Capital

2.7.1 Tech jobs are being extended to secondary cities

The data emerging from this study shows that tech jobs are being extended to secondary cities. For instance, one government representative from Ondo State in South-Western Nigeria notes that,

“As COVID[-19] has restricted travel and forced people to work from home, it has also provided an opportunity for us to actually see the potential of this. For example, there is a private organisation who offer software development for the financial services industry in Lagos which, due to the high cost of living, have basically moved about 30% of their operations to Akure and following COVID they have now increased this to about 70%.”

While a hub leader in Kaduna, a city in north-western Nigeria observed a similar trend saying,

“People who are building things in Lagos, are beginning to realise that it's not the best place for them. The market may be there but your engineering or design team doesn't need to be in Lagos. You shouldn't be building super critical products and spending so much time commuting. So, I think that very soon we will start to see a sort of exodus from Lagos.”

One of the issues we noted in our digital snapshots is that the concentration of hubs and startups in urban areas and capital cities and how this, in combination with poor infrastructure, inadvertently excludes those living outside of these areas from digital job opportunities. What our study reveals is that in countries such as in Nigeria there has been a growing trend of tech companies moving their offices from Lagos to secondary cities such as Calabar (Cross River State) in the Southern region, Kaduna (Kaduna State) in the North and Akure (Ondo State) in the south-west region. While this trend was already happening

pre-pandemic, it has been accelerated by the pandemic. As noted earlier, states like Ondo are investing in infrastructure to leverage this trend (e.g., a tech city being built in Ondo). Therefore, a positive effect of COVID-19 may be the increase in digital hubs and businesses in previously under-served and hard to reach areas. This increase in access could have wide ranging benefits including employment opportunities, access to training and support and availability of office space. Of course, this move would also have to be accompanied by the necessary infrastructure support.

2.7.2 Increased interest in digital jobs and online economic opportunities

The pandemic has in some cases altered working patterns and it has also led to the loss of employment for many people. Many people have had to consider new ways of working; with a significant number trying to make a living online. For those with the necessary skills, knowledge and access this transition may be an easy one. However, as documented in the Country Snapshots, digital literacy lags behind digital innovation. Without addressing this skills gap, many will be unable to transition into working online/virtually. However, for local developers the periods of lockdown have been an opportunity to showcase their skills and expertise as more companies turn to them for tech and digital solutions. This has meant more exposure for local developers both within their own countries and internationally as one informant in Nigeria noted.

“The COVID[-19] crisis has helped more local developers become exposed to international jobs. There was already a trend of developers and software engineers doing some gigs abroad. But the lockdown made it clear that everybody can now get a job outside of the country. I saw more local developers getting recognised by people who needed to hire talent from the UK and from Europe generally.”

2.7.3 Higher rates of women dropping out of the labour force

It was noted that sectors such as hospitality and tourism as well as the informal sector have been significantly affected by COVID-19. The workforce in these sectors is made up primarily of women. As a result, many women who dropped out of the workforce have borne the brunt of COVID-19’s negative socio-economic impact. Given the existing gender gap in employment as discussed in the Country Snapshots, the pandemic has undoubtedly contributed to widening the gender employment gap as one hub leader in Ghana notes,



“The hospitality and tourism industries have massive victims of the pandemic as hotels, tourist sites and the like have been closed. And, of course, a lot of women are employed in those sectors as waitresses, cleaners etc. And so again, we are seeing a disproportionate impact on women.”

SECTION 3: CHALLENGES & OPPORTUNITIES FOR STRENGTHENING AFRICAN DIGITAL INNOVATION HUBS

3.1 The Role of Digital Innovation Hubs

We identify six main roles that hubs are playing to catalyse local innovation ecosystems in Africa (see Figure 3). First, hubs are providing critical support to startups and entrepreneurs by providing infrastructure including workspace and internet connectivity, a supportive community, business incubation and acceleration as well as access to funding. At the same time hubs are contributing to building a diverse talent pool for digital innovation by providing skills training and promoting the inclusion of women and youth. Lastly, hubs are playing the fundamental role of advocating for and providing guidance in the development of enabling policies for startups, investment and the growth of the ecosystem as a whole. Discussing the catalytic role of hubs one hub leader in Tanzania said,

“Innovation hubs are basically at the core of the innovation ecosystem. They are conveners, they work with governments, they work with development partners, they work with private companies, they serve entrepreneurs directly and work with policymakers. In Tanzania right now, hubs are at the centre of the conversation and discussion around innovation in the country”

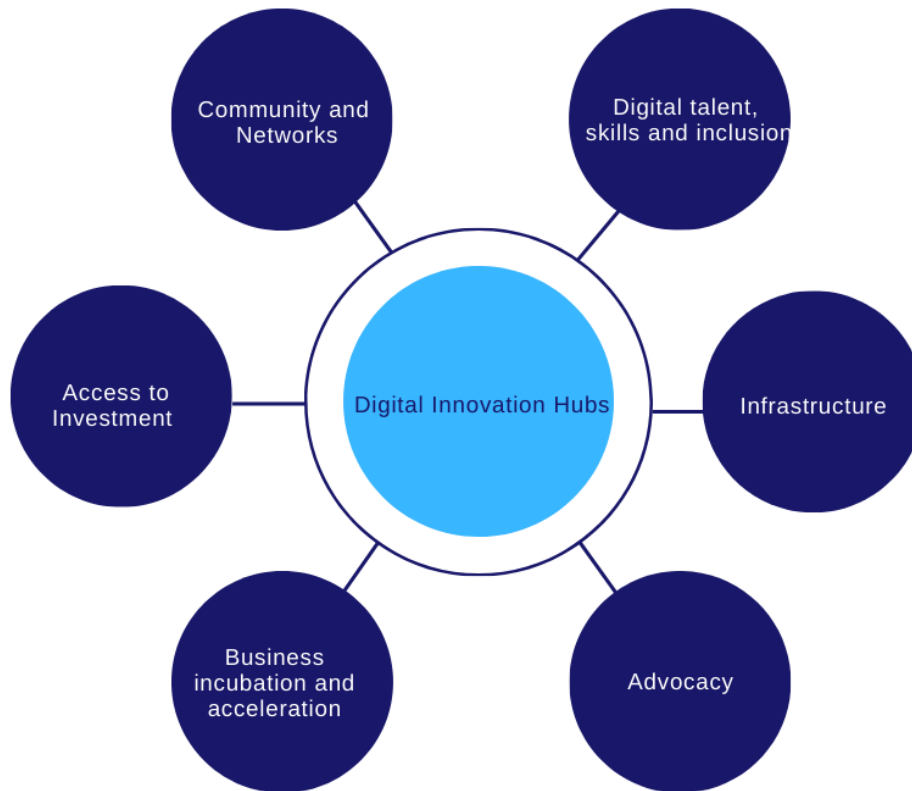


Figure 3: Roles of DIHs in the innovation ecosystem

3.1.1 Community and networks

Hubs provide a vital community and space where like-minded innovators and other ecosystem actors can connect.

One interviewee noted that entrepreneurship can be a lonely journey and being part of a hub was important to them because it meant that they did not feel alone. Speaking about the important role that hub communities had to play in the development of his startup, one startup founder in Nigeria said,

“When you participate in local hubs, apart from the advisory they provide, the community is much more important. You meet like-minded people working on similar problems who you can learn from and call upon when you need help. They become friends who can turn into employees and have a fundamental role to play.”

While one hub leader describing how their hub is helping to connect the innovation ecosystem in Ghana noted,

“We realised that there were a lot of people trying to develop products and services in various parts of the country, but they were working alone. Also many feared sharing their ideas with others and so were working in silos. One of our efforts has been to bring these people together, especially those who are working in the same value chain, or working on similar products, and also connect them to the global ecosystem and other stakeholders.”

3.1.2 Digital talent, skills and inclusion

Hubs are playing a crucial role in developing the talent pool and skills needed to drive innovation.

As discussed previously, our research showed that a major challenge that is seen to be holding back the development of the African digital ecosystem is the shortage of talent with relevant skills for the fast-evolving digital economy. We found that innovation hubs are playing a crucial role in bridging this gap. Many of the hubs we spoke to reported having digital upskilling programmes as a focus area of their work. Describing their role within the digital ecosystem, one hub leader in Nigeria explained,

“In the close to five years that we have been in operation, we have probably gotten more people into technology jobs than anyone else across the region. We do what we call talent acceleration, which is basically getting people the skills they need to fit into the global workforce.”

In addition to upskilling individuals to develop technology products and careers, hubs are also crucially helping to impart digital skills to small, non-digitised businesses in order to bring them into the digital economy. One hub leader in Uganda described the work that they are doing to bring small and medium sized businesses into the digital economy,

“We also focus on small businesses that want to utilise digital technologies, either for improving their business models or becoming more resilient. For instance, last year, we trained close to 600 small business owners around aspects of how they can utilise the different tools to still stay operational during the lockdown.”

Hubs are also playing an important role in addressing digital divides for women and youth

Our conversations with hub leaders highlighted the efforts hubs are making to address digital divides for women and youth. 94% of the hubs we surveyed indicated that they currently run specific programmes targeting women. Furthermore, during the pandemic hubs have been developing solutions to help women and youth continue to access support online. For example, during the pandemic lockdowns, Social Enterprise Ghana partnered with a telecom company to zero-rate their digital courses on their website resulting in a significant uptick in the number of young people taking part in their online courses. In Uganda, Amara Hub made its training content more accessible by creating bite sized, shareable content that does not require a lot of data or bandwidth. While iSpace Ghana provided laptops and catered for data access to enable female participants to continue with their digital programmes.

3.1.3 Infrastructure

Hubs provide spaces and infrastructure (internet and electricity) for entrepreneurs to innovate.

Hubs are providing access to stable internet as well as highly subsidized and flexible office space where startups and entrepreneurs can work on developing their ventures. This is within a context where internet costs and office rents, particularly in cities like Lagos and Accra are notoriously high. In many of these cities, hiring office space also requires large, sometimes multi-year advance payments which puts it out of reach for most startups. Hubs are bridging this gap by offering shared office space on a month-on-month basis at more affordable rates and have thus been the first home for many successful startups. One hub leader in Ghana elaborated on the work that they are doing to bridge the infrastructure gap for entrepreneurs,

“In Accra, and I want to hazard a guess that this is the case in a lot of emerging markets, there's a serious real estate issue. In places like Lagos and Accra, some of the city's brightest and youngest cannot afford to live in the centre of the city where the most productivity is happening. So, you find young people are commuting for up to six hours a day just to get to work and back. That is compounded by the crazy rent rates. Landlords are asking entrepreneurs to pay one year or even two years rent in advance before they [entrepreneurs] can even kick start their businesses. It just doesn't make sense. So, what we are doing as a hub is to essentially invest in co-working spaces, take up that real estate and put some investment and internet into it, make it functional, and then essentially sell it at highly subsidised rates”

3.1.4 Access to investment

Hubs are also playing a role in connecting startups to investment by helping them to become investment ready and providing exposure to investors.

Describing the support, they provide to startups when it comes to access to investment, one hub leader in Ghana explained,

“We help startups get investment-ready and gain access to investors. We also help prepare them for their pitches and organise pitch nights where they can get peer feedback from their colleagues as well as from the mentors and coaches. Some of the investor networks we have helped startups connect to include EWB Ventures, Accra Angels Network and African Business Angels Network.”

3.1.5 Business incubation and acceleration

Hubs are providing entrepreneurs with much needed support to develop their business ideas into viable ventures. They provide mentorship, training, market research support and in some cases seed funding to entrepreneurs to test and validate their ideas. One hub leader in Uganda described the support they provide to innovators,

“We have supported innovators to come up with different products, primarily medical technologies but also in fintech and agriculture. And we have a comprehensive pathway that we take innovators through. Someone comes to us with a problem, we take them through our pathway including training them on how to develop their concept and proposal. We then go through a vetting process. For example, we invite a team of judges to vet the innovation and make sure it meets all our criteria, that it is commercially viable, is able to deliver impact and is really achievable. Once the innovation passes that stage, it enters our lab and goes through the other stages until it goes to market at which point the entrepreneur is able to establish and manage their startup.”

3.1.6 Policy advocacy

Lastly, hubs are playing a key role in educating governments and bringing ecosystem actors together to develop enabling policies for innovation and technology. Notably, networks organisations bringing together different hubs within these ecosystems namely Ghana Hubs Network, Startup Uganda, Tanzania Startup Association and Innovation Support Network Nigeria, have been particularly key to enabling policy

advocacy by hubs. Discussing the role of hubs in supporting the development of policy, one investor in Tanzania noted,

“There is actually a lot to be done in terms of education. Especially to solve key challenge areas like government regulation. There is a need to educate policy makers on the importance of nurturing digital industries and getting them to understand that these industries, if optimised, will be able to help solve problems that are affecting millions of people in a short amount of time. I think innovation hubs are well positioned to play this role because you can create an environment where public decision makers and those deploying innovation can sit down to discuss what needs to be done.”

3.2 Challenges facing African DIHs

As highlighted above, hubs are playing a vital role in supporting the development of startups and the digital innovation ecosystem as a whole. Our findings however also reveal three key challenge areas that are limiting the impact of hubs as catalysts for digital innovation in Africa.

We found that current funding approaches limit the impact of hubs. Specifically, funding is focused on short-term programme delivery and does not recognise the longer-term, ecosystem-building work that hubs are doing. Additionally, many hubs lack sustainable business models and are heavily reliant on grants which leaves them financially vulnerable.

Our research also highlighted that hubs face capacity and expertise gaps in key areas of business development, fundraising, gender-responsive programming and investment facilitation. This is negatively affecting the level of the support that they provide to startups as well as limiting their ability to tap into investment opportunities and drive investment into the ecosystem.

Lastly, we found that hubs face challenges in building effective ecosystem partnerships with corporates, governments, investors and fellow hubs which is limiting hubs’ ability to scale their impact, influence policy and more effectively contribute to developing the digital innovation ecosystem.

3.2.1 Current funding approaches limit the impact of hubs

Our findings reveal that current funding mechanisms limit the impact of hubs in catalysing digital innovation. These approaches fail to recognise hubs as key actors who are playing a crucial role in the development of the digital innovation ecosystem but rather view hubs simply as a means to deliver programmes and outputs. Below we elaborate on how these funding dynamics affect hubs.

Lack of core funding limits the ability of hubs to invest in their own capacities and infrastructure

One key challenge with current funding models for hubs is that the majority of funding is often allocated towards the delivery of programmes while not enough is dedicated to covering core costs and building the capacity of hubs. Consequently, hubs are not able to sufficiently invest in building their institutional capacity for example for hiring highly skilled teams and developing their infrastructure. One hub leader in Ghana described the situation that hubs are facing as follows,

“For most projects, the organisations that fund hubs to support entrepreneurs, the way they structure these programmes is that a large chunk of the money goes towards startup support costs. They don't allow hubs to actually pay themselves. I think perhaps they don't see hubs as service providers who need to be paid for the projects they are working on. This is affecting sustainability. Even though we see more hubs springing up, they don't have the capacity to hire the best talent that can deliver support training for the startups.”

Another hub leader in Ghana summarised the funding situation of hubs as follows,

“For hubs, infrastructure in particular comes at a huge cost because you need to keep your whole hub running with constant internet and electricity which is expensive. Even though it looks like there are more organisations funding hub projects, these projects are not actually helping the hubs become more sustainable because of the way that they are structured. So, there's a lot of activity going on but it's not really trickling down to actually help build a foundation for hubs to hire the right people and keep their spaces operating at an optimal level so that they can actually support entrepreneurs beyond the programme or project. These projects are typically six weeks or three months and at the end of it, the startups remain in the ecosystem, they still come to these spaces and still need support. Who pays for who pays for all of that?”

Short-term funding limits the effectiveness of hubs' support for startups

It was also highlighted because much of the funding that hubs receive is for short-term programmes, this limits the ability of hubs to provide more effective support for startups. To develop, digital ecosystems require ongoing support that can build a sustainable pool of entrepreneurs with the wide range of skills necessary for successful innovation. However, many hubs are not able to do this as one ecosystem enabler in Uganda noted,

“Innovation hubs are not sufficiently investing in upskilling young people with skills that would enable them to get their products to market. What they mostly offer is the occasional one-day training on product development or marketing. I had a meeting with some funders who were so excited to tell me about a three-day training programme that they would be supporting. And I told them honestly that I didn't think these short-term training sessions are what is needed. The unfortunate truth is that the ability to build a market ready product cannot be taught over three days.”

While an entrepreneur in Ghana noted,

“The support that hubs provide is limited by their capacities. For instance, hubs will run programmes and get startups involved. But many of these programmes depend on funding and when the programme ends and the support is pulled, hubs are not able to keep supporting startups with coaching, mentoring or guidance. They may wish they could do more, but they also lack the resources. So, you go through some of these programmes and at the end of the day, when the hubs reach their limit, they pull back and you are left in the middle”

Funders' emphasis on outputs limits hubs' potential to create systems change

Lastly, funders often focus on programme deliverables and outputs without recognising the deeper work that is required for these efforts to actually create meaningful, system-change. It was also noted that the highly bureaucratic funding processes take time and effort away from the real work that needs to be done. One hub leader in Tanzania noted,

“Digital transformation is a process. However, most donors are simply looking at numbers. There is so much that goes into setting up stronger processes, capacity strengthening, doing human centred design to understand the different contexts and embracing these different contexts. And all that requires funding. So, if a funder comes and says, “I need 10,000 digitally upskilled young people”, I say “No, I'm giving you

500, because I need to spend one year really learning about those guys.” So, there is a mind shift needed from donors and development partners.”

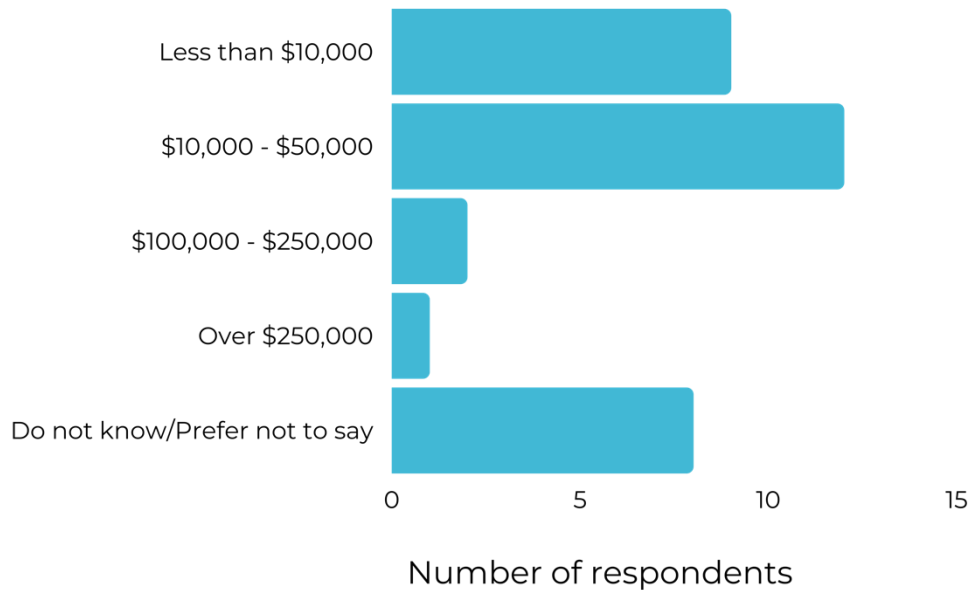
Similarly, another hub leader in Ghana said,

“In many cases funders are in control, and they are very rigid and bureaucratic. The number of things you have to fill in and how you manage your time, in the end some of these projects come at a loss. If you look for example at how much time is allocated per head for a particular project vis a vis what really needs to go into it, you realise that it is just a box ticking exercise. It is all about “Ok you trained 20,000, that’s people great.” Mission accomplished. But actually, we need a lot more capital allocated over a longer period of time, with more trust and less rigidity. That is not to say that it is a free lunch. Of course, we need to account for it. But I think it should be outcomes driven and rather than focus on say how many people were trained. While that is an important metric, it is not the most important one. It should be about what did we actually achieve? What is the outcome? Hubs are an important part of the ecosystem, and we need investors to invest in hubs. Those are some of the issues from funders that can be very problematic for those implementing on the ground”

3.2.2 Lack of sustainable business models

As already noted in section 1, funding is a major challenge for hubs. We noted for example that 65% of the 32 hubs we surveyed had a yearly turnover of less than \$50,000 (see Figure 4).

What is your yearly turnover?



All figures in USD

Figure 4: DIHs’ yearly turnover

We found that many of the financial challenges that hubs face are rooted in the fact that many hubs lack sustainable business models and therefore have to rely on grants and donor funding to operate. While many of them had other incoming generating activities like office space rental, events and training, these only made up a small percentage of hubs’ revenues as startups have limited capacity to pay for these services. This is negatively affecting the resilience of hubs leaving them vulnerable to shifting priorities of funders and funding cuts as many of them experienced during the pandemic. It has also meant that their work is often dictated by the priorities of funders which may not be necessarily aligned with hubs’ goals or the needs of their local ecosystems. Speaking at our Ghana roundtable about their findings from research that was conducted by Social Enterprise Ghana to understand the situation of hubs in Ghana, co-founder Amma Sefa-Dedeh Lartey explained,

“We found that the hubs that were doing well were those that had a commercial offering or had built really strong brands and funding partnerships, over many years, that they had been able to build into a regular revenue stream. Some hubs had full

consulting companies that they owned and were doing commercial consulting, feasibility studies, etc. and then putting a part of their profits into the hub. We realised that those that were purely hubs and either did not have solid fundraising expertise and networks, or a business that was viable and profitable, really fluctuated whereby they would get some money for projects and then when the money runs out, they are struggling. There's a need for us to figure out how we can resource these hubs in a more sustainable way.” **Amma Sefa-Dedeh Lartey, co-founder Social Enterprise Ghana and CEO Impact Investment Ghana.**

Similarly, one hub leader in Tanzania elaborated on the challenges that the reliance on grants creates for hubs,

“Creating investor ready businesses is what hubs should focus on, instead of simply jumping into different projects and activities in order to survive. If hubs have to rely on donor money, it's not sustainable, first of all. Secondly, it always comes with an agenda. They will be told to focus on the health sector or Water, Sanitation and Hygiene for example. So, if for example they would like to support businesses in agriculture, in edtech, healthtech, or in future emerging technologies, like AI and blockchain, they won't be able to do that because whoever is giving them money is telling them to do something else”

3.2.3 Capacity and expertise gaps

Our study revealed that African digital hubs are lacking capacity and expertise in key areas, specifically business development, investment facilitation, fundraising and supporting women and youth. This is linked to the fact that the majority of hubs are still quite young and as one informant highlighted, often the hubs supporting startups are startups themselves. Indeed, our own data found this to be the case. 80% of the hubs we surveyed across Ghana, Nigeria, Uganda and Tanzania had been in operation for less than 5 years, with 35% of them being less than 2 years old (see Figure 5) Below we outline some of the capacity gaps that hubs face and elaborate on how they are affecting hubs.

How many years has the hub/ESO been in operation?

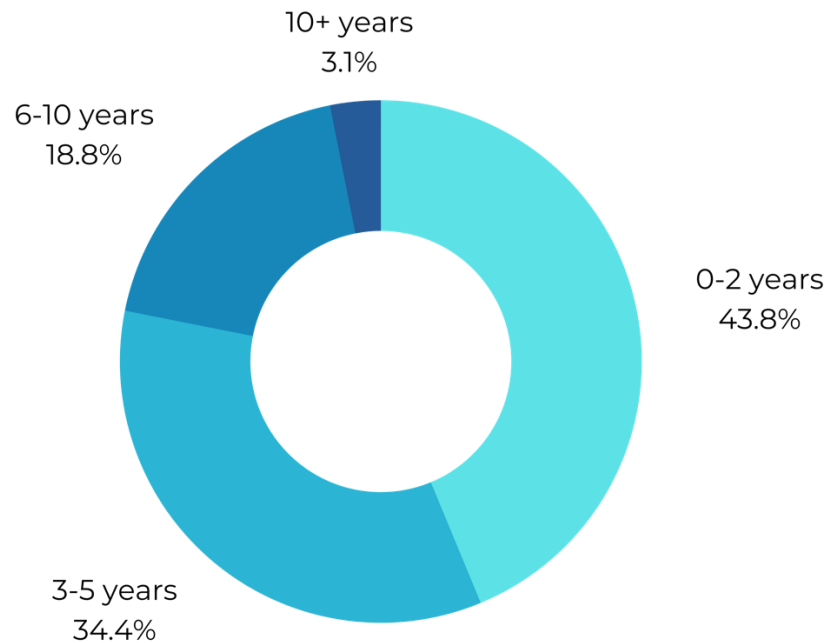


Figure 5: DIHs' number of years in operation

Lack of in-depth business development expertise

A number of stakeholders we spoke to felt that hubs are not effectively supporting startups because they (hubs) themselves lack in-depth business development expertise in key areas like marketing, design thinking, market research and user testing that are necessary for developing successful businesses from idea to scale. One entrepreneur in Tanzania commented,

“They (hubs) are not doing enough. Some run programmes for entrepreneurs but they are not teaching young people practical ways to run a business. They simply don't teach entrepreneurs how a business should work and how to build business systems.”

While one government representative in Ghana noted,

“Many hubs have challenges with human resource capacity. Sometimes you have a startup training startups. Many of them have the zeal but they don't have the required

knowledge and understanding of how to groom and incubate a company and move it from the idea stage to the market and help the entrepreneurs to sustain it.”

Lack of capacity in facilitating investment

It also surfaced that many hubs lack capacity and expertise when it comes to facilitating investment. Our survey of 32 hubs across Ghana, Nigeria, Uganda and Tanzania indicated that 62% of them had no or limited capacity in providing investment matching and advisory services. This is a missed opportunity for hubs as greater competency in this area could enable them to build long-term financial sustainability by investing in the startups they support.

Fundraising

Further limiting the financial resources of hubs is their lack of fundraising skills and capacity. 50% of the hub leaders we surveyed said they have limited or no capacity in grant proposal writing and fundraising. They also highlighted access to funding opportunities, increased visibility and connections to funder networks as some of the key areas where they need support.

Gender-responsive programming

While almost all the hubs we surveyed said they offered specific programmes for women, our findings indicate that hubs still face challenges in reaching women with their programmes due to cultural norms that hinder women’s participation. A number of hub leaders we surveyed stated that they need support in improving their gender responsiveness and designing programmes that address systemic barriers for women.

A hub leader in Tanzania describing some of the challenges that persist around getting more women into their digital programmes said,

“Our programming is focused on 70% women. However, there are still gaps in terms of support for women. Our digital ambassadors who deliver technology in our communities are supposed to be 70% women. But when we send out a call for applications, you find that 70% of those applying are men. Because for women to apply they really have to think about it, or they may have to ask their family. A recent study found that half of digital innovation hubs are having a tough challenge when it comes to onboarding women. As a digital hub or space, you cannot sit back and wait for women to come. Our current approach involves going into communities to understand

the norms and see how we can penetrate through those norms. In some contexts, women are allowed to tap into digital and use technology while in others, they are not. So how do we still penetrate such regions? This is part of the normative frameworks that we are now designing.”

3.2.4 Challenges in developing effective ecosystem-wide partnerships

Lastly, we found that hubs face challenges in building effective partnerships with other key ecosystem actors including governments, corporates, investors and fellow hubs. Here we shed light on some of the barriers hubs face when it comes to collaborating with various actors.

Government partnerships

As noted in Section 2, COVID-19 has caused governments to put a greater emphasis on enabling digital innovation. While this has created more opportunities for hubs to engage policy makers, we found that several factors are standing in the way of hubs being able to influence and work more effectively with governments. For example, one government representative in Ghana noted that a lack of specialisation by hubs makes it difficult for the government to outsource enterprise development projects through hubs.

“If they [hubs] get their systems right, then things will move faster with the government and the ecosystem will be strengthened. They need to have infrastructural capacity, logistics, human resource capacity and the knowledge for them to be able to really support businesses. They also need to be able to specialise. You ask some of them “What is your area of specialisation?” and they say, “we can do everything”. We don’t want to work with a hub that is trying to do everything. From agriculture to IT to tourism, some hubs think that they can do it all. There needs to be some level of specialisation.”

The need for data to back up the recommendations that hubs are making to governments was raised as another issue that is limiting the policy advocacy efforts of hubs as a hub leader in Nigeria noted,

“As an ecosystem, we need to be able to help the government to see the economic value of what we are doing. We need to start having conversations around “How does this digital skills and entrepreneurship opportunity convert into revenue and tax. How does it turn into some form of income for the country?”. We need to go at it from an investment standpoint and say for example “if the government invests a certain amount, this is where we can get to in the next two to three years”. Until we start to

drive that kind of conversation, I don't think that we're going to see the level of interest that we need from the government."

Corporate partnerships

Partnering with corporates can provide a wide range of benefits for hubs. For example, a number of hubs have partnered with telecommunications companies and Internet Service Providers to access internet infrastructure at subsidised rates. Corporates can also create pathways to scale for the startups supported by hubs for example by startups leveraging the sector expertise, brand, infrastructure and customer base that these more established companies bring. One hub leader in Tanzania noted,

"Increased strategic collaborations and partnership with the corporate world for example banks, insurance companies and telecom companies is extremely important. Activities such as brand acceleration programmes, corporate accelerator programmes, design sprints and corporate VC programmes where corporate companies can offer investment funds to startups. I think these are needed. There is a lot of capital lying around African corporates that is not supporting even 10% of what is happening in their own local ecosystems."

However, it was also noted that developing corporate partnerships was a challenge for hubs as there is often little incentive for corporates to invest in research and development of new ideas and innovation.

One hub leader in Uganda explained,

"In Europe, innovation and research tends to be grounded in industry, because they have a connection and continuous engagement with academic institutions and the innovation ecosystem. Their industries therefore invest quite a lot in research and development. Here in Uganda, it is quite different. You don't have corporate companies investing heavily in research and development. I spoke to someone at a corporate and he told me "I don't really have an incentive to invest in research and innovation because I am taxed to the bone. Even if I were to set aside a research fund, the taxation body will come for me" So the incentives for industrial research do not exist. If, for example, there was a tax rebate, to say, "if you invest such and such value into research, that will be taken out of your taxable income." I am pretty sure companies would want to do it as part of their corporate social responsibility."

Investor partnerships

Our findings revealed a disconnect between investors and hubs. Many investors we spoke to described their relationship with hubs as being limited to mentoring or investing in some of the startups participating in hubs programmes. However, there was a clear lack of deeper partnerships around building a stronger pipeline of startups and sharing the associated costs and returns on these efforts. A number of investors pointed to the fact that many hubs are not commercial entities and are therefore more focused on creating impact through their grant-based programmes. The implication here is that hubs do not have ‘skin in the game’ and are therefore not incentivized to identify and nurture startups that can deliver the highest returns for investors. Indeed, only 13% of the hubs we surveyed said they were investing and taking equity stake in some of the startups that they support.

One investor in Uganda described some of the challenges they are facing in trying to create more commercial partnerships with hubs around sourcing for deal flow,

“The way that we have structured our fund is that we want to work with all the hubs and offer them a success fee if we raise capital for the startups that they refer to us. We also offer them an opportunity to subscribe for shares in this fund so that when we get upside, they can also benefit. However, so far many of them [hubs] are hesitant. It’s difficult even to get a Memorandum of Understanding in place for deal flow. I think this is because many hubs are lacking in their knowledge of investments and how they work.”

Hub to hub partnerships

Many hub leaders we spoke to recognised the need for collaborating with other hubs. It was noted for example that hubs could have a stronger influence on government policies and provide more holistic support to startups by working together. However, we found that because as previously discussed many hubs are largely dependent on grants, competition for funding opportunities is affecting joint efforts and collaboration. One hub leader in Uganda noted,

“Right now, there’s a lot of competition in terms of who’s going to win this or that funding or project. I think it would be better to bring us together at one table and understand the niche markets that each hub serves so we can have that conversation and leverage each other’s strengths.”

3.3 Recommendations for capacity building and strengthening African DIHs

Earlier on, we looked at the vital role that DIHs are playing in developing digital Innovation ecosystems in Africa. We also discussed some of the challenges they continue to face that are limiting their impact. In this section we outline our recommendations for strengthening and building the capacity of African DIHs to play their role more effectively.

3.3.1 Provide funding that supports hubs sustainability and long-term impact.

As much as hubs need diversified and sustainable revenue streams, there is recognition that donor funding and grants will continue to play an important role in enabling hubs to do their work. This is because entrepreneurs and startups who are the core beneficiaries of hubs often cannot afford to pay market rates for the services that hubs provide. Additionally, hubs are playing ecosystem-building roles such as advocating for policies that are essential to the development of the digital economy. This foundation-building work cannot be commercialised and will therefore need to continue to be supported by donor and philanthropic funds.

However, as discussed above, current funding mechanisms which are primarily short-term and programme-focused, are affecting hubs sustainability and limiting their impact on startups and the ecosystem as a whole. To address these gaps, funding for hubs should support their sustainability and long-term impact. Specifically, more funding needs to be allocated towards covering hubs core costs as well as developing their internal capacity and infrastructure. Additionally, funding for hubs should focus on long-term outcomes and place less emphasis on maximising short-term outputs.

3.3.2 Support hubs to build more diversified and sustainable revenue streams.

To build their resilience, hubs need support to become more sustainable by developing alternative revenue streams. As highlighted previously, many hubs are primarily relying on grants to operate leaving them financially vulnerable. For example, during the pandemic, many hubs saw their funding cut and revenues from office space rental and events diminish. Consequently, as noted in section 2, many hubs

are now exploring new revenue generating opportunities in a bid to become sustainable. These hubs could benefit from support in testing and piloting new sustainability models.

“Most hubs are run more like charities or NGOs. They need to be more commercial. It would be helpful to train them to be more commercially astute. For example, they could start asking for revenue share from startups that they support. In that way, they can become more sustainable.” **Investor, Uganda**

It is worth noting however that one potential risk to hubs diversifying their activities is that it could detract hubs’ attention from serving entrepreneurs and startups which many of them see as their core role within the ecosystem. There is therefore a need to explore sustainability models for hubs that complement and build on rather than take away from their mission. Box 1 provides a case study of HapaSpace and demonstrates how hubs could potentially develop commercially viable entities that not only help to sustain their activities, but also complement and contribute to the work that hubs are doing (see Box 1).

Box 1: How a sustainable business model helped HapaSpace Ghana survive the COVID-19 pandemic

“During the COVID lockdown, it got to a point where we realised that we would only be able to pay our staff for three months before we would run out of money and have to let them go. But at that time, because our parent company HapaWeb is a cloud service company and during COVID more companies were now moving to cloud services, HapaWeb needed some support. And so instead of hiring other people, they outsourced the business to us. And that was the only way we were able to continue to pay our staff. In many cases HapaWeb has acquired consultancy services on our behalf and then we use some of our disposable time at the hub to execute them. And that keeps financing us. And of course, HapaWeb also uses our space, and they pay us for that. So, in fact, I think that one of the ways that can help hubs to survive is to be able to create multiple streams of consultancy services, beyond the support that they give to the startups. Interestingly sometimes we have even had consultancy services projects, where the startups within the HapaSpace community have been able to execute them and also get paid. So, in the long run it is not only helpful for the survival of HapaSpace alone, but also our small ecosystem that we run here at the hub.”

Gideon Brefo, co-founder HapaSpace

3.3.3 Build hubs capacity in key areas of business development, investment facilitation and fundraising

Support for African DIHs should focus on strengthening their internal capacity and skills. Addressing these gaps is especially crucial in a context where hubs do not have enough resources to invest in their internal capacity and are in many cases newly established. In particular, we identified business development, investment facilitation and fundraising as key areas where many hubs have capacity gaps. Specifically, hubs need support developing internal expertise on how to take new products to market such as product development, market research and user testing as well as in key aspects for growing and scaling businesses such as finance and strategy. Equally, capacity around facilitating investments, for example being able to take equity and invest in funds, is crucial for developing the long-term sustainability of hubs. In addition, capacity in fundraising is key because as previously noted, donor funds will continue to play an important role in supporting the work that hubs do. The AfriLabs Capacity Building Programme (ACBP) run by AfriLabs, a pan-African network for digital innovation hubs, provides a useful case study as an approach for bridging skills gaps for hubs. The initiative offers training for hub managers in areas such as business development and investment management through a series of quarterly virtual webinars and physical workshops in various African cities¹⁸⁵.

3.3.4 Enable standardisation of support provided by hubs

Standardisation of hub support.

This was highlighted as one of the keyways that could help foster stronger working relationships between hubs and governments. Building capacity in this aspect for example by training hubs to deliver a standardised enterprise support curriculum would be beneficial for enabling hubs to become well positioned to work with governments. The work that the National Entrepreneurship & Innovation Programme (NEIP) is doing to drive cooperation and enable a uniform quality of support is provided by hubs across Ghana provides a useful case study (see Box 2).

¹⁸⁵ AfriLabs, 'Needs Assessment Report'.

Box 2: How NEIP is building the capacity of hubs in Ghana

“When we came in in 2017, we realised that there was no coordination within the ecosystem. So, what we did was to bring the various actors in the ecosystem together, including private incubation hubs and accelerators. Our strategy for incubating businesses and building capacity is to rely heavily on accelerators and incubators to do this for the government because the government itself cannot provide this training. So, we need to leverage these actors. As a result of our activities, the Hub Network was formed by the private sector, because we were engaging with them and providing government funding to run training programmes on our behalf. Through this approach, in the last four years, we have been able to train close to 80,000 businesses and entrepreneurs across the Ghana in partnership with innovation hubs and accelerators. We are now embarking on a four-year project to strengthen the capacity of hubs in partnership with the World Bank under the Ghana Economic Transformation Programme. Our goal is to partner with the various private actors and ensure that there is some form of benchmarking for incubation hubs. So that it will be possible to categorize entrepreneurial training institutions. For example, identifying a set of criteria that incubation hubs and co-working spaces need to meet. That way we can have a uniform curriculum that will be run by all the hubs. So that if you are an entrepreneur in the northern or southern part of Ghana, you can go to any incubation hub and you are sure to get the same standard of training.”

Franklin Owusu-Karikari, Director of Business Support, National Entrepreneurship & Innovation Programme

3.3.5 Build evidence and data to support better policymaking

As noted earlier, one of the challenges that hubs face in effectively engaging with governments is the lack of data and evidence to drive the policy agenda. Support in this area could include sharing learnings of policies that have worked successfully to drive innovation in Europe for example technology investment tax incentives; facilitating joint information gathering on the economic contributions of the digital economy and hubs; as well as providing expertise in drafting policy recommendations and supporting dissemination of learnings from the data gathered. As an example, one representative from Startup Uganda elaborated on how the hub network is employing a more data-driven approach to strengthen their policy advocacy efforts,

“...there is a need as an ecosystem to not only drive these conversations with the government in a joint voice, but also to present clear findings and research, factual proof that can support the demands for better policies. In this regard, startup Uganda is planning to carry out research, to provide evidence to support the policy recommendations that we are pushing for.”

3.3.6 Support and strengthen hub networks

Hub networks such as Ghana Hubs Network, Startup Uganda, Tanzania Startup Association and Innovation Support Network Nigeria are playing a crucial role in bringing hubs together and facilitating joint initiatives including carrying out research and policy advocacy. However, many of these networks are newly established and are led by busy hub leaders who have other pressing priorities running their own hubs. Supporting these networks for example through the provision of technical assistance and financial support can help to strengthen their role and create greater impact. A good example of how this could be done is the support that the German Corporation for International Cooperation (GIZ) is doing by funding a dedicated technical advisor to support the Ghana Hubs Network (see Box 3).

Box 3: How GIZ supported the development of Ghana Hubs Network

“Ghana Hubs Network is the umbrella body for innovation hubs in Ghana. It currently has about 40 members and these members are individual hubs that are located in various districts and regions across the country. My role as a technical advisor is to support the network. The network is governed by a board in terms of its legal and administrative structure. This board has a rotating chair which was initially one year and is currently two years. The board members are all either hub founders or managers. So, on a daily basis, they are also running their own hubs and initially there was a struggle when it came to meeting and really focusing on the activities of the network. This highlighted that there was a need to have someone who could dedicate time to steering the activities of the network. So, I came in as a technical advisor under an agreement between the Ghana Hubs Network, and GIZ, MakeIT Africa project. My role is to understand where the network wants to go in terms of its strategy and then provide technical support. For example, when the network was being formed, we had to develop the team, the organisational structure, and think about how to develop programmes that will be of value to the members.”

Paulina Adjei, Technical Advisor to Ghana Hubs Network

3.3.7 Enable partnerships between hubs and corporates

As highlighted previously, corporate partnerships can add value to the support that hubs provide to startups by providing infrastructure, sector expertise and access to markets. However, challenges such as a lack of incentives for corporates to invest in innovation makes it difficult for hubs to attract corporate partners. Support to educate and facilitate investment into the digital ecosystem by corporate actors would help to catalyse relationships with hubs. One example of this is the work being done by the Catalyst Fund through the Circle of Corporate Innovators. Their programme brings together diverse corporate actors including banks, telecommunication companies and FMCGs to support startups. The initiative provides corporates with access to data, de-risked investment opportunities and a knowledge sharing platform to deepen their understanding and engagement with the digital innovation landscape.¹⁸⁶

3.3.8 Support hubs to invest in startups and develop commercially viable relationships with investors

Hubs are working to support the development of startups but are often not able to reap any benefits when these startups become successful. Supporting hubs to be able to take an equity stake in startups and commercialise their investment matching services will not only contribute to the long-term sustainability of hubs but also foster deeper relationships with investors. In addition, this will incentivise hubs to identify and nurture high potential startups. Facilitating collaboration between hubs and investors, as is being done by Afrilabs and Africa Business Angels Network¹⁸⁷ through their Africa Catalyst initiative, is a promising first step. The programme provides co-investment grants to encourage private investment into startups that are sourced through their hubs network. To strengthen this collaboration, a next step could be to enable hubs to co-invest in these deals.

3.3.9 Provide resources and build capacity for gender-responsive programming

Hubs are running programmes to support women's integration into the digital economy, however many of them still face challenges in supporting women due to wider socio-cultural factors. Addressing these systemic barriers for women necessitates gaining a deeper understanding of the contextual factors driving them and designing gender-responsive solutions. These efforts require specialised gender expertise and

¹⁸⁶ Sokolowski, 'Catalyst Fund Announces Circle of Corporate Innovators'.

¹⁸⁷ Catalyst, 'Catalyst'.



resources which many hubs lack. Therefore, to enable hubs to more effectively support women's digital inclusion, hubs should be provided with resources to carry out this deeper work and provided with training in gender-responsive research and programme design.

SECTION 4: RECOMMENDATIONS FOR THE AFRICONEU PROJECT

In light of the roles played and challenges faced by African DIHs, this section outlines considerations for designing effective capacity building programmes for hubs. In line with the objectives of this research this section also identifies opportunities and challenges for building EU-Africa DIH partnerships from the perspective of African digital stakeholders.

4.1 Considerations for designing effective capacity building programmes for African DIHs.

The design of capacity building programmes should take into consideration the time and resource constraints that may hinder the ability of hubs to fully benefit from these efforts. Below we outline some considerations that can help hub support programmes like the AfriConEU to boost their relevance and impact for African DIHs.

- **Capacity building programmes should be co-created together with hub leaders and provide a sense of ownership.** Our conversations with hub leaders highlighted the fact that they did not want to simply be targets of capacity building interventions but want to feel empowered to provide input into the design of programmes in order to ensure that they are relevant for their needs. The analysis of hub needs carried out as part of this research phase provides a strong starting point for the design of the AfriConEU programme activities. However, given the diverse contexts and capacities of hubs, further consultation should be done to further adapt content to meet specific hubs needs.
- **Capacity building programmes should focus on clear outcomes and tangible outputs.** Hub leaders indicated that they would be more likely to participate in programmes where there is a real, tangible output that they can work towards, for example developing a joint initiative with other hubs. This will help to embed learnings and solidify the relationships developed with other hubs. Given the goals of the AfriConEU project, outcomes could include increasing collaboration between hubs in working on a specific sector challenge such as healthcare access, increasing hubs capacity in fund-raising and business model development, increasing African DIH hubs' exposure



to EU funding networks. While tangible outputs could include: a joint innovation challenge, policy paper or grant proposal.

- Taking into account the financial constraints that many hubs face, **capacity building programmes should be complemented by funding** to enable concrete implementation of recommendations and learning outcomes. While direct funding to hubs may not always be possible, part of the capacity building programme could invest time and effort to explore sources of funding to support the implementation of co-developed ideas. For example, developing a joint grant or corporate sponsorship proposal.
- **Peer to peer learning should form a key component of hub capacity building programmes.** Hub leaders we spoke to said they valued the opportunity to learn from other hubs across the region who are facing similar challenges. Therefore, in addition to connecting African DIHs to hubs in Europe, AfriConEU should also emphasise connecting hubs regionally. For example, by providing joint capacity building activities which bring together hubs from across the different African ecosystems.
- While online platforms provide efficiency and scale, **face to face interaction is still essential.** 64 percent of the hub leaders we surveyed indicated that their preferred mode for participating in capacity building programmes was through in person sessions. Therefore, where it is possible to do so safely and in accordance with COVID-19 guidelines, we would encourage providing face to face training and networking opportunities in addition to online activities.
- **Short sprints spread out over a longer period of time** can help to provide the flexibility needed by hub leaders. The day to day running and operation of hubs can often make it difficult for hub leaders to attend training sessions that require them to take long periods off. We therefore recommended that AfriConEU capacity building activities should be run for a few days at a time, spread out over several months.
- Capacity building programmes **should target both hub leaders as well as their teams.** To enable the impact of the AfriConEU programme to become embedded at all levels of hub organisations, activities should not only target hub leaders but aim to engage other members of hub teams as well.

4.2 Opportunities and challenges for building EU-Africa DIH partnerships

4.2.1 Background

One of the objectives of this research was to identify at a high-level, the opportunities and challenges for enabling collaboration between African and European digital innovation ecosystems. The data that informs this section was collected firstly through an ecosystem survey where we asked African digital ecosystem stakeholders whether they had existing relationships with any European digital actors as well as what their interests and needs were when it comes to connecting with their counterparts in Europe. Secondly, as part of our roundtable discussions with African digital ecosystem actors, we hosted co-creation workshops where we asked participants to share their perspectives on,

- I. What opportunities exist for value exchange between Africa and Europe in relation to digital innovation?
- II. What are the barriers to effective partnership and collaboration between Europe and African digital ecosystems?
- III. How can these barriers be addressed?

Below we present our key findings on the opportunities and challenges and provide recommendations for enabling effective partnerships between African and European digital actors.

4.2.2 Key findings – Opportunities

There is a clear opportunity for connecting African digital actors to the European digital ecosystem

Our findings revealed that the majority of digital actors we engaged with in Ghana, Nigeria, Uganda and Tanzania do not currently have access to networks and partnerships with European digital ecosystem actors (Figure 6). This demonstrates that there is a real opportunity for developing collaboration and relationships between the two ecosystems.

Have you ever been a part of any Europe-Africa networking or partnership development activities?

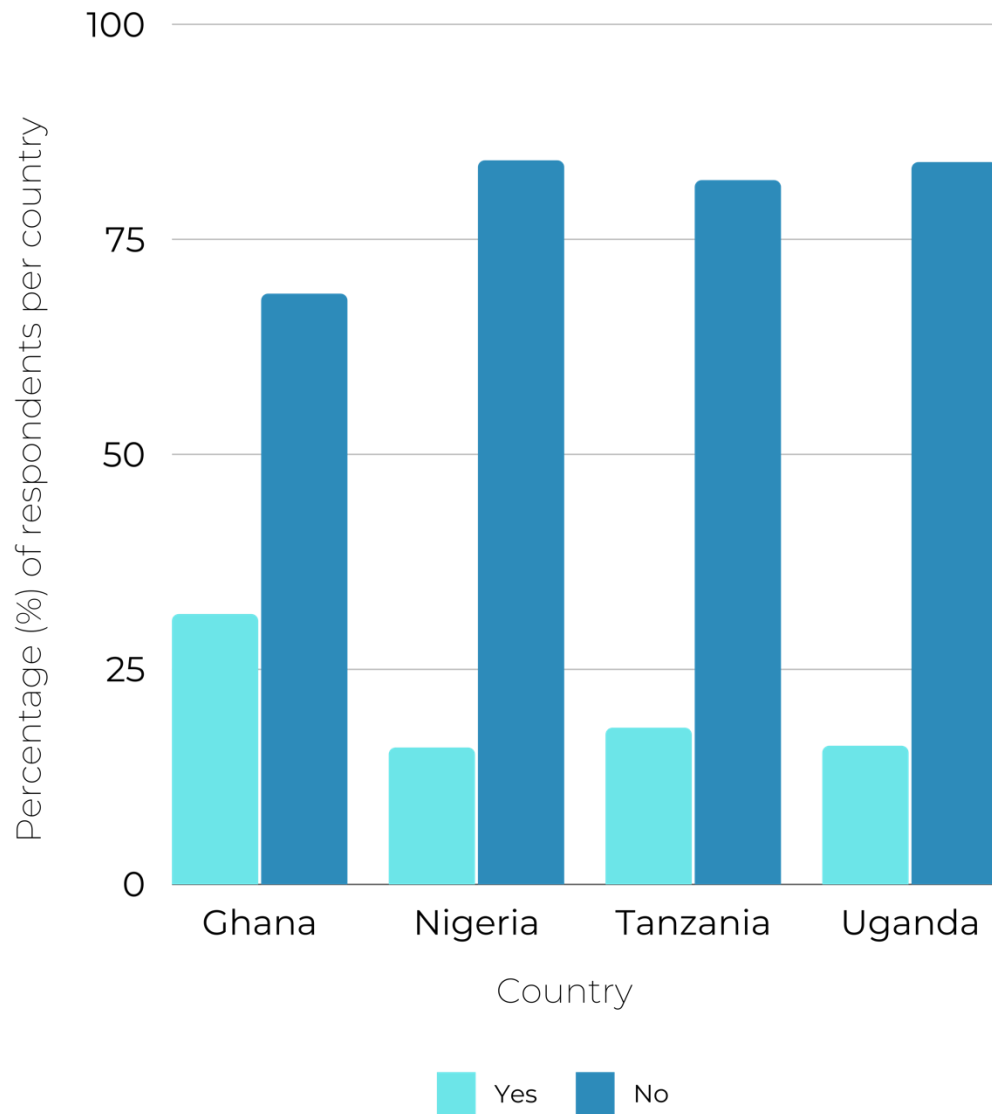


Figure 6: Number of respondents who have been part of Europe-Africa partnerships or networks.



Opportunities for EU-Africa value exchange exists around market access, knowledge exchange, and human resources and capital

Our findings also identified opportunities for value exchange between European and Africa digital actors specifically around market access, knowledge exchange, and human resources and capital (Table 12). With regards to market access, Africa digital actors felt that they can offer value to European actors by helping them to identify and pilot new opportunities within African markets as well as acting as access points into these markets by supporting European actors to navigate the local regulatory and business environment. Similarly, they felt that having European partners would provide the same benefits in helping African actors access European markets.

We also found a number of knowledge and skill gaps that enabling EU-Africa partnerships can help to fill on both sides. On the one hand, African digital actors can benefit from technological, business and investment expertise from Europe. While European actors stand to learn a lot from African actors about innovation and business models for low resource environments as well as designing technological solutions to meet social needs.

Lastly, our findings revealed opportunities for value exchange in relation to human resources and capital. In particular, Africa's young population with increasing digital skills presents an opportunity that European digital businesses and startups can tap into. In doing so, European businesses and startups can help to create opportunities for African youth and help to address growing unemployment. When it comes to capital, as previously discussed in this report, funding remains a challenge for many African startups. Access to investment networks in Europe can help to bridge this gap while at the same time providing European investors with access to fast-growing market opportunities in Africa.

Table 13: Opportunities for value exchange between African and European digital ecosystems

	Africa to Europe	Europe to Africa
Market access	<ul style="list-style-type: none"> ▪ Insights into market needs and opportunities within Africa ▪ Access to new and growing markets for European startups and businesses Opportunities for European businesses to pilot their solutions with African contexts 	<ul style="list-style-type: none"> ▪ Insights into market needs and opportunities within Europe ▪ Access to a larger market within Europe for African startups and businesses ▪ Opportunities for African startups and businesses to pilot their solutions with the European context
Knowledge	<ul style="list-style-type: none"> ▪ Knowledge about how to innovate for low resource environments ▪ Business models for local consumers ▪ Inclusive innovation and the use of technology to address social needs 	<ul style="list-style-type: none"> ▪ Technological know-how in areas like AI, deeptech, hardware ▪ Business and investment expertise e.g., design, financial management, investment structuring ▪ Knowledge about enabling policies that have been successfully implemented
Human resources and capital	<ul style="list-style-type: none"> ▪ Access to digital talent e.g., developers, software engineers ▪ Investment opportunities within African startups and businesses 	<ul style="list-style-type: none"> ▪ Digital job opportunities for African talent ▪ Access to investment and funding opportunities

4.2.3 Key findings – Barriers

Our discussions with African digital ecosystem stakeholders also brought to light some of the barriers that can hinder effective collaboration and partnership with Europe.

- **Cultural differences**

Participants highlighted the fact that differences in culture for example different ways of working could make building partnerships with European partners more difficult.

- **Lack of trust**

It was also noted that lack of trust on both sides can stand in the way of collaboration and partnership. On the one hand negative perceptions about Africa for example around corruption and under-development could affect confidence in the opportunities and knowledge that their African counterparts

bring to the table. On the other hand, power imbalances and perceptions related to the exploitation of Africa by European partners could similarly contribute to trust issues.

- **Infrastructure and skills gaps**

Gaps in the infrastructure and skills available with African markets was noted as a challenge particularly in relation to creating digital job opportunities and outsourcing between Europe and Africa.

- **Information gaps**

We also identified information gaps such as the lack of readily available data about African markets relating to the size of available opportunities, business regulations and investment policies as limiting factors to European companies and investors tapping into African opportunities. On the side of African actors, this includes a lack of access to information about investment structuring and investor requirements as well as relevant market opportunities in Europe.

- **Lack of enabling policies specific to digital innovation**

While high-level policies around enabling trade between Europe and Africa exist, participants identified a lack of clear policies to facilitate exchange round digital opportunities. For example, policies to de-risk technology investments, technical talent visas or relaxed travel restrictions for technology startups and investors between the two regions could help to facilitate stronger collaboration around digital innovation.

4.3 Recommendations for building effective Europe-Africa DIH partnerships

1. Deeply examine and take into consideration power imbalances, trust issues and cultural differences in the design of programme activities. For example, structuring activities to ensure balanced contributions from both sides, incorporating positive storytelling to build confidence and trust and providing opportunities for actors to explore and understand the different cultures and ways of working.
2. Generate and aggregate information on market needs and opportunities that are relevant for digital stakeholders in both regions.
3. Facilitate networking and knowledge sharing based on clearly defined needs and work towards mutually beneficial goals.
4. Advocate and support development of policies focused on enabling Europe-Africa collaboration around digital innovation.
5. Take into consideration infrastructure and skills gaps and support actors to navigate these challenges for example building cross-sector partnerships with telecommunication services providers and hubs and building partnerships with education institutions to increase access to skills between Europe and Africa.

CONCLUSION

The full extent of the COVID-19 pandemic's impact on Africa's digital innovation ecosystem in general and on DIHs specifically is yet to be determined. However, this study presents a timely and much needed overview of the current situation. Furthermore, it showcases the importance and resilience of Africa's DIHs. The information gathered by engaging with stakeholders provides key insights into the challenges and needs of African DIHs working through a global pandemic. These insights provide the basis for the recommendations presented in this report. In line with AfriConEU's commitment to knowledge sharing we anticipate that this study will serve as the foundation for more knowledge creation in relation to African DIHs and the impact of COVID-19 on digital innovation. Finally, we hope that the findings of this report will provide useful information to those interested in strengthening African digital ecosystems and EU-Africa innovation partnerships.

REFERENCES

- Adjei, Paulina. 'COVID-19 Crisis: Impact on Innovation Hubs and Coping Mechanisms'. Ghana Hubs Network, 20 April 2020. <https://www.ghanahubsnetwork.com/post/covid-19-crisis-impact-on-innovation-hubs-and-coping-mechanisms>.
- AFP. 'Outcry as Ugandans Hit with New Internet Tax', 3 July 2021. <https://www.monitor.co.ug/uganda/news/national/outcry-as-ugandans-hit-with-new-internet-tax-3459580>.
- AfricArena. 'The State of Tech Innovation in Africa', 2021.
- AfriLabs. 'Needs Assessment Report', 2020.
- Agaya, Martin. 'FinScope 2018: The Case for a Deeper and More Inclusive Financial Sector in Uganda'. *FSD Uganda* (blog), 30 August 2018. <https://fsduganda.or.ug/finscope-2018-case-for-deeper-inclusive-financial-sector-uganda/>.
- Akinyemi, Tayo, and Osarumen Osamuyi. 'Chasing Outliers: Why Context Matters for Early Stage Investing in Africa'. Kinyungu Ventures, 2021. <https://kinyungu.com/wp-content/uploads/2021/01/Chasing-Outliers-Jan2021-Executive-Summary.pdf>.
- Alliance for Affordable Internet. 'Africa Regional Snapshot: Affordability Report 2020'. Alliance for Affordable Internet, 2020.
- Annang, Kenneth. 'Ghana Digital Roadmap Conference 2019 Begins Today'. GhanaWeb, 15 May 2019. <https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Ghana-Digital-Roadmap-Conference-2019-begins-today-746479>.
- Antoun, Nadine. 'The Great Debate: Why Tanzania May Be the Best Country to Launch and Scale Your Tech Startup!' MEST Africa, 20 July 2020. <https://medium.com/the-gps/the-great-debate-why-tanzania-may-be-the-best-country-to-launch-and-scale-your-tech-startup-60c6379e31ef>.
- Armah, John. 'Addressing Ghana's Startup Funding Challenges'. GhanaWeb, 12 August 2014. <https://www.ghanaweb.com/GhanaHomePage/business/Addressing-Ghana-s-Startup-Funding-Challenges-320800>.
- Atiase, Victor Yawo, Oluwaseun Kolade, and Tahiru Azaaviele Liedong. 'The Emergence and Strategy of Tech Hubs in Africa: Implications for Knowledge Production and Value Creation'. *Technological Forecasting and Social Change* 161 (2020): 120307. <https://doi.org/10.1016/j.techfore.2020.120307>.
- Ball, Eunice Baguma. 'Examining Gender Barriers for Female Digital Entrepreneurs in Uganda'. Cambridge University, 2020.



- Ball, Eunice Baguma, Maya Adereth, and Stav Bar-Shany. 'Catalysing Local Innovation Ecosystems in Kenya and Ghana'. Africa Technology Business Network, 2018.
https://uploads.strikinglycdn.com/files/e745f70a-3e19-4a91-b632-765a6e5d80ab/Catalysing Local innovation Systems_ ATBN_Nov_2018.pdf.
- Borokini, Favour. 'Review Of National Digital Innovation and Entrepreneurship Policy'. *TechHive Advisory* (blog), 8 March 2021. <https://techhiveadvisory.org.ng/review-of-national-digital-innovation-and-entrepreneurship-policy/>.
- Catalyst. 'Catalyst'. Catalyst, 2021. <https://africa-catalyst.com/>.
- Chijioke, Chibuzor. 'A Review Of Startup Act Policy In Africa'. *Tech Build Africa* (blog), 28 May 2021.
<https://techbuild.africa/a-review-on-startup-act-policy-in-africa/>.
- CK Japheth. 'One Small Step for Our Entrepreneurs, One Giant Leap for Our Ecosystem. Humbled to See #The97Fund Fall in Place. @The97Fund Is for the Missing Middle Unlocking the Positive Value of Technology in Society. See <https://t.co/9qSrOp2Syl> for More.. <https://t.co/W14v2pu9i1>'. Tweet. @CKJapheth (blog), 4 May 2019.
<https://twitter.com/CKJapheth/status/1124725580904185856>.
- Clesensio, Tizikara, Nakayiwa Florence, and Otto Francis. 'Investing in Women as Drivers of Growth: A Gender-Based Assessment of the Science, Technology and Innovation Ecosystem in Uganda'. *African Journal of Rural Development* 4, no. 2 (7 April 2020): 261-281.
- Coalition for Digital Equality. 'Bridging the Digital Gender Divide in Africa: Insights from Ghana and Uganda', December 2020. <https://coalition-for-digital-equality.medium.com/bridging-the-digital-gender-divide-in-africa-insights-from-ghana-and-uganda-e275d4b768f3>.
- Co-Creation Hub. 'Co-Creation Hub'. Co-Creation Hub Nigeria (CcHUB), 2021. <https://cchubnigeria.com/>.
- COSTECH. 'Rolling Strategic Plan 2016/17- 2021/21', 2018.
<https://www.costech.or.tz/storage/uploads/5e12i1NEgA2VpmTfj9VoLDlLsuFa2v2w4cYDvD0y2.pdf>.
- . 'Tanzania Commission for Science and Technology', 2021. <https://www.costech.or.tz/>.
- Cuvellier, Max. 'All Eyes on Africa'. *The Big Deal*, 28 June 2021. <https://thebigdeal.substack.com/p/all-eyes-on-africa>.
- Dalberg Global Development Advisors. 'Catalysing Growth in Nigeria', 2017.
- Dean, Jeff, and Moustapha Cisse. *Google AI in Ghana. The Keyword*. Google, 2018.
<https://www.blog.google/around-the-globe/google-africa/google-ai-ghana/>.
- DigestAfrica. 'These Are the 3 Latest Tech Hubs in Tanzania's Eco-System'. *Digest Africa*, 6 August 2018.
<https://digestafrica.com/tech-hubs-tanzania-eco-system>.



- Disrupt Africa. 'African Tech Startups Funding Report 2020', 2020. <https://disrupt-africa.com/funding-report/>.
- EU. 'Jobs and Growth Compact for Uganda', 2019. https://eeas.europa.eu/sites/default/files/jobs_and_growth_compact_for_uganda_2019.pdf.
- Ezeani, Elimma. 'Barriers to Graduate Employment and Entrepreneurship in Nigeria'. *Journal of Entrepreneurship in Emerging Economies* 10 (16 October 2018). <https://doi.org/10.1108/JEEE-02-2017-0009>.
- FMoC. 'Nigeria ICT Roadmap 2017-2020', 2017. https://www.commtech.gov.ng/Doc/Nigeria_ICT_Roadmap_2017-2020.pdf.
- FMoCDE. 'Federal Ministry of Communications and Digital Economy', 2021. <https://www.commtech.gov.ng/the-ministry/about-the-ministry.html>.
- GEM. 'GEM Uganda: Supporting Africa's Young Entrepreneurs', 2015.
- . 'Women and Youth Spearheading Business Creation'. Global Entrepreneurship Monitor, 2012.
- GHN. 'Ghana Hubs Network'. Ghana Hubs Network, 2021. <https://www.ghanahubsnetwork.com>.
- GIFEC. 'Ghana Investment Fund for Electronic Communications'. GIFEC, 2021. <https://gifec.gov.gh/>.
- Gillwald, Alison, Onkokame Mothobi, Ali Ndiwalana, and Tusu Tusubira. 'The State of ICT in Uganda'. Research ICT Africa, 2019. https://researchictafrica.net/wp/wp-content/uploads/2019/05/2019_After-Access-The-State-of-ICT-in-Uganda.pdf.
- Gillwald, Alison, Fola Odufuwa, and Onkokame Mothobi. 'The State of ICT in Nigeria 2018'. After Access. Research ICT Africa, 2018.
- Giuliani, Dario, and S Ajadi. '618 Active Tech Hubs: The Backbone of AFRICA'S Tech Ecosystem'. *Mobile for Development*, 2019.
- Giuliani, Dario, and Anna Ekeledo. 'Building a Conducive Setting for Innovators to Thrive a Qualitative and Quantitative Study of a Hundred Hubs across Africa', 2019. <https://www.afrilabs.com/wp-content/uploads/2019/11/AfriLabs-Innovation-Ecosystem-Report.pdf>.
- Government Citizen Interaction Centre. 'From an Economic Perspective[...]'. Tweet. @GCICUganda (blog), 22 November 2019. <https://twitter.com/GCICUganda/status/1197831257318666241>.
- Government of Uganda. 'Uganda Vision 2040'. Kampala, 2007.
- GSMA. *A Deep Dive into the Ghanaian Start-up Ecosystem. Mobile for Development Blog*, 2018. <https://www.gsma.com/mobilefordevelopment/blog/a-deep-dive-into-the-ghanaian-start-up-ecosystem/>.
- . 'Digital Transformation in Tanzania'. GSMA, 2019. <https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=39256224&file=2736-180319-Tanzania.pdf>.

- . ‘Tanzania: Driving Social and Economic Value through Mobile-Sector Tax Reform’. GSMA, 2021. https://www.gsma.com/publicpolicy/wp-content/uploads/2021/04/GSMA_Mobile_taxation_in_Tanzania_2021.pdf.
- . ‘The Mobile Economy: Sub-Saharan Africa 2020’, 2020. https://www.gsma.com/mobileeconomy/wp-content/uploads/2020/09/GSMA_MobileEconomy2020_SSA_Eng.pdf.
- . *The Mobile Economy West Africa 2018*, 2018.
- Herrington, Mike, and Donna Kelley. ‘African Entrepreneurship: Sub-Saharan African Regional Report’. Global Entrepreneurship Monitor, 2012.
- ICT Commission. ‘Information and Communication Technology Commission’, 2021. <https://www.ictc.go.tz/>.
- International Finance Corporation. ‘Digital Skills in Sub-Saharan Africa: Spotlight on Ghana’. World Bank Group, 2019. https://www.ifc.org/wps/wcm/connect/58f4396b-fcee-49c8-82a4-614fd3d53ea3/Digital+Skills+Report_WEB_ES.pdf?MOD=AJPERES&CVID=mGkda3h.
- Isenberg, Daniel. ‘The Entrepreneurship Ecosystem Strategy as a New Paradigm for Economic Policy: Principles for Cultivating Entrepreneurship’. *Presentation at the Institute of International and European Affairs* 1, no. 781 (2011): 1–13.
- ISN Hubs. ‘ISN Hubs’. ISN Hubs, 2021. <https://www.isnhubs.org.ng/>.
- Jackson, Tom. ‘Tanzania’s East Africa Fruits Closes Series A Funding Worth \$3.1m’. *Disrupt Africa* (blog), 7 May 2020. <https://disrupt-africa.com/2020/05/07/tanzanias-east-africa-fruits-closes-series-a-funding-worth-3-1m/>.
- Jobberman. ‘Digital Sector Skills Gap’. Jobberman, 2020.
- Kapinga, Alsen Florian, Calkin Suero Montero, Godfrey Issac Mwandosya, and Esther Rosinner Mbise. ‘Exploring the Contribution of Business and Technology Incubators to Women Entrepreneurs’ Business Development in Dar Es Salaam, Tanzania’. *Journal of Global Entrepreneurship Research* 8, no. 1 (2018): 23. <https://doi.org/10.1186/s40497-018-0111-9>.
- Kemp, Simon. ‘Digital in Uganda: All the Statistics You Need in 2021’. DataReportal – Global Digital Insights, 12 February 2021. <https://datareportal.com/reports/digital-2021-uganda>.
- Kempner, Jessica. ‘Youth Unemployment in Uganda Has Been Misdiagnosed’. Palladium, 29 January 2020. <https://thepalladiumgroup.com/news/Youth-Unemployment-in-Uganda-Has-Been-Misdiagnosed->.
- Kene-Okafor, Tage. ‘African Payments Company Flutterwave Raises \$170M, Now Valued at over \$1B’. *TechCrunch* (blog), 9 March 2021. <https://social.techcrunch.com/2021/03/09/african-payments-company-flutterwave-raises-170m-now-valued-at-over-1b/>.

- Kiboi, Phoebi. 'Up to 50,000 People from Rural Communities Gain Access to Mobile Coverage through Newly Deployed Network Sites in Ghana and Uganda'. GSMA. *GSMA* (blog), 25 February 2021. <https://www.gsma.com/mobilefordevelopment/blog/up-to-50000-people-from-rural-communities-gain-access-to-mobile-coverage-through-newly-deployed-network-sites-in-ghana-and-uganda/>.
- Kolawole, Olukayode. 'Nigeria Mobile Report 2019'. Jumia, 2019. <https://www.jumia.com.ng/sp-mobile-report/>.
- Kushoka, Ikandilo. 'Encouraging Entrepreneurship in Tanzania. Start-Ups and Growth Barriers', 2008. <https://www.grin.com/document/276668>.
- Kuure, Joseph-Albert. 'VC Investments Top \$90 Million For Ghana's Tech Ecosystem In 2020'. TechNova, 25 January 2021. <https://technovagh.com/vc-investments-top-90-million-for-ghanas-tech-ecosystem-in-2020/>.
- Lixi, Marc Jean Yves, Siegfried Zottel, Maria Isabel AS Neto, Feyifolu Adeyosola Boroffice, Karol Karpinski, Lindsey Tan Lim, Maryam Lawal, Natalia Agapitova, Olatunde Adetoyese Adekola, and Parminder Bra. 'Nigeria Digital Economy Diagnostic Report'. The World Bank, 2019. <http://documents.worldbank.org/curated/en/387871574812599817/Nigeria-Digital-Economy-Diagnostic-Report>.
- Malakata, Michael. 'Tanzania Extends National Broadband Backbone to Mozambique'. ITWeb Africa, 8 April 2021. <https://itweb.africa//content/P3gQ2qGxn82vnRD1>.
- Materu, Beatrice. 'Tanzania's Self-Formed "Silicon Dar" Turning City into Smart Hub'. *The East African*, 23 July 2019. <https://www.theeastafrican.co.ke/tea/business/tanzania-s-self-formed-silicon-dar-turning-city-into-smart-hub-1423238>.
- Mercy Corp. 'Competing in a Digital Age'. Mercy Corp, 2019. https://www.mercycorps.org/sites/default/files/2020-01/Publication_IT_Skill_Gap_Report_April1_VF.pdf.
- Ministry for Works, Transport & Communication. 'National ICT Policy 2016', 2016.
- Ministry of Communications. 'The Ghana ICT for Accelerated Development (ICT4AD) Policy', June 2003.
- Ministry of Education. 'ICT in Education Policy'. Republic of Ghana, 2015. https://planipolis.iiep.unesco.org/sites/default/files/ressources/ghana_ict_in_education_policy_august_2015.pdf.
- Ministry of Information and Communications Technology. 'National Information and Communications Technology Policy for Uganda', October 2014. https://ict.go.ug/wp-content/uploads/2018/11/ICT_Policy_2014.pdf.
- MoEST. 'Ministry of Education, Science and Technology', 2021. <http://www.moe.go.tz/en>.



- Mtambalike, Jumanne Rajabu. 'What You Need to Know about Tanzania Innovation Ecosystem. Why Are We the Fastest?' Medium, 5 August 2018. <https://afruturist.medium.com/what-you-need-to-know-about-tanzania-innovation-ecosystem-why-we-are-the-fastest-12ebfc7c32ef>.
- NACTE. 'Mapping Skills Gap and Skills Needs for Technician Graduates In The Selected Economic Sectors for Industrial Growth in Tanzania', 2019. <https://www.nacte.go.tz/wp-content/uploads/2020/12/MAPPING-SKILLS-GAP-AND-SKILLS-NEEDS-FOR-TECHNICIAN-GRADUATES.pdf>.
- Ndoto Hub. 'We Are Excited to Introduce Ndoto Innovation College and Ndoto Hub Arusha.' Tweet. @ndotohub (blog), 30 April 2021. <https://twitter.com/ndotohub/status/1388004674918289410>.
- NEEC. 'Tanzania Inclusive National Entrepreneurship Strategy', 2017.
- NEIP. 'National Entrepreneurship & Innovation Programme'. National Entrepreneurship & Innovation Programme, 2021. <http://neip.gov.gh/>.
- Nesbitt-Ahmed, Lailah, Claire Scharwatt, and Chux Daniels. 'Supporting the Growth of the Tech Start-up Ecosystem in Uganda: A Policy Outlook'. GSMA, July 2020. <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/07/Supporting-the-Growth-of-the-Tech-Start-Up-Ecosystem-in-Uganda-A-Policy-Outlook.pdf>.
- NITA. 'President Inaugurates a \$38 Million Fiber Optic Backbone Project', 18 May 2015. <https://nita.gov.gh/38-million-fiber-optic-backbone-project/>.
- NITDA. 'Nigeria ICT and Entrepreneurship Vision', 2018. <http://www.greenenergyinvestment.com.ng/sites/default/files/documents/Nigeria%20ICT%20and%20Entrepreneurship%20Vision.pdf>.
- O'Grady, Vaughan. 'Tanzania Hopes to Accelerate Internet Access'. Developing Telecoms, 18 May 2021. <https://developingtelecoms.com/telecom-technology/telecom-devices-platforms/11162-tanzania-hopes-to-accelerate-internet-access.html>.
- Olarewaju, Tolu. 'Can Equalizing Educational Endowments Between Men and Women Create More Female Self-Employed Value in Nigeria?' *Journal of Creating Value* 5, no. 1 (2019): 68–83. <https://doi.org/10.1177/2394964318815313>.
- O'Neill, Aaron. 'Tanzania - Youth Unemployment Rate 1999-2019'. Statista, 2021. <https://www.statista.com/statistics/813098/youth-unemployment-rate-in-tanzania/>.
- Partech Africa. '2020 Africa Tech Venture Capital Report'. Partech, 2021.
- Quaye, Wilhemina, Gordon Ackon Yamga, and Emmanuel K Tetteh. 'National Framework for Research, Innovation, and Commercialisation in Ghana'. *Scinnovent Center Policy Brief, No. 7/2020*, 2020.



- Ramachandaran, Vijaya, and Blessing Omakwu. 'Nigeria's Tech Sector May Be Booming, but Where Are the Women?' Center For Global Development, 21 November 2019.
<https://www.cgdev.org/blog/nigerias-tech-sector-may-be-booming-where-are-women>.
- Rusinov, Georgi. 'Entrepreneurial Education and Attitudes in Tanzania', 2019, 9.
- SafeBoda. 'SafeBoda', 2021. <https://safeboda.com/ug/>.
- Sahara Ventures. 'A Startup in Tanzanian Context, Challenges and Opportunities', 2019.
- . 'Digital and Financial Inclusion for Women-Led Business in Tanzania', 2019.
- Saini, Sonal. 'Impact of the Pandemic on African Capital Markets'. Acuity Knowledge Partners, 2021.
<https://www.acuitykp.com/blog/impact-of-the-pandemic-on-african-capital-markets/>.
- Smart Girls Foundation Uganda. 'Her Start Up', 2021. <https://www.smartgirlsfoundation.org/her-start-up-program/>.
- Sokolowski, Thea. 'Catalyst Fund Announces Circle of Corporate Innovators'. *BFA Global* (blog), 15 June 2021. <https://bfaglobal.com/catalyst-fund/insights/catalyst-fund-announces-circle-of-corporate-innovators/>.
- Startup Uganda. 'Startup Uganda'. Startup Uganda, 2021. <https://startupug.com/startups>.
- TECC. 'Tanzania Entrepreneurship and Competitiveness Centre', 2021. <https://tecc.or.tz/>.
- The Innovation Village. 'STARTUP FINANCING: SOURCES AND WHY INNOVATION ECOSYSTEMS MATTER'. *The Innovation Village* (blog), 7 May 2021. <https://innovationvillage.co.ug/startup-financing-sources-and-why-innovation-ecosystems-matter/>.
- . 'The Innovation Village'. The Innovation Village, 2021. <https://innovationvillage.co.ug/>.
- TSA. 'Tanzania Startup Association'. TSA, 2021. <https://tsa.co.tz/>.
- . 'TSA Snapshot Survey on The Impacts of Covid-19 Pandemic on Startups & Small And Medium Enterprises In Tanzania'. Tanzania Startup Association. Accessed 16 July 2021.
<https://tsa.co.tz/docs/Tanzania-Startup-Association-Report.pdf>.
- United Nations, Department of Economic and Social Affairs, Population Division. 'World Population Prospects 2019, Volume II: Demographic Profiles'. United Nations, 2019.
- . 'World Urbanization Prospects: The 2018 Revision', 2019.
<https://population.un.org/wup/Publications/Files/WUP2018-Report.pdf>.
- UWEAL. 'Uganda Women Entrepreneurs Association Limited', 2021. <https://uweal.co.ug/>.

- Viik, Linnar, Katrin Nyman-Metcalf, Hannes Astok, Kristiina Kaljurand, and Margus Püüa. 'Guidelines and Roadmap for Full Deployment of E-Governance Systems in Africa'. E-Governance Academy, 2019. https://ega.ee/wp-content/uploads/2019/04/eGA_Final-Report-Research-analysis-guidelines-and-roadmap-for-full-deployment-of-e-governance-systems-in-Af.pdf.
- Wangari, Brenda, and Rachel Crawford. 'Unlocking Pipeline: A Playbook for Entrepreneur Support in Africa'. Village Capital, 2019.
- WitU. 'Women in Technology Uganda'. WitU. Accessed 30 July 2021. <https://witu.org/>.
- World Bank. 'Addressing Youth Unemployment in Ghana Needs Urgent Action, Calls New World Bank Report'. World Bank, 2020. <https://www.worldbank.org/en/news/press-release/2020/09/29/addressing-youth-unemployment-in-ghana-needs-urgent-action>.
- . 'Digital Solutions in a Time of Crisis : Uganda Economic Update : Fifteenth Edition', 2020. <https://documents1.worldbank.org/curated/en/775621594292073824/pdf/Uganda-Economic-Update-Fifteenth-Edition.pdf>.
- . *Ghana Digital Economy Diagnostic*. World Bank, 2019.
- . 'Uganda Economic Update, 14th Edition'. Strengthening Social Protection to Reduce Vulnerability and Promote Inclusive Growth. Washington, DC, February 2020.
- . 'World Bank in Tanzania'. Text/HTML. World Bank, 2021. <https://www.worldbank.org/en/country/tanzania/overview>.

APPENDICES

Appendix 1: Interview Schedule

AfriConEU – Interviews

Objectives:

- Get a deep understanding of the different stakeholders, challenges and opportunities on the ground in Ghana, Nigeria, Uganda and Tanzania digital ecosystems.
- To analyse the needs of the DIHs within these ecosystems and bring to light the challenges they face

Target groups:

The research will focus on four groups of digital ecosystem actors including

- Digital Innovation Hubs including Tech hubs, entrepreneurship support organisations (accelerators, incubators), entrepreneur support networks and universities
- Investors
- Startups
- Ecosystem enablers & policy makers (those focused on building the ecosystem more broadly rather than primarily supporting startups)

Interview questions:

All questions are for the digital innovation hubs while other stakeholders only answer the 'ECOSYSTEM PERSPECTIVE' questions.

1.0 What role do digital innovation hubs (and similar actors) currently play within the digital innovation ecosystems in Uganda, Ghana, Nigeria and Tanzania?

1. HUB-SPECIFIC ACTIVITY: How does [DIH name] work to support the digital ecosystem within [country]? How do you see yourself as being different from other players within the ecosystem?
2. ECOSYSTEM PERSPECTIVE: What are the ecosystem needs? What is the role of innovation hubs (e.g universities, accelerators, incubators) more generally within the ecosystem? How effective are the innovation hubs in the country? Are there any policy initiatives or government support for innovation hubs?

2.0 How has COVID-19 affected digital innovation ecosystems and how have DIH responded to the challenges?

1. HUB-SPECIFIC ACTIVITY: What has been the impact on COVID-19 on your activities and start-up support? [Follow-on question if needed: Has it played a positive or negative role?]
2. ECOSYSTEM PERSPECTIVE: What has been the impact on COVID-19 on the tech ecosystem more broadly? Has COVID-19 changed the work of innovation hubs within the ecosystem? Did and how covid impact collaborations?

3.0 What gaps still exist in terms of the role that DIH can play in strengthening digital ecosystems? How can DIHs be supported to play a greater role?

1. HUB-SPECIFIC ACTIVITY: What are your top three biggest needs as a DIH? [follow on question: What is limiting the potential of your hub to support start-ups and the ecosystem?]
2. HUB-SPECIFIC ACTIVITY: Have you or your team taking part/have taken part in any support programmes/capacity building programmes? How effective are they/have been?
3. ECOSYSTEM CONTEXT: What's missing for innovation hubs in [Nigeria, Ghana, Tanzania or Uganda]? How can innovation hubs be supported to play a greater role? Are there any policy initiatives or government support for innovation hubs?

4.0 What opportunities and challenges exist around collaboration with EU DIHs and ecosystems

1. HUB-SPECIFIC: What is your experience working with the international partnership building/networking programmes? What worked well or what could be improved?
ECOSYSTEM PERSPECTIVE: What hub support initiatives, activities or strategies have you seen in other parts of Africa, Europe or the world that you like to implement in [Nigeria, Ghana, Tanzania or Uganda]?

Appendix 2: Roundtable Sessions Information

AFRICONEU VIRTUAL ROUNDTABLE SERIES: BUILDING RESILIENT AFRICAN DIGITAL ECONOMIES POST-COVID – FOCUS ON GHANA, NIGERIA, UGANDA AND TANZANIA

Introduction:

COVID-19 has ushered us all into the most dramatic digital transformation in a generation! From remote working capabilities to new business models and innovations, digital technologies have captured our attention and boosted certain sections of the digital economy.

These virtual events sought to understand how hubs in Ghana, Nigeria, Uganda and Nigeria can be better supported to help their economies harness the digital opportunities that are arising and to catalyse innovation on the continent.

Summary:

Country	Date held	No of attendees	Panellists
Ghana	28th April 2021	33	<ul style="list-style-type: none"> • Josiah Eyison, Co Founder/CEO, iSpace • Gideon Brefo, Co-Founder, hapaSpace • Amma Sefa-Dedeh Lartey, Co-Founder, Social Enterprise Ghana
Nigeria	19th May 2021	41	<ul style="list-style-type: none"> • Nneka Ukay, Executive Secretary, Innovation Support Network Hubs • Joel Ogunsola , Co-Founder, Emerging Communities Africa (ECA) – Nigeria • Mimshach Obioha , Former Executive Director, Ventures Platform • Professor Ajayi, Federal University of Tech Akure
Uganda	10th June 2021	63	<ul style="list-style-type: none"> • Allan Lule, Startup Manager, Makerere Innovation and Incubation Center • Michael Niyitegeka, Director, Refactory • Apiyo Perez Masinde, Programme Lead, Outbox Uganda
Tanzania	23rd June 2021	28	<ul style="list-style-type: none"> • Iku Lazaro - Co-Founder, Shule Direct • Godfrey Kilimwomeshi - Co-founder, Fundi App • Promise Mwakale - Partnership Lead, Buni Hub

Agenda:

Session 1: Discussion Panel (1 hour)

Our panel of hub and ecosystem leaders discussed the challenges and opportunities for African digital ecosystems and hubs post-COVID

Discussion questions:

- What are some of the challenges and opportunities created by COVID-19 within the digital ecosystem in Ghana/Nigeria/Uganda/Tanzania? I.e for hubs, investors, startups and other ecosystem actors
- How can digital innovation hubs play a greater role in addressing the challenges and harnessing the opportunities that have emerged? What support would DIHs need for this to happen?
- What challenges and opportunities have emerged with respect to women and youth participation and inclusion? What needs to be done to ensure no one is left behind in the post-COVID digital economy?
- More broadly, what do you believe is still missing or needs to happen for the African digital ecosystem to be able to thrive (i.e drive innovation, inclusion and growth) in a post-COVID world

Session 2: Co-creation workshopS (1 hour)

interactive break-out group sessionS where participants generated ideas for building the capacity of African digital innovation hubs and enabling effective partnerships with Europe

Discussion questions:

- How might we support African Digital Innovation Hubs to become more sustainable and effective as catalysts within the innovation ecosystem?
- How might we strengthen the ability of African Digital Innovation Hubs to more effectively support women and youth in a post-COVID world?
- How might we build mutually beneficial partnerships between Europe and African digital ecosystem actors?

Appendix 3: Survey Forms

AfriConEU – African Digital Ecosystem Survey

Goal of survey:

- To collect data on perceptions of digital ecosystem stakeholders in Ghana, Nigeria, Uganda and Tanzania on the impact of COVID-19 on the local digital ecosystems.
- Gain understanding of African stakeholders' needs and interests in relation to developing partnerships with European digital ecosystem actors.

Target Respondents:

- Leaders of Digital Innovation Hubs (tech hubs, universities, incubators, accelerators)
- Entrepreneurs and entrepreneur support network leaders
- Digital skills providers
- Other innovation ecosystem actors (investors, investment enablers, policymakers and advocates)

Questions:

1. Where are you based? (Country)
2. Which one of the following best describes you or your organisation?
 - Innovation Hub (Tech hub, incubator, accelerator, innovation network, entrepreneurship support organisation)
 - Ecosystem Enabler (University, knowledge builder, investment enabler, professional services)
 - Startup/Entrepreneur
 - Investor (VC, Private Equity, Angel)
 - Funder (philanthropy and development finance)
 - Policy maker
 - Other
3. To what extent would you say COVID-19 has had a NEGATIVE impact on your organisation/activities?
 - Severely affected (e.g led to closure, major loss of revenue, high number of job losses)
 - Moderately affected (e.g significant loss of revenue, some job losses)
 - Minor (e.g temporary disruption of activities)
 - Did not affect
4. To what extent would you say the COVID-19 pandemic has had a POSITIVE impact on your organisation/activities?
 - Very positive (e.g created new significant revenue opportunities, rise in clients/users)
 - Moderately positive (e.g some revenue growth, opened new channels for delivering your products/services)
 - Minor positive impact
 - No positive impact

5. Would you say the COVID-19 Pandemic has had an overall negative or positive impact on the digital innovation ecosystem in your country?
 - Overall positive impact
 - Overall negative impact
 - No impact
 - I don't know

6. a) Have you ever been a part of any Europe-Africa networking or partnership development activities?
 - Yes
 - No

If YES

b) To what extent would you say these Europe-Africa networks or partnership activities were beneficial to your business/organisation?

- Highly beneficial
- Moderately beneficial
- Not beneficial
- Were a waste of resources/time

7. What would be your biggest interests for participating in Europe-Africa networking or partnership development activities??

Finding new market opportunities for your products/services

- Knowledge exchange
- Sourcing for funding
- Sourcing talent/expertise
- Gaining international exposure
- Accessing technology solutions
- Other (Please specify)

AfriConEU – African DIH Training & Capacity Needs Survey

Goal of survey:

1. To collect data on the general training and capacity needs of African Digital Innovation Hubs including but not limited to hub sustainability, support for startups/entrepreneurs and women & youth, impact monitoring and evaluation)
2. Gain feedback on their participation in past training/ capacity building programs

Target Respondents:

- Hub leader/ managers
- Entrepreneur support organisation (ESO) /programme leaders

SECTION 1: TRAINING AND CAPACITY NEEDS

1. General info

- Name of the person
- Role/Position
- Name of Hub/ ESO
- Country
- City
- Years in operation (*drop down – 0-2years, 3-5 years, 6 -10 years, 10+ years*)

2. Activities and services

a. How would you rate your organisation’s capacity and skills in providing the following services within the digital innovation ecosystem?

0) Do not provide 1) Limited capacity/skills 2) Adequate capacity/skills 3) Excellent capacity/skills

- Work space
- Incubation and acceleration support for startups/entrepreneurs
- Market research
- Business development support
- Networking and community
- Investor matching and investment advisory services
- Digital skills training e.g coding
- Design training (e.g product/service design, ideation, design thinking etc)
- Consultancy services for SMES, businesses or corporations
- Consultancy for philanthropic, impact and development organisations
- Impact/international development research
- Other (please specify)

b. How would you rate the competency and skills of your organisational team in the following areas

0) No competency/skills 1) Limited competency/skills 2) Adequate competency/skills 3) Excellent competency/skills

- Hub financial management
- Programme design
- Programme management
- Business development
- Advocacy / policy

- Grant proposal writing/fundraising
- Marketing and communications
- Impact monitoring and evaluation
- Research

3. Funding and revenue streams

a. What is your yearly turnover - *(not mandatory & drop down – less than \$10,000USD per year, \$10,000 – \$50,000, \$50,000 – \$100,000, \$100,000 – \$250,000, over \$250,000)*

b. Do you generate revenue or funding from any of the following sources/activities (please tick all that apply)

- Grants
- Office or event space hire/rent
- Impact or international development Consultancy
- Tech consultancy (e.g software design, coding)
- Business consultancy (business development, market research)
- Equity from start ups
- Research
- Training and or program participant fees

c. What needs or gaps exist with regards to your organisation’s financial sustainability?

4. Women

- Do you currently run specific programs for women?
- Do you track how many women participate in your programmes ?
- If so, approximately what % of your participants are female
- What needs or gaps exist in terms of your capacity to support women?

5. Youth

- Do you currently run specific programs for youth and addressing youth unemployment?
- Do you track how many youth you have been able to help get into employment or entrepreneurship?
- If so, how many youth have you been able to impact to date?
- What needs or gaps exist in terms of your capacity to support youth?

6. Impact measurement

Do you currently have any of the following methods in place to monitor and track the social and economic impact of your programmes (please tick all that apply)

- – Theory of change
- – Impact strategy
- – Monitoring and Evaluation plan
- – Baseline surveys
- – Feedback/follow up surveys
- – None of the above

7. Have you participated in previous training or capacity building programmes aimed at Digital Innovation Hubs/ Entrepreneurship Support Organisations?

Yes – Continues to section 2

No – Ends survey

SECTION 2 : EXPERIENCES WITH TRAINING & CAPACITY BUILDING PROGRAMS

8. - Capacity building programmes are designed for DIHs in the establishment phase or for DIHs in the fully operational phase. On which of these topics have you already had training?

*more answers possible

1	DIH establishment
2	DIH strategy & business development
3	DIH service portfolio and development
4	DIH expansion & networking
5	DIH skills & knowledge creation
6	DIH communication & awareness creation
7	DIH sector-specific topics

8. Which capacity building for DIHs (training modules/programmes) did you attend successfully met your expectations?

Title	
Link	
Title	
Link	
Title	
Link	

9. For which topics would you need further support in the future?

*more answers possible

1	DIH establishment	
2	DIH strategy & business development	
3	DIH service portfolio and development	
4	DIH expansion & networking	
5	DIH skills & knowledge creation	
6	DIH communication & awareness creation	
7	DIH sector-specific topics	
8	Other topics: women entrepreneurs	
9	Other topics: youth empowerment	

10. Which training methods you found most effective for you?

- F2:2 Workshops
- Zoom workshop
- 1:1
- Mentoring
- Online knowledge centre
- Peer to peer
- Other

SECTION 3: Contact details

12. Would you like to be added to our mailing list to receive updates on the AfriConEu project and our upcoming activities for connecting African and EU digital Innovation Hubs?

- Yes
- No