

Tech Hubs in Africa

ACCELERATING START-UPS
FOR RESILIENT GROWTH
3rd Edition



In collaboration with:



© International Trade Centre 2024

The International Trade Centre (ITC) is the joint agency of the World Trade Organization and the United Nations.

Street address: ITC
54-56, rue de Montbrillant
1202 Geneva, Switzerland

Postal address: ITC
Palais des Nations
1211 Geneva 10, Switzerland

Telephone: +41-22 730 0111

Fax: +41-22 733 4439

E-mail: itcreg@intracen.org

Website: www.intracen.org

Tech Hubs in Africa

ACCELERATING START-UPS
FOR RESILIENT GROWTH
3rd Edition

About the report

African tech hubs – now more than 1,000 across the continent – accelerate digital, social and economic transformation as they support start-ups.

The report examines the COVID-19 impact on tech hubs and offers recommendations for future operations. It surveys 52 tech hubs across Africa and includes interviews with dozens more. It identifies resilient business models that weathered the pandemic. The ability to digitalize their services is the most defining parameter for resilient tech hub success, according to the ITC survey.

This report serves also as a toolkit for governments and funders to invest successfully in tech entrepreneurship support infrastructure. It concludes with practical recommendations and underlines the importance of hybrid support and digital service delivery.

Publisher: International Trade Centre

Title: Tech Hubs in Africa: Accelerating start-ups for resilient growth (3rd Edition)

Publication date and place: Geneva, February 2024

Page count: 96

Language: English

ITC Document Number: P127.E/SEC/DECI/24-III

Print ISBN: 9789210030953

PDF ISBN: 9789213588604

Sales no.: E.24.III.T.4

Citation International Trade Centre (2024). *Tech Hubs in Africa: Accelerating start-ups for resilient growth (3rd Edition)*. ITC. Geneva.

For more information, contact: Martin Labbé at labbe@intracen.org

ITC encourages the reprinting and translation of its publications to achieve wider dissemination. Short extracts of this paper may be freely reproduced, with due acknowledgement of the source. Permission should be requested for more extensive reproduction or translation. A copy of the reprinted or translated material should be sent to ITC.

Digital image(s) on the cover: © International Trade Centre (ITC)

© International Trade Centre (ITC)

ITC is the joint agency of the World Trade Organization and the United Nations.

Foreword

Africa's large youth population and high rate of entrepreneurship are stoking hopes that high-growth start-ups, especially in the technology sector, can create quality jobs while filling major gaps in providing important goods and services for communities. But often these start-ups run up against significant challenges, from lack of information and skills to limited access to finance and infrastructure. That, however, is where tech hubs are making a difference.

From just a smattering of hubs in the continent a decade ago, there are now over 1000 tech hubs across Africa. These hubs provide digital entrepreneurs and established firms with support to test out ideas, develop their businesses, and forge new relationships. Crises of recent years have tested these hubs' resilience, while shedding light on what needs to change so that these hubs can continue doing what they do best, regardless of what the future may hold.

This third edition of *Tech Hubs in Africa* examines what the COVID-19 pandemic meant for African tech hubs, along with the lessons learned. The report incorporates both survey data and tech hub "success stories" to show what worked well and why, along with what risks and vulnerabilities became apparent during a period of crisis.

Ghanaian Nelson Amo is one such success story. He founded Innohub in 2014, followed by the Accra Angels Network in 2019. He also sponsors Wangara Green Ventures, an SME fund that invests in local, climate-smart businesses. By 2020, he had become an influential player in building up Ghana's digital economy. When the pandemic struck, he pivoted to make sure Innohub could keep supporting entrepreneurs, namely by seeking out high-impact projects in neighbouring countries. Thanks to these efforts, Innohub has become an expert in sourcing the best innovation projects for investors, which is a service that it now provides throughout West Africa.

Nelson Amo was not alone: the COVID-19 pandemic prompted many tech hubs to expand their digital capabilities and offer new services. Uganda's StartHub Africa, Tunisia's Open Startup, Senegal's CONCREE and Zimbabwe's CUBE are among those hubs which successfully used digital tools for incubation and acceleration services. Conversely, those tech hubs that were unable to make a big digital leap suffered during the pandemic. Many hubs closed their premises and sent their staff home to limit contact, some temporarily and others permanently. The closure of premises, in turn, hurt their revenues.

In other words, this report shows that one of the biggest factors in whether a tech hub can survive a crisis is in its ability to adopt digital tools for delivering services. Also key, this report shows, is the ability for these hubs to diversify their business models and, where needed, become leaner in how they work.

Today, tech hubs in Africa remain fragile. Many struggle to monetize their services, and nearly half of our survey respondents told us that the core services they offer do not bring in enough revenue to support their operations. Other major hurdles include where these hubs sit within the entrepreneurial ecosystem, how they are set up, and whether they can access the funding, facilities and equipment they need to function effectively.

Many of the problems that tech hubs faced before COVID-19 remain a reality today. This has a direct impact on whether digital start-ups can achieve their goals: for instance, those startups supported by accelerators received twice as much funding as those without support. With no end in sight to the crises that are reshaping the global economy, now is the time to help create a more supportive entrepreneurial ecosystem for tech hubs and the small businesses they serve.

The report provides an in-depth analysis of what a strong entrepreneurial ecosystem requires, while setting out the challenges that many hubs still face in the pandemic's wake. The authors also include cases, business models and insights to help African tech hubs succeed, while setting out recommendations that hubs, policymakers and funders should consider for the future.

At the International Trade Centre, we have seen firsthand why digital connectivity matters for small businesses and their communities to thrive. That is why we have a dedicated "digital moonshot" to focus our efforts over the coming years. It is also why we are stepping up our support for SMEs that are agents of digitalization in their countries, and are doing so hand-in-hand with local tech hubs. They are the pillars of the innovation ecosystems that we need for resilient growth that delivers for sustainable development.



Pamela Coke-Hamilton
Executive Director
International Trade Centre

Acknowledgements

This book was prepared by a team led by Martin Labbé under the general supervision of Robert Skidmore. Martin Labbé coordinated the publication with the support of Kyle de Klerk, who updated the executive summary and Chapters 1, 2, 5 and 6, and Caroline Mayr, Matteo Todisco, Beatriz Valle Seva and Hibat-Allah Hably, who peer-reviewed the publication. The Bond'Innov team updated Chapter 3. Briter Bridges did the research and write-up of Chapter 4, and the Impact Hub Network wrote Chapter 5. Special thanks to the hub leaders, experts and academicians who shared their practical insights and expertise for the book. Special thanks to Tim Weiss, Assistant Professor at the Department of Management and Entrepreneurship of Imperial College Business School, for his case study on Pacers. Tayo Akinyemi wrote the first version of chapters 1, 2 and 5.

Natalie Domeisen and Anne Griffin (both ITC), oversaw the editorial and production process; Jennifer Freedman edited the publication; Iva Stastny Brosig of Design Plus provided the graphic and layout services; and Serge Adeagbo (ITC) provided the digital printing support.

Contents

| | |
|---|-----------|
| Foreword | i |
| Acknowledgements | iv |
| Acronyms | ix |
| Executive summary | x |
| | |
| Chapter 1 | |
| UNDERSTANDING THE ECOSYSTEM..... | 1 |
| THE RISE OF TECH HUBS IN AFRICA..... | 2 |
| What do tech hubs do?..... | 3 |
| The role of hubs and entrepreneurial ecosystems..... | 4 |
| THE EIGHT PILLARS OF ENTREPRENEURIAL ECOSYSTEMS..... | 6 |
| THE TECH ENTREPRENEURIAL ECOSYSTEM POST-PANDEMIC..... | 9 |
| | |
| Chapter 2 | |
| ENTREPRENEURSHIP AND TECH HUBS..... | 13 |
| THE KNOWLEDGE ECONOMY..... | 14 |
| THE JOB CREATION IMPERATIVE..... | 15 |
| THE ROLE OF HIGH GROWTH TECH START-UPS..... | 17 |
| SUPPORT NEEDED BY TECH START-UPS..... | 18 |
| How do hubs provide this support?..... | 19 |
| COMMON CHALLENGES FOR HUBS..... | 20 |
| A COMPREHENSIVE FRAMEWORK TO DEFINE HUB SUCCESS..... | 22 |
| THOUGHT LEADER TIM WEISS ON THE RISE OF 'PACERS' IN THE NEW NORMAL..... | 24 |
| | |
| Chapter 3 | |
| FINANCIAL SUSTAINABILITY: THE CHALLENGE..... | 27 |
| HUBS SEEK TO DELIVER SOCIAL IMPACT..... | 29 |
| Core purpose matters..... | 30 |
| Alignment matters..... | 31 |
| FUNDING SOURCES AND REVENUE STREAMS..... | 32 |
| FIVE BUSINESS MODELS..... | 33 |
| A NETWORK APPROACH TO FINANCIAL SUSTAINABILITY..... | 35 |
| FINANCIAL SUSTAINABILITY: A MULTIDIMENSIONAL CONCEPT..... | 36 |
| SEEING FINANCIAL SUSTAINABILITY IN TERMS OF ALIGNMENT..... | 37 |
| Aligning key components of hubs is difficult..... | 38 |
| Evolving hubs require evolving business models..... | 39 |
| Bond'innov: Main takeaways from the COVID-19 crisis..... | 39 |

| | |
|--|-----------|
| ADAPTING WHILE DELIVERING IMPACT SUPPORT..... | 39 |
| Creating new opportunities during the pandemic..... | 39 |
| Initiating a new dynamic after the pandemic..... | 40 |
| TECH HUB CASE STUDY: FRENCH SOUTH AFRICAN TECH LABS..... | 40 |
| Handling operational and financial disruption to pursue activities..... | 40 |
| Finding the right balance between physical and digital meetings..... | 40 |
| | |
| Chapter 4 | |
| BUSINESS MODELS AND VALUE PROPOSITIONS..... | 43 |
| BUSINESS MODELS OF AFRICAN TECH HUBS..... | 45 |
| The value of tech hubs..... | 45 |
| CREATE: DESIGNING THE BUSINESS MODEL AND VALUE PROPOSITION..... | 45 |
| Tech hub types, business models and services offered..... | 45 |
| Types of financial support offered..... | 48 |
| The impact of hubs..... | 48 |
| DELIVER: CONNECTING TO THE MARKET..... | 51 |
| Strategies to attract entrepreneurs, funders and partners..... | 51 |
| CAPTURE: CAPITALIZING THE BUSINESS..... | 53 |
| HUBS ARE STRUCTURED ON FIVE REVENUE MODELS..... | 55 |
| HUBS IN THE COVID-19 ERA..... | 58 |
| Operational challenges..... | 58 |
| Threats to financial sustainability..... | 59 |
| Pivoting business models to become financially stable and resilient..... | 59 |
| The new normal: The changing role of hubs..... | 61 |
| WHAT SUPPORT DO HUBS NEED?..... | 62 |
| | |
| Chapter 5 | |
| CASE STUDY: IMPACT HUB – LOCALLY ROOTED, GLOBALLY CONNECTED..... | 65 |
| COMMUNITIES FOR IMPACT..... | 67 |
| ADAPTING TO COVID-19..... | 67 |
| POST-PANDEMIC: WHAT WORKS..... | 68 |
| | |
| Chapter 6 | |
| THE NEXT STEPS..... | 71 |
| RECOMMENDATIONS FOR HUBS..... | 72 |
| RECOMMENDATIONS FOR FUNDERS..... | 74 |
| RECOMMENDATIONS FOR POLICYMAKERS..... | 74 |
| WHERE TO FROM HERE?..... | 76 |
| | |
| REFERENCES..... | 79 |

Figures

| | |
|---|----|
| Figure 1: Tech hub types..... | 46 |
| Figure 2: Tech hub services..... | 46 |
| Figure 3: Types of financial support offered by tech hubs..... | 48 |
| Figure 4: Tech hub cheque sizes..... | 48 |
| Figure 5: Tech hub goals..... | 49 |
| Figure 6: Tech hubs target specific sectors..... | 49 |
| Figure 7: Tech hub targeted support..... | 50 |
| Figure 8: Tech hubs target population segments..... | 50 |
| Figure 9: Tech hub stakeholders..... | 51 |
| Figure 10: Tech hub marketing channels..... | 53 |
| Figure 11: Tech hub revenue from core service offerings..... | 53 |
| Figure 12: Tech hub funding from external sources..... | 54 |
| Figure 13: Tech hub cost allocation..... | 54 |
| Figure 14: Grants are the main revenue source for many hubs..... | 55 |
| Figure 15: Networker hubs earn most revenue from co-working fees..... | 56 |
| Figure 16: Consulting fees are vital for some tech hubs..... | 56 |
| Figure 17: Agent hubs make most revenue from management fees..... | 57 |
| Figure 18: Pandemic hurt revenue of most hubs..... | 58 |
| Figure 19: Main threats to financial sustainability..... | 59 |
| Figure 20: Hubs shifted to virtual workshops and online events..... | 60 |

Boxes

| | |
|---|----|
| Box 1: What are tech hubs?..... | 2 |
| Box 2: Entrepreneurship as driver of economic development..... | 4 |
| Box 3: The state of tech start-up funding in Africa..... | 7 |
| Box 4: The future for tech hubs after COVID-19..... | 10 |
| Box 5: Mentoring vs formal business classes..... | 20 |
| Box 6: Geographical expansion to scale up and expand capabilities..... | 26 |
| Box 7: BongoHive aligns projects with goals..... | 30 |
| Box 8: Best practices to engage the private sector..... | 31 |
| Box 9: Managing cash flow when a business model includes revenue sharing..... | 35 |
| Box 10: Integrating tech hubs in the venture capital world..... | 38 |

Tables

| | |
|--|----|
| Table 1: Typical hub services..... | 4 |
| Table 2: Key pillars of an entrepreneurial ecosystem: a checklist for policy makers..... | 8 |
| Table 3: Hub models and revenue streams..... | 32 |
| Table 4: Survey participants..... | 44 |
| Table 5: How do stakeholders engage with hubs?..... | 52 |

Acronyms, units and measures

Unless otherwise specified, all references to dollars (\$) are to United States dollars, and all references to tons are to metric tons.

| | |
|---------|--|
| AfDB | African Development Bank |
| FSAT | French South African Tech Labs |
| GDP | Gross domestic product |
| GEM | Global Entrepreneurship Monitor |
| ICT | Information and communication technology |
| ITC | International Trade Centre |
| LAB'ESS | Laboratoire de l'Economie Sociale et Solidaire |
| NGO | Non-governmental organization |
| SMEs | Small and medium-sized enterprises |
| WEF | World Economic Forum |

EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

What future for tech hubs in a post-pandemic, more connected world? In short, tech hubs are here to stay, as they accelerate Africa's digital transformation. Yet the ways they operate and their funding models continue to evolve.

Support digital startups, accelerate African development

In Chapter 1, we explain how the entrepreneurial support landscape in Africa is changing and in Chapter 2, we examine the role of tech hubs as ecosystem builders and development facilitators.

Tech hubs have emerged in force over the last decade, as part of a new generation of business support organizations. In Africa alone, there were well over 1 000 tech hubs in 2021. These hubs nurture startups, foster innovation and accelerate digital skill development that Africa critically needs. They encourage networking among like-minded entrepreneurs; give access to training, mentors and potential investors; and offer related services for startups.

These hubs come at a cost. To help tech hubs understand funding sources and related business models, ITC developed a tech hubs publication in partnership with African tech hub leaders in 2019, and updated it in early 2020.

Today's context is dramatically different. This third edition addresses the impact of COVID-19 on tech hubs. We surveyed 52 African tech hubs and interviewed others, whose cases are included in this edition.

Pandemic: Shuttered doors

Many hubs had built their brand over years as a place where entrepreneurs could share office space, electricity and internet connections, too. This helps companies – in many places, costs remain high and service may be inconsistent.

When the pandemic-related lockdowns arrived, shared spaces ground to a halt. Our survey shows that over 70% of tech hubs lost revenue, of which over 40% lost more than half of their income. A number of hubs even had to close down their operations permanently. This is not unique to tech hubs, of course. All businesses with a face-to-face component suffered considerably.

Tech hub winners: Connected to networks, at ease with technology

Digital technologies took a big jump since 2020 – especially culturally, as people were obliged to lean on digital communications to do business and kept those learnings when the pandemic was over.

Tech hubs that survived and thrived were connected to networks and able to switch their operations online. This echoes the research results that the International Trade Centre has found in interviewing businesses across Africa.

Tech hubs that thrived were those that adapted to the new era. They rapidly moved their training online, for example, responding to the jump in demand for digital services. They also looked closely at their costs to run physical spaces, and took some hard decisions to stay afloat: tech hubs were forced to rethink their business models.

As we have returned to a new normal of “hybrid” services, the working world has changed. People welcome the opportunity to meet again for conferences, training and professional networking meetings. At the same time, online training, online news reporting, online marketing and other online delivery services continue to grow. Digital skills are more important than ever to succeed in business, and African tech hubs need to nurture these skills.

Pandemic impact on funding models

In Chapter 3, we analyze the five different types of business models identified among African tech hubs. While some proved more resilient than others during the pandemic, none were unaffected. In Chapter 4, we look in more detail at the pandemic’s impact on these business models, and see examples of resilience and adaptability that can serve as models for hub success in the ‘new normal’. Chapter 5 goes one level deeper, and explores the case of the Impact Hub network in Africa and the Middle East.

Tech hubs reflect five different business types: the grantee, the networker, the consultant, the agent and the builder. The pandemic influenced them differently. While no business models emerged unscathed, examples of resilience exist that can serve as models for the future.

Among successful hubs were CUBE of Togo, CONCREE of Senegal, Open Startup of Tunisia and StartHub Africa of Uganda. Their common thread: a pivot to digital solutions. They digitized many of their services and continued to bring value to clients during successive lockdowns.

Impact Hub, a network of 14 hubs in Africa and the Middle East, is a case example. It supports more than 1 000 startups, and when the pandemic hit, Impact Hub faced major challenges. Lockdowns and travel bans made it hard to deliver. Lower revenues made it challenging to cover fixed costs such as rent and salaries. What to do? They pivoted away from space-based revenues to digital offerings that did not require fixed costs in rent and other overheads. This helped Impact Hub to survive and deliver services when the need was most critical.

The grantee: Grants from governments, international organizations or private foundations are the primary funding source. The hubs deliver services as part of a wider project and act as implementers for funding entities .

Their revenues dropped up to 50% during the pandemic.

The networker: Entrepreneurs pay subscription fees for access to office space or registration fees for events. More than 40% lost at least 50% of their revenue during the pandemic.

The consultant: Established companies and startups pay for consulting and training. Fees to established companies help subsidize support to fledgling startups.

These were among the most shock-resilient. About 40% saw a minor drop in income – 25% or less – but others actually increased their income. That's because consulting services are more easy to digitize, and companies looked to consultants to help them pivot during the pandemic. A successful example is the CUBE hub in Togo.

The agent: Management fees from incubation and acceleration programmes are the revenue source. These hubs take an equity stake in ventures and generate revenue from investment and exits. They take percentage fees for successful investor matching or charge direct fees for incubation services.

More than 40% lost up to half of their income; and almost 30% lost more than half of their income. An exception that did well was CONCREE in Senegal; their success was based on digitizing their services.

The builder: Start-up studios generate revenue from successful enterprises to fund their own operations, in this unusual model. An example is Fast-Forward Venture studio of Nigeria, which develops a business idea, finds an entrepreneur who can turn it into a scalable company, and offers start-up funding in exchange for an equity stake in the new venture.

No builder hubs provided feedback for the survey. However, the economic shock made it more challenging to scale up new ideas, and it is likely that these hubs also lost income.

Moving forward, together

Chapter 6 offers recommendations for hubs, funders, policymakers and wider ecosystems to improve the role and success of hubs in African tech ecosystems.

Tech hubs are part of a business ecosystem that matter for Africa's future. African governments are supporting digitalization and the African Union has clearly identified the important role they play in in its *Digital Transformation Strategy for Africa 2020-2030*.

Startup accelerators and incubators are thriving, especially for young entrepreneurs, complementing formal business training institutes. Tech hubs fit into the same ecosystem space, with the difference that there is perhaps more flexibility for entrepreneurs to customize their impact and involvement.

Some tips to ensure the viability and resilience of tech hubs in Africa:

For new hubs, conduct a thorough feasibility assessment. Before launching, map and analyse the local ecosystem to understand what is needed and decide the structure that best suits a new hub.

Define core purpose. Don't strive to be all things to all stakeholders – supporting entrepreneurs, fostering communities, promoting ecosystem growth and attracting investors. Defining core purpose allows hubs to progress in one area, ultimately bringing greater value to the ecosystem.

For new and existing hubs, address systemic issues jointly. Some problems are too big for any one institution. Hubs can resolve some issues by sharing practices, failures and ideas. A collaborative ecosystem improves performance for all players.

Balance strategy implementation with organic response. Ideally, a hub understands its market niche before its launch. Yet even with the most robust research, as the pandemic showed, shocks will come and situations will shift. Always seek feedback and stay flexible to consider adjusting one's strategies and approach.





RETRACT ONLY
TYPE NAME
CLASSICAL OF THE
MONTANA

Look at the
... ..

FEEL?
...

WANT?
... ..

THINK?
... ..

WOULD
... ..

FILE

TECHNOLOGY
CHAIN..

CHAPTER 1

UNDERSTANDING THE ECOSYSTEM

THE RISE OF TECH HUBS IN AFRICA..... 2

THE ROLE OF HUBS AND ENTREPRENEURIAL ECOSYSTEMS 4

THE EIGHT PILLARS OF ENTREPRENEURIAL ECOSYSTEMS..... 6

THE TECH ENTREPRENEURIAL ECOSYSTEM POST-PANDEMIC 9

CHAPTER 1

UNDERSTANDING THE ECOSYSTEM

THE RISE OF TECH HUBS IN AFRICA

The entrepreneurial landscape in Africa is changing. A new generation of business support organizations known as 'tech hubs' have emerged in recent years and spread rapidly across the continent. They cater to a growing number of young African tech entrepreneurs who demand flexibility and a wide variety of support services.

This report investigates how African tech hubs have been affected by and responded to COVID-19. It provides insights into the shifting landscape of African tech entrepreneurial ecosystems and identifies ways that hubs may best support entrepreneurs in the 'new normal'.

Box 1: What are tech hubs?

There have been many attempts to define a tech hub and differentiate between its functions: hub, lab, incubator and accelerator. The overall role of hubs is to ensure that entrepreneurs thrive, which they do through two primary activities: building businesses and creating communities.

In *Bolstering Innovators in Africa Report 2021* by Briter Bridges, 'tech hub' refers to 'some combination of a workspace, internet café, coffee shop, training centre, incubator, accelerator, event venue and/or makerspace. While there is great diversity hub-to-hub with respect to structure, amenities, membership and other factors, the consensus is that hubs serve as a meeting place for a community'. At its core, a hub is a space where tech enthusiasts, innovators and entrepreneurs gather to share ideas and build. Although hubs serve different purposes and use different models, they share many common characteristics, such as:

Community building: Hubs stimulate the building of entrepreneurial communities by creating a communal space and a shared sense of identity among members. Tech hub communities are usually self-starting, self-organizing and driven by empowered members. The hub often brings together members who would otherwise not meet; they contribute diverse perspectives and knowledge.

Foster collaboration: Hubs assemble different types of people to share ideas and work together, which often serves to stimulate innovation.

Catalyse innovation: Hubs curate creative and dynamic spaces that inspire innovation.

Source: Kelly, 2014; De Beer et al., 2017; Csíkszentmihályi et al., 2018; Gryszkiewicz and Friederici, 2014; Toivonen and Friederici, 2015.

Over the last decade, tech hubs have become critical actors within African entrepreneurial ecosystems, providing much needed support for resource-constrained start-ups. An estimated 1,031 hubs operated across the continent in 2021, with the number increasing by 60% since 2019, when 643 hubs were identified.¹ This is even more impressive when one considers that only a handful of hubs existed in the early 2010s.²

Nigeria hosts the most tech hubs on the continent (164), followed by South Africa (96) and Kenya (90).³ Within Africa, 53% of hubs primarily function as community-building institutions, while just 45% offer some kind of business support programme.⁴

What do tech hubs do?

At their core, hubs provide safe spaces for small businesses to launch ideas, scale and network with like-minded entrepreneurs.

Hubs aim to have a social impact as they aspire to be (and create) profitable businesses. They also have assorted functions, offering activities as diverse as providing co-working space, hosting events, offering training and incubating start-ups.

Hubs perform three general functions: building relationships and networks, enhancing capabilities and serving as intermediaries.⁵

- **Hubs as network and relationship facilitators:** As hub members, entrepreneurs can find one another and join forces to exploit opportunities and overcome challenges. Hubs also help entrepreneurs connect to stakeholders outside the hub, such as investors and educational institutions. Finally, hubs help stimulate innovation by creating proximity, which leads to collaboration, as well as social proximity, which gives entrepreneurs a sense of shared identity that encourages knowledge exchange and learning.⁶
- **Hubs as capacity builders:** Hubs offer formal training to start-ups to build skills and enable managers to exchange expertise. They help to cultivate core business skills, technical skills and 'soft' skills related to management and leadership.⁷
- **Hubs as intermediaries:** Intermediaries are institutions that bridge system gaps or institutional voids. Six types of voids represent gaps in the institutions and infrastructures that support business and markets:⁸
 - Product market voids affect the relationships of firms with their suppliers and customers.
 - Labour market voids make it difficult for companies to find qualified employees and partners.
 - Capital market voids characterize the lack of financial capital that start-ups need to grow.
 - Regulatory voids are the variable or missing rules and norms for doing business.
 - Contracting voids describe the lack of formal written contracts.
 - Institutional voids indicate the degree to which the basic enabling environment conducive to supporting growing businesses is absent.

Hubs address these gaps by building networks, increasing the pool of human capital, creating trust to encourage business dealings and serving as the foundations of ecosystem growth.

1. Briter Bridges and Afrilabs (2021). 'Bolstering Innovators in Africa Report 2021.' See <https://briterbridges.com/bolstering-innovators-in-africa>

2. Afrilabs and Briter Bridges (2019). 'Building a Conducive Setting for Innovators to Thrive: A Qualitative and Quantitative Study of a Hundred Hubs Across Africa.' See <https://www.afrilabs.com/wp-content/uploads/2019/11/Afrilabs-Innovation-Ecosystem-Report.pdf>

3. Briter Bridges and Afrilabs (2021), op. cit.

4. *Ibid.*

5. Littlewood, D.C., and W.L. Kiyumbu (2018). "'Hub' organisations in Kenya: What are they? What do they do? And what is their potential?' Technological Forecasting & Social Change, p. 131, 276–285, 278, 280–283.

6. *Ibid.*: 282.

7. *Ibid.*: 282–283.

8. *Ibid.*: 278.

Table 1: Typical hub services

| Hub function | Services |
|--|---|
| | Start-up creation |
| Start and develop new growth-oriented start-ups. | <ul style="list-style-type: none"> ▪ Mentoring ▪ Business and marketing support ▪ Seed funding ▪ Networking (including with investors) ▪ Acceleration-type start-up competitions ▪ Deal brokerage ▪ Office space |
| | Skills development |
| Broaden entrepreneurial and technical talent pool and train competent potential start-up founders and employees. | <ul style="list-style-type: none"> ▪ Technical and business trainings, workshops and clinics ▪ Virtual learning courses and platforms ▪ Mobile app testing facilities |
| | Network building |
| Bring together diverse stakeholder groups and help activate and organize communities. | <ul style="list-style-type: none"> ▪ Regular, in-depth, one-on-one start-up mentorship and coaching ▪ Core business support (accounting, legal services, etc.) ▪ Business development (brokerage and mediation of formal contracts, grants and partnerships) |

Source: Reproduced from infoDev, 2015.

The role of hubs and entrepreneurial ecosystems

Hubs are inextricably linked to the concept of entrepreneurship. As such, to understand the role that hubs play, one must also understand the role of entrepreneurship and the broader concept of entrepreneurial ecosystems.

Entrepreneurship is seen as a catalyst for economic growth, innovation, job creation and desirable socioeconomic outcomes.⁹ Technology-enabled start-ups are a particularly potent conduit of these effects.

Box 2: Entrepreneurship as driver of economic development

'Entrepreneurs are key drivers of economic and social progress. Rapidly growing entrepreneurial enterprises are often viewed as important sources of innovation, productivity growth and employment (small and medium-sized enterprises account for a high percentage of all jobs in emerging economies). Many governments are therefore trying to actively promote entrepreneurship through various forms of support.'

Source: World Economic Forum, 2014.

Historically, entrepreneurship has been examined from the perspective of an individual entrepreneur. However, to focus on the individual entrepreneur and his/her start-up is insufficient to understand the full extent of entrepreneurial activity in a country. Instead, one must understand the relationship of individual entrepreneurs with their wider environment and structures, or what is known as the entrepreneurial ecosystem.¹⁰

This ecosystem is defined as 'a system of interrelated pillars that impact the speed and ability with which entrepreneurs can create and scale new ventures in a sustainable way'.¹¹ The need to understand this

9. World Economic Forum [WEF] (2014). Entrepreneurial Ecosystems Around the Globe and Early-Stage Company Growth Dynamics. Geneva, p. 4. Retrieved from <http://reports.weforum.org/entrepreneurial-ecosystems-around-the-globe-and-early-stage-company-growth-dynamics/wp-content/blogs.dir/34/mp/files/pages/files/nme-entrepreneurship-report-jan-8-2014.pdf>

10. Mason, C., and M. Hruskova (2021). 'The impact of Covid-19 on entrepreneurial ecosystems.' In McCann, P., and Vorley, T. (eds.) Productivity and the Pandemic. Edward Elgar, pp. 59–72. See <https://www.e-elgar.com/shop/gbp/productivity-and-the-pandemic-9781800374614.html>

11. WEF, *op. cit.*: 9.

ecosystem is increasingly appreciated¹² and, as a result, 'entrepreneurial ecosystem' has become a commonplace term in management science and business literature.¹³

Every ecosystem is different, but most contain several typical categories of actors. For example, the International Trade Centre's (ITC) tech entrepreneurship ecosystem mapping methodology features academic institutions, financial institutions, capacity development providers, corporations or corporate foundations, development finance institutions or donor agencies, foundations, government agencies, investors, research and advisory providers, media, sector associations and microfinance institutions.¹⁴

Each country may have multiple overlapping local, regional and national ecosystems often with more activity in cities than in rural areas while international ecosystems may extend across borders.¹⁵

Unsurprisingly, ecosystems are relevant to hub impact. First, tech hubs are often tasked with filling ecosystem gaps, so understanding the strengths, weaknesses and needs of the ecosystem will help them determine where and how to intervene.¹⁶

Second, ecosystems are oriented around a purpose. In Kenya, for example, the information and communication technologies (ICT) ecosystem is associated with building start-ups, economic growth and generating social impact.¹⁷ There are two separate, but related, communities in Nairobi, where much of Kenya's tech start-up activity is centred. One is composed of social enterprises and targets social impact while the other focuses on ICT and tech start-ups.¹⁸ In such a scenario, ecosystem mapping helps a hub decide whether to focus on ecosystem building or start-up creation, or perhaps to pursue multiple purposes.¹⁹

Finally, hubs (and start-ups) are more likely to thrive in ecosystems that function well and contain essential resources such as entrepreneurial and technical talent, early-stage investors and general capital availability, relationship networks and community infrastructure.²⁰ For example, social technology projects that emerge from tech hubs are more likely to succeed when the ecosystems in which they function are healthy and contain these elements. Those that are created in dysfunctional ecosystems are more likely to fail.²¹

Entrepreneurial ecosystems are extremely important to start-ups. The quality of the ecosystems these start-ups occupy will ultimately determine how well they cope with new technology and renegotiate relationships with their customers, partners and suppliers, as well as how well they navigate the challenge of expanding into new markets.²²

THE EIGHT PILLARS OF ENTREPRENEURIAL ECOSYSTEMS

Entrepreneurial ecosystems are based on eight main pillars, according to research by the World Economic Forum.²³ These ecosystem pillars are not only interrelated, but they affect each other. For example, the pillars associated with government, policy and regulatory frameworks may strongly influence the others given the role that policy plays in defining the boundaries of entrepreneurial activity.

- **Markets.** This pillar pertains to the availability of markets that are conducive to start-up success, such as the presence of 'early adopter' customers who are willing to buy and use new products. While companies

12. Park, E.K., Martins, R.M., Hain, D., and R. Jurowetcki (2017). 'Entrepreneurial Ecosystem for Technology Start-ups in Nairobi: Empirical analysis of Twitter networks of Start-ups and Support organizations.' In DRUID (p. 35). New York, 30, 3.

13. International Trade Centre (2018). SME Competitiveness Outlook 2018: Business Ecosystems for the Digital Age. Geneva, 16. Retrieved from <http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/SMECO2018.pdf>

14. ITC (n.d.). Tech Entrepreneurship Ecosystem in Ghana: Network analysis and mapping of institutions supporting tech entrepreneurship. ITC: Geneva.

15. Park et al., *op. cit.*: 26–27.

16. Csíkszentmihályi, C., Rodrigues, G., Ferreira, E., Gianolla, C., Jardim, C., Kasprzak, M., Leclerc, E., Mukundane J., and D. Mwesigwa (2018). *Social Tech Ecosystems in Sub-Saharan Africa*, p. 48. Madeira Interactive Technologies Institute. See https://www.indigotrust.org.uk/wp-content/uploads/2018/05/SocialTechAfrica_Final_DOI_CC.pdf

17. Marchant, E. (2015). 'Who is ICT Innovation For? Challenges to Existing Theories of Innovation, a Kenyan Case Study' (CGCS Occasional Paper Series on ICTs, Statebuilding, and Peacebuilding in Africa No. 4). Retrieved from http://www.global.asc.upenn.edu/app/uploads/2015/01/Marchant_Who-is-ICT-Innovation-for.pdf, pp. 18–19.

18. Park et al., *op. cit.*: 29.

19. InfoDev (2014). 'The Business Models of mLabs and mHubs – An Evaluation of infoDev's Mobile Innovation Support Pilots,' p. 55.

20. *Ibid.*: 20.

21. Csíkszentmihályi et al., *op.cit.*: 48.

22. *Ibid.*: 29–30 and WEF, *op.cit.*: 4.

23. WEF, *op. cit.*

need accessible markets with advantageous business environments, executing a successful business-to-consumer model in Africa is difficult because there are so many low-income consumers and few early adopters. Entrepreneurs also struggle to penetrate new markets, even though they can use their networks to identify opportunities.²⁴

- **Human capital** refers to the supply of qualified personnel. Managerial, technical and leadership skills are needed to run start-ups, and educational institutions are expected to produce well-trained graduates. Ideally, start-ups benefit from a well-educated workforce from which they hire high-quality employees.

Managerial, technical and leadership skills remain a serious problem. It stems partly from a shortage of educational institutions and a lack of focus on entrepreneurial, management, technical and vocational training. The relative scarcity of knowledge-intensive industry, through which employees learn valuable skills on the job, is also cited as a source of the problem.

Most people with the skills needed by start-ups have more lucrative, stable employment options at corporations or seek higher wages in foreign markets. As start-up founders enter African markets from more developed ecosystems, however, they bring their experience, skills and access to resources such as networks, mentorship and funding. When these people start new businesses, they transfer their knowledge and connections to those ventures, which may be further disseminated throughout the market.²⁵

- **Funding** refers to financial capital in the form of angel investment, seed-stage capital, venture capital, public markets and debt financing that enables start-ups to function. Early-stage capital is scarce across the continent from a global perspective and local venture capital markets are nascent.

Many African start-up founders rely on funds from family and friends to launch their enterprises, and then face the 'Valley of Death' – the point at which this funding is exhausted as they are not yet successful enough to attract early-stage institutional capital. Appropriate funding from African venture capitalists, angel investors and crowdfunding remains limited, but is growing.²⁶

- **Support systems** are the individuals and institutions that guide and support start-ups, such as tech hubs (i.e. incubators, accelerators), mentors, professional service providers and networks. These support structures enable fledgling founders to validate their business ideas, learn valuable skills and be part of a community focused on tech entrepreneurship.

Activities such as events, workshops and competitions help entrepreneurs learn and stimulate innovation by bringing people together and encouraging exchange of ideas and business opportunities. This helps form close-knit communities that foster trust and good business practices, and makes entrepreneurs more comfortable about doing business with each other. Finally, private, public, academic and institutional actors have launched a growing number of initiatives that help organize ecosystems.²⁷

Box 3: The state of tech start-up funding in Africa

African tech start-ups raised more than \$5.2 billion in 2021 – 264% growth compared to 2020. The number of start-ups that received funding rose by 84% to 640 in 2021 from 347 in 2020. While this represents growth in funding that is 6 times larger than the global average, 92% of this funding went to start-ups in South Africa, Kenya, Nigeria and Egypt.

There were at least 771 different disclosed investors in 2021, up from 370 in 2020. Successful African founders are increasingly starting to invest in other start-ups, which reflects the growing maturity of the African ecosystem. However, African investors are still the minority, representing only an estimated 3%–4% of acquisitions in 2021.

Source: Briter Bridges, 2021; Partech, 2022; Partech, 2020.

24. Hanff, E., and C. Jekinnou (2018). Challenges and opportunities of incubators in West Africa: A guide to understanding support structures for entrepreneurs in West Africa, p. 31; Bramann, J. (2017). 'Building ICT Entrepreneurship Ecosystems in Resource-Scarce Contexts: Learnings from Kenya's "Silicon Savannah"' In B. Ndemo and T. Weiss (Eds.), *Digital Kenya An Entrepreneurial Revolution in the Making*, p. 241.

25. WEF, *op. cit.*: 10. Hanff and Jekinnou, *ibid.*: 30. Bramann, *ibid.*: 238–239.

26. Bramann, *ibid.*: 239–240.

27. *Ibid.*: 237–238. WEF, *op. cit.*: 11. Hanff and Jekinnou, *op.cit.*: 31.

- **Infrastructure.** This pillar indicates the availability of basic infrastructure including electricity, internet access and transportation. The high cost and limited or unreliable availability of basic utilities such as electricity and internet can limit the growth and scalability of businesses.²⁸
- **Culture** reflects the embeddedness of entrepreneurial culture, or the degree to which entrepreneurship is seen as an acceptable profession with recognizable role models and success stories. Culture reflects societal norms as it pertains to basic entrepreneurship values such as risk tolerance, experimentation and innovation. It also includes attitudes towards entrepreneurship and building wealth.²⁹

Many African countries have highly entrepreneurial cultures, but entrepreneurship is often considered a low-level profession. There is little trust in institutions and business transactions, and fear of failure causes people to avoid risk. Low trust levels and risk aversion hinder the creation of new ventures. The need to support extended family members financially is another major barrier to entrepreneurship in Africa.³⁰

- **Government, policy and regulatory framework.** This indicates how hospitable the operating environment is to entrepreneurship from a policy and regulatory standpoint, which includes incentives such as tax benefits and legislation that addresses bankruptcy and labour laws. Weak rule of law, inadequate contract enforcement, corruption and ambiguous government administrative processes have damaged many entrepreneurial ecosystems.

Some governments have begun to prioritize private-sector development and taken steps to improve their respective ecosystems – for instance, creating one-stop shops to streamline the process to set up ventures and privatizing public agencies focused on small and medium-sized enterprises (SMEs).³¹

- **Education & training.** Universities are central ecosystem actors and sources of technical and business talent. However, sub-Saharan Africa receives some of the lowest scores on the Global Entrepreneurship Index for start-up skills. This is likely due to the lack of access to and quality of tech-related education in Africa.³² As a result, young people in sub-Saharan Africa believe inadequate skills is one of the top barriers to creating a venture, according to the Global Entrepreneurship Monitor (GEM) and Youth Business International.³³

Of the eight pillars, the first three – markets, human capital, and funding – are the most important to start-ups. It is obvious that companies cannot survive without paying customers, capable employees and funding to cover the cost of growth and development.³⁴

Table 2 Key pillars of an entrepreneurial ecosystem: a checklist for policy makers

| Markets | Human capital |
|---|--|
| <ul style="list-style-type: none"> ▪ Domestic market: <ul style="list-style-type: none"> – Large companies as customers – SMEs as customers – Governments as customers ▪ Foreign market: <ul style="list-style-type: none"> – Large companies as customers – SMEs as customers – Governments as customers | <ul style="list-style-type: none"> ▪ Management talent ▪ Technical talent ▪ Entrepreneurial company experience ▪ Outsourcing availability ▪ Access to immigrant workforce |
| Funding and finance | Support systems |
| <ul style="list-style-type: none"> ▪ Friends and family ▪ Angel investors ▪ Private equity ▪ Venture capital ▪ Access to credit | <ul style="list-style-type: none"> ▪ Mentors/advisers ▪ Professional services ▪ Tech hubs (incubators/accelerators) ▪ Network of entrepreneurial peers |

28. Hanff and Jekinnou, *ibid.*

29. WEF, *op. cit.*: 11. Hanff and Jekinnou, *ibid.*: 31. Bramann, *op. cit.*: 235.

30. WEF and Hanff and Jekinnou, *ibid.*

31. *Ibid.* Bramann, *op. cit.*: 241.

32. WEF, *ibid.*: 12.

33. Youth Business International and GEM (2013). *Generation Entrepreneur? The state of global youth entrepreneurship.*

34. *Ibid.*: 4.

| Government and regulatory framework | Education and training |
|--|---|
| <ul style="list-style-type: none"> ▪ Ease of starting a business ▪ Tax incentives ▪ Business-friendly legislation/policies ▪ Access to basic infrastructure ▪ Access to telecommunications/broadband ▪ Access to transport | <ul style="list-style-type: none"> ▪ Available workforce with pre-university education ▪ Available workforce with university education ▪ Entrepreneur-specific training |
| Educational institutions | Cultural supports |
| <ul style="list-style-type: none"> ▪ Promoting a culture of respect for entrepreneurship ▪ Playing a central role in idea formation for new companies ▪ Playing a key role in providing graduates for new companies | <ul style="list-style-type: none"> ▪ Tolerance of risk and failure ▪ Preference for self-employment ▪ Success stories/role models ▪ Research culture ▪ Positive image of entrepreneurship ▪ Celebration of innovation |

Source: Aspen Network of Development Entrepreneurs, 2013; WEF, 2014.

THE TECH ENTREPRENEURIAL ECOSYSTEM POST-PANDEMIC

The COVID-19 pandemic and the disruptions it has caused have necessitated new ways of thinking about how an entrepreneurial ecosystem functions in times of uncertainty. While ecosystems generally suffered from greater vulnerability, they also grew in importance as fledgling start-ups and entrepreneurs that lacked the resources and resilience of established firms depended on the ecosystem for their survival. In this context, the ability of start-ups to develop during the pandemic, as well as their post-COVID recovery, depend directly on the health and functioning of the ecosystem as a whole.³⁵

The pandemic has thus highlighted the importance of entrepreneurial ecosystems – especially in Africa, where businesses generally have fewer institutional support structures than firms in more developed economies. This makes it important to diagnose the impact of the pandemic on the ecosystem to enhance its resilience in the face of future potential crises. Unsurprisingly, this impact was felt across the pillars described in the previous section.

- **Government, policy and regulatory framework.** Lockdowns, social distancing and bans on travel and events had profound effects on both the entrepreneurial ecosystem and wider economies of many countries. Ecosystems are based around facilitating formal and informal interactions that build connections among different actors in the ecosystem, and these were obviously all but impossible in the COVID-19 policy environment.

As such, in the short-term the pandemic undermined constant and interconnected stakeholder engagement in business decisions, prevented knowledge dissemination throughout the ecosystem and reduced the magnitude of social networking among ecosystem actors.³⁶ In the longer term, the rise of remote and hybrid working modalities has and is likely to continue to undermine the formation of new connections among these actors that are based on physical proximity, and has led to fears that entrepreneurial ecosystems may become more dispersed and less effective as this trend continues.³⁷

- **Education and training.** Beyond the impact that these containment measures had for connections within the ecosystem, they also had knock-on effects for the other ecosystem pillars. Regarding education and human capital, the closure of higher education institutions and the shift to online learning modules likely affected the quality of education provided as well as network formation opportunities for budding entrepreneurs.

35. Kansheba, J.M.P., Marobhe M.I., and A.E. Wald (2022). 'Cushioning the Covid-19 Economic Consequences on Entrepreneurial Ecosystems: The Role of Stakeholders' Engagement, Collaboration, and Support.' *Journal of African Business* 2023, Vol. 24, No. 2 214–234.

36. *Ibid.*

37. Mason and Hruskova, *op. cit.*

This is more so the case in Africa, where poorer students in rural areas were unable to attend online classes as resource-constrained institutions struggled to provide them.³⁸ The long-term implications for the availability of high-quality human capital are clear.

- **Markets.** These same containment measures also hampered the ability of start-ups to access and engage with traditional offline markets. Where markets remained available, consumer purchasing power had declined and appetite had waned for the consumption of non-basic goods and services, particularly in poorer African countries that could not deploy fiscal countermeasures to the economic impact of the pandemic.³⁹
- **Funding.** The availability of capital for start-ups was also constrained for three reasons. First, global investor risk-appetite decreased in the face of economic instability, prompting them to invest in established ventures rather than in less resilient start-ups.⁴⁰ Second, venture capital funds preferred to focus on making follow-up investments to safeguard existing portfolio companies that suffered losses in revenue.⁴¹ Finally, finance was increasingly provided in the form of loans that were underwritten by government guarantees. This led to sharp declines in the availability of equity finance and seed and start-up finance.⁴²

Interestingly, the data presented in Box 3 suggest that these trends may not have held true in an African context, with investment in African tech start-ups having grown consistently throughout the pandemic.⁴³ This indicates that risk-adjusted returns were sufficiently high in African tech start-ups to offset the additional risk associated with COVID-19, and/or is a testament to the resilience and growth potential of the African tech ecosystem, which still only absorbs less than 1% of global venture capital.

- **Support Systems.** Many tech hubs and other support organizations also ceased support activities or reduced the scope of support services offered due to the financial impact of the pandemic. In addition, many of these support activities needed to adopt to online modalities that often proved challenging from both a value-proposition and technical perspective.

However, there is anecdotal evidence to suggest that where tech hubs managed to navigate this transition, activities such as virtual bootcamps, workshops and meet-ups garnered higher rates of participation and led to the development of connections that transcended the geographical boundaries of local ecosystems. As such, it is likely that many tech hubs may continue to adopt a hybrid model that will likely blur the boundaries between overlapping local, regional and international ecosystems and facilitate resource transfer between them.⁴⁴

Box 4: The future for tech hubs after COVID-19

Given the role of tech hubs as community builders (particularly in Africa), lockdown measures and the transition to remote working greatly affected hub attendance and revenues. In the post-COVID context, the continuation of remote working has prompted many start-ups to question whether they require office space in tech hubs as the cost of maintaining their presence in these hubs may no longer be considered worth it.

This raises questions as to whether hubs will have the same pre-pandemic draw for entrepreneurs and investors, or whether the dispersion of ecosystems due to remote working will force them to re-evaluate their business model. Anecdotal reports have indicated that there is great hesitation in launching new tech hubs, particularly those that focus on providing co-working spaces.

While on the face of it these trends would lead to obvious conclusions for the future of tech hubs, their role in African ecosystems could suggest otherwise. African hubs often have access to a more reliable supply of electricity and internet connectivity that cannot be replicated at home, potentially making them more resilient to impact of remote working on African ecosystem dispersion.

These trends and hypothesis are explored in much greater depth in Chapter 4 of this report.

Source: Briter Bridges and AfriLabs, 2021; Clarke, 2022.

38. Ndzinisa, R., and N. Dlamini (2022). 'Responsiveness vs. accessibility: pandemic-driven shift to remote teaching and online learning.' *Higher Education Research & Development*, 41:7, 2262–2277.

39. McKinsey & Company (2020). Survey: South African consumer sentiment during the coronavirus crisis.

40. Kansheba, Marobhe and Wald, *op. cit.*

41. AfricArena (2021). *The State of Tech in Africa 2021*.

42. Mason and Hruskova, *op. cit.*

43. Partech, 2020 and 2021, *op. cit.*

44. Mason and Hruskova (2021), *op. cit.*

While no two entrepreneurial ecosystems are alike, evidence from many national ecosystems including Australia,⁴⁵ Germany,⁴⁶ the United Kingdom,⁴⁷ Pakistan,⁴⁸ Tanzania⁴⁹ and Nigeria⁵⁰ suggests that the impact of the pandemic described above has been relatively consistent around the world.

Ultimately, the impact of the pandemic on entrepreneurial ecosystems and how they function in the new normal is still ongoing, raising several questions regarding the future of tech hubs and the role they play. For example, how will hubs adapt their business models to changes in the entrepreneurial ecosystem? What new support activities will entrepreneurs demand from hubs? How will the ecosystem mould according to the flexibility offered by remote working modalities?

Chapter 4 offers a closer look at these questions – and potential answers. The next two sections first provide additional background context to the role of tech hubs in Africa. Chapter 2 explores the wider role that entrepreneurship plays in Africa, while Chapter 3 provides an overview of hub financial sustainability.

-
45. Maritz, A., Perenyi, A., de Waal, G., and C. Buck (2020). 'Entrepreneurship as the Unsung Hero during the Current COVID-19 Economic Crisis: Australian Perspectives.' *Sustainability* 12(11):4612.
46. Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Morales Reyes, C.A., Prochotta, A., Steinbrink, K.M., and E.S.C. Berger (2020). 'Startups in times of crisis – A rapid response to the COVID-19 pandemic.' *Journal of Business Venturing Insights*, Vol. 13, June 2020, e00169.
47. Beauhurst (2021). 'COVID-19 Business Impact: April 2020–August 2021.'
48. Rashid, S., and V. Ratten (2021). 'Entrepreneurial ecosystems during COVID-19: the survival of small businesses using dynamic capabilities.' *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 17, No. 3, pp. 457-476.
49. Kansheba, Marobhe and Wald, *op. cit.*
50. AfriLabs (2020). 'The Impact of Covid-19 on the Nigerian Innovation Ecosystem.' AfriLabs - Innovate UK KTN.





CHAPTER 2

ENTREPRENEURSHIP AND TECH HUBS

THE KNOWLEDGE ECONOMY 14

THE JOB CREATION IMPERATIVE..... 15

THE ROLE OF HIGH GROWTH TECH START-UPS 17

SUPPORT NEEDED BY TECH START-UPS..... 18

COMMON CHALLENGES FOR HUBS 20

A COMPREHENSIVE FRAMEWORK TO DEFINE HUB SUCCESS..... 22

THOUGHT LEADER TIM WEISS ON THE RISE OF 'PACERS' IN THE NEW NORMAL..... 24

CHAPTER 2

ENTREPRENEURSHIP AND TECH HUBS

Entrepreneurship, especially tech-enabled, high-growth entrepreneurship, is often cited as a key to economic growth and development in Africa. Consequently, those with a stake in Africa's future – its citizens, government, civil society and the private sector – seek to promote and encourage entrepreneurship as a catalyst for economic prosperity and social well-being.

Participation in the knowledge economy, job creation and the impact of high-growth firms are key outcomes of tech-enabled enterprises. By examining these aspects of economic development, this chapter will explore the wider role of hubs in African development and suggest interventions that can meaningfully support entrepreneurship activity in Africa.

THE KNOWLEDGE ECONOMY

The term 'knowledge economy' emerged in the 1960s to mark the transition from traditional economic models to those driven by knowledge production. It is defined as an economy that uses information resources such as technologies, skills and processes to drive economic growth⁵¹ and, according to the World Bank, consists of four main pillars:⁵²

1. **An economic incentive and institutional regime** that provides good economic policies and institutions that permit efficient mobilization and allocation of resources and stimulate creativity and incentives for the efficient creation, dissemination, and use of existing knowledge.
 2. **Educated and skilled workers** who can continuously upgrade and adapt their skills to efficiently create and use knowledge.
 3. **An effective innovation system** of firms, research centres, universities, consultants, and other organizations that can keep up with the knowledge revolution and tap into the growing stock of global knowledge and assimilate and adapt it to local needs
- A modern and adequate information infrastructure** that can facilitate the effective communication, dissemination, and processing of information and knowledge.

As an example of the knowledge economy in action, a local tech company might use global software and hosting solutions to develop an automated risk assessment tool for local banks to evaluate entrepreneurs seeking funding more accurately. At its core, creation and sale of such a digital tool can be considered a 'knowledge product'. Its production and use would have been enabled by both a tech-friendly regulatory environment and potential economic incentives for the creation of domestically developed digital solutions.

Development of the tool would have made extensive use of ICT that enables information to travel quickly and broadly via the internet. In the past, Africa was characterized by significant barriers to this ease of communication and quagmires in the flows of information needed to create and maintain a knowledge economy. However, this is changing as the African digital economy grows rapidly.

51. Asian Development Bank (2014). *Innovative Asia: Advancing the Knowledge-Based Economy - Country Case Studies for the People's Republic of China, India, Indonesia, and Kazakhstan*.

52. World Bank (2013), <https://documents1.worldbank.org/curated/en/695211468153873436/pdf/358670WBIOThe11dge1Economy01PUBLIC1.pdf>

It more than tripled in value to \$99.7 billion in 2019 from \$30 billion in 2012 and has continued to grow exponentially since then due to the impact of COVID-19.⁵³ Rapid increases in bandwidth availability⁵⁴ and greater adoption of internet-enabled mobile devices across Africa have facilitated this growth.

The ubiquitous use of smartphones to access the internet is a critical enabler of the African digital economy. Mobile network penetration far exceeds that of traditional broadband in Africa, having grown by a factor of 10 since 2010 and now covering 82.4% of the African population.

This accessibility, combined with the greater affordability of mobile devices, means that 75% of African consumers have mobile internet access compared to the mere 22.7% who have internet access at home.⁵⁵ While this offers great hope for the creation of an African knowledge economy, these penetration rates and the other critical elements of a thriving knowledge economy still lag significantly behind other world regions.

In the modern global economy, a partial transition to a knowledge economy is generally seen as necessary for a country to develop, and for its economic resilience in a connected global economy. While internet use particularly through smartphones is growing in Africa, this does not reflect a correlative increase in African knowledge products. A study in 2017 found that Africa's share of knowledge products, as measured through domain name registrations and code uploaded to GitHub, has declined relative to other regions.⁵⁶

This also reflects Africa's performance in the latest edition of the Global Knowledge Index, which tracks the suitability of countries for the development of a knowledge economy. While no regional data are available, the top African country (the Seychelles) placed 50th, and along with Mauritius are the only two African countries with a score greater than the global average. On the other end of the index, 18 of the worst ranked 20 countries were in Africa.⁵⁷

Fortunately, the rise of hub-like institutions and the bottom-up, technology-enabled entrepreneurship support they provide signal knowledge economy activity and offer hope for the future.⁵⁸ As noted in the previous chapter, research suggests that tech hubs are key actors in the knowledge economy due to their ability to stimulate connections and collaboration between important private and public sector actors.⁵⁹ They may also help spread the benefits associated with technology, which tend to be less evenly distributed than the technology itself.

These benefits can be delivered through non-technical complements to technology that are important contributors to development.⁶⁰ Upskilling workers to help them participate in the knowledge economy is a relevant example.

THE JOB CREATION IMPERATIVE

The global economy is in a state of uncertainty after the Covid pandemic, with slowing growth around the world undermining the creation of new employment opportunities and the absorption of new workers. This disparity between the rate of job creation and the growing workforce is particularly acute in Africa. The continent has the youngest age distribution in the world and the highest fertility rate. These factors combine to make Africa the only continent where the size of the youth labour force is on an upward trend.⁶¹

-
53. COVID-19 is estimated to have increased internet usage by as much as 20% across Africa. See Google and International Finance Corporation (2020). *e-Conomy Africa 2020: Africa's \$180 billion Internet economy future*.
 54. African inbound international bandwidth capacity grew by a factor of 10 in 2009–19. African Union and Organisation for Economic Co-operation and Development (2021). *Africa's Development Dynamics 2021: Digital Transformation for Quality Jobs*. African Union: Addis Ababa/OECD Publishing, Paris.
 55. International Telecommunication Union (2022). *Global and Regional ICT Data*.
 56. Graham, M., Ojanperä, S., Anwar, M.A., and N. Friederici (2017). 'Digital Connectivity and African Knowledge Economies.' *Questions de communication* 32, No. 2: pp. 345–60.
 57. United Nations Development Programme and Mohammed bin Rashid Al Maktoum Knowledge Foundation (2020). *Global Knowledge Index 2020*.
 58. Piotrowski, J. (2015). 'What is a knowledge economy?' *SciDev.Net*.
 59. De Beer, J., Millar, P., Mwangi, J., Nzomo, V., and I. Rutenberg (2017). 'A Framework for Assessing Technology Hubs in Africa.' *Journal of Intellectual Property and Entertainment Law*, 6(2), p. 244.
 60. Kelly, T., and R. Firestone (2016). 'Digital Dividends: How Tech Hubs are helping to Drive Economic Growth in Africa.' *World Development Report Background Papers*, p. 2.
 61. United Nations Department of Economic and Social Affairs (2022). *World Population Prospects 2022: Summary of Results*. New York. African Development Bank [AfDB] (2021b). *Entrepreneurship and Free Trade: Volume II – Towards a New Narrative of Building Resilience*.

More than 60% of Africa's population is under 25 years old,⁶² and by 2030, 42% of global youth will live in Africa.⁶³ The outsized importance of youth in Africa represents both a blessing and a curse: if sufficient employment opportunities are created, it could fuel long-term economic growth, but this demographic dividend may quickly become a demographic curse if these employment opportunities do not arise.

Securing these opportunities, however, will be a major challenge. Although Africa's gross domestic product (GDP) grew by 6.9% in 2021⁶⁴ and 3.9% in 2022,⁶⁵ it will take more than 5 years for Africa to return to its pre-COVID share of 5% of global GDP.⁶⁶ Additionally, 30 million people have been pushed into extreme poverty as a result of the pandemic and 22 million jobs have been lost. The African Development Bank estimates that it will take more than 10 years for extreme poverty to return to pre-pandemic levels.⁶⁷

The ongoing conflict between the Russian Federation and Ukraine is also expected to push an additional 3.9 million Africans into extreme poverty.⁶⁸

In addition to the impact of COVID-19, African economic growth is decoupled from similar levels of growth in employment: 1% growth produces only 0.4% employment growth. Over the last 15 years, annual employment growth has averaged 1.8% while the labour force has expanded by 3% each year.⁶⁹ This means that, effectively, Africa's employment rate has been shrinking even as the number of jobs has been rising.

Africa has the fastest growing population in the world, three times the global average. The continent's population is expected to double by 2050,⁷⁰ and the labour force to swell from 620 million in 2020 to 2 billion by 2060.⁷¹ More than 10 million youth enter the market every year, but only 3.1 million formal jobs are created annually,⁷² meaning close to 70% of African youth are forced to find informal sources of employment.⁷³ The twin pressures of a rapidly expanding labour force and a decoupling of employment from economic growth have forced many African policymakers to prioritise job creation.

This job creation imperative is predicated on the assumption that the jobs in question are good jobs, or jobs that offer income stability, enable jobholders to support themselves and their families, and provide opportunities for learning and growth. The current reality is that such work placements are quite scarce.⁷⁴ Further, the prevalence of traditional, long-term career opportunities seems to be decreasing.⁷⁵ As a result, entrepreneurship has been earmarked as an important source of employment in Africa with potential to absorb the increasing numbers of youth entering the labour market each year.

'Under the AfCFTA, young people will be able to create 450 million jobs in Africa, contributing over 60% to Africa's GDP. It is the driver of Africa's economy.'

Wamkele Mene, Secretary General of the African Continental Free Trade Area

Fortunately, sub-Saharan Africa boasts the highest proportion (60%) of potential youth entrepreneurs compared to other regions,⁷⁶ with youth 1.6 times more likely to engage in entrepreneurial activity than adults. Self-employment is a major source of income across the continent.⁷⁷ In West Africa, particularly in urban areas, self-employment accounts for half of all jobs. In countries such as Ghana and Mali this rate reaches above 80%.⁷⁸

62. United Nations Department of Economic and Social Affairs (2020). *World Youth Report 2020*; AfDB (2021b), *ibid.*

63. WEF, "Why Africa's Youth Hold the Key to Its Development Potential," World Economic Forum, 2022, <https://www.weforum.org/agenda/2022/09/why-africa-youth-key-development-potential/>.

64. AfDB, *African Economic Outlook 2022*.

65. African Union and Organisation for Economic Co-operation and Development, *op. cit.*

66. *Ibid.*

67. AfDB (2022), *op. cit.*

68. *Ibid.*

69. Kappel, Robert (2021). *Africa's Employment Challenges: The Ever-Widening Gaps*. Friedrich Ebert Stiftung.

70. United Nations Department of Economic and Social Affairs (2022), *op. cit.*

71. Kappel, *op. cit.*

72. AfDB (2021b), *op. cit.*

73. Kappel, *op. cit.*

74. Youth Business International and GEM, *op. cit.*

75. *Ibid.*: 9–12.

76. *Ibid.*

77. United Nations Department of Economic and Social Affairs (2020), *op. cit.*

78. Kappel, *op. cit.*

Similarly, 22% of Africans who are of working age are starting new businesses – the highest rate globally.⁷⁹ However, about 33% of African entrepreneurs are considered necessity entrepreneurs. This term describes entrepreneurs who start their ventures because they cannot find suitable formal jobs, not because they have a great business idea, or out of entrepreneurial spirit. For these people, entrepreneurship is the only path available.

It should also be noted that most of this entrepreneurial activity is informal and will not result in growth enterprises that have major implications for wider job creation. To have a significant impact on employment and wider development, policymakers should focus on enabling the creation and sustainability of high-growth start-ups, particularly those in the services sector that contribute to the growth of the knowledge economy. This dynamic is explored in further detail below.

THE ROLE OF HIGH GROWTH TECH START-UPS

High-growth firms play a central role in the economy because of their huge capacity to contribute to job and output growth, in addition to helping firms around them grow.

There is no single definition of what constitutes a high-growth firm, but the term generally refers to those firms that achieve a certain threshold of sustained annual growth (e.g. 10%). They have been earmarked as important for job creation, as they are generally accepted to create more jobs than their slower growing counterparts.⁸⁰ For example, high-growth firms in the countries studied by the World Bank created more than half of all new jobs despite comprising just 3% and 20% respectively of services and manufacturing companies.⁸¹

'A common view of a typical [high-growth firm] is a small start-up in a high-tech sector that grows quickly over a sustained period through some favorable quality inherent to the firm, for example, a new advanced technology, a brilliant marketing innovation, or an extremely capable staff.'

High Growth Firms: Facts, Fiction and Policy Options for Emerging Economies, Executive Summary, xix

Interestingly, most high-growth firms in Africa tend to be larger than the average firm, and they show signs of high growth potential only after a year or two of operation. They also operate in different sectors.⁸²

These types of firms are attracting increased attention. As the understanding of entrepreneurship has developed, so too has the understanding that the primary challenge that entrepreneurs face is not starting a business, but rather achieving sustainable growth. This is reflected by the fact that high growth is temporary and variable – that is, firms experience periods of high growth and slower growth, and many high-growth companies lose momentum after showing initial promise.⁸³

Despite this variability, it is essential to understand what has the potential to stimulate high growth, given the potential for job creation and output benefits. The primary forces are the ability of an enterprise to enter and exit markets and to share resources via networks. Managerial, entrepreneurial and innovative skills are also critical, as are access to knowledge, availability of financing and flexible labour markets.⁸⁴

This also reflects the fact that high-growth firms often rely more on the wider entrepreneurial ecosystem than other firms, due to the intense and urgent need for resources that comes with rapid growth.⁸⁵ As such, in the context of the knowledge economy and the need for employment creation in Africa, it is important that these businesses have sufficient access to these resources.

79. AfDB (2021b), *op. cit.*: 158.

80. Monteiro, G.F.A. (2019). 'High-Growth Firms and Scale-Ups: A Review and Research Agenda,' RAUSP Management Journal Vol. 54, No. 1. pp. 96–111.

81. *Ibid.*

82. *Ibid.*: 144.

83. *Ibid.*: xix, 54.

84. *Ibid.*: xx.

85. Monteiro, *op. cit.*

SUPPORT NEEDED BY TECH START-UPS

Conditions that favour entrepreneurs are scarce in Africa. In the 2021–22 edition of the Global Entrepreneurship Monitor which provides a holistic overview of a country’s entrepreneurial environment all African countries included in the survey scored below the global average.⁸⁶ Additionally, the most recent edition of the Global Entrepreneurship Index⁸⁷ ranks sub-Saharan Africa lowest on start-up skills, risk acceptance and risk capital.⁸⁸

Entrepreneurship in Africa is hamstrung by a lack of resources across the eight pillars of the entrepreneurial ecosystem described in the previous chapter. There are major infrastructure deficits, comparatively poor regulatory environments, a lack of access to finance and perhaps most significantly gaps in education access and quality.

‘Sub-Saharan Africa is still plagued by markedly lower levels of literacy, poor numeracy skills and high drop-out rates, particularly in secondary schooling, and low level of tertiary enrolments.’⁸⁹ Consequently, nearly 35% of young Africans lack basic job skills, making it difficult for them to run firms and compete globally.⁹⁰

This reflects low levels of human capital in Africa, which is defined as the knowledge, skills and wealth that people accumulate over their lives. More human capital is associated with higher earnings for people, higher income for countries and stronger cohesion in societies. It is a central driver of sustainable growth and poverty reduction.⁹¹ Sufficient human capital is intrinsic to entrepreneurial ecosystems and start-up success, as it reflects the capacity of workers in a country to hatch and operationalize innovative ideas and/or help others in doing so.⁹²

The comparatively poorer educational outcomes in Africa mean that Africa’s human capital lags behind other continents and is 29% lower than the global average.⁹³ To build human capital at internationally competitive levels, African countries need more institutions and programmes that can actively bridge the gap between industry needs and education, focusing especially on management and problem-solving skills.⁹⁴

Other than early-stage interventions to improve human capital, efforts to improve firm capabilities typically involve providing basic support services such as mentoring, networking and business development. Policymakers and institutional actors can play a role by introducing financial incentives including grants and equity financing, recognition awards such as prize competitions, advisory services provided by government to enhance technology use and business strategy, and incubators and accelerators that provide foundational support to young companies.⁹⁵

Incubators and accelerators can help build the capabilities of high-growth firms because they cultivate early-stage, high-potential ventures.⁹⁶ Research suggests that incubated firms can generate additional revenue and jobs. Accelerators can boost company survival rates, revenue and (more modestly) employment growth. They can also improve deal flow in regional ecosystems, although the evidence is more limited than for incubators.⁹⁷

86. GEM (2022). *Global Entrepreneurship Monitor 2021/2022 Global Report: Opportunity Amid Disruption*. London: GEM.

87. This index is a composite indicator of the health of the entrepreneurship ecosystem in a given country.

88. Ács, Z., Szerb, L., Lafuente, E., and A. Lloyd (2018). *The Global Entrepreneurship Index 2018*. The Global Entrepreneurship and Development Institute, Washington, p. 12.

89. GEM and Youth Business International, *op. cit.*: 12.

90. *Ibid.*: 12, 28.

91. World Bank (2021). *The Human Capital Index 2020 Update: Human Capital in the Time of COVID-19*. Washington, D.C., International Bank for Reconstruction and Development / World Bank.

92. AfDB (2021a). *Entrepreneurship and Free Trade Volume I - Africa’s Catalysts for a New Era of Economic Prosperity*.

93. *World Bank (2021), op cit.*

94. *AfDB, op. cit.*: 215.

95. *Ibid.*: xxii.

96. *Ibid.*: xxii, 122, 144.

97. *Ibid.*: 144.

How do hubs provide this support?

Hubs add value in three ways: building communities, supporting start-ups and contributing to well-being. They offer the greatest benefit through community building, rather than affecting the outcome of a specific entrepreneur. This is true even though hubs do not always make community building an explicit goal.⁹⁸

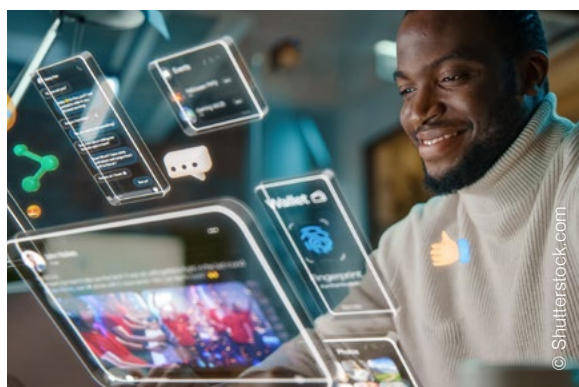
Few start-up founders attribute the launch of their companies to the intervention of tech hubs.⁹⁹ Many find interactions in the hub superficial, which prevents inexperienced founders from connecting with actors they would not ordinarily meet, such as seasoned entrepreneurs and investors.¹⁰⁰ As community builders, paradoxically, hubs aim to create a sense of shared identity and purpose that extends beyond the provision of basic services such as desks and internet access.¹⁰¹

Within a traditional framework, hubs are typically seen as purveyors of innovation. Consequently, any failure to produce major innovations is seen as a failure to contribute to development.¹⁰²

But this overlooks the contributions that hubs make in terms of offering previously unexplored professional opportunities in tech and entrepreneurship, boosting problem-solving ability, fostering shared identity and creating community.¹⁰³ Viewing hubs strictly as ‘start-up factories’ and promoting policies that connect innovation to economic development may miss or undervalue other important aspects of development.¹⁰⁴ From this perspective, hubs could be viewed as holistic contributors to economic development.

It has been proven that hubs support development and job creation in countries such as Nigeria, where the access they provide to electricity, space and mentorship are hard to duplicate given the prevailing conditions in the country. In such a scenario, hubs attract entrepreneurs and funding, and raise the profile of local start-ups.¹⁰⁵ Additionally, many argue that aiding start-ups generates social impact through their contribution to economic development.

Tech hubs can add value in other ways as well. According to the Global Accelerator Learning Initiative, and based on a sample of 2,599 start-ups and 212 accelerators, those start-ups that benefited from accelerator support received twice as much investment over a two-year period compared to those that didn't.¹⁰⁶ They also typically employed more people and experienced faster revenue growth.¹⁰⁷ These findings support the notion that tech hubs do indeed play a role in the creation of high-growth firms.¹⁰⁸



98. *Ibid.*: 12.

99. *Ibid.*: 10.

100. *Ibid.*: 10, 11.

101. *Ibid.*: 7.

102. Jimenez, A. (2016) 'A Capabilities Approach to Innovation: A Case Study of a Technology and Innovation Hub in Zambia.' In *ECIS 2016 Proceedings*, p. 21.

103. *Ibid.*

104. *Ibid.*: 12.

105. Akanle, O., and A. Omotayo (2017). 'Prospects of Incubation Hubs as a Development Driver in Southwest Nigeria.' In *Nigerian Anthropological and Sociological Practitioners Association 22nd Annual Conference on Contours of Change, Modern Conflict and Mode of Production in Nigeria*, p. 1, 11–12, 14.

106. Global Accelerator Learning Initiative (2021a). *A Rocket or Runway? Examining Venture Growth during and after Acceleration*.

107. Global Accelerator Learning Initiative (2021b). *Does Acceleration Work?*

108. Hallen, B.L., Bingham, C.B., and S. Cohen, 'Do Accelerators Accelerate? The Role of Indirect Learning in New Venture Development.' *Social Science Research Network. Elsevier* 8, no. 07 (2016); Lall, S.A., Chen, L-W., and P.W. Roberts (2020). 'Are We Accelerating Equity Investment into Impact-Oriented Ventures?' *World Development* 131: 104952.

COMMON CHALLENGES FOR HUBS

Box 5: Mentoring vs formal business classes

One of the biggest barriers to the success of start-ups in Africa is a lack of information. To test the most effective way of overcoming this obstacle, researchers in 2018 studied 538 female Kenyan entrepreneurs and split them into two groups. The first were given formal business classes at a local university tailored to micro, small and medium-sized enterprises, and the second were matched with successful female business owners in their sector and met in informal and unstructured settings.

Those who attended the mentorship session increased their profits by 20% relative to those who attended formal classes. This suggests that hubs should not adopt a one-size-fits-all standardized training approach to skills development. Rather, market-specific mentoring from experienced, successful local entrepreneurs may be more effective.

Source: Brooks, Donovan and Johnson, 2018.

Tech hubs face numerous challenges. The hub concept is still relatively new in some African ecosystems, and there are misconceptions about how technology can benefit users. Hubs must invest in educating stakeholders, potential partners and the general public about what they are, what they do and how they add value.

Hubs have discovered many ways to raise awareness about their activities. These include engaging with educational institutions and communities, organizing events that attract participants such as tech companies, civil society organizations and government, and hosting monthly engagement meetings with key stakeholders. Equally importantly, they can encourage technologists – who often lack social science backgrounds – to move beyond technology and ground their endeavours in the needs of potential customers and users.¹⁰⁹

Other common challenges¹¹⁰ include:

- **Fighting for talent.** As mentioned above, relatively low levels of human capital in Africa mean that identifying and retaining talent is a challenge for hubs and the start-ups they support. This is likely to become even more challenging as a result of COVID-19.

School closures and family hardships have greatly affected education quality around the world. This is estimated to have caused a 4.5% loss in global human capital of the current cohort of school children, and a 10% loss in lifetime productivity for the generation going forward.¹¹¹

Hubs may address human capital deficits by investing in training personnel, although the risk is that they may later move to competitors who can pay more. Nonetheless, creating a robust institutional culture with a strong value proposition to members and employees as well as giving them opportunities to shape the organization can boost commitment.

- **Managing high fixed costs.** Hubs may struggle to afford reliable access to electricity and the internet, which can be prohibitively expensive and difficult to secure. The prevalence of mobile phones means that 75% of African consumers have mobile subscriptions while just 22.7% have internet access at home.¹¹²

109. Treisman, L. (2015). *Capturing Learning from Tech Innovation Hubs Across Africa*, pp. 7–8. Treisman, L. (2017). *Capturing Learning from Tech Innovation Hubs Across Africa: 2017*, pp. 6–7.

110. Treisman (2017), *ibid.*: pp. 7–10.

111. World Bank (2021), *op. cit.*

112. International Telecommunication Union, *op. cit.*

While this is a positive trend, African consumers pay some of the highest mobile data prices in the world. For example, in 2021, Zimbabwe had the world's most expensive data (\$75 per gigabyte)¹¹³ and only 12 African countries were considered to have affordable mobile data.¹¹⁴ Moreover, for various reasons, African governments are increasingly shutting off internet access for their populations, with 34 countries having restricted internet access at least 182 times in 2021.¹¹⁵ When this happened in anglophone Cameroon, the ActivSpaces community had to relocate to an area that remained connected.

Access to power can also be problematic. For example, Hapa Space in Ghana must rely on generators and batteries due to frequent outages, and Ethiopia's IceAddis is required by its landlord to restrict its use of auxiliary power.

- **Connecting with rural communities.** Tech hubs are usually based in cities, so engaging with rural communities can be difficult. Most people in Africa (58%) live in rural areas, compared to 27% in Europe and 19% in Latin America.¹¹⁶ For hubs to contribute to widespread job creation and poverty alleviation, reaching these rural communities should be a priority. Hubs can partner with NGOs including microfinance institutions that have built relationships with rural communities, apply user-centred methodologies and are physically present in these areas. For example, IceAddis took a user-centred approach to help beekeepers develop Yenemar, a micro investment platform that raises capital for honey production.
- **Finding a market and competing.** The start-ups that hubs support may struggle to compete with larger companies, win over consumers and convince potential clients that they can deliver. Start-ups may have to invest in client education and marketing to counteract the preference of many potential clients for larger, better-known companies.

Hubs find that it is often difficult for start-ups to attract initial users. Hapa Space in Ghana addressed this issue by organizing showcases for start-ups to share their solutions, communicating about them via WhatsApp and engaging local technology influencers. These steps encouraged people to try the new products and increased awareness of them.

- **Navigating location changes.** Hubs may relocate due to rising rental costs or the need to expand. Such a change can disrupt the community cohesion that is central to so many hubs. For example, when iSpace in Ghana moved, it lost many members who used it primarily for convenient access to space and internet, but retained those who were dedicated to the community.

Hubs may also struggle to transition maturing ventures out of their spaces, given the cost of office rentals and legal registration obstacles. In these instances, incubators and co-working spaces may serve as a bridge for start-ups that have outgrown general-purpose hubs, but still need some support.

- **Adapting to changing realities and managing limited capacity.** Tech hubs usually adapt to meet the needs of their ecosystems. But this adaptability may come at a cost. The capacity of hub teams can be overstretched given the demands of the ecosystems in which they operate, those imposed by stakeholders such as funders and the demanding roles they play as ecosystem gap-fillers. These teams may not be able to deliver because of limited capacity, overwhelming demands and difficult operating environments.

113. United Nations Economic Commission for Africa (2021). *Assessing Regional Integration in Africa X: Africa's Services Trade Liberalization & Integration under the AfCFTA*. United Nations Economic Commission for Africa, African Union Commission, United Nations Conference on Trade and Development, AfDB: Addis Ababa.

114. Alliance for Affordable Internet (2021). *Mobile Broad Pricing: Data for 2021*.

115. Access Now (2022). *Internet shutdowns in 2021 report: resistance in the face of blackouts in Africa*. Access Now (blog).

116. World Bank (2022). *Rural population (% of total population) - Sub-Saharan Africa*.

A COMPREHENSIVE FRAMEWORK TO DEFINE HUB SUCCESS

The work of hubs must be evaluated effectively to help understand the ecosystem as a whole. Assessing hub success should not be based only on its contributions to start-up success and economic development, as the core purpose of many ecosystems and hubs is to create social impact. This suggests that a holistic approach is needed. One framework¹¹⁷ that defines hub impact comprises seven categories:

- **Fostering ecosystem success** refers to the effect a hub has on its surrounding ecosystem. For example, positioning Rwanda as an emerging ICT-enabled knowledge economy is a government priority. Hubs will be considered successful if they contribute to this goal by building the ecosystem and its reputation, and preparing start-ups to engage with other parts of it (by helping them raise investment funds, for example). This also underscores the role that hubs play in the transition towards a knowledge economy, as they act as both the locus of creation and dissemination of knowledge-intensive products throughout the ecosystem.
- **Supporting start-up success** refers to the ways that hubs have tangible impacts on the companies they support, and their contribution to content and knowledge development. Launching start-ups is one indicator of success, but helping them acquire customers and create jobs is important, too. Hubs can also be rated on how well they help people (especially budding entrepreneurs) build in-demand skills and capabilities, and ultimately by the success of their supported start-ups.
- **Providing infrastructure** refers to the fact that hubs help start-ups survive by making office space, electricity and internet affordable and accessible. As mentioned in the previous chapter, this could be a particularly big draw for hubs in Africa, where these services may otherwise be erratic and expensive.
- **Building community.** Hubs serve as central nexus points for entrepreneurs and other like-minded individuals focused on technology and innovation to meet and share ideas. Other community-centred sources of value addition include creating partnership and project opportunities for members, exposing them to new ideas and knowledge through events, and building their business and technical skills through training.
- **Making connections.** Tech hubs help entrepreneurs connect to customers, investors, mentors and partners outside the hub that will help them expand their businesses. The strongest ecosystem connectors can also help entrepreneurs find and access other support services available in the ecosystem, even from other hubs. Not all hubs can offer all forms of support. A strong ecosystem is interconnected and collaborative, offering the best possible outcomes for entrepreneurs.
- **Encouraging personal outcomes.** Hubs can influence the growth and evolution of members by offering training, introducing them to new ideas and knowledge through events, or directing them to external resources such as online courses to build their capacity. Hubs can also encourage members to work for themselves and build the skills and capabilities of aspiring entrepreneurs so they can launch successful ventures.¹¹⁸
- **Fostering status and prestige.** As illustrated by the public profile of iHub (one of the first and most well-known hubs in Kenya), a well-regarded hub can function as an anchor for the development of the local ecosystem and can establish its city or country as a centre for tech entrepreneurship. Belonging to such a hub can raise the status of a start-up and increase its chances of attracting media attention and investor interest.

In this sense, hubs may play an important role in acting as signallers of quality of their resident start-ups to the wider business community.¹¹⁹ This, in turn, expands the pool of opportunities available to all hub members.

117. Obeysekare, E., Mehta, K., and C. Maitland (2017). 'Defining Success in a Developing Country's Innovation Ecosystem: the case of Rwanda.' In 2017 IEEE Global Humanitarian Technology Conference, pp. 2–3.

118. <https://briterbridges.com/bolstering-innovators-in-africa>

119. Global Accelerator Learning Initiative (2021a), *op. cit.*

Despite the utility of this framework, measuring hub impact is challenging. Assuming that the biggest benefits of a hub come from its work building community and ecosystems, the impact of activities such as training can be difficult to measure¹²⁰ and establishing a direct connection between this type of activity and its impact is tricky.

Additionally, the socioeconomic impact of these activities is hard to measure, difficult to quantify and almost impossible to attribute directly to hubs' activities. This is in part due to the anecdotal nature of much of the evidence.¹²¹ When metrics are aligned with core purpose and activities, the maturity of the hub's surrounding ecosystem should be considered.

For instance, measures in nascent ecosystems in countries including The Gambia and Liberia should focus on ecosystem-building activities such as community development, training and skills development. However, in countries with rapidly growing or established ecosystems, such as South Africa, Kenya and Nigeria, more emphasis could be placed on start-up outcomes.

Metrics associated with start-up creation are easier to measure.¹²² But when hubs attempt to use traditional incubation metrics such as increased start-up revenue to illustrate their merit, the results can be a mismatch between the true value of their activity and the evaluation metric.¹²³

This assumes, of course, that hubs collect data – which is often not the case. At least two studies have found that the absence of performance data and tracking of post-programme graduates hampered efforts to evaluate accelerators.¹²⁴ Finally, comparing performance measurement across hubs is challenging because of their fluid nature and the evolving nature of the environments in which they operate.¹²⁵

Ideally, hubs track many different metrics including outputs such as the number of event participants, supported start-ups and numbers of training sessions. They also collect other relevant data such as participant feedback from training and events, progress made on revenue generation and partnership development, start-up performance and diversity statistics. BongoHive in Zambia has set quarterly targets for its start-ups while iSpace in Ghana tracks the number of women who organize and take part in its events.¹²⁶

Ultimately, the core challenge may be insufficient institutional capacity. Hub teams probably have some sense of what and how to measure, but they may lack the resources to do so. As a hub manager interviewed by the Institute for Development Studies and Results for Development explained, 'I know our website is a disaster, but I haven't had the resources or the time to fix it. I know I need to tell the awesome stories from our work on the ground, but I've had to focus on actually delivering that work first.'¹²⁷

120. Friederici, *op. cit.*: 12–13.

121. Sambuli, N., and J.P. Whitt (2017). *Technology innovation hubs and policy engagement*. Making All Voices Count Research Report. Institute of Development Studies, p. 6.

122. *Ibid.*

123. Friederici, *op. cit.*: 3.

124. De Beer et al., *op.cit.*: 259.

125. *Ibid.*: 5.

126. Treisman (2015), *op. cit.*: 10–11.

127. Sambuli and Whitt, *op. cit.*: 6.



THOUGHT LEADER

Tim Weiss on the rise of 'pacers' in the new normal

Tim Weiss

Assistant Professor in the
Department of Management

Tim Weiss is an Assistant Professor in the Department of Management and Entrepreneurship at the Imperial College London. His research programme sits at the intersection of entrepreneurship and society, analysing the changing nature of entrepreneurship and its societal effects. <https://www.imperial.ac.uk/people/timweiss>

Long-term support for technology entrepreneurs has been a consistent challenge. This has been especially salient during the COVID-19 pandemic. Who can technology entrepreneurs turn to for immediate advice when their entire business model is put into question? What networks can technology entrepreneurs leverage to find the right knowledge that helps them adjust and pivot to survive and thrive amid a crisis?

Most entrepreneurial support organizations are set up to provide short-term support – think of fellowships, incubators and accelerator programmes. These initiatives provide short-term boosts to technology entrepreneurs by helping them to develop their idea or bringing an idea to market. Yet entrepreneurial journeys tend to last longer than 1–6 months and stretch out to cover 10 years to a lifetime. In such extended periods, an entrepreneur's focus is not just on scaling ideas, but also on dealing with issues of de-growth, bridge rounds and potential bankruptcy.

To deal with such issues, technology entrepreneurs are either on their own or they have to self-assemble what looks like a broad portfolio of entrepreneurial support programmes often with questionable outcomes on business performance because programmes may not align with the entrepreneur's real need. While a plethora of entrepreneurial support organizations provide access to short-term support, a void exists when it comes to long-term support.

Pacers or pacemaker organizations have emerged to fill the gap of long-term support in African entrepreneurial ecosystems. They represent a new cadre of entrepreneurial support organizations that enlist technology entrepreneurs as long-term, at times even lifetime, members. Akin to pacers who help marathon runners achieve their desired goals, so too do pacers engage with their members during their proverbial entrepreneurial marathon. That is, pacers provide ongoing and continued support in the form of knowledge exchange, mentoring, member networks, events and peer-to-peer support.

Examples of pacers include African Management Institute, Endeavor, Entrepreneur's Organization, Harambe Entrepreneur Alliance, Stanford Seed and Unreasonable Group. Four building blocks define what entrepreneurs gain from becoming a member of pacers.

- **Ongoing learning.** Lifelong learning is accomplished at pacers by focusing on the evolution of both the entrepreneur and the business. Building new habits or transforming a business model takes time. Pacers offer long-term learning opportunities by anticipating the challenges that entrepreneurs will likely face and developing educational content (i.e. webinars, peer-to-peer support and events) that can address the critical knowledge need.
- **Brokering access to expansive networks.** Pacers tend to have an expansive geographical coverage and maintain relationships with a diverse stakeholder pool. As a result, they can facilitate introductions to, for example, investors or strategic partners for an international expansion. What's more, pacers facilitate interactions between members on a local and international/global level. As the member base increases over the year, so too does the potential network that its members can leverage.
- **Developing meaningful connections.** Pacers put significant effort into curating experiences that forge meaningful connections between members. They build strong bonds based on trust between members with the intent of curating a peer-to-peer support community in which members learn about and invest in each other. Through immersive, retreat-like events, pacers put the human interface first and ensure that members connect by facilitating sessions that go beyond the entrepreneurial role and identity and focus on the whole self.
- **Proactive response to entrepreneurs' needs.** Pacers evolve over time with their members. That is, they increase their content and offerings based on members' needs and demands. This is especially important, given some of the unforeseen shocks that can disrupt business, such as COVID-19. As a response to the pandemic, many pacers designed new sessions to help their members navigate extreme uncertainty.

While these four building blocks capture how pacers deliver value to entrepreneurs on a more general level, two specific examples allow further illustration of their unique character.

- **Spotlight 1:** How to bring together African entrepreneurs who want to transform industries, yet are dispersed across the continent? The Harambe Entrepreneur Alliance was founded in 2008 and has since forged deep connections among its 327 members. The alliance carefully curates a collectivist spirit centred around servant leadership, deliberate audacity and enduring optimism.

Members commit to the Harambean Declaration, symbolizing members' unity in their pursuit towards a collective goal greater than their individual goals. 'We publish and declare our intention to work together as one to unleash the potential of Africa's people; pursue the social, political and economic development of our continent; and fulfil the dream of our generation,' the declaration says.

With a collectivist spirit in place, members intuitively support each other by facilitating knowledge sessions, brokering access to new contacts and catering to their need for new knowledge. Harambe members have generated more than 3,000 jobs and raised upwards of \$1 billion in capital.

- **Spotlight 2:** How to leverage world class knowledge and make it available to maturing entrepreneurial firms across the African continent? Stanford Seed, housed on the Stanford University campus in California, has been active since 2013 and counts more than 4,000 members. Stanford Seed has created a digitally mediated, on-demand platform of entrepreneurial support that members can leverage, such as a network directory, webinars and peer-to-peer industry groups.

In addition, Stanford Seed offers continued support in the form of coaching, assistance from Stanford student interns and pro bono consulting. During the pandemic, Stanford faculty designed new webinars intended to support members with state-of-the-art knowledge about how to ensure survival in times of extreme uncertainty. Stanford Seed has helped its members create more than 21,000 jobs, generating \$183 million in additional revenues and raising \$421 million in capital.

By addressing the gap in long-term entrepreneurial support, pacers provide a template for a new type of entrepreneurial support organization that will further catalyse the maturation of African entrepreneurial ecosystems. In doing so, more entrepreneurs will benefit from its value, enhancing business growth and mitigating the impact of external shocks.

Additional information about pacers can be accessed via the open-access publication https://ssir.org/articles/entry/pacing_entrepreneurs_to_success.



CHAPTER 3

FINANCIAL SUSTAINABILITY: THE CHALLENGE

HUBS SEEK TO DELIVER SOCIAL IMPACT 29

FUNDING SOURCES AND REVENUE STREAMS 31

FIVE BUSINESS MODELS 32

A NETWORK APPROACH TO FINANCIAL SUSTAINABILITY 33

FINANCIAL SUSTAINABILITY: A MULTIDIMENSIONAL CONCEPT 35

SEEING FINANCIAL SUSTAINABILITY IN TERMS OF ALIGNMENT 36

ADAPTING WHILE DELIVERING IMPACT SUPPORT 39

HANDLING OPERATIONAL AND FINANCIAL DISRUPTION TO PURSUE ACTIVITIES 40

FINDING THE RIGHT BALANCE BETWEEN PHYSICAL AND DIGITAL MEETINGS 40

CHAPTER 3

FINANCIAL SUSTAINABILITY:
THE CHALLENGE

When the COVID-19 crisis hit in March 2020, governments across the world were forced to take drastic measures. Many would have assumed that SMEs would be the first economic actors affected by the global shutdown.

Even though African governments have not been able to provide as much aid as Western governments during the pandemic, African entrepreneurial ecosystems proved to be quite resilient to the crisis. Indeed, data compiled by global investment platform Partech showed that venture capital funding in Africa's tech ecosystem rose by 8% in 2022 to \$6.5 billion, surpassing the record set the previous year¹²⁸.

Nevertheless, 2020 and 2021 were challenging years for many African SMEs – and tech hubs. A 2021 study by Briter Bridges and AfriLabs shows that '78% of the hubs were forced to shut down their premises at one point during the pandemic' and 'half of the hubs had a drop in revenues of up to 50%'.¹²⁹ Many hubs also criticized the lack of pandemic-related funding opportunities, which could have helped them cope better with the sudden halt of activities.

In some contexts, working from home was specifically challenging as internet connectivity is not always reliable in many African countries. That meant tech hubs staff and entrepreneurs could not work together as easily as they did in the past.

As the pandemic fragilized the global economy and affected entrepreneurial ecosystems in Africa, including tech hubs, it is especially interesting to study the financial sustainability of hubs in the post-COVID era.

There is little research on African tech hubs and even less on their financial sustainability or business models. Reports, articles and blog posts comprise most of the literature, rather than evidence-based academic work. Additionally, much of the content highlights success stories or offers opinions, rather than providing critical analysis.

As a result, there is no universally accepted definition, benchmark or set of conditions indicating when a tech hub should be considered financially sustainable.

As many hubs are nonprofits or sponsored organizations, the most straightforward interpretation should be adopted: a financially sustainable hub can cover all of its overhead costs, such as rent, electricity and access to internet, as well as the cost of its activities and programmes, including human resource costs. However, many hubs partner with private companies to provide in-kind internet access in exchange for brand visibility and access to the community, or with government to donate a space to house the hub. Such arrangements can reduce the financial resources needed.

Additionally, African tech hubs operate in different environments. The community served by a Lagos-based hub will differ considerably from that served in Monrovia. As a result, core purpose, value proposition, business model and activities will be tailored to the environment, and will affect the hub's prospects for financial sustainability.

128. <https://partechpartners.com/africa-reports/2022-africa-tech-venture-capital-report>

129. Briter Bridges and AfriLabs (2021), *op. cit.*

Box 6: Geographical expansion to scale up and expand capabilities

The COVID-19 health crisis caused many tech hubs to improve and accelerate their digital capabilities and to imagine and implement dematerialized services. Digitalization has made it possible to reinvest in other targets, including beneficiaries beyond the hub's physical location.

In 2021 for instance, Ghana's Innohub decided to extend its services offer beyond its borders and sought impactful projects elsewhere in West Africa. As a result, the hub increased the quality of the projects in its pipeline.

Innohub was founded by Nelson Amo, who also created the Accra Angels Network and sponsors Wangara Green Ventures, a SME fund that invests in climate-smart ventures. This enabled Innohub to develop strong ties with investor networks. The hub developed an expertise in sourcing the best innovation projects for investors and can now offer this service across West Africa.

Other hubs have expanded their capabilities domestically to reach a rural target. Incub'Ivoire, founded both in France and Côte d'Ivoire, was created to meet the specific needs of entrepreneurs from the Ivorian diaspora and to bridge the gap between the two countries.

Today, Incub'Ivoire's geographical development has taken another turn. The hub has locations in Paris and Abidjan, major capitals that brew economic opportunities, human talents and network connectors. Within a European programme, the Ivorian branch integrated a new development component to support rural entrepreneurs. Hermann Kouassi, co-founder of Incub'Ivoire, says:

"Côte D'Ivoire is still a country where the agricultural sector is essential for a large part of the population. Innovation in agriculture responds to multiple challenges: employment, environmental challenges, food security. Thus, it is important that the incubators can also act beyond the major towns and reach out to entrepreneurs and innovators in the agricultural world. We need them to respond to the major challenges of sustainable development that we face at the beginning of the 21st century".

Source: Briter Bridges interviews, November 2022, for this report

HUBS SEEK TO DELIVER SOCIAL IMPACT

Although tech hubs are viewed as catalysts for start-up creation, ecosystem development and community building, they also have a strong desire to generate social impact – a goal closely associated aligned with community building.

Tech hubs maintain this commitment even as they pursue financially sustainable business models and focus on their support of profit-focused start-ups rather than social enterprises.

Hubs that link social purpose with the potentially more profitable accelerator model are still likely to face financial sustainability challenges. A study by the Aspen Network of Development Entrepreneurs and Village Capital¹³⁰ found that 74% of the social accelerators they assessed were supported by philanthropic capital, which comprised 54% of their total budgets. This funding did not seem to affect start-up success, however.

Core purpose matters

This emphasis on social impact is important because it signals what activities hubs choose to offer and to what extent they can monetize those activities. Actions typically associated with ecosystem building, such as organizing training and hosting events including hackathons and conferences, may also be difficult to monetize. These characteristics may be indicative of a common issue among ecosystem boosters: uncertainty about their for-profit or not-for-profit status and how to generate revenue, for example through investment or grants

130. Bridging the "Pioneer Gap": The Role of Accelerators in Launching High-Impact Enterprises, https://www.researchgate.net/publication/265957560_Bridging_the_Pioneer_Gap_The_Role_of_Accelerators_in_Launching_High-Impact_Enterprises

Ecosystem-building activities may be difficult to monetize because hubs become providers of public goods when they try to fill ecosystem gaps. Governments provide public goods, such as education and healthcare, for the well-being of the general population. Private actors are not incentivized to market ecosystem-building activities.

Many of these activities will be difficult to monetize, particularly in a post-Covid economy. As the 2021 Briter Bridges and AfriLabs study shows, a large proportion of hubs still rely on external funding and have been unable to reach financial sustainability after the outbreak of the pandemic. Indeed, almost half of African tech hubs surveyed generated revenues from membership fees before 2020 - event organization and office rent activities that largely contribute to building ecosystems. The study results eventually emphasized the need for revenue diversification.

Indeed, focusing on ecosystem building is unlikely to stimulate high-growth, profitable businesses, which require more customized, sophisticated forms of support. Despite these challenges, purely profit-oriented approaches seem like a poor fit for many African start-up ecosystems because they probably have few high-growth start-ups, low valuations and limited investment capital relative to more mature markets.

It appears that many hubs started providing additional services – not strictly limited to the start-up sphere, but delivering value to a largest number of economic actors – as a way to generate wider social impact, such as creating and broadcasting digital literacy content to communities usually excluded from start-up ecosystems.

Many hubs need to strike a balance between start-up creation and ecosystem building, and certain risks must be managed to achieve this balance. As was the case with mLabs, hubs may operate in environments where it is difficult to pursue both goals simultaneously because ecosystem constraints necessitate a specific approach.

For example, it could result in conflicting revenue streams, such as fees associated with managing accelerator investments versus grant funding secured for delivering skills training. Or in cases where hubs set up consulting services to subsidize their ecosystem-building activities, they struggle to balance seeking profitability and serving the community.

The needs of an ecosystem are likely to change as it evolves. BongoHive, the first Zambian tech hub, was launched in 2011 at a time when there was no permanent home for Lusaka's tech community. It began as a series of informal meetups and evolved in the first seven years to include an idea-stage programme, an incubator focused on business model validation and an accelerator designed to help more mature start-ups grow.

Alignment matters

The connection between a hub's primary objective and its business model is a key component of a hub. Tech hubs need to be 'financially independent, to expand [their] technical expertise, set [their] agenda and refine [their] strategic direction to meet the needs of [their] local environment'.¹³¹

What happens when they don't?

- **Hub failure.** Hubs are more likely to fail if their overarching goals do not match their structure or do not meet the needs of the ecosystem. For example, Plug and Play Egypt tried to provide comprehensive start-up support services, including mentoring, training and investment, without adequate funding and while facing an increasingly inhospitable environment for emerging ventures.
- **Hub sustainability challenges.** When the goals of a hub do not align with its business model, it will probably face difficulties with financial sustainability. This is also the case when its approach fails to address the needs and constraints of the ecosystem.

For example, the debate continues as to which start-up support model works best in Africa. Accelerators align incentives between a hub and its start-ups through investment, focusing on the most competitive start-ups with the greatest potential. This may be perceived as concentrating only on the strongest companies rather than investing in improving the overall pool of emerging ventures.

131. Atiase, V.Y., Kolade, O., and T.A. Liedong (2020). 'The emergence and strategy of tech hubs in Africa: Implications for knowledge production and value creation.' *Technological Forecasting and Social Change*, Vol. 161.

Box 7: BongoHive aligns projects with goals

BongoHive regularly received requests to set up websites, create applications, products and services, and offer training. Organizations typically approached the Zambian hub because they saw it as a 'one-stop shop' for technology, had experienced poor outcomes with other service providers and were attracted by its strong reputation, were looking for local service providers as part of a broader strategy to support local start-ups or had sourced hub services elsewhere and wanted to do the same in Zambia.

In response to these needs, BongoHive developed the following criteria, which enable it to determine whether a particular opportunity is a good fit:

- Accept projects that let BongoHive leverage the experience of its community and that of other hubs
- Avoid competing with start-ups in the community with similar competencies by taking projects that require a broad and diverse set of skills
- Engage in projects that help the hub expand its suite of services and develop skills in areas such as design thinking and UX design, as well as generate positive social impacts in Zambia
- Deliver projects that are scoped to include work from concept design to implementation

Source: Molyneux-Berry, 2018.

FUNDING SOURCES AND REVENUE STREAMS

Clearly, there is no universal, 'one size fits all' path to become financially sustainable. Yet there are several useful insights about funding sources, income diversification, core cost coverage and the influence of external conditions.

- **Funding sources.** According to the 2021 Briter Bridges/AfriLabs report, hubs increasingly rely on external funding. Most donor funding is allocated for implementing and managing programmes to support start-ups. Hubs usually source this funding through actors including corporates, philanthropic organizations or private foundations, governments, embassies or development finance institutions.
- **Income diversification.** Many hubs depend on several different income streams to survive financially. This includes internally generated revenue streams such as membership dues as well as externally generated sources such as consulting and research. Some hubs even earn consulting fees for advising on the launch of other hubs.
- **Core cost coverage.** No model was found in mLabs to cover both core operating costs and the costs of running programmes and activities. Similarly, most successful hubs receive core cost support from development partners.
- **External conditions.** A functional, healthy entrepreneurial ecosystem creates the conditions necessary to support a thriving hub. In the absence of such an environment, hubs struggle to provide substantial value to key stakeholders. For example, they are not profitable enough to attract traditional investors, but they lack the resources to produce output that would be useful to soft capital providers such as NGOs.

Also, although philanthropic funders have contributed considerably to the survival of hubs, longer-term support for projects that take financial sustainability into account might help hubs achieve similar goals.

Box 8: Best practices to engage the private sector

Approaching private-sector partners can be daunting, but with some foresight and preparation, hubs can take a strategic approach to building relationships. Barbara Birungi, director of Hive Colab in Uganda, said: 'Sometimes it can be hard to source the business development services that start-ups need. It took time to engage the private sector, but they now provide pro bono support to our community.'

Do your homework. Before approaching a potential partner, it is important to know and understand the strategic priorities of the company and how it might want to engage. Some will want to support the community by providing access to their training and tools, while others may prefer to fund events or support specific programmes that will allow them to engage with the hub community.

Offer a specific value proposition. A proposal or offer to a potential partner should articulate clear goals and a value exchange. For example, CcHub in Nigeria and JoziHub in South Africa were able to secure free internet from mobile telecommunication companies by communicating the marketing value of the arrangement and the impact on market share. JoziHub managed to engage a large company by developing an application to help manage entry into its parking complex.

Invest in building relationships with the private sector. It may take a lot of time and effort to develop robust private-sector relationships. As such, it is helpful to assign a specific staff member to cultivate these relationships. Ghana's iSpace invested two years in educating potential corporate partners about what it did and how it created value for companies both locally and internationally. Eventually, iSpace secured free internet, financial support for events, funding for start-ups and unsolicited requests from large businesses for partnerships.

Work with partners to host events. A hub can design and host events for partners that can help them get to know the community. Event management can be demanding in terms of time and resources, however, so the events must complement the broad goals of the hub to avoid mission creep.

Solicit in-kind contributions. Companies may be willing to offer time- and resource-based in-kind contributions to a hub, such as training and mentoring. For instance, Hive Colab persuaded the corporate social responsibility departments of local businesses to contribute four hours of support each month.

Leverage your start-ups. Introduce corporates to relevant start-ups in your community. For example, BongoHive found that corporate interest increased when it shared information about its start-up support efforts. Similarly, JoziHub introduced the South Africa Automobile Association to start-ups working on new transportation solutions.

Source: Treisman, 2017.

FIVE BUSINESS MODELS

Several archetypes illustrate the range of possibilities for hubs, as well as the types of decisions that must be made to match operating models with business models. The models described in Table 3 reflect the general landscape of hubs in Africa, though each region of the continent has its own specificities.

After research and data collection, it appeared that 4 main business models patterns tend to be used in Africa: the grantee, the networker, the consultant, the agent and the builder.

Business model 1: The grantee. Tech hubs that use the grantee model intentionally choose to work with public organizations, foundations and the corporate social responsibility departments of companies, among others.

Business model 2: The networker. Tech hubs mostly offer co-working spaces to entrepreneurs, a network to help them grow and usually organize a lot of events, that they can also monetize.

Business model 3: The consultant. Tech hubs that tend to choose multiple revenue stream strategies by highlighting their offer of consulting services to public and private organizations.

Business model 4: The agent. Agents are usually acceleration-orientated tech hubs. They help start-ups that are investment ready by connecting them with investors. These hubs generate revenue from exits, success fees and fund management fees. This model is difficult to deploy in immature entrepreneurial ecosystems.

Business model 5: The builder. Builders refers to tech hubs that have start-up studios as a revenue stream so they can fund (fully or partially) their own budgets. It is the least widely available.

Table 3: Hub models and revenue streams

| Type of business model | Possible sources of revenue | Characteristics |
|------------------------|---|--|
| The grantee | Grants from international institutions (such as Agence Française de Développement, GiZ, World Bank, etc.) | Costs are determined by: <ul style="list-style-type: none"> period and frequency of call for bids from donors the donor's objectives The entrepreneur is usually offered services (funding, networking, co-working areas). |
| The networker | Offices and event space rent | Costs are determined by: <ul style="list-style-type: none"> period and frequency of use (day, week, month, quarter, etc.) position: open plan or enclosed space Associated services: Administrative support, access to computers, Wi-Fi connection and printing, other documentation and organized events, etc. |
| The consultant | Training on innovation for organizations seeking inspiration | Consultants are tech hubs that want to become sustainable as quickly as possible while supporting entrepreneurs at little to no cost. |
| The agent | Revenues from exits, success fees, fund management fees | Investment is based on: <ul style="list-style-type: none"> value of the start-up at the time of the deal percentage of shares negotiated The entrepreneur always remains the majority shareholder. The accelerator will be able to sell its shares later and value its investment (or not) according to the performance of the start-up on the market. |
| The builder | Revenues from start-ups they create | They have integrated start-up studios to build their own ventures they can sell or from which they get revenue. |

A NETWORK APPROACH TO FINANCIAL SUSTAINABILITY

Financial sustainability is an expectation typically applied to a single organization. In viewing hubs as undercapitalized institutions that are managed by overstretched teams, questions emerge about what hubs can do together. Hubs, particularly those in more mature ecosystems that require them to differentiate to survive, develop distinct value propositions and core strengths.

As such, it makes sense for hubs to consider how to collaborate in ways that create and capture more value. For example, a network of hubs such as AfriLabs, Impact Hubs or Jokkolabs could offer a larger consolidated market for potential partners to engage, whether the objective is to train developers or run sector-focused accelerator programmes. The same logic might be extended to cutting costs.

For several years, iHub in Nairobi was based in a single building, sharing space with other organizations and start-ups including Ushahidi and Kopo Kopo that wanted to interact with the hub. The Office in Kigali still follows this model by hosting the hub on one floor while leasing space to companies and international organizations as anchor tenants on other floors.

It is worth exploring how this collaborative value logic might extend to financial sustainability. No clear conclusions can be drawn from previous efforts within and between hub networks to address financial challenges.

For example, AfriLabs often hosts workshops about hub sustainability. These conversations tackle questions such as whether hubs should be sustainable and what type of funding (core or programmatic) would be most useful.

The focus of all of these activities was on the financial sustainability of a single hub. But how might financial sustainability look for a collection of incubators?

InfoDev created such a model from the early days of incubator development in Africa. This model for sustainable and replicable ICT incubators has three parts: a network of hubs, a financial model composed of a short-term loan fund and a venture capital-style incubator investment fund.

Part 1: Network of incubators

The network of incubators would operate according to a shared set of standards, exploit economies of scale and spread costs. The underlying principle is that a model based on developing incubators as a system, with standard operating procedures, sufficient funding and targeted support, would be better equipped than an under-resourced organization operating alone. Single incubators tend to be undercapitalized because they are funded by local or regional public-sector organizations that are underfunded by agencies that operate on annual budgets, and do not easily accommodate multi-year projects.

The network could adopt one of four different operating models, all of which assume that land and/or the building that houses the incubator(s) is the primary cost driver. The network approach assumes that the public sector – that is, the national government, local government or a university – will donate a desirable location for the incubator in the central business district or near a technical university.

Other important elements of the network approach include:

- corporate sponsors willing to provide in-kind training and support to incubated companies that could become part of the corporation's value chain;
- the hub's brand identity signifies credibility for start-ups;
- ongoing support is made available to start-ups after they leave the incubator;
- coverage of core costs as the incubators establish themselves.

The four possible models for the network approach are:

1. **New construction:** Incubator building is built from scratch
2. **Renovation:** Structure is rebuilt, i.e. a university building is repurposed
3. **Virtual incubation:** Support services are provided online, but entrepreneurs periodically visit a location with office and training space
4. **Hybrid model:** Integrates components of the previous models, but combines the skills and experience of an institutional investor with those of a construction management company that has a track record in building technology parks and an incubator management company.

Part 2: Loan fund

Young companies need working capital because, unlike large enterprises, they cannot fund their operations while waiting for customers to pay. Hubs tend to develop their own in-house funds to make early-stage inclusive funding tools available for start-ups. For example, Bond'innov co-launched the Observatory of interest-free loans in Africa¹³² and has developed local funds within African tech hubs so they can handle and fund the start-ups they support.

Bond'innov usually starts raising funds among development finance institutions or corporates and allocates funding to local loan funds. This can generate a virtuous circle: start-ups that are funded with interest-free loans reimburse them, and reimbursements help fund other start-ups. Back-office and management costs should not be underestimated, however, as they are key for hubs to provide the most appropriate follow-up services to start-ups after they are funded so they can also ensure the highest reimbursement rate.

Part 3: Incubator investment fund

This fund would be designed to meet the longer-term debt and equity investment needs of start-ups supported by the incubator. An institutional investor would capitalize the fund, setting aside a fixed amount annually over several years to help build the capacity of incubators in the network.

Other elements of the financial model

The primary revenue streams for each incubator would include fees for services such as space rental, access to mentors and coaches, training and business development services, as well as a 5% gross revenue share paid annually after start-ups graduate from the incubator. Each incubator would run on an annual budget of \$500,000–\$700,000 and most likely operate at a deficit for several years. Finally, total costs for each incubator – including retrofitting a building, furniture, telecom connectivity, staff and so on – would amount to \$1.5 million.

132. See <https://bondinnov.com/wp-content/uploads/2021/04/Prets-dhonneurs-VF.pdf>

Evidence of network-based financial sustainability

As African tech hubs have multiplied in the past decade, it is important to explore whether signs of network-based models for financial sustainability have emerged. Impact Hub is one of the main tech-hub networks globally and has 14 hubs operational on the African continent. Instead of developing a franchise, it created a co-owned structure: when founding an Impact Hub, a team must pay application fees and a joining payment (if selected). The amount of the joining payment depends on the local economy and purchasing power parity. Afterwards, each hub is required to pay a 2.5% fee on its monthly revenues.

Thus, the Impact Hub network funds the operations of its global team (Impact Hub company), which provides products and services to members, through a joining fee paid by new hubs, the previously mentioned membership fees and fees earned through programmes or partnerships.

AfriLabs, a pan-African network of tech hubs, does not appear to have a collective strategy for financial sustainability, but it has an approach to generate revenue for the secretariat that serves its members.

This involves a three-pronged strategy focused on engaging partners, implementing projects and collecting membership fees. AfriLabs runs an affiliate programme through which organizations can buy sponsorship packages that offer access and visibility to the AfriLabs community. The hub also collects fees for managing multi-location programmes and events by its members.

In addition, AfriLabs successfully launched a paid membership mechanism and requires a \$500 membership fee before joining the network – which now counts 330 hubs, located in 51 different countries.

FINANCIAL SUSTAINABILITY: A MULTIDIMENSIONAL CONCEPT

The success and financial sustainability of tech hubs depends, at least partially, on the alignment of elements such as core purpose, organizational structure, business model and the needs of the ecosystem. Other factors, such as how a hub is classified and its activities, also play a role. Viewing these elements together suggests a multidimensional framework for understanding hub sustainability.

Categorization

If the alignment of a hub's core components matters and its central purpose is alignment, then how a hub is categorized affects how it is evaluated. Much of the literature on African hubs implicitly or explicitly classifies them as companies. One publication defined a 'company hub' as a single organization and rejected categorizing hubs as companies given their community-building orientation.

This type of classification also subjects hubs to the same financial performance expectations as high-growth companies – profitability within 3–5 years rather than the 6–10 years assumed for infoDev's mLabs, for example. In other words, the organizational label a hub gets or gives itself is expected to complement its operating model and the profitability of that model.

Goals and impact

Similarly, the objectives of a hub will affect its financial sustainability prospects. Ecosystem building is typically more difficult to monetize than start-up support, and hubs pursuing this path will probably take longer to reach financial sustainability. Environmental conditions may prevent hubs from pursuing both goals simultaneously.

Finally, many hubs aim to have a social impact, much of which happens through community building, rather than activities such as building start-ups that are more likely to contribute to sustainability.

Organizational structure

Hubs may pursue multiple goals that are each associated with a certain structure. Accelerators, for instance, are designed to support high-growth start-ups. The way a hub is structured, or legally registered, is another point of alignment.

Hubs that are involved in activities with high profit potential (ideally aligned with core purpose) are likely to register as for-profit organizations. Those that focus on social impact may be more inclined to register as nonprofits.

Box 9: Managing cash flow when a business model includes revenue sharing

For hubs that focused directly supporting high-growth start-ups, revenue sharing (taking a percentage of the revenue that start-ups earn) may be part of their business models. In such cases, when start-ups have difficulty collecting payment from their clients and customers, hubs will also struggle to collect a share of revenue from their start-ups.

Given that these funds are often used to pay for the human resources needed to deliver quality services to start-ups, it may be tempting to take an aggressive approach to fee collection. But given the mandate of hubs to support start-ups, finding a creative way around the problem may be a better approach.

For example, CTIC Dakar opted to meet its cash-flow needs by commercializing event management as a new service line. CTIC had organized well-attended events in the past, so it packaged event management as an offering and pitched it to several potential clients. The event planning was so successful that CTIC was averaging 20 events a year by 2014 and became Orange's digital events management partner.

Source: Molyneux-Berry, 2018.

Business model

As mentioned previously, a hub's business model is derived from its core purpose and can be used to align this purpose with the hub's services, financial requirements and operating model.

Activities

It follows from the above that the activities of a hub affect its prospects for sustainability. As mentioned before, ecosystem-building activities and models can be difficult to monetize compared with start-up creation activities. Yet service provision (to start-ups and other key actors) usually cannot on its own cover a hub's operational costs and programmes.

Ecosystem

Ultimately, the state of the ecosystem and the needs of key stakeholders should determine what core purpose a hub selects. All other important decisions regarding the hub's architecture – such as goals, business model and activities – flow from this foundation.

In summary, financial sustainability appears to require alignment between central elements that are internal (goals, activities, business models) and external (classification, ecosystem needs, state of the ecosystem) to hubs. Consequently, financial sustainability cannot be understood simply by looking at revenue streams and business models.

A more holistic perspective encompassing a hub's classification, goals and impact, business model, activities and ecosystem is necessary. These elements should complement one another to set the stage for financial sustainability.

SEEING FINANCIAL SUSTAINABILITY IN TERMS OF ALIGNMENT

A recurrent theme across much of the literature and dialogue about African tech hubs is the belief that connecting entrepreneurs and helping them build community with each other and major stakeholders will enable them to help build Africa's digital and innovation economies. However, this belief can shatter on the complex reality of what it actually takes to build a community and develop enabling ecosystems.

Researcher Nicolas Friederici has explored assumptions about the value that hubs are meant to create, taking into account founders and start-ups themselves, whose perspectives are often missing from formal discourse. His research exposes the many disconnects and tensions that emerge in the space between the vision of a hub founder and the path to implementation.

Friederici highlights four important issues, each of which has implications for financial sustainability if one assumes that a hub's core purpose, activities and business model should align with the needs of the community and ecosystem it serves.

'Once hub implementations began, leaders realized they needed to adapt their vision to local conditions. The issues that arose resulted specifically from tensions between aspirational hub visions and thorny hub realities.'

Nicolas Friederici, economist, Organization for Economic Co-operation and Development Africa Desk

Community is primary. This has been highlighted throughout this report. However, the community development process varies from hub to hub. Although there will be common experiences and obstacles, a hub's path to community formation will depend on the distinctive characteristics of the involved people, institutions and environmental conditions.

Perhaps more importantly, community building is a complex process that brings to the surface tensions and inconsistencies that may require difficult choices by hub founders. The dynamic nature of the hub development process and the evolving nature of start-up ecosystems mean the funding requirements and financial sustainability prospects of a hub will change. This suggests that hub sustainability is not a final destination, but a journey that will mirror a hub's life cycle.

Community characteristics and hub purpose are related. The alignment and connection of core elements is another recurring theme. For example, the link between core purpose and financial sustainability is evident in the connection between ecosystem-building activities and how difficult it is to monetize them. What causes this difficulty? To some extent, it is about the choices that hub founders make about inclusion.

Ecosystem-building activities are typically less lucrative because they seek to address market failures, such as developing the skills and capabilities of aspiring entrepreneurs. These activities are generally left to the public sector, as private-sector actors do not see enough profit potential in them.

Not surprisingly, these activities engage a wide variety of participants, because the goal is to broaden or deepen the pool of talent, for example. In contrast, activities to create start-ups may be less inclusive because they aim to identify high-growth start-ups, which involves a competitive selection process.

This level of rigour is necessary to find such start-ups, which in turn increases the likelihood that the best ventures with the most potential to generate returns for investors (and hubs through revenue or equity sharing) are selected. However, the choice between inclusion and exclusion may pit community building and start-up creation against each other as goals, and force difficult choices about whether to pursue a less lucrative, more inclusive path, or a more profitable, less inclusive one.

Community-produced value. The members of a hub, many of whom are entrepreneurs, inform and shape its identity. They often express what they value through the degree of their participation in hub activities.¹⁶² For instance, large companies often support specific hub activities, such as hackathons and pitch competitions, because they provide access to a desired target audience (entrepreneurs and developers).

It is reasonable to assume that corporations and other stakeholders would pay for greater insight about hub communities, specific consumer segments and technology markets at large. From this perspective, hubs may be able to invest in building their communities while generating revenue and contributing to their longevity.

Founder vision and hub purpose interconnect. The personal vision, goals and motivations of hub founders will inform and shape the purpose of the hubs they create. As the architecture of the hub – activities, business model, etc. – follows from the purpose, the influence of the founder permeates all aspects of the hub, including how it perceives and pursues financial sustainability.

To summarize, the biggest problem with an alignment-focused perspective on financial sustainability is the difficult nature of creating and maintaining alignment across the key components of a hub. Just as the community-building process is dynamic and can be difficult to navigate, the same is true for aligning key components of a hub. Examining the hybrid nature of hubs, the impact of time and the organic nature of hub development helps explain why this is the case.

Aligning key components of hubs is difficult

The hybrid nature of hubs makes alignment challenging. When hubs have multiple purposes, experiment with different business models and offer different activities, aligning these elements is tricky. It will also be tough for the teams that run hubs to identify and deliver the most impactful activities given the vast array of choices and the limitations of their own capacity.

Nevertheless, many hub founders choose missions that prioritize social impact due to their personal beliefs, as well as what is required in immature, resource-scarce environments. As a result, a model for financial sustainability must accommodate a multidimensional approach and the simultaneous pursuit of different, sometimes conflicting, goals.

Evolving hubs require evolving business models

Much of the discussion until this point assumes that the core purpose, activities and business model of a hub are appropriate at a specific point during its development. But hubs are dynamic, evolving organizations, and their fundamental characteristics will also change over time.

For example, the community and skills building activity that is critical in the very early stages of an ecosystem's development may become less important (and valuable) as the ecosystem matures. The core purpose and activities of a hub will change as a result, and these changes will affect its financial sustainability prospects.

Box 10: Integrating tech hubs in the venture capital world

HSEVEN is a Morocco-based technology innovation accelerator dedicated to 'Africans, Africans of the diaspora and Africans at heart', according to chief executive Amine Al-Hazzaz. Its objective: to boost start-ups that will help build tomorrow's Africa.

The HSEVEN campus, co-founded by seven experienced entrepreneurs with high-level business and networking connections who are committed to the development of Morocco, is located at the Casablanca Marina. It recently partnered with one of the leading start-up accelerators in English-speaking Africa to expand its start-up pipeline across the continent and expand its sourcing and acceleration capabilities.

Al-Hazzaz would like to see greater integration between tech hubs and seed and venture capital funds. He expects a wave of new African seed and venture capital funds to emerge.

The platform has attracted more than 1,350 tech start-ups: a third from Morocco, a third from sub-Saharan Africa and a third from the African diaspora in Europe and North America. HSEVEN has accelerated more than 60 start-ups that have raised or are now raising \$8 million.

'We catalyse our start-ups through three programmes: Rise-Up Idea, an ideation programme dedicated to those who are just starting out on their entrepreneurial journey; Rise-Up Start, an incubation programme for entrepreneurs at the start-up stage, and Disrupt Africa, an acceleration programme for start-ups seeking exponential growth,' Al-Hazzaz said.

HSEVEN's core expertise is to select and accelerate teams of founders with 'outstanding entrepreneurial quotient capable of building African start-ups that can impact the lives of 100+ million Africans', Al-Hazzaz said. 'We advocate for greater collaboration, even integration, between African tech hubs and seed and venture capital funds.'

International institutional investors should invest in African hubs because they are 'at the origin of the creation of the start-up pipeline. Also, to encourage the birth of African seed funds backed or affiliated with African gas pedals', he said, adding that he believes increased investment in Africa is likely

Source: Interview with Amine Al-Hazzaz conducted by BondInnov, November 2022, for this publication

Building communities and creating hubs have been characterized as messy, difficult and dynamic processes. Many founders settle on an operating model only after years of experimentation, trial and error, and short-to medium-term failure. If this is the case, one must assume that inflexible frameworks will fail to help hubs think strategically and critically about financial sustainability.

From this perspective, a meaningful contribution to the process of achieving financial sustainability may be less about issuing instructions about which revenue streams and business models to pursue, and more about presenting a road map of key issues to consider and questions to ask. This should be supplemented by crowdsourced information on what has worked or failed for hubs operating different models in different contexts.

Bond'innov: Main takeaways from the COVID-19 crisis

Bond'innov is a nonprofit organization, created in 2011, that aims to support innovation and entrepreneurship in Africa and Europe. To do so, it incubates, accelerates and funds start-ups. However, its main activity is working with entrepreneurial actors, investment funds, incubators, research institutes to structure innovation ecosystems. Bond'innov has three main offices – in Senegal, Morocco and France – and an extensive network across francophone Africa.

When the COVID-19 crisis hit, Bond'innov's main challenge was to adapt coaching programmes and deliver the same impactful support as real-life incubation programmes offered. It also sought to ease access to digital tools for entrepreneurs and incubators partners.

ADAPTING WHILE DELIVERING IMPACT SUPPORT

Bond'innov was coordinating several programmes in Africa when the pandemic hit in 2020, working closely with tech hubs and directly supporting entrepreneurs. Bond'innov was co-founded by the French Research Institute for Development and has long worked closely with the research world to transform academic innovation into entrepreneurial solutions. Along with MakeSense, they created CoLAB in 2017, supporting projects led by teams of multi-actors tackling food safety in Burkina Faso, Côte d'Ivoire and Senegal.

The incubation programme was meant to be delivered in person. Because of the crisis, Bond'innov and the institute adapted all the tools created for the programme. They trained entrepreneurs to use digital tools and even provided internet vouchers to those who were testing their digital solutions in rural areas.

The programme was eventually extended and its budget raised as the partners' teams wanted to show that they could deliver impactful support in a time of crisis. It worked: for example, the support Cultiv'4G received helped the Côte d'Ivoire-based company deliver digital farming advice and provide climate data to remote farmers at a time no one could travel or hold in-person meetings.

Creating new opportunities during the pandemic

In 2019–21, Bond'innov coordinated AFIDBA, an Agence Française de Développement-backed programme that accelerated 60 inclusive, digital businesses. The programme funded half of them, in Morocco, Senegal, Burkina Faso and Ghana. The support activities had to be digitized, and though many entrepreneurs feared quality and commitment would decline, all objectives were reached.

The pandemic taught Bond'innov's team and its hubs partners about the benefits of digital tools and how scaling up acceleration programmes is feasible through tech-enabled methods.

In 2020, the United Nations Development Programme commissioned Bond'innov to organize a massive digital hackathon to find and boost ideas that could tackle some of the worst effects of the pandemic and therefore build a collective resilience against crises.

Initiating a new dynamic after the pandemic

Many efforts were made in 2020 and 2021 to maintain activities, keep delivering impact and, for some hubs, remain financially viable.

For Bond'innov, it became clear that staff needed greater autonomy and had to work remotely more often. While the incubator used to work with staff and partners in various African countries, the need to act more locally and build regional offices became apparent. Bond'innov opened offices in Dakar and Casablanca in 2022 and continues to work with local operators across North and West Africa. The pre-COVID era was mainly physical, the COVID period mainly digital, and the future seems to be growing into a subtle mix of 'phygital' (a mix of digital and physical), global and local.

TECH HUB CASE STUDY: FRENCH SOUTH AFRICAN TECH LABS

The French South African Tech Labs (FSAT Labs) is a Cape Town-based hub that helps early-stage start-ups develop high-impact, scalable businesses for the betterment of South Africa, with a focus on product development. FSAT Labs delivers pre-incubation, incubation and soft-landing services for South African ventures. The hub has incubated 15 start-ups a year since it was founded in 2016.

The pandemic had a major impact on South Africa and its economy. Still, FSAT Labs found new opportunities and managed to extend its reach.

Handling operational and financial disruption to pursue activities

Alongside the shock of the pandemic and lockdowns, 2020 was mostly about quickly adapting methods and tools, according to FSAT Labs founder Christophe Viarnaud. FSAT Labs used to organize all activities – workshops, community events, training – at its Cape Town hub, where it also hosted a number of start-ups a year. The hub, which combines the grantee and networker business models, shifted from an in-person approach before the pandemic to an all-digital methodology.

FSAT Labs is subsidized by the French embassy in South Africa and the national Small Enterprise Development Agency. The hub also benefits from rent revenues.

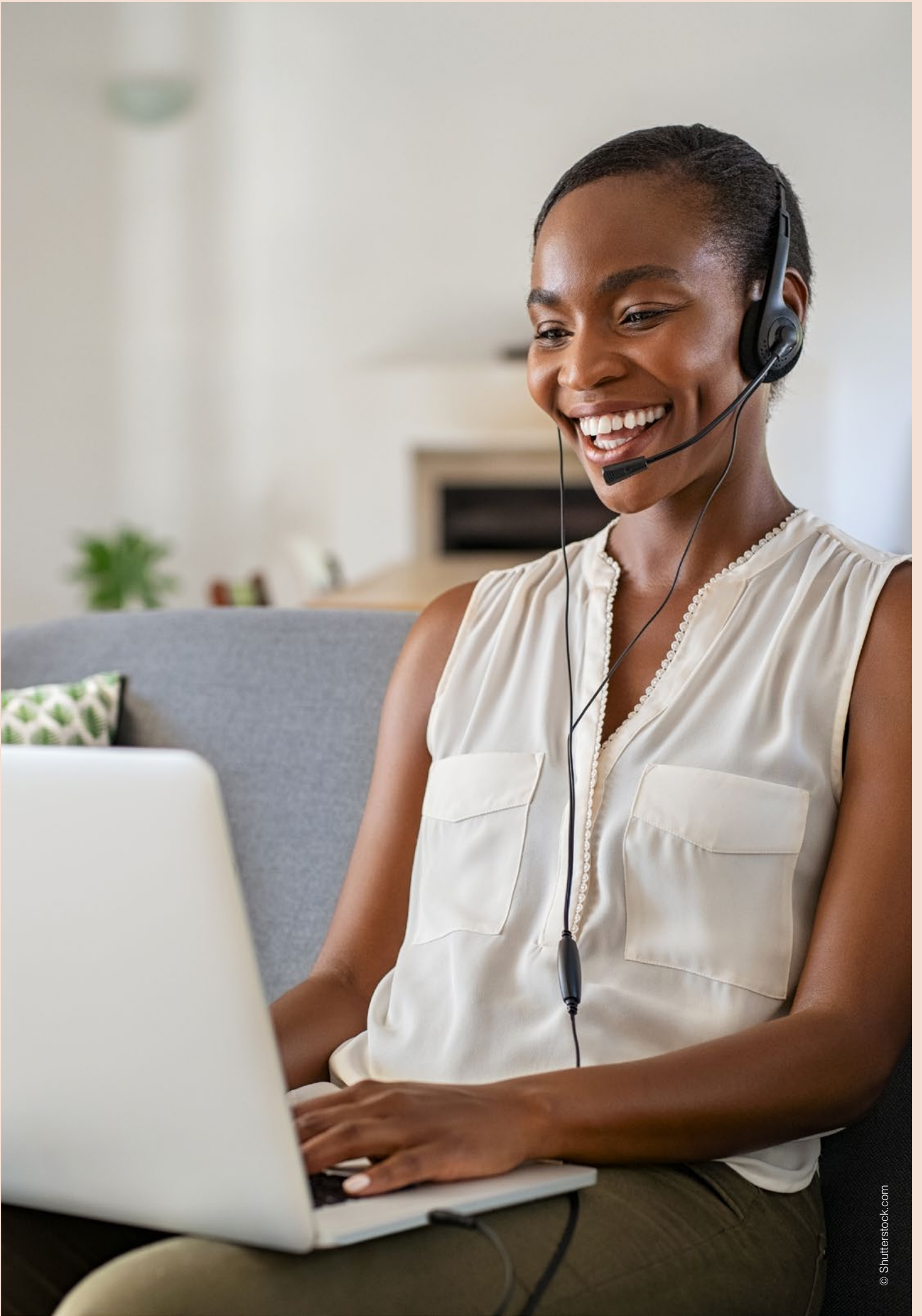
During the lockdown, rent revenues dropped and the Small Enterprise Development Agency temporarily froze financial support. Although FSAT Labs had to extend credit to some of the entrepreneurs it hosted, most were quite advanced in their start-up development and continued to support the hub and pay rent. FSAT Labs also received an extra subsidy from the embassy to adapt its programmes to digital services – helping the hub overcome its financial difficulties.

Finding the right balance between physical and digital meetings

Like many businesses around the world, FSAT Labs had to transform quickly to digital. The result is the best of both worlds, Viarnaud said. The incubator/accelerator now uses digital tools for mentoring sessions and most one-on-one meetings while collective training is done in person. Today, 80% of the incubation services FSAT Labs provides to its start-ups are digital.

The pandemic also presented FSAT Labs with an opportunity to extend its services beyond Cape Town to other parts of South Africa, notably Johannesburg and Durban. This also helped the hub expand its collaboration with the Small Enterprise Development Agency.

FSAT Labs' now nationwide pre-incubation and incubation programmes mainly involve online mentoring between start-ups and hub coaches. This has proven to be very efficient and something that appears to be essential – even when done digitally – in a post-pandemic world.





CHAPTER 4

BUSINESS MODELS AND VALUE PROPOSITIONS

- BUSINESS MODELS OF AFRICAN TECH HUBS 45
- CREATE: DESIGNING THE BUSINESS MODEL AND VALUE PROPOSITION..... 45
- DELIVER: CONNECTING TO THE MARKET..... 51
- CAPTURE: CAPITALIZING THE BUSINESS 53
- HUBS ARE STRUCTURED ON FIVE REVENUE MODELS..... 55
- HUBS IN THE COVID-19 ERA 58
- WHAT SUPPORT DO HUBS NEED? 62

CHAPTER 4

BUSINESS MODELS AND VALUE PROPOSITIONS

This chapter outlines the core business models and value propositions of tech hubs and explores how they have responded to the COVID-19 pandemic. The sections in this chapter leverage Briter's database of more than 1,000 hubs, desk research, survey findings from the 2020 ITC report on tech hubs in Africa¹³³ and new findings from a survey of 52 leading African hubs. The most recent survey data include contributions from previous participants as well as 38 new participants.

Table 4: Survey participants

| Hub name | Location | Hub name | Location |
|---|-----------------------------|--|--------------|
| 250Startups | Rwanda | Jakkolabs, Dakar | Senegal |
| Aga Khan University Media Innovation Centre | Kenya | Jokkolabs, Banjul | Senegal |
| Bayelsa Tech Hub | Nigeria | Kumasi Hive | Ghana |
| Blue Sapphire Hub | Nigeria | Laboratoire de l'Economie Sociale et Solidaire (Lab'ess) | Tunisia |
| BongoHive* | Zambia | mLabs | South Africa |
| Colab | Nigeria | MusterPoint | Nigeria |
| CONCREE | Senegal | Mzuzu E-Hub | Malawi |
| Creative Arts and Visual Imagery Centre | Nigeria | nHub | Nigeria |
| CUBE | Togo | Noni Hub | Ghana |
| DoniLab | Mali | NyamukAfrica | Zambia |
| Ennovate Ventures | United Republic of Tanzania | Open Startup | Tunisia |
| EnovateLab | Nigeria | Outbox* | Uganda |
| Flat6Labs* | Egypt | Plus Innovation Hub | Nigeria |
| Founders Hub* | Nigeria | Premierhub Nigeria | Nigeria |
| French South African Tech Labs* | South Africa | Programos Foundation | Nigeria |
| Furntech | South Africa | RedStart Tunisia | Tunisia |
| Harmony Innovation Hub | Nigeria | SankoreLabs | Mali |
| Hive Colab | Uganda | StartHub Africa | Uganda |
| Huda | Senegal | Startup Bayelsa | Nigeria |
| Impact Hub Bamako | Mali | Startup Incubator Gambia | Gambia |
| Impact Hub Dakar | Senegal | The CANs Park | Nigeria |
| Impact Hub Lagos | Nigeria | The Hub | Gambia |
| Impact Hub Lusaka | Zambia | The Innovation Village Kampala Ltd | Uganda |
| Incub'Ivoire* | Côte d'Ivoire | The Nest | Nigeria |
| Injini | South Africa | Workstation International Cowork | Nigeria |
| Innovation Growth Hub | Nigeria | Zixtech Hub | Cameroon |

Note: *Contributors to the 2020 ITC tech hubs in Africa report

Source: Briter Bridges survey, November 2022, for this report

133. ITC (2020). Tech hubs in Africa: How can they support tech start-ups across the continent?

This chapter explores the impact of lockdowns and restrictions on movement and the ways some hubs have pivoted or evolved to become more resilient in the face of shocks. It also highlights trends and themes from the business and revenue models of African tech hubs during the COVID-19 pandemic.

Analysis of survey responses highlight the challenges that hubs face to become financially sustainable and some approaches they have adopted to adapt their business models to the changing hub landscape. It should be noted that the figures and opinions of the surveyed hubs represent just one segment of the tech landscape and cannot necessarily be generalized to the ecosystem. Instead, the data provide a snapshot of key business models and experiences of hubs coping with the pandemic.

BUSINESS MODELS OF AFRICAN TECH HUBS

A business model refers to how organizations define their customers, the needs of their customers, what product or service to develop to deliver value to them, and how to monetize this value. Organizations can adopt business models to distinguish themselves by how they create and capture value through their services.

For example, many tech hubs are adopting an impact mandate that guides how they work with stakeholders. There is no perfect business model, and organizations must be very careful and cautious when implementing their business model. Nevertheless, sustainable business models can enable organizations to respond, and become resilient, to external shocks that might threaten their operations.

The value of tech hubs

The following three sections explore the nature and role of tech hubs based on their business models, the services they provide, how they generate revenue and how they allocate resources to achieve their mission. These elements are explored through three key lenses:

1. Creating value for their customers and partners through their service offerings
2. Delivering value by attracting the right partners
3. Capturing value for themselves to achieve sustainability and longevity

CREATE: DESIGNING THE BUSINESS MODEL AND VALUE PROPOSITION

This section provides an overview of the business models that hubs adopt to create value and explores ways to measure the impact of activities and presence.

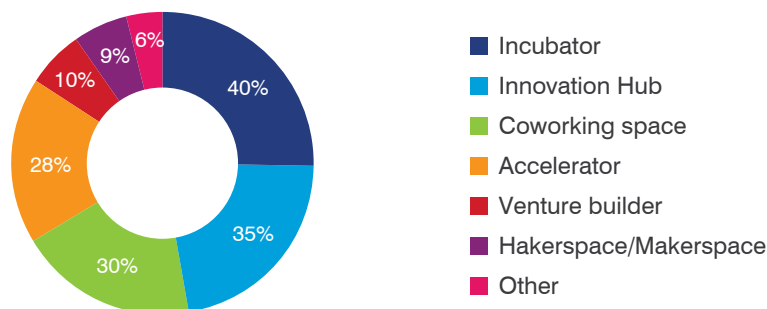
Tech hub types, business models and services offered

While hubs are usually identified with their core offerings, their roles are broadening as they increasingly provide combined services. For the purpose of categorization, the survey identified eight key hub types:

- Accelerators, offering cohort-based and fixed programmes that provide access to advisory services, mentorship, networks and capital to enable ventures to scale. These can be associated with an in-house or separate fund that provides the financial capital.
- Incubators, supporting early-stage start-ups with resources including mentorship, training and, in some cases, capital that enables them to refine their business models.
- Innovation hubs, understood in the broader sense as facilities designed to nurture innovative and creative ideas, while helping entrepreneurs develop their business.
- Hackerspaces, makerspaces and fab labs, providing access to technological tools, equipment and skills to create and test digital products.

- Co-working spaces, offering physical workspaces that increase productivity and encourage peer learning, networking, capacity development and collaboration.
- Venture builders, providing access to resources for high-growth businesses to develop and scale quickly.
- Technology parks, clustering technology companies in an area to enable the development of innovative ideas and interaction among actors.
- Corporate venture arms, providing access to capital, advisory services and new technologies for innovative start-ups.

Figure 1: Tech hub types

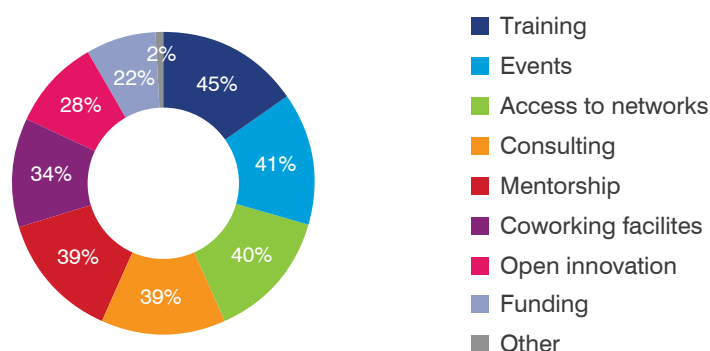


Source: Briter Bridges survey, November 2022, for this report

As the tech hub landscape evolves, the roles and activities of hubs are becoming increasingly intertwined, with many hubs fitting within two or more of the categories outlined above. Across the survey sample, 60% of hubs fit into at least three categories based on the description of their organization. Incubator, innovation hub, co-working space and accelerator emerged as the most selected categories by 84% of hubs.

This is a natural development. as tech hubs look to offer a more comprehensive suite of services, from co-working to acceleration, and access to networks. Combined solutions can also attract a broader range of start-ups on the one end and donors and partners on the other.

Figure 2: Tech hub services



Source: Briter Bridges survey, November 2022, for this report

This study identified some of the key services offered by hubs on the continent, including:

Training and professional skills development

About 16% of survey respondents said they offered training programmes to entrepreneurs. These programmes help participants develop the necessary digital and technical skills to launch a career in technology, upskill and build products.

Events

Events provide an avenue for players in the ecosystem to network and find new opportunities. Tech hubs are often preferred locations for hosting small ecosystem gatherings. One reason is that they are places where individuals active in the tech and investment space can be found.

Another reason is that they provide access to a conducive environment and reliable amenities such as internet and electricity. Users typically rent the hub space to host their activities for a small amount of money. Events emerged as the second most mentioned service, offered by 14% of survey respondents.

Access to networks

Hubs establish partnerships with key stakeholders that are vital to their sustainability. Such partners include corporates, public and private organizations, start-ups and investors. Members of the hub community can have access to these partners through programmes and events. About 14% of survey respondents said they offered access to networks to entrepreneurs in their community.

Consulting

Consulting services offer hubs an opportunity to leverage their human resources and networks with start-ups to solve problems for public and private organizations. Providing consulting services is becoming an important revenue stream for hubs. Those that offer this service typically offer business training and insights, advice and digital solutions for organizations. Some 13% of survey respondents identified as such hubs.

Mentorship

Start-ups that are mentored by tech hubs are often given access to internet facilities, business support and investment opportunities. In some cases, hubs connect young founders with successful entrepreneurs to receive mentoring on how to refine their business models. About 13% of survey respondents said they offered mentorship to start-ups in their cohort.

Co-working facilities

Offering co-working facilities to entrepreneurs is a low-hanging fruit for tech hubs. Around 12% of survey respondents said they provided access to co-working facilities for entrepreneurs. Co-working spaces provide access to office facilities for individuals and teams on flexible terms and at affordable prices.

Open innovation

The central idea behind the concept of open innovation is collaboration and information sharing between actors in an ecosystem, in particular between startups and corporates. In this regard, private and public organizations seek the help of hubs to solve business and technology problems. About 8% of survey respondents said they offered open innovation services. Hackathon events are one of the most common models of open innovation adopted by hubs, where start-ups compete to solve a problem for a prize.

Funding

Start-ups need capital to survive. In their early development, however, many struggle to attract funding from investors, who view investing in early-stage start-ups as risky. Hubs help start-ups overcome this challenge by providing the support required to build initial runway, develop prototypes and become investment-ready. This could include funding for equity in the start-up when it raises follow-on funding. About 8% of survey respondents said they offered offer funding to start-ups in their cohort.

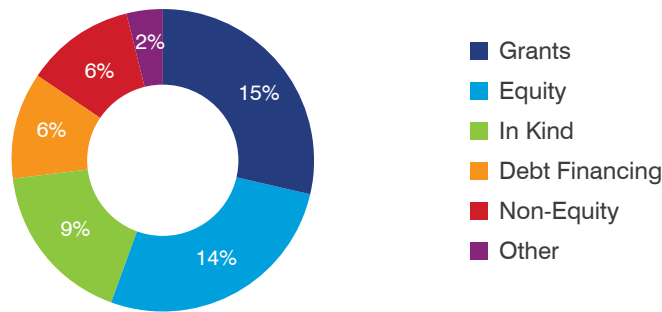
Types of financial support offered

Many hubs are not equipped to offer financial support to the start-ups in their portfolio. Only 8% of respondents provide funding as a part of their service offering to start-ups, as shown in Figure 2.

Among the hub types, accelerators and incubators are the most likely structures to offer funding to their cohorts.

Grants and equity are the most common instruments used by hubs that indicated funding as a service offering to start-ups. Half of these hubs give cheques of less than \$5,000 (Figure 4).

Figure 3: Types of financial support offered by tech hubs



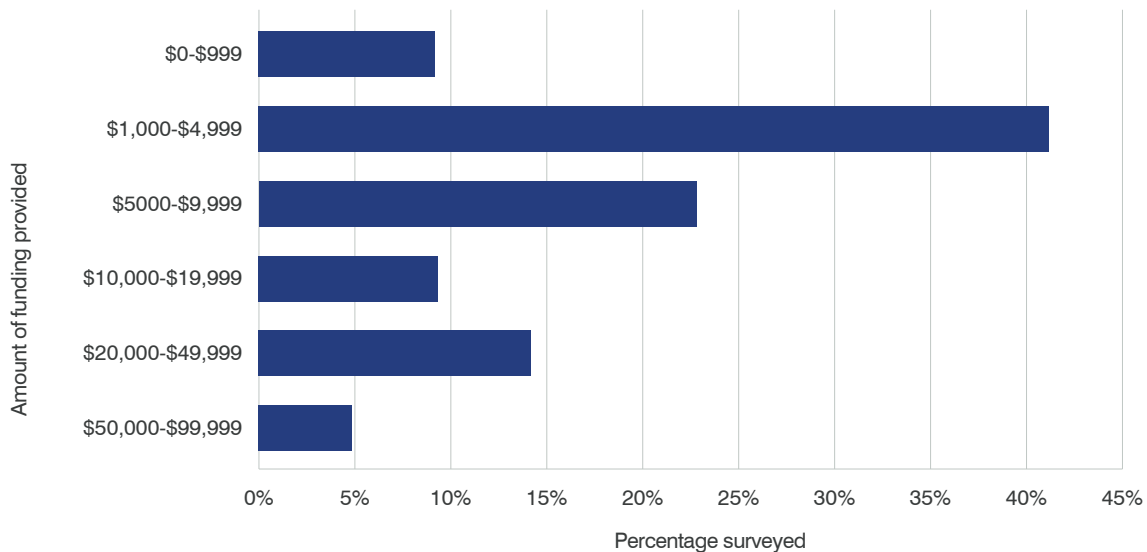
Source: Briter Bridges survey, November 2022, for this report

The impact of hubs

Hubs have different goals, ranging from driving digitalization and enhancing skills development for entrepreneurs to getting start-ups past the ideation stage to investment readiness.

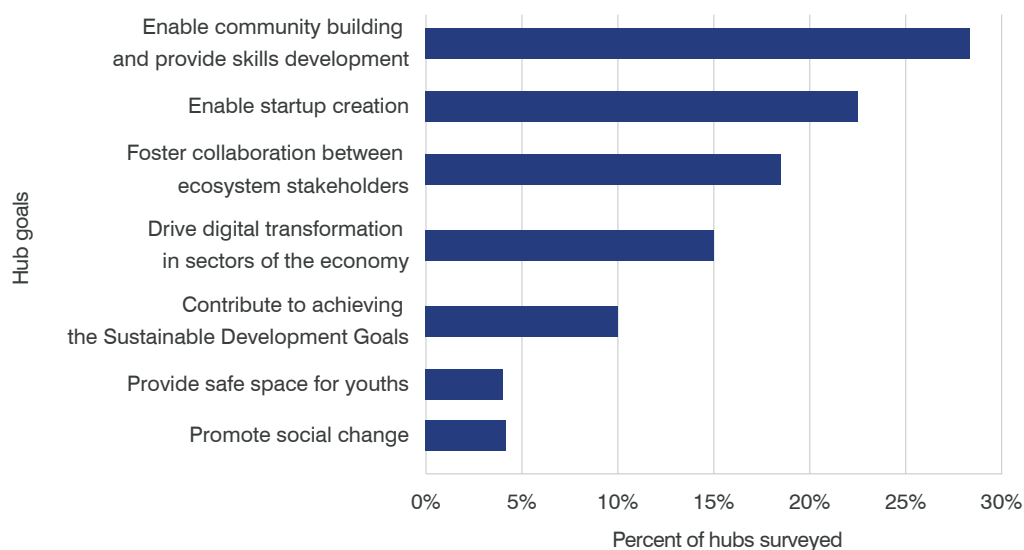
Yet data collected show that almost half of the hubs see their objective as enabling community building and start-up creation. This reflects the two primary purposes of hubs as discussed in the previous edition of this report, namely building businesses and creating communities.

Figure 4: Tech hub cheque sizes



Source: Briter Bridges survey, November 2022, for this report

Figure 5: Tech hub goals

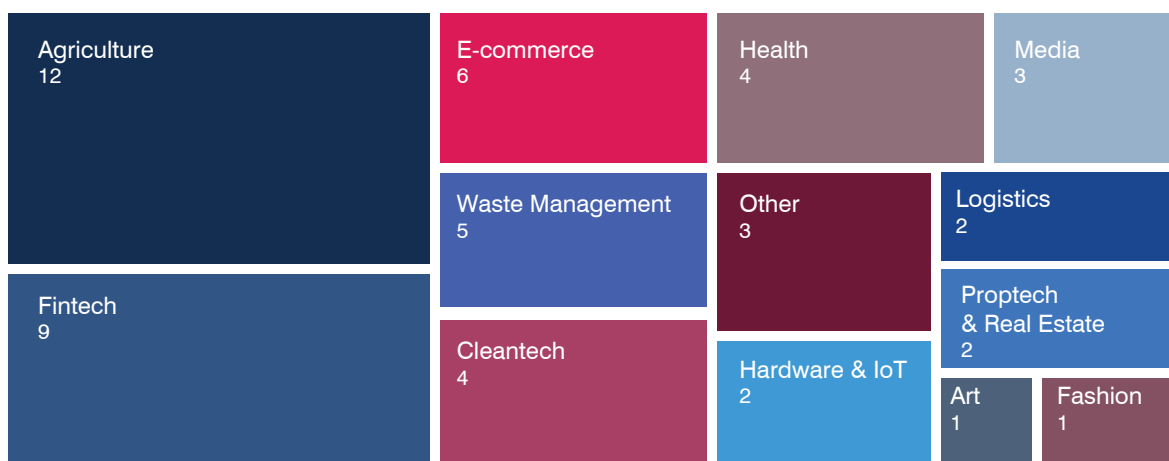


Source: Briter Bridges survey, November 2022, for this report

Several hubs now also offer more customized programmes and support, targeting specific demographic groups or sectors to optimize the expertise training and support provided. Data from the survey reveal that 52% of hubs target specific sectors in the delivery of their programmes and initiatives.

Among these, agriculture, fintech and e-commerce are the top targeted sectors, accounting for 22%, 17%, and 11%, respectively. These sectors represent some of the most active sectors in Africa in terms of their share of investments and their number of start-ups. Furthermore, these sectors present huge opportunities for entrepreneurs to create social impact. Tech hubs and other stakeholders that are seeking to drive change increasingly back social entrepreneurs.

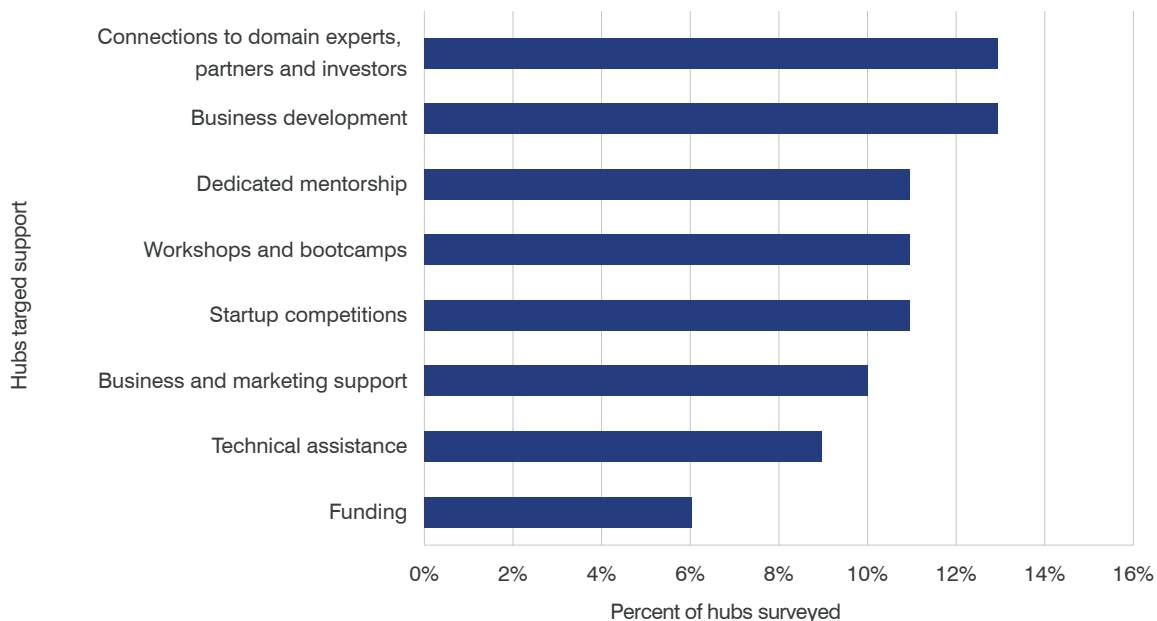
Figure 6: Tech hubs target specific sectors



Source: Briter Bridges survey, November 2022, for this report

Hubs provide targeted support for start-ups in line with their business model strategy and mission statement. The format of support for start-ups usually includes connections to domain experts, partners and investors, business development support and dedicated mentorship.

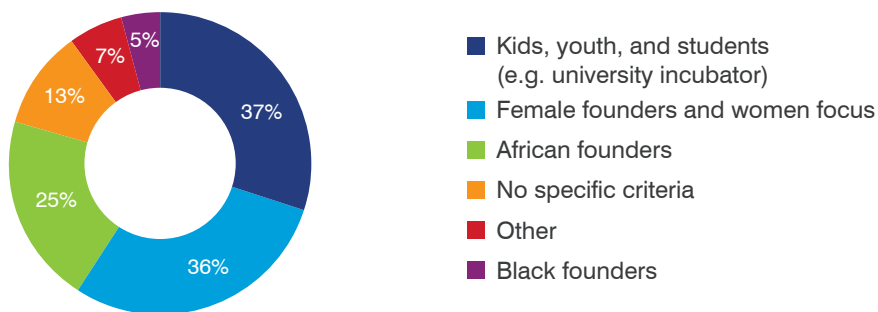
Figure 7: Tech hub targeted support



Source: Briter Bridges survey, November 2022, for this report

Several hubs focus on providing support services for particular segments of the population. While many hubs target different population groups, most target youths and students, followed by female founders and women. Only 11% of hubs in the survey sample do not target a specific population group.

Figure 8: Tech hubs target population segments



Source: Briter Bridges survey, November 2022, for this report

DELIVER: CONNECTING TO THE MARKET

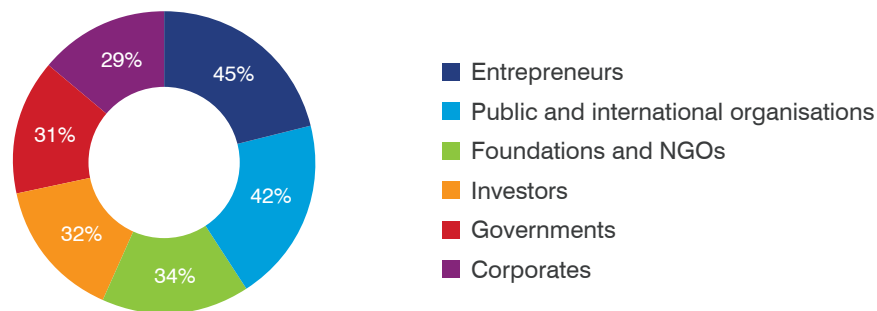
This section explores how tech hubs engage with different stakeholders and identify partners to deliver value to their cohorts and audience.

Strategies to attract entrepreneurs, funders and partners

Hubs can offer value when the services they provide match the needs of their local ecosystem. To do so, it is crucial for them to identify relevant partners that can assist in the process and to adopt strategies to attract entrepreneurs, find funders and partners, and hire consultants and employees.

About 90% of tech hubs in the survey sample work with at least three ecosystem stakeholders. Hubs indicated that they work predominantly with entrepreneurs, public and international organizations, and foundations and NGOs.

Figure 9: Tech hub stakeholders



Source: Briter Bridges survey, November 2022, for this report

Hubs engage with different stakeholders in diverse ways to generate revenue and become financially sustainable. Engagement forms include:

- Supporting entrepreneurs through training and programmes
- Building deal flow for investors
- Offering consulting services to established companies
- Developing initiatives and projects for sectors and communities in partnership with foundations and governments

The table below provides excerpts of different forms of engagement between hubs and stakeholders as described by hubs in the survey sample.

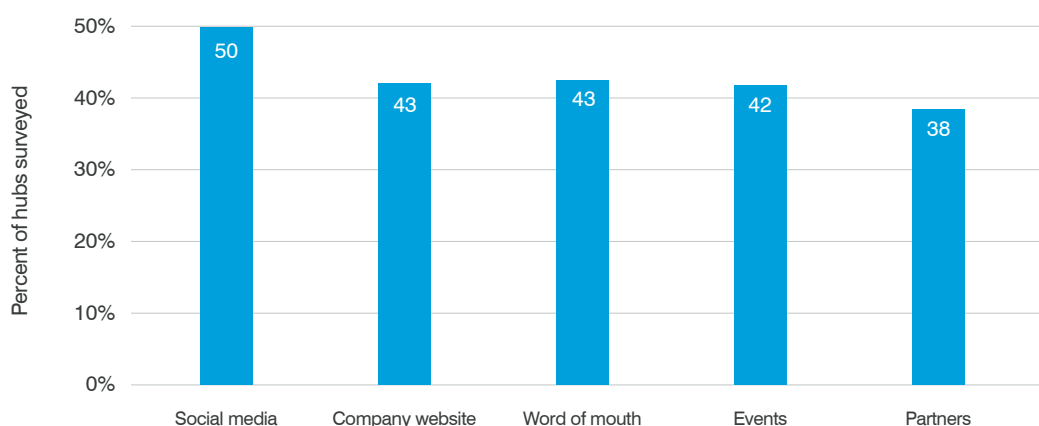
Table 5: How do stakeholders engage with hubs?

| Stakeholders | How hubs work with them |
|--|---|
| Entrepreneurs | <p>'We provide an enabling environment for entrepreneurs through programmes.'</p> <p>'Entrepreneurs support us by using our workspaces and mentoring other budding entrepreneurs.'</p> <p>'We provide venture development and investment readiness support.'</p> <p>'The entrepreneurs that are hosted in our co-working space pay a monthly fee towards the usage of the co-working facility.'</p> <p>'Entrepreneurs access our business development services.'</p> <p>'We organize programmes to help scale their business and support their operations.'</p> <p>'We provide support to help entrepreneurs scale.'</p> <p>'We work with entrepreneurs by supporting them to design and develop new products or services and eventually businesses.'</p> <p>'We support entrepreneurs and introduce them to investors as often as possible.'</p> <p>'We support entrepreneurs from idea to revenue.'</p> |
| Investors | <p>'We work with investors to provide support to start-ups.'</p> <p>'We provide start-up pipeline for investment deals.'</p> <p>'We work with investors to provide support for entrepreneurs through grants, equity or loans.'</p> <p>'We co-invest with investors.'</p> <p>'We offer access to network development, funding opportunities and events.'</p> <p>'We connect early-stage investors to the entrepreneurs that we work with.'</p> <p>'We provide investors with investment-ready start-ups/SMEs.'</p> |
| Foundations and NGOs | <p>'We work with the public and international organizations to get funding and training.'</p> <p>'We develop tools for NGOs and organizations.'</p> <p>'We engage through partnerships in fundraising and organizing events.'</p> <p>'We co-design and co-implement entrepreneurship programmes.'</p> <p>'We provide consulting services.'</p> <p>'We work on engagement towards strengthening the policy framework supporting the entrepreneurial ecosystem and funding opportunities towards hubs.'</p> <p>'Foundations are our primary funders.'</p> <p>'Foundations also work with us to support programmes for entrepreneurs in their sectors.'</p> |
| Corporates | <p>'Through training offered and organizing programmes in their intervention areas.'</p> <p>'We approach corporates for sponsorship of programmatic support and research.'</p> <p>'We offer corporations innovation consultancy and software development for mobile and web application needs.'</p> |
| Public and international organizations | <p>'Through grants, targeted programmes for key sectors and communities.'</p> <p>'We provide innovation programme management services.'</p> <p>'Social entrepreneurship sensitization, lobbying.'</p> <p>'International organizations and foundations work with us to support entrepreneurs through programmes and capacity-building efforts.'</p> <p>'We assist development organizations in their mission to impact populations through entrepreneurship.'</p> |
| Government | <p>'Governments provide funding for our projects.'</p> <p>'We work with the government for innovation programme development and implementation.'</p> <p>'Government is a key stakeholder in the education landscape and must be engaged with.'</p> <p>'We often execute programmes conceived by governments, although we also sometimes have support to run our own.'</p> |

Source: Briter Bridges survey, November 2022, for this report.

Hubs use different channels to market their activities to attract paying customers and stakeholders. Social media, company websites and word of mouth are among the commonly used channels.

Figure 10: Tech hub marketing channels



Source: Briter Bridges survey, November 2022, for this report

CAPTURE: CAPITALIZING THE BUSINESS

This section examines how tech hubs monetize their services to capture value for themselves. The monetization strategies of most hubs are tied to multiple revenue streams. Revenues are generated from their core service offerings and are typically focused on start-ups. The most common are fees generated from providing training, consulting and co-working services.

Other forms of monetization include revenue generated from incubation and acceleration programmes, organizing events, completing research projects and connecting start-ups to investors.

Figure 11: Tech hub revenue from core service offerings



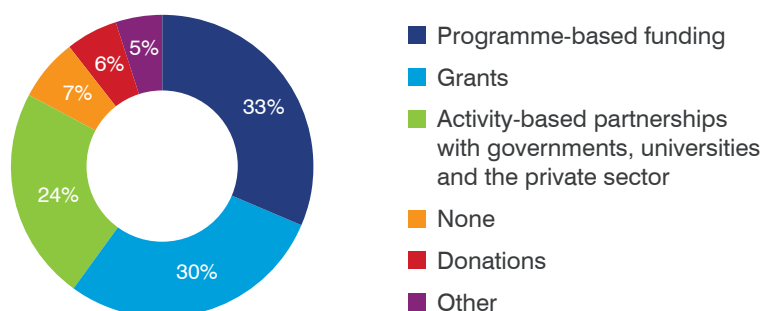
Source: Briter Bridges survey, November 2022, for this report

Many hubs signalled that they faced difficulties monetizing their services. About 46% said the revenue generated from their core service offering was not adequate to fund their operations. The most common monetization problems – faced by more than half of surveyed hubs – were tied to the stage of the ecosystem where they operate, lack of access to funding, how they are structured and scarce facilities and equipment.

Due to inadequate monetization, 93% of surveyed hubs accepted funding from external sources to provide additional services that may not be strictly start-up focused. Programme-based funding, grants and activity-based partnerships with governments, universities and the private sector represent 83% of revenues generated from providing additional services in the hub survey sample.

Only 7% of hubs from the survey had not accessed any funding from external sources. It is unclear whether this is because they opted not to do so or if they were unable to access external funding.

Figure 12: Tech hub funding from external sources

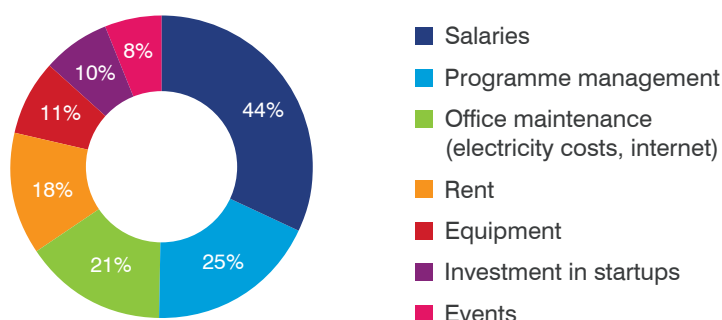


Source: Briter Bridges survey, November 2022, for this report

Figure 12 outlines the various types of external funding for hubs. The analysis suggests that while hubs may offer multiple services, the two main sources of funding are development programmes and grants.

Half of the hubs allocate most of their funding to cover the costs of their operations, such as salaries and programme management expenses. Results show that 30% of hubs consider salaries to be a primary cost priority. When office maintenance – covering electricity and internet costs – and rent costs are considered, however, they are the largest costs for 79% of hubs (Figure 13).

Figure 13: Tech hub cost allocation



Source: Briter Bridges survey, November 2022, for this report

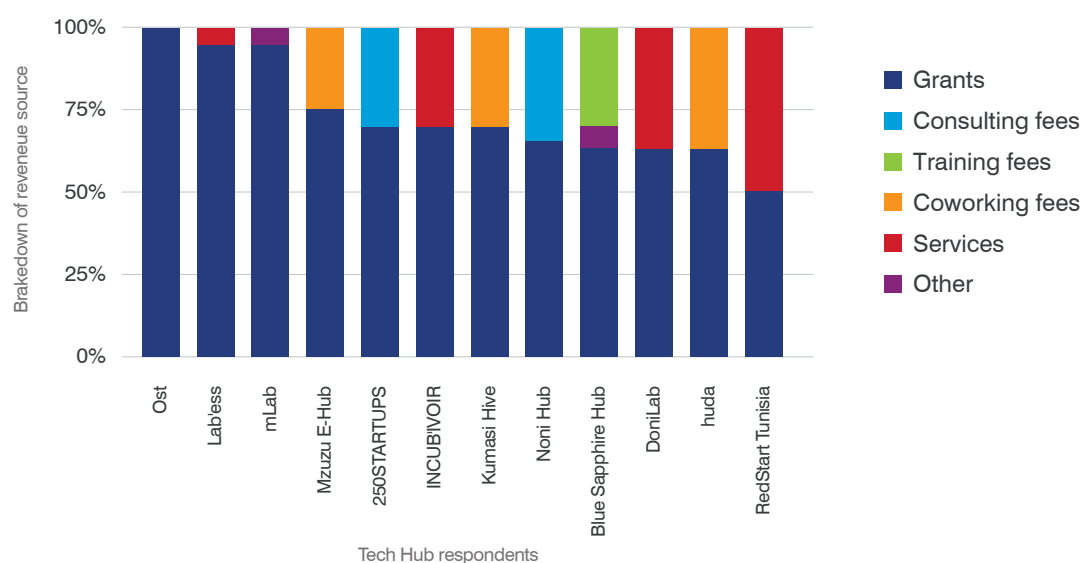
HUBS ARE STRUCTURED ON FIVE REVENUE MODELS

Drawing on the previous edition of this report, hubs can be categorized into five major revenue models that emerged from how they generate their revenue. This chapter analyses how the different revenue models function during the COVID-19 pandemic.

The five revenue model patterns of hubs are:

1. The grantee

Figure 14: Grants are the main revenue source for many hubs



Source: Briter Bridges survey, November 2022, for this report

Tech hubs that generate at least half of their revenue through grants engage with different actors of the entrepreneurial ecosystem, such as corporate sponsors, embassies, governments, NGOs, hub networks, foundations, nonprofit organizations and impact investors. Funding from these stakeholders enables hubs to offer a variety of services such as training, co-working, events, mentorship, access to networks, consulting and funding.

A key similarity among most grantees is that they offer incubation programmes to develop innovative projects that seek to deliver impact. One notable example is the Tunisian incubator Lab'ess, which generates almost all of its funding from grants tied to projects. Through its incubation programmes, Lab'ess offers personalized support to entrepreneurs addressing social and environmental problems in the Middle East and North Africa region. Entrepreneurs who are accepted into the programme receive incubation for six months and compete for a prize of up to 15,000 dinars (\$3,260).

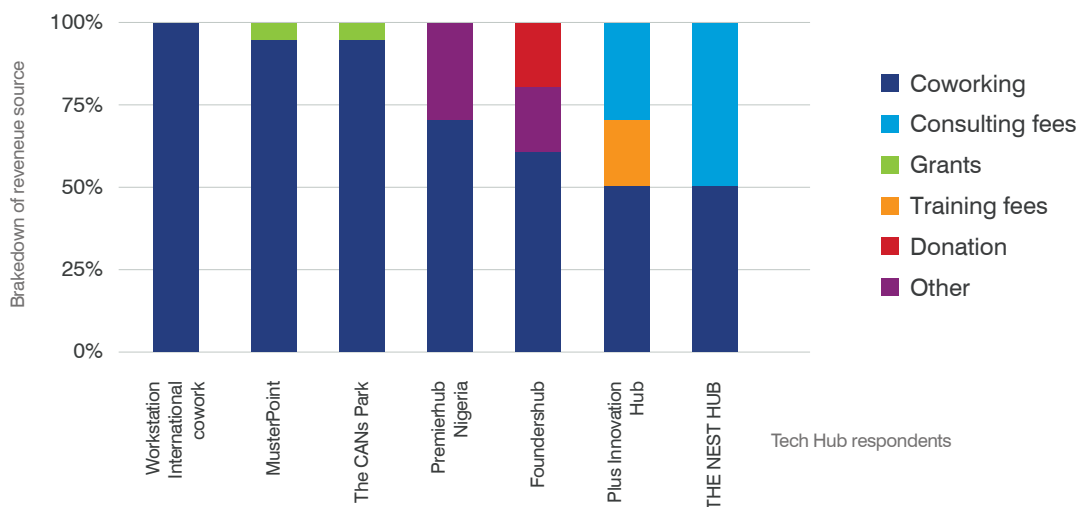
Grantees also offer training to entrepreneurs. Many see their primary goal as enabling community building and providing skills development as well as driving digital transformation in different sectors of the economy.

However, most grantee hubs struggle to become financially sustainable and are among the most vulnerable to shocks. Data from the survey show that COVID-19 reduced the revenue streams of half of the grantee hubs by up to 50%. Also, two tech hubs said they had shut down operations.

Common challenges that threaten the sustainability of grantee hubs include cuts to pre-approved funding, lack of external funding and reduction of consulting and programme revenues. Yet grantee hubs that have well-executed revenue models are able to withstand shocks. For instance, DoniLab in Mali, mLabs in South Africa and Lab'ess indicated that they did not experience any change in revenue, while the Tunisian hub OST reported a positive financial performance as a result of the pandemic.

2. The networker

Figure 15: Networker hubs earn most revenue from co-working fees



Source: Briter Bridges survey, November 2022, for this report

Common services offered by networker hubs include co-working, training, access to networks and events. At least half of their revenue is generated from activities tied to their co-working facility. External funding to cover part of their operational costs is sourced from foundations, development finance institutions, governments, NGOs, nonprofit organizations, corporate sponsors and private organizations.

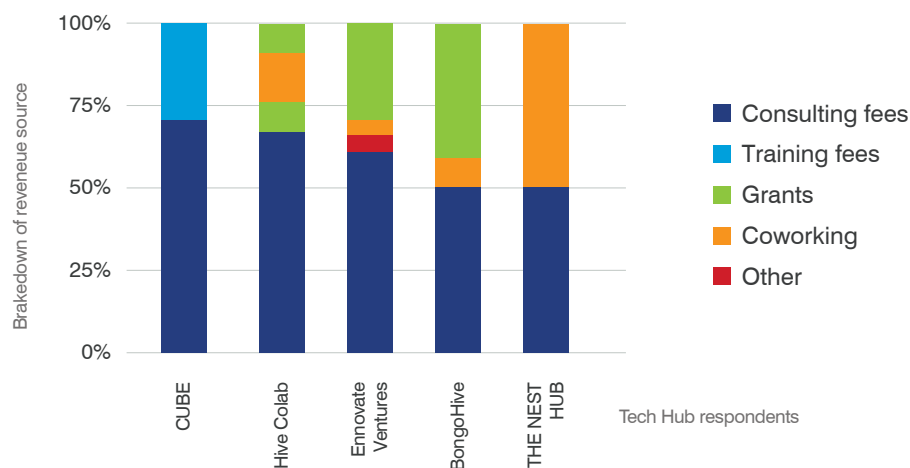
Networker hubs see their primary goal as enabling community building and providing skills development. A prime example is Workstation Cowork in Nigeria, which generates all of its revenue by providing shared office spaces and organizing social activities for a community of creatives, entrepreneurs, start-ups and small businesses.

Limits on physical contact following the outbreak of COVID-19 had an adverse effect on the revenue streams of many networker hubs: 71%

reported that they temporarily closed their business premises to comply with safety guidelines. While 43% of respondents said their losses were less than a quarter of their revenue, another 43% lost more than half of their revenue.

3. The consultant

Figure 16: Consulting fees are vital for some tech hubs



Source: Briter Bridges survey, November 2022, for this report

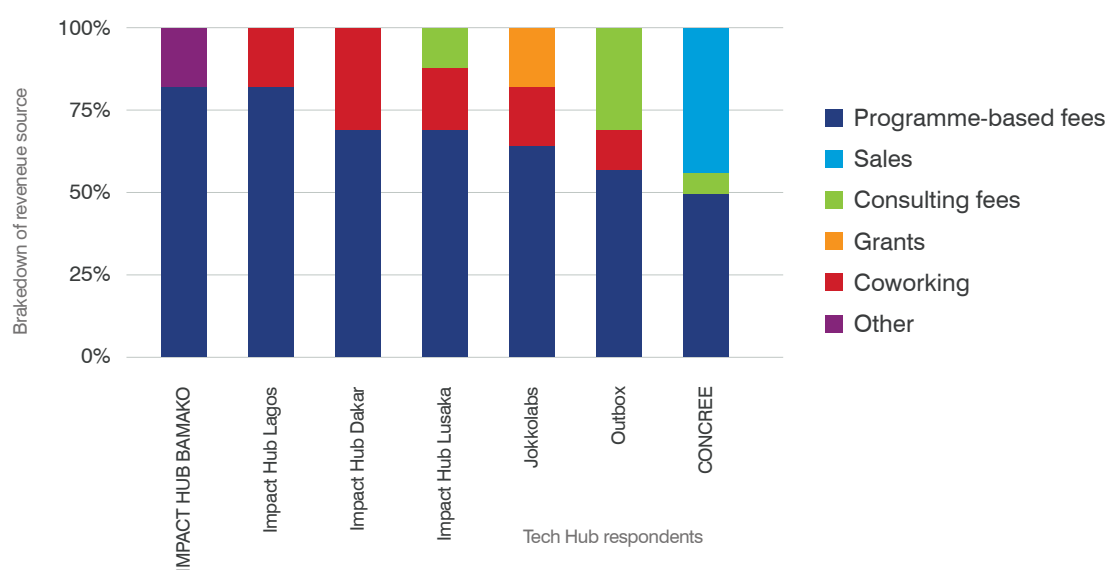
These hubs generate more than half of their revenue from providing consulting services to all kinds of organizations. Specifically, they develop tools and innovation programmes for corporates, governments, NGOs and public and private organizations. A notable example is Ennovate Ventures in the United Republic of Tanzania, which also offers venture development and investment readiness support for entrepreneurs.

Most consultant hubs seek to foster collaboration among ecosystem stakeholders and enable the creation of start-ups. CUBE in Togo, for instance, offers training for entrepreneurs and connects them with investors.

Consultant hubs are among the most resilient to shocks. Data from the survey revealed that the pandemic had a mildly negative impact on the revenue of 40% of consultant hubs, which lost up to 25% of revenue. And CUBE reported a revenue increase after the outbreak of COVID-19 – possibly because the hub stepped up its digital activities.

4. The agent

Figure 17: Agent hubs make most revenue from management fees



Source: Briter Bridges survey, November 2022, for this report

Agent hubs generate more than half of their revenue from management fees they earn from incubation and acceleration programmes. These hubs monetize their services through incubation fees and revenue sharing, funder matching fees and equity through acceleration programmes. Most agent hubs focus on enabling start-up creation. The amount of revenue they generate depends on the maturity of their ecosystem.

The Impact Hub network, with locations in Bamako, Dakar, Lagos and Lusaka, among others, falls into this category. External funding for its activities comes from different stakeholders through programme-based funding, activity-based partnerships and in-kind support.

The survey showed that 43% of agent hubs lost up to half of their revenue while 29% lost more than half of their revenue. However, CONCREE, which fits the agent-hub category, said its revenue rose during the pandemic – in large part because the Senegal-based hub adapted its business model to offer its programmes virtually.

5. The builder

Builder hubs refer to those that provide direct resources, including business ideas and funding to enable the creation of start-ups. None of the hubs that were surveyed offered this business model, but one example is Nigeria's Fast Forward Venture Studio. The hub provides a business idea and finds an entrepreneur capable and willing to turn it into a scalable company. Fast Forward then offers funding of up to \$100,000 in exchange for up to 20% equity in the company.

The builder model could become important to support and drive new innovation in Africa after COVID-19, subject to the availability of adequate funding.

HUBS IN THE COVID-19 ERA

This section provides an analysis of the difficulties tech hubs face due to the pandemic and how their business models have adjusted, pivoted and evolved.

Operational challenges

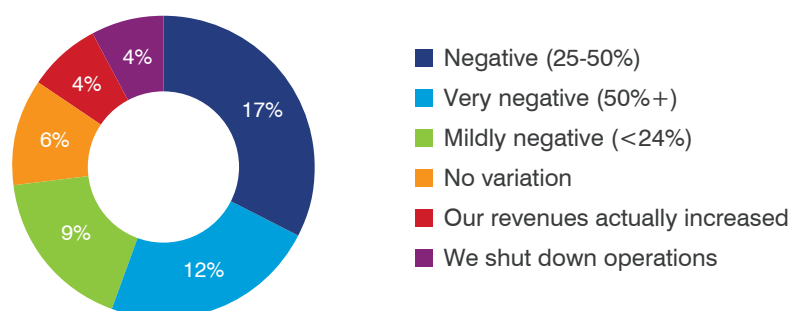
Most global business operations came to a halt after the COVID-19 virus was declared a pandemic in March 2020. Lockdown measures were put in place across Africa, restricting movement and gatherings for non-essential activities. Many businesses closed their premises and sent their employees home to limit contact.

Tech hubs were no exception. Many were forced to cease operations – some temporarily and others permanently. Limitations and restrictions on travel affected co-working spaces. Survey responses reveal that 73% of hubs closed their premises early on to comply with lockdown directives. The remaining 27%, however, remained open and operational, possibly by adhering to strict COVID procedures during the pandemic.

The closure of premises had a direct impact on hubs' revenues. The pandemic had a negative impact on the revenue of 73% of surveyed hubs and 8% said it caused them to shut down their operations.

Increased revenues were reported by CONCREE in Senegal, Togo's CUBE, Tunisia's Open Startup and Uganda-based StartHub Africa. These hubs pivoted to leverage digital tools to continue their incubation and acceleration activities.

Figure 18: Pandemic hurt revenue of most hubs

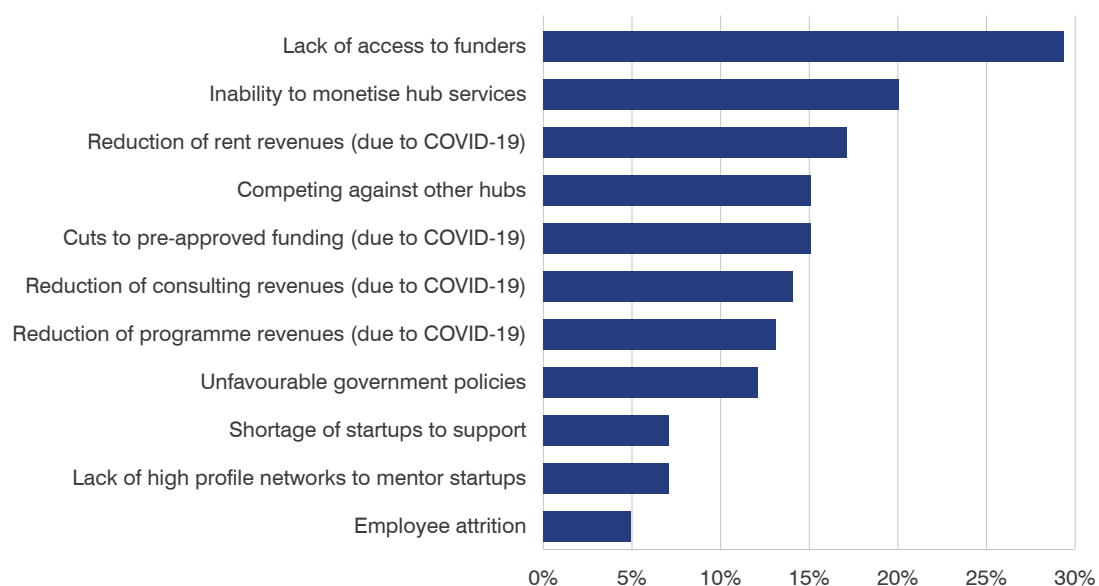


Source: Briter Bridges survey, November 2022, for this report

Threats to financial sustainability

Hubs have faced challenges that have threatened, and in some cases reduced, their financial sustainability since the outbreak of the coronavirus. Most hubs cited a lack of external funding, inability to monetize their services, lower rent revenues and competition from other hubs as the key threats. They also mentioned cuts in pre-approved funding, a drop in consulting and programme revenues, unfavourable government policies, a shortage of start-ups to support, an absence of high-profile networks to mentor start-ups and loss of talent. While many of these challenges stem from the pandemic, some existed before the COVID-19 outbreak.

Figure 19: Main threats to financial sustainability



Source: Briter Bridges survey, November 2022, for this report.

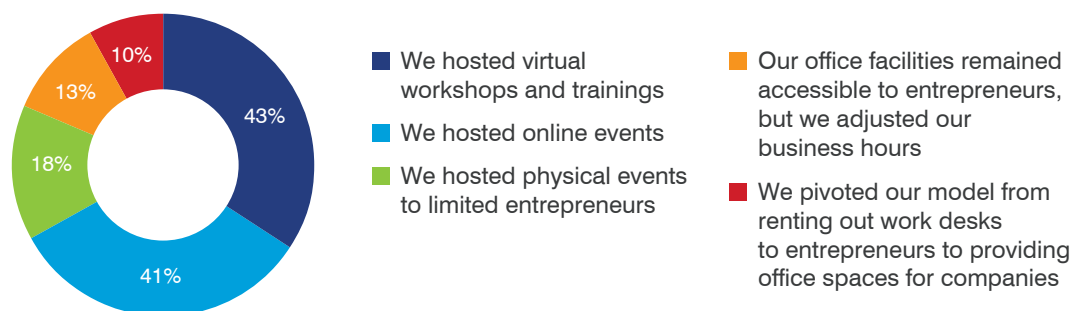
Pivoting business models to become financially stable and resilient

In some ways, the COVID-19 crisis has played an important role in bolstering tech hubs and making them more resilient to shocks. One survey respondent, Nigeria's Harmony Innovation Hub, noted that 'the pandemic has actually brought the future faster than we would have imagined. During the pandemic, we were kept on track by our passion to help start-ups, and this helped us build resilience'.

Hubs said their business activities shifted almost immediately in response to the crisis. Two-thirds of hubs adopted digital approaches to provide their services by hosting virtual events, workshops and training. Others continued hosting physical events, but limited the number of attendees while regularly disinfecting public and private areas. A few kept their premises accessible, but adjusted their business hours, while some hubs pivoted their model to cater to corporates that needed flexible office spaces.

COVID-19 taught many businesses that they could cut costs by allowing employees to work from home or renting office spaces for their employees in co-working facilities. Hubs including Lagos-based The Nest – seeing this as an opportunity to generate recurring income from businesses opting out of using traditional offices – positioned themselves to offer flexible office solutions such as virtual and serviced offices. The Nest provides private offices for company employees and clients to meet as well as a business address to receive mail and carry out other work-related functions.

Figure 20: Hubs shifted to virtual workshops and online events



Source: Briter Bridges survey, November 2022, for this report

Three key trends emerged from how survey respondents have changed their business model to remain resilient. Several hubs have used more than one of these approaches.

1. Leveraging digital tools to better support entrepreneurs

Most tech hubs quickly adapted their delivery model to remain operational. One way was by leveraging digital tools to deliver their services. As centres of innovation, hubs such as NyamukAfrica (Zambia), Startup Incubator Gambia and Impact Hub Bamako (Mali) already had the capacity to shift their support activities remotely. They used a range of digital tools to offer virtual sessions and programmes and to provide online coaching and incubation workshops.

Digital technologies ensured continuity for hub programmes when movement and gatherings of people were restricted. They also enabled hubs including Aga Khan University Media Innovation Centre (Kenya), Impact Hub Dakar (Senegal) and NyamukAfrica to expand both the reach of their programmes and their brand awareness. Tech hubs like CUBE (Togo), which increased its online presence, attracted new stakeholders and developed digital training, marketing and investment products for them.

2. Modifying the business model

Tech hubs changed their revenue-generation strategies to cater to the growing demand for digital services from stakeholders. Outbox (Uganda) decided to offer venture programming when it found that many entrepreneurs preferred to work remotely. Ennovate Ventures digitized its consulting services and start-up support programmes to continue operations during the lockdown, enabling the hub to reach and serve clients and start-ups beyond Tanzania. Lab'ess (Tunisia) pivoted from offering co-working spaces to entrepreneurs to providing consulting services for corporates.

Other hubs diversified their services to attract new revenue streams. For example, Impact Hub Lusaka shifted its focus from consulting to programme-based activities and from co-working activities to non-co-working activities. Similarly, Impact Hub Lagos explored more non-space-based revenue streams than space-based ones.

Hubs including The Nest (Nigeria) became receptive to other modes of operating, such as organizing virtual events in place of, or in addition to, physical meet-ups and offering virtual office spaces. Virtual spaces provide a registered business address for companies to work without the need for a traditional office. Aga Khan University Media Innovation Centre reported being 'keener on opening up our events to online audiences unlike before'.

Tech hubs that offered digital services before the pandemic doubled down and expanded their offerings to provide more hybrid services. Examples include Founders Hub and Innovation Growth Hub, both in Nigeria. Cameroon's Zixtech Hub and South Africa-based mLabs use a combination of virtual and physical meet-ups to offer their incubation programme, while Jokkolabs Banjul (The Gambia) and The Innovation Village (Uganda) host more virtual and in-person events.

3. Adopting a lean approach

Survey respondents said that adopting remote approaches enabled them to continue their operations and cut costs. Hubs such as BongoHive (Zambia) and The CANs (Nigeria) adopted flexible work schedules for their staff, with team members working remotely.

By adopting cost-saving techniques such as reducing travel and hiring temporary talent, hubs were able to keep their operations lean and agile. For example, The Hub (Gambia) hires interns to keep recruitment costs low and has shifted its focus to offering more training and events, 'which entail less overhead and brings in more money'. Any unspent budget from operations is reallocated 'towards more direct support interventions'.

Some hubs – including Flat6Labs (Tunisia), Colab (Nigeria), OST (Tunisia), 250Startups (Rwanda) and DoniLab (Mali) – said their business models had changed little or not at all because of the pandemic. They suggested that their organization had built-in resilience from the start – such as a suite of digital and non-digital services.

Case study: How CUBE adapted its business model to remain resilient

CUBE is a Togolese accelerator with a sector focus on agriculture, fintech and health. The hub's services include:

- Training and access to networks for entrepreneurs
- Connecting investment-ready start-ups with investors
- Tools for NGOs and other organizations
- Consulting services for international organizations

While CUBE generates revenue from multiple income streams, most of its revenue comes from its consulting services. Training fees also make up a considerable share of the hub's income. CUBE remained operational following the outbreak of COVID-19 and saw its revenue increase. The hub leveraged digital tools to provide services by hosting online events, virtual workshops and training, and physical events for a limited number of entrepreneurs.

However, some challenges have threatened the hub's sustainability since March 2020, including the inability to monetize its services, loss of talent and competition from other hubs. To cope with shocks to its business model, CUBE has stepped up its digital activities. This has benefited the hub by increasing its partnerships with government and international organizations. Projects that CUBE has worked on with support from stakeholders such as the United Nations Development Programme include:

- PRIME, a digital training platform for entrepreneurs
- CUBE STORE, an e-commerce platform that allows informal merchants to sell their products to users
- K-PITAL INVEST, a crowdfunding platform that connects investors to entrepreneurs raising capital for their projects

The new normal: The changing role of hubs

As the world slowly adapts to the new normal after two and half years of a global pandemic, the hub landscape has changed. Some hubs were forced to close their door temporarily or permanently, while others managed to pivot. Many hubs now offer a broader suite of services and more comprehensive business models to accommodate both start-up needs and donor objectives.

Although many start-up programmes and initiatives are still virtual – in some ways becoming more accessible than ever – plenty of in-person and location-based activities have resumed, as people are eager to travel and reconnect. As such, hubs that adapt their business model to offer hybrid services stand to benefit greatly.

While tech hubs can provide pivotal support for early-stage start-ups, hubs themselves need support to remain sustainable and resilient in the face of shocks. Responses from survey participants suggest critical factors that can help boost the growth and impact of hubs. These are described in the following section.



WHAT SUPPORT DO HUBS NEED?

The final section of this chapter explores areas where African hubs require support so they can continue to deliver value to their ecosystem through high-impact programmes. Although these hubs have diverse natures and structures, the survey disclosed four areas where help is needed.

1. Provide access to funding

Most hubs cannot fund their operations from the revenue generated solely from their services; they need help to secure external funding such as grants. One survey respondent suggested 'having institutional support funds allocated for events and other activities to sustain hub operations for at least three months'. Another called for 'aid to financially support our hubs and finance the support of project leaders'.

However, another respondent said funding should be allocated strategically and less project-based. It is important to 'make sure that donors do not always give money to those best-connected in an ecosystem that might not be the most effective, but are just most established. The funding often does not come based on quality, potential and long-term systemic strategy. This must change, so cash is used better on behalf of entrepreneurs'.

Hubs seeking external funding such as grants should focus on activities that help prepare entrepreneurs and start-ups for investments and growth. These activities could include offering targeted programmes that train entrepreneurs on how to build and scale their venture. This would enable hubs to attract programme-based funding from donors seeking to support start-ups.

For example, The Seed Fund by Digital Africa is one of several initiatives that has relied on the expertise of hubs to provide skills development and financial support for start-ups. Additionally, by improving the quality of their support programmes for entrepreneurs, tech hubs can build a pipeline of quality deals for investors that they can monetize.

2. Offer capacity building and technical support

Hub networks like Afric'innov, AfriLabs and ANDE provide capacity-building support for hubs across Africa to maintain a strong, healthy and sustainable innovation ecosystem. Still, hubs would like more support from hub networks to manage their operations efficiently. One respondent said 'capacity building is crucial for hubs to upskill their team on how to design and implement dynamic business model, based on trends'. Such capacity building would include training and technical support facilitated by hub networks and investors. It would also help unlock funding opportunities and provide business linkages for hubs.

Capacity-building programmes for hubs should give managers and staff the skills they need to offer much-needed support to stakeholders. Such programmes should also provide business development support for hubs on how to align their services with the needs of the stakeholders in their ecosystem. Initiatives such as the AfriLabs Capacity Building Programme help to equip African hubs through workshops, certified courses and grants to support African start-ups. Hubs can benefit from participating in such initiatives.

3. Provide an enabling environment

Hubs would benefit from government support in the form of incentives and relief packages such as tax breaks and rebates to enable activities that benefit the entire innovation ecosystem. They also need favourable policies that attract investors and encourage innovation. One respondent suggested adopting policies 'that support hubs and increase investor incentives for start-up support.' Others proposed reducing hub costs through tax holidays, exemptions, a 'special legal status' for hubs and easing regulations and administrative procedures to encourage the development of the local digital economy.

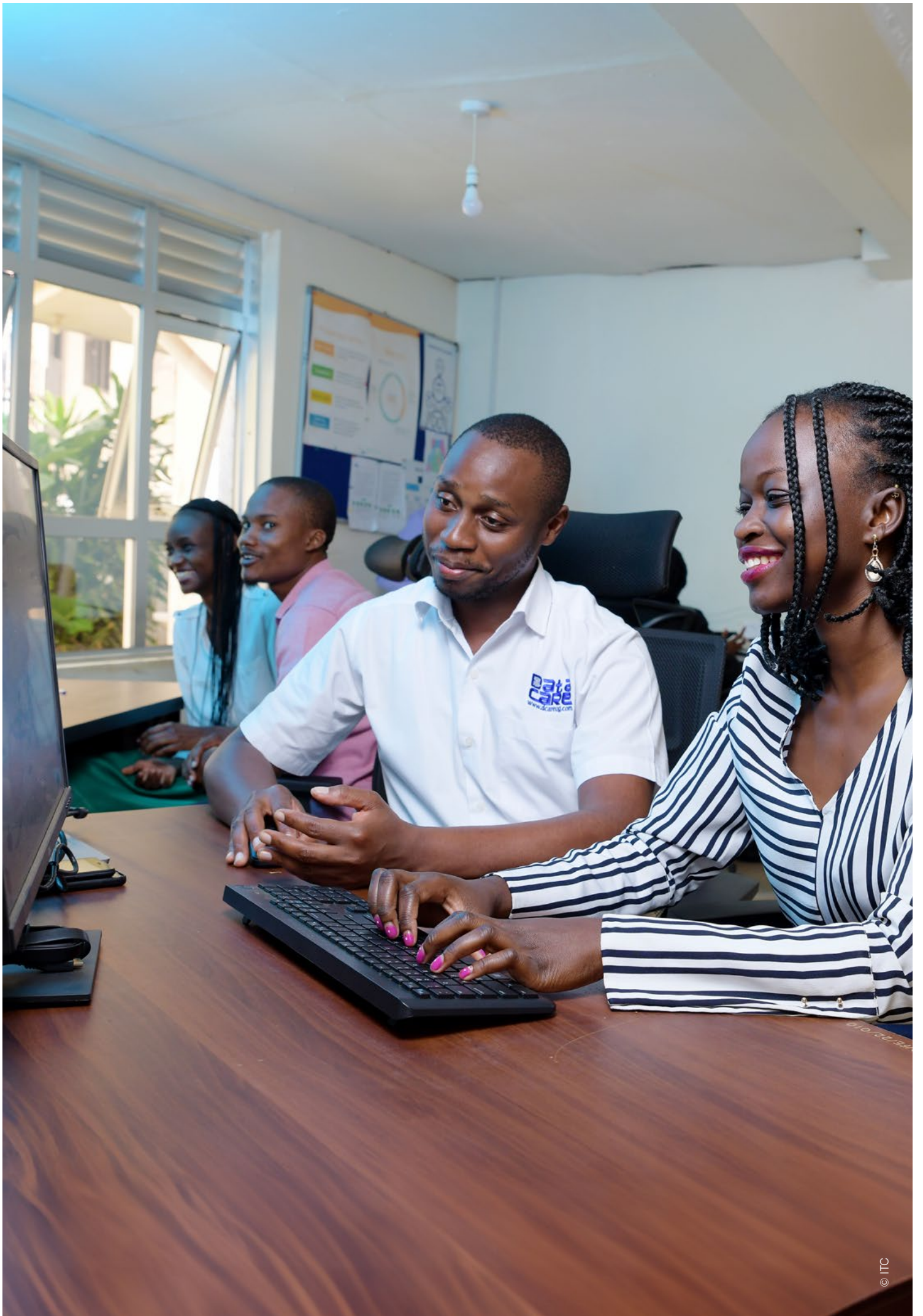
A hostile business environment can contribute to the failure of hubs. To drive favourable policies, hubs should engage with policymakers and governments to produce initiatives or legal instruments to develop their local ecosystems. For instance, the Nigeria Startup Act, developed with the involvement of tech hubs in the country's entrepreneurial ecosystem, makes provisions for hubs to receive relief from a government fund.

4. Encourage knowledge transfer and collaboration among hubs and with stakeholders

Hubs would like to see more collaboration with other hubs on projects. Some recommended working as a consortium where knowledge sharing and partnerships with other hubs will be commonplace. One survey respondent envisioned hubs 'collaborating to share expertise to reduce costs and leverage the accumulated strengths to support each other in resource mobilization'. Hubs also want access to more project-based activities as well as teamwork on projects with other stakeholders.

Tech hubs stand to benefit greatly from building stronger relationships with stakeholders – especially other hubs. Initiatives that make it easier for hubs of different types, geographies and operational experience to share information and experience with each other should be encouraged. This would equip them with the resources they need to design relevant and impactful programmes for start-ups.

It also benefits hubs to be associated with hub communities so they can attract funding opportunities such as start-up support projects that are typically implemented through hub networks. Hubs should also partner with investors to ensure that their start-up programmes are aligned with their investment needs.



CHAPTER 5

CASE STUDY:
IMPACT HUB – LOCALLY
ROOTED, GLOBALLY
CONNECTED

COMMUNITIES FOR IMPACT..... 67

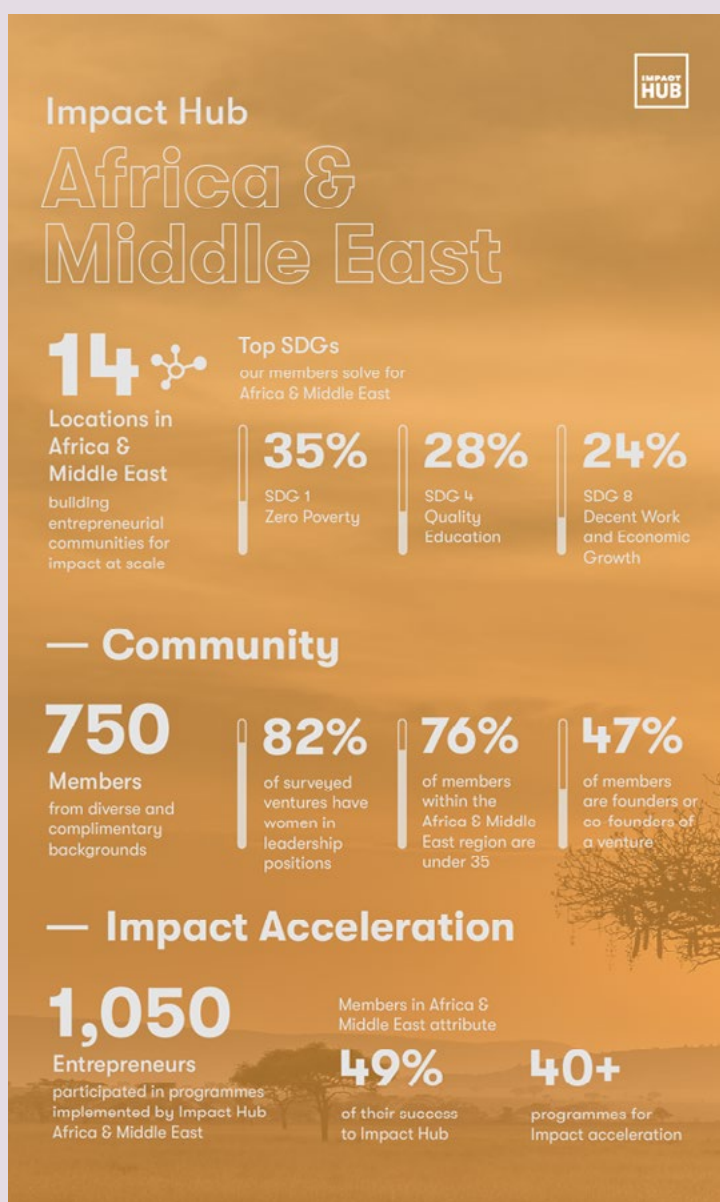
ADAPTING TO COVID-19..... 67

POST-PANDEMIC: WHAT WORKS 68

CHAPTER 5

CASE STUDY: IMPACT HUB – LOCALLY ROOTED, GLOBALLY CONNECTED

Impact Hub is a global network of 108 hubs, with 25 000 members in over 60 countries across five continents. Impact Hub strives to enable inclusive and sustainable innovation at scale by connecting entrepreneurs and innovators to large organizations, investors and public institutions.



Between 2012 and 2022, Impact Hub created more than 13 000 new ventures and generated 47 000 new jobs on a global scale. In 2021 alone, the network:

- Established 1 900 new ventures
- Created more than 9 000 jobs
- Provided more than 1 million hours of peer support
- Helped 63% of members achieve double-digit revenue growth
- Helped 78% of members increase the number of products and services offered.¹³⁴

Impact Hub started small. Launched in 2005, the organization began with just one community, in one city. Today, from Kigali to São Paulo, Taipei to Berlin, Impact Hub is one of the world's biggest networks focused on enabling impact entrepreneurship towards a just and sustainable world. In Africa and the Middle East, the network is home to more than 1 800 participants in 14 Impact Hubs: Abidjan, Accra, Amman, Bamako, Bujumbura, Dakar, Dar es Salaam, Harare, Khartoum, Kigali, Lagos, Lusaka, Nairobi and Riyadh.

Delivering more than 300 acceleration programmes annually, the network aims to support the development of ecosystems that drive collaboration and entrepreneurial innovation around the United Nations Sustainable Development Goals. To achieve this, Impact Hub works with partners and allied networks all over the world – and notably, in Africa and the Middle East.

134. Impact Hub (2022). Impact Report 2021-2022: *Inclusive and sustainable innovation – at scale*.

COMMUNITIES FOR IMPACT

Community is the basis for all Impact Hub activities and the foundation on which new connections and projects emerge. The hubs are safe, yet challenging environments for entrepreneurs to display their projects, get feedback, consider other perspectives, invite creative tension and take risks.¹³⁵ The region's community is young and highly educated, with three-quarters of members under age 35 and 84% holding a university degree.

Community members run impact enterprises all along the entrepreneurial journey, from idea stage (15%) to start-up (25%), up-and-running (29%) and the scaling stage (21%). In 2021, 82% of enterprises supported by the network in Africa and the Middle East increased the number of products or services offered, and 66% reported double-digit revenue growth.

Impact entrepreneurs face various challenges. Feeling part of a larger community and network, developing skills and capabilities, gaining visibility and credibility, and developing new ideas are among the most reported needs. Compared to the global average, support needs of impact enterprises in Africa and the Middle East are more pronounced in the areas of obtaining financial capital and investment, building international connections and expanding into new geographic markets, and accessing and retaining talent.

ADAPTING TO COVID-19

The response to the pandemic among Impact Hub hubs in Africa and the Middle East were similar, with some temporarily decreasing their team size, moving to smaller spaces and/or looking for additional funding. The pandemic also accelerated a shift in the business models of Impact Hubs in the region, away from space-based revenues to more programme-related offerings and revenues.

The early phases of the COVID-19 pandemic greatly reduced access to clients and beneficiaries, and the ability of staff to work. Revenues often fell short of expectations. Impact enterprises in Africa and the Middle East were affected by increased costs, lack of access to finance and the inability of staff to perform their work.

The effects continued into 2021 with entrepreneurs facing further decreases in sales, event cancellations and supply chain interruptions. Entrepreneurs in Africa and the Middle East noted difficulties in covering fixed costs and a lack of alternative financing options.

Yet impact entrepreneurs showed resilience and agility, adapting their businesses and impact models. By 2021, 40% of member ventures were able to continue operating without drastic changes to their business model and another 30% were able to recover and continue operations after initial setbacks. Almost one fifth of member ventures pivoted permanently.

Entrepreneur support programmes – vital to building entrepreneurial resilience, promoting innovation and raising skills and capabilities in the ecosystem – enabled local Impact Hubs to provide tailored support during the pandemic. The New Economy Booster¹³⁶ is an example of such a programme: it supports entrepreneurial solutions to shape the post-pandemic economic recovery in Ghana and Nigeria.

Impact entrepreneurs adapted quickly to the pandemic. By doing so, they contribute to economic recovery. With its focus on social and environmental impact, Impact Hub and its members contribute solutions to the challenges created by the pandemic and work towards an economic recovery that is green and inclusive.

To this end, Impact Hub launched the Circularity by Design¹³⁷ programme in 2021. It is based on the belief that, like profitability, circularity can also become a core principle for firms. Impact Hub developed the Embedding Circularity toolkit for incubators and accelerators, provided capacity building to business support organizations and validated the tools with entrepreneurs and businesses through pilot incubation and acceleration programmes with 12 hubs, including Impact Dakar, Dar es Salaam, Harare and Kigali.

135. Impact Hub Association & Inter-American Development Bank (2018). Community Development and Member Experience. A How-To Guide

136. <https://impacthub.net/new-economy-booster/>

137. <https://impacthub.net/embedding-circularity/>

POST-PANDEMIC: WHAT WORKS

The following programmes and projects run by Impact Hub communities in Africa illustrate the kinds of ventures that thrive in the new normal. These efforts play a key role in nurturing the broader social innovation ecosystem across the continent.

Blockchain application Guta: Impact Hub Harare

In partnership with UNICEF Zimbabwe and the City of Harare Nutrition Unit, Impact Hub Harare introduced Guta, a blockchain system that encourages youth to improve the food system. Guta also improves the diets of school-aged children. After a year of planning around numerous lockdowns, the project was carried out at Mutasa primary school, with more than 400 students participating. This innovative technology has motivated students to eat immune-boosting foods.

Startup Factory: Impact Hub Dakar

As part of this incubation programme, Startup Factory, Impact Hub Dakar and the Senegalese Agency for Rapid Entrepreneurship (DER) helped eight tech start-ups improve their project structure, test their market, build their capacity and learn of funding opportunities to grow. Despite the difficulty of coping with the pandemic, the four-month programme helped the start-ups prepare for their launch.

Road2Cop: Impact Hub Bamako

Fifteen young girls were trained in climate tech. These activities highlighted the opportunities offered by green jobs and introduced young people to eco-responsibility.

Impact Hub Bamako's Road2Cop project connected people across many disciplines to raise awareness about climate change in Mali. During eight Green Fridays – a series of informative activities – more than 51,000 people were brought up-to-date on global warming.

New Economy Booster programme: Impact Hub Lagos and Impact Hub Accra

Funded by Germany's Federal Ministry for Economic Cooperation and Development and the Lab of Tomorrow, Impact Hub's translocal programme, New Economy Booster supported entrepreneurial solutions to shape the post-pandemic economic recovery of Ghana and Nigeria. By prioritizing sustainable and equal access to food, healthcare and education, entrepreneurs built capacity, improved their structure and cultivated their position to attract more investments and increase growth.

By creating vibrant communities, providing inspiring spaces and delivering high-quality content, Impact Hub hubs in Africa foster strong interactions within their communities to achieve impact. Being part of the Impact Hub community in Africa generates personal and professional support – community members attribute 49% of their professional success to being part of Impact Hub's community.

Each member has received an average of 10 hours per month of mentoring, advice or feedback from other members in 2021. This culture of peer support and innovation can inspire further collaboration within and between ecosystems for impact.



© Baba Whizzo



CHAPTER 6

THE NEXT STEPS

RECOMMENDATIONS FOR HUBS 72

RECOMMENDATIONS FOR FUNDERS 74

RECOMMENDATIONS FOR POLICYMAKERS..... 74

WHERE TO FROM HERE? 76

CHAPTER 6

THE NEXT STEPS

This report explores what tech hubs are, how they operate and the capacity and sustainability challenges they face as they support start-ups and build ecosystems. Yet much remains to be learned about the impact of hubs and how they can remain financially viable long enough to improve the functioning of their local entrepreneurial ecosystems and achieve their goals.

The following recommendations for hubs, funders and policymakers aim to provide actionable insights to enhance the role of hubs in African tech ecosystems.

RECOMMENDATIONS FOR HUBS

How can tech hubs maximize their contributions to start-up ecosystems? As hubs evolve to respond to dynamic, rapidly changing environments, understanding their landscapes, building the capacity to be responsive, defining success and learning from peers could contribute to their longevity and effectiveness. Hubs are urged to:

Conduct thorough feasibility assessments before launching. The success of a tech hub and its projects hinges greatly on ecosystem health. It is important to understand the needs of key stakeholders – primarily entrepreneurs, but also other ecosystem actors such as investors and large businesses. This process should include mapping and assessing the state of the ecosystem (including strengths, weaknesses and gaps), determining the core purpose of the hub based on this assessment and proposing a structure, activities and business model that align with these elements.

No one-size-fits-all approach works for hub activities, as each ecosystem is unique. This means the same activities may not be successful in all contexts. For example, hosting a demo day is likely to be ineffective in an ecosystem that lacks early-stage venture capital.

Ecosystem mapping and assessment could be carried out on two levels:

- Understanding the health or readiness of the ecosystem to support a tech hub and clarifying what the market demands, i.e. what entrepreneurs, corporations, investors and policymakers need from the hub;
- Learning to what extent these needs represent market opportunities that can be monetized. ITC's African tech ecosystem mappings, mentioned in Chapter 1, may be helpful in this regard.

Define core purpose. Hubs typically focus on ecosystem building or start-up creation, depending on the needs and health of the ecosystem and the personal motivations of the hub founders. It is better to target one or the other, as ecosystem constraints may make it difficult to pursue both goals simultaneously. Many hubs choose to combine the two or to pursue the goal that best meets ecosystem needs at a particular time. This underscores the importance of selecting a core purpose, as it will affect both the role a hub decides to play and the type of funding that it may attract.

Choose an approach. Alignment increases the likelihood of success, so a hub should select an approach that complements its goals. For instance, if a critical mass of mature, high-potential start-ups are operating in an equally mature ecosystem with many key resources such as good infrastructure, financial capital and robust internet access, the hub may elect to focus on start-up creation and operate as an accelerator.

But if there are few viable start-ups and many inexperienced founders operating in a nascent ecosystem with variable access to key resources, the hub should probably focus on ecosystem building and operate as a community-focused hub or co-working space. If the former is chosen, a hub may wish to tailor its cohort to ensure that productive networking opportunities are maximized and a community is built around like-minded entrepreneurs.

Be strategic about funding. Depending on the approach chosen, hubs may also attract different sources of funding. For example, those seeking external funding such as grants should focus on activities that help prepare entrepreneurs and start-ups for investments and growth. Such activities could include offering targeted programmes that train entrepreneurs on how to build and scale their venture. This would enable hubs to attract programme-based funding from donors seeking to support start-ups.

The Seed Fund by Digital Africa is one of several initiatives that has relied on the expertise of hubs to provide skills development and financial support to start-ups. Additionally, by improving the quality of their support programmes for entrepreneurs, hubs can build a pipeline of quality deals for investors that they can monetize.

Strike a balance between acting strategically and responding organically. In an ideal scenario, a hub would conduct the type of assessment described above. This would help it establish market needs, the value proposition(s) that will respond to those needs, the activities, products and services that will deliver the value, and the business model that will fund operations. But starting a tech hub is complicated, and even with this level of preparation, conditions will change – often in unexpected ways. This means hubs must continually seek feedback and adapt their strategies, activities and even overall purpose.

Offer a perspective on how hubs are defined and measured. External parties including journalists, researchers and funders generate much of the public commentary on hub definitions and measurement. Although this may add objectivity to the dialogue, it is also a lost opportunity for hubs, as they can offer informed opinions about how they are defined and evaluated. For example, there is no universal definition or benchmark for the financial sustainability of hubs.

However, as hubs are often categorized as businesses, they are held to the same (or comparable) profitability standards. In most cases, these expectations are unrealistic, both in terms of the timeframe and the level of performance required. It might even be worth asking whether hubs should be expected to reach sustainability at all, given that they often take on the difficult, long-term public goods provision work that few other actors are equipped or motivated to tackle.

Become part of a hub network. Some problems are too big for any single hub to solve. Challenges that affect most hubs, such as financial sustainability, could be easier to resolve if hubs learned from and helped each other by sharing best practices, failures and ideas.

Hub networks such as the Aspen Network of Development Entrepreneurs, Afric’innov, AfriLabs, Impact Hub and ISN Hubs provide capacity-building support for hubs across Africa to maintain a strong, healthy and sustainable innovation ecosystem. The Impact Hub network has a repository of best practices that members can access, and AfriLabs piloted a network-wide learning week during which hub managers shared their expertise with other members.

These networks may also provide capacity-building programmes for hubs, such as the AfriLabs Capacity Building Programme, which helps to equip African hubs through workshops, certified courses and grants to support African start-ups.

Collaborate with other hubs. Linked to joining a hub network and based on the survey, hubs would like to work more with other hubs on joint projects. Some recommended working as a consortium, where knowledge sharing and partnerships with other hubs would be commonplace. One respondent said likely benefits would include ‘collaborating to share expertise to reduce costs and leverage the accumulated strengths to support each other in resource mobilization’.

Tech hubs also want access to more project-based activities and to work on projects with other stakeholders. They stand to benefit greatly from building stronger relationships with stakeholders, particularly other hubs. Initiatives that facilitate information and experience sharing among hubs of a different type, geography and operational experience should be encouraged. This would equip hubs with the resources needed to design relevant and impactful programmes for start-ups.

Hubs would also benefit from being associated with hub communities so they could attract funding opportunities such as start-up support projects that are typically implemented through hub networks. Furthermore, hubs should partner with investors to ensure that their start-up programmes are aligned with their investment needs.

RECOMMENDATIONS FOR FUNDERS

Play the long game. Stimulating economic growth and development, building ecosystems and supporting high-growth start-ups are all long-term goals. Funders that support tech hubs to reach these objectives should take a long-term approach. This might require the funder to partner with hubs, offer flexible, appropriate funding, be open to experimentation and help build hub capacity by sharing knowledge and contacts.

For example, the Omidyar Network has given Nigeria's CcHub multiple grants over several years to establish the hub,¹³⁸ launch a social innovation fund¹³⁹ and host a social change summit.¹⁴⁰ Additionally, Indigo Trust provides core funding assistance through a tech hub fund so it can respond to needs on the ground.¹⁴¹

Join forces or take complementary positions where possible. Multilateral institutions have spearheaded several efforts to support job creation and Africa's participation in the global digital economy. Just as African start-ups often struggle with different sources of support, hubs must piece together funding and opportunities to meet, learn and exchange best practices.

Multistakeholder collaborations can be complex, but it is worth exploring when and how funders can cooperate to support hubs when there is shared interest, a strong mandate and complementary skills available. Additionally, funders should exploit opportunities to build the field by investing in leaders, convening hubs or facilitating knowledge exchange.

Adjust and readjust expectations. Support offered to tech hubs in nascent ecosystems should be flexible and not contingent on achieving certain results. Hubs in these ecosystems already lack resources, and imposing additional burdens is likely to be counterproductive by make them less reactive and flexible to the needs of entrepreneurs.

However, funding organizations are generally not adaptable entities. If they engage with hubs, funders that are flexible and dynamic will need to figure out how to reshape their processes and/or help hubs navigate them effectively. Ultimately, no one-size-fits-all approach works to create effective hub support programmes. It is more important to identify how individual hubs may generate different results depending on the specific needs of their entrepreneurs and the realities of their local ecosystems.

RECOMMENDATIONS FOR POLICYMAKERS

This report has made clear that the quality and maturity of the ecosystems in which hubs and start-ups operate greatly influence how they fare. Thus, five steps are recommended for policymakers to build entrepreneurial ecosystems in resource-constrained countries.

Build a sound foundation. An efficient entrepreneurial ecosystem requires functional ICT and payment infrastructure, as well as an accessible market. Basic offerings such as mobile phones, internet and mobile money should be made accessible across the country. Enhancing digital literacy, including for consumers to benefit from these products, is also essential.

Policymakers should also provide incentives for pioneer entrepreneurs and other key stakeholders to create communities and set up the initial building blocks of a functional entrepreneurial ecosystem. Here, tech hubs are especially important, as their support for fledgling start-ups can help build the foundations of tech-driven industry and create the conditions that enable entrepreneurship. Setting up support infrastructure such as accelerators, hubs and competitions should be prioritized early in the development of entrepreneurial ecosystems.

138. Nsehe, M. (20 July 2011). 'EBay Billionaire Omidyar Gives Nigerian Tech Incubator \$200,000.' *Forbes*.

139. Jackson, T. (2015). 'CcHub, Venture Garden, Omidyar Network launch \$5m Social Innovation Fund.

140. CcHub (2017). Press release: Co-creation Hub (CcHUB) Hosts 3rd Annual Social Change Summit.

141. Treisman (2017), *op. cit.* 3.

Provide an enabling environment for hubs. There will be a global shortage of some 4.3 million tech workers by 2030.¹⁴² This means hubs face the challenge of attracting skilled workers. It is therefore critical to expand human capital – particularly in Africa, where (as mentioned in Chapter 2) high skill levels are relatively rare.

Repatriate and expatriate talent in Kenya helped close short-term gaps and will help build the human capital pool over time. The flow of talent, resources and knowledge facilitated by the movement of people from mature ecosystems to resource-constrained ones should be encouraged and organized through measures such as easing work and residence permits for skilled workers, tax incentives, preferential procurement measures for locally produced digital goods and services, and investments in higher education and skills development.

Additionally, hubs would benefit from government support in the form of incentives and relief packages such as tax breaks and rebates to enable their continued activity. This benefits the entire innovation ecosystem, the surveyed hubs said. They also need favourable policies that attract investors and encourage innovation. These could include policies that support hubs and increase investor incentives for start-up support or reduce hub costs through tax holidays, exemptions, a 'special legal status', and/or easing regulations and administrative procedures to encourage the development of the local digital economy.

Create pioneer start-ups that catalyse spillover effects in the ecosystem. The success of the first generation of entrepreneurs benefits the entire ecosystem. Entrepreneurs who exit their companies successfully will fund the next generation of founders as angel investors or venture capitalists and enhance the human capital available to the ecosystem through the mentorship of the next generation of start-ups.

The emergence and visibility of successful start-ups will begin to change the norms around the legitimacy of entrepreneurship as a career path and perceptions of risk and wealth creation. To increase the likelihood of pioneer survival, governments could provide stipends to cover the living expenses of committed entrepreneurs until their businesses become viable.

Solicit the input of start-up founders and other ecosystem builders when developing policy. The interconnected nature of entrepreneurial ecosystem pillars means it is important to take a holistic, systems-oriented approach to building one. Systems are complex, and many variables must be considered to understand them.

The only way to navigate this process is to engage institutions that are building the ecosystem and can provide perspective and information about the reality on the ground. As such, policymakers should engage with hubs to produce initiatives such as start-up acts to develop their local ecosystems. An example of this is the Nigeria Startup Act, which allows for hubs to get relief from a government fund. The act was developed with the participation of tech hubs in Nigeria's start-up ecosystem.

This type of collaborative, bottom-up approach is especially important when resources are scarce to ensure that policymakers do not turn to mature ecosystems for best practices that are not appropriate in the African context.

Embrace the evolution and dynamism tied to emerging entrepreneurial ecosystems. Ecosystems grow and change and will face obstacles that correspond to their stage of development. Two problems are worth noting. First, although it makes sense in the early stages of ecosystem building for a firm to create the market by providing basic telecom products and services, this player may become a monopolistic incumbent as the ecosystem matures. The dominance of this type of company would stifle the emergence of other start-ups.

Secondly, the inflow of (repatriate and expatriate) human capital affects the entrepreneurial culture, potentially leading to one characterized by a diversity of values, both domestic and foreign. This blending of values and norms may lead to tensions in the ecosystem that will have to be addressed over time.

142. Boston Consulting Group (2022). 'Turning a Tech Hub into a Talent Magnet.' <https://www.bcg.com/publications/2022/turning-a-tech-hub-into-a-talent-magnet>

WHERE TO FROM HERE?

There are many unanswered questions regarding the strategic choices that tech hubs make about core purpose, what types of start-ups to serve and how support should be delivered. But other questions on hub success, support, expectations, alignment and collaboration with other hubs are equally important. Additional research on the role of African hubs in start-up ecosystems, as well as practical interventions, should attempt to answer the questions posed below.

How can hub success be defined?

This book has explored what core purposes hubs select and how a choice to create start-ups and/or build ecosystems affects how straightforward it is to measure impact. It also presents a research-informed framework for categorizing this impact. Naturally, the outcomes of some activities are easier to measure than others. This can result in measuring what is easiest instead of what is most relevant.

Fundamentally, hubs aim to stimulate economic development and social progress. As a result, success might look like prosperous, educated and healthy citizens acting to create a thriving and inclusive economy. Hubs may contribute to this future by supporting participation in the knowledge economy, job creation and the success of high-growth firms.

The assumptions underpinning this narrative are untested, however, and on-the-ground realities will shift faster than they can be understood. Even so, it is worthwhile to examine how African tech hubs might serve as conduits of socioeconomic change.

Should tech hubs focus on building ecosystems or creating start-ups?

Hubs tend to be adaptable, flexible organizations that take on elements of ecosystem building and start-up creation, depending on the needs of the ecosystem and its stakeholders. But the decisions that hubs make about purpose have consequences and affect their ability to have an impact and achieve financial sustainability.

In terms of impact, ecosystem-building activities promote inclusivity and allow more fledgling founders to build their skills and experience entrepreneurship. The outcomes of this approach are difficult to measure. With respect to financial sustainability, hubs may need to build both start-ups and ecosystems. This means they may pursue multiple goals and explore several sources of revenue to survive.

These revenue streams may not be complementary, however. What is the best way to resolve such difficult choices? The key may be in selecting the approach that best fits the ecosystem and has the greatest impact on the overall level of entrepreneurship activity.¹⁴³

What is the best package of support for tech hubs?

There is some understanding of the activities that hubs carry out to create start-ups and build ecosystems. But there are no minimum operating requirements and conditions for hubs, even though it is known that they are influenced by the quality and maturity of their ecosystems. Given that hubs operate in such different contexts, it can be difficult to determine what each may need at any specific point and throughout its entire journey.

Like start-ups, new hubs may require technical assistance as well as funding. Therefore, it would be helpful to understand how to provide the best combination of resources at critical junctures throughout a hub's life cycle. Insight into when and how to adjust as conditions change would also be instructive.

How can the expectations and goals of hubs and funders be aligned?

The extent to which the core purpose, activities and business model of a hub align with one other as well as the particularities of a given local ecosystem may affect the prospects for financial sustainability. Community needs are often primary, but the goals and expectations of funders will figure prominently because they are important sources of support for hubs.

143. InfoDev (2014), *op. cit.*: 45–46.

This can create tension between a hub trying to achieve its mission based on knowledge of local context and a funder with its own agenda and ideas about how to create impact. Uncertainty about how best to evaluate hub performance aggravates this situation. Aligning the interests of both parties would allow the outside perspective, networks and resources that funders can provide to enrich the locally grounded insight of the tech hub.

Is a hub network better equipped to reach financial sustainability than a single hub?

Chapter 2 discussed financial sustainability of incubator networks. Assumptions contributing to the model's financial success included exploiting economies of scale, spreading fixed costs across multiple locations, instituting standard operating procedures to ensure optimal use of resources, creating venture and loan funds to support start-ups, and setting aside an annual budget for building hub capacity.

This model does not seem to exist on the ground, however. Associations such as AfriLabs and the Impact Hub network support their secretariats primarily through fee-for-service revenue and membership fees. Without in-depth understanding of these networks, solid conclusions cannot be drawn about what is possible.

Yet it stands to reason that pooling together financially challenged hubs would not create a financially stable whole, unless the aggregation unlocked new opportunities to generate revenue. As a result, exploring how hubs might collaborate to open up opportunities, such as co-bidding for multimillion-dollar projects, would be informative.

At what stage of start-up development can hubs engage most effectively?

This question is closely related to the question about core purpose, as ecosystem building tends to focus on nascent, inexperienced entrepreneurs while start-up creation may attract and yield seasoned founders. The needs of the ecosystem and its stakeholders should inform the direction of a hub.

As a result, the quantity and quality of potential founders and start-up teams should strongly influence the choices a hub makes. This means hubs must consider the negative impact that inadequate start-up skills have on start-up success.

A hub needs to decide whether to fill this gap or focus on high-potential start-ups that may contribute more directly to its financial viability. In the end, the answer may be found in better impact assessment. Evaluations of hub effectiveness should take a long-term view and account for ecosystem conditions that are beyond a hub's control.¹⁴⁴

Should hubs invest directly in start-ups or focus on easing access to investors?

The argument in favour of investing directly assumes that a combination of business and financial support is most effective for start-ups, especially as seed-stage funding is limited. However, there are several reasons why the 'hub as investor' approach might face difficulties.

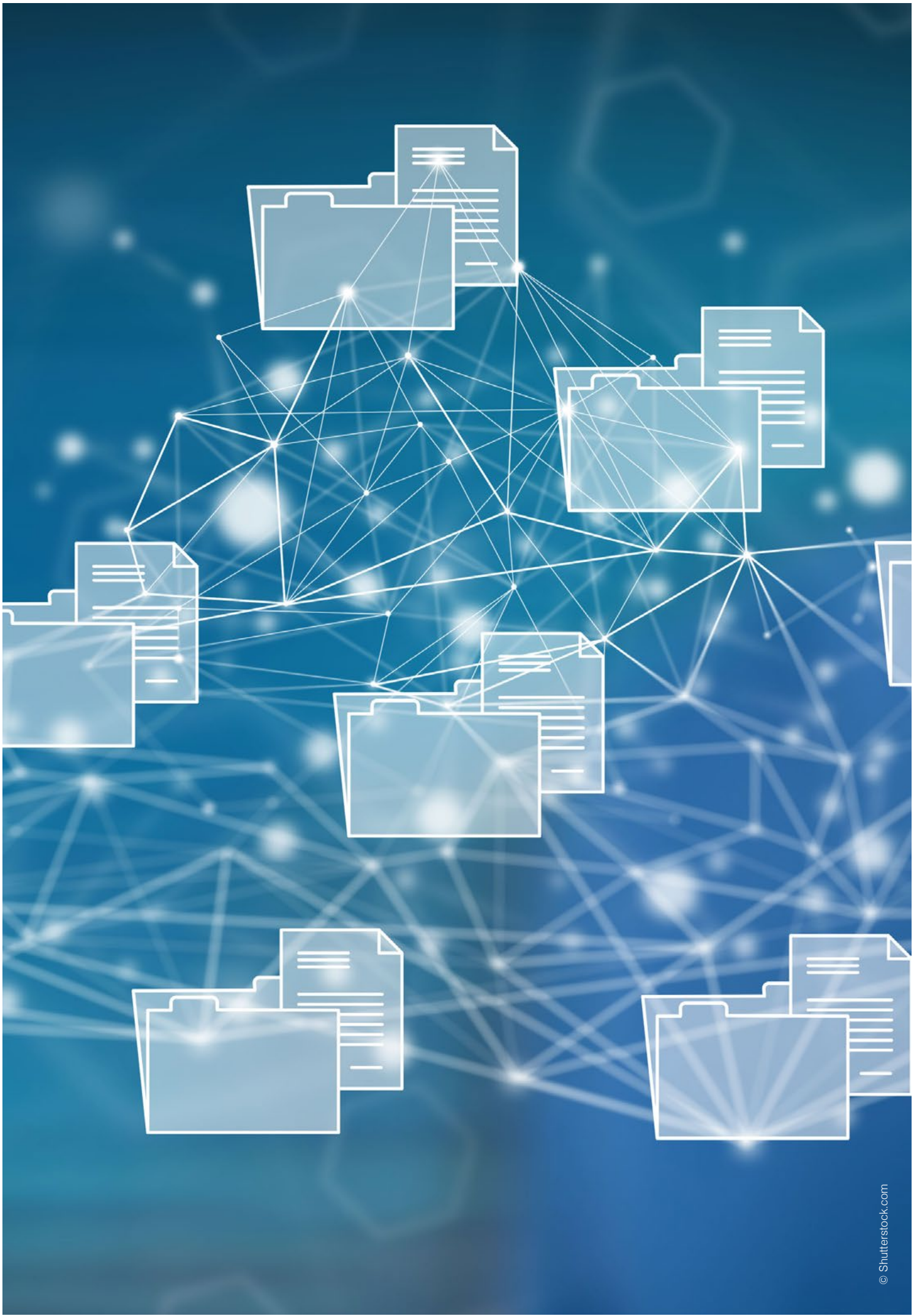
Funding used for investment may be distortive, crowding out private investors, because many tech hubs benefit from philanthropic support. As agents of donor capital, hubs may best address market failures by bridging the gap between start-ups and financiers without filling it directly. In this case, however, hubs would have to decide when and whether the development of their start-ups is best served by facing market realities on their own, or leveraging curated access to investors.

In addition, many hub teams may lack the skills and expertise needed to value start-ups and facilitate investment. Even if they could broker deals successfully, the hub would have to decide how to compensate them.

Finally, a hub may not be equipped to manage an in-house fund without external help.¹⁴⁵ Therefore, its approach to investing in start-ups should reflect ecosystem needs as well as its own capabilities and limitations.

144. *Ibid.*: 47.

145. *Ibid.*: 52.



REFERENCES

REFERENCES

- Access Now (2022). *Internet shutdowns in 2021 report: resistance in the face of blackouts in Africa*. Access Now (blog). <https://www.accessnow.org/internet-shutdowns-africa-keepiton-2021/>.
- Ács, Z., Szerb, L., Lafuente, E., & Lloyd, A. (2018). *The Global Entrepreneurship Index 2018*. Washington, D.C.: The Global Entrepreneurship and Development Institute- <https://doi.org/10.1007/978-3-030-03279-1>.
- African Development Bank (2021a). *Entrepreneurship and Free Trade Volume I – Africa’s Catalysts for a New Era of Economic Prosperity*. https://www.afdb.org/sites/default/files/2021/06/28/entrepreneurship_in_africa_-_may_2021_abridged_version_06_28.pdf.
- African Development Bank (2021b). *Entrepreneurship and Free Trade: Volume II – Towards a New Narrative of Building Resilience*. https://www.afdb.org/sites/default/files/documents/publications/final_volume_ii_entrepreneurship_edited_22_fev.pdf.
- African Development Bank. (2022). *African Economic Outlook, 2022*, •••. Retrieved from <https://www.afdb.org/en/documents/african-economic-outlook-2022>.
- African Union and Organisation for Economic Co-operation and Development (2021). *Africa’s Development Dynamics 2021: Digital Transformation for Quality Jobs*. African Union: Addis Ababa/OECD Publishing, Paris. <https://doi.org/10.1787/0a5c9314-en>.
- AfricArena (2021). *The State of Tech in Africa 2021*. https://www.wired.africarena.com/_files/ugd/cdd60c_5d9deb5822c4e84940b69925d8d2ba2.pdf.
- AfriLabs (2020). ‘*The Impact of Covid-19 on the Nigerian Innovation Ecosystem*.’ AfriLabs - Innovate UK KTN. <https://iuk.ktn-uk.org/perspectives/the-impact-of-covid-19-on-the-nigerian-innovation-ecosystem-afrilabs/>.
- AfriLabs and Briter Bridges (2019). ‘*Building a Conducive Setting for Innovators to Thrive: A Qualitative and Quantitative Study of a Hundred Hubs Across Africa*.’ <https://www.afrilabs.com/wp-content/uploads/2019/11/AfriLabs-Innovation-Ecosystem-Report.pdf>.
- Akanle, O., and A. Omotayo (2017). ‘*Prospects of Incubation Hubs as a Development Driver in Southwest Nigeria*.’ In Nigerian Anthropological and Sociological Practitioners Association 22nd Annual Conference on Contours of Change, Modern Conflict and Mode of Production in Nigeria.
- Alliance for Affordable Internet (2021). *Mobile Broad Pricing: Data for 2021*. Accessed 28 June 2022. https://adi.a4ai.org/extra/baskets/A4AI/2021/mobile_broadband_pricing_gni.php#.
- Asian Development Bank (2014). *Innovative Asia: Advancing the Knowledge-Based Economy - Country Case Studies for the People’s Republic of China, India, Indonesia, and Kazakhstan*. <https://www.adb.org/publications/innovative-asia-advancing-knowledge-based-economy-country-case-studies>.
- Aspen Network of Development Entrepreneurs (2013). *Entrepreneurial Ecosystem Diagnostic Toolkit*. https://www.aspeninstitute.org/wp-content/uploads/files/content/docs/pubs/FINAL%20Ecosystem%20Toolkit%20Draft_print%20version.pdf.
- Atiase, V. Y., Kolade, O., & Liedong, T. A. (2020). *The emergence and strategy of tech hubs in Africa: Implications for knowledge production and value creation*. *Technological Forecasting and Social Change*, 161, 120307. Retrieved from <https://www.science-direct.com/science/article/abs/pii/S0040162520311331?via%3Dihub> <https://doi.org/10.1016/j.techfore.2020.120307>.
- Beauhurst (2021). ‘*COVID-19 Business Impact: April 2020–August 2021*.’
- Boston Consulting Group (2022). ‘*Turning a Tech Hub into a Talent Magnet*.’ <https://www.bcg.com/publications/2022/turning-a-tech-hub-into-a-talent-magnet>.
- Bramann, J. (2017). ‘*Building ICT Entrepreneurship Ecosystems in Resource-Scarce Contexts: Learnings from Kenya’s “Silicon Savannah”*.’ In B. Ndemo and T. Weiss (Eds.), *Digital Kenya An Entrepreneurial Revolution in the Making* (Palgrave S., p. 518). Palgrave Macmillan. https://doi.org/10.1057/978-1-137-57878-5_8.
- Briter Bridges (2021). ‘*Africa Investment Report 2021*.’ <https://briterbridges.com/africainvestmentreport2021>.
- Briter Bridges and AfriLabs (2021). *Bolstering Innovators in Africa Report 2021*. <https://briterbridges.com/bolstering-innovators-in-africa>.
- Brooks, W., Donovan, K., & Johnson, T. R. (2018). *Mentors or Teachers? Microenterprise Training in Kenya*. *American Economic Journal. Applied Economics*, 10(4), 196–221. <https://doi.org/10.1257/app.20170042>.
- CcHub (2017). *Press release: Co-creation Hub (CcHUB) Hosts 3rd Annual Social Change Summit* Clarke, Adrian. ‘What’s next for Global Tech Hubs after COVID-19?’ *Startups Magazine*. Accessed 7 September 2022. <http://startupsmagazine.co.uk/article-whats-next-global-tech-hubs-after-covid-19>.
- Csíkszentmihályi, C., Rodrigues, G., Ferreira, E., Gianolla, C., Jardim, C., Kasprzak, M., Leclerc, E., Mukundane J., and D. Mwesigwa (2018). *Social Tech Ecosystems in Sub-Saharan Africa*. Madeira Interactive Technologies Institute. https://www.indigotrust.org.uk/wp-content/uploads/2018/05/SocialTechAfrica_Final_DOI_CC.pdf.
- De Beer, J., Millar, P., Mwangi, J., Nzomo, V., & Rutenberg, I. (2017). *A Framework for Assessing Technology Hubs in Africa*. *Journal of Intellectual Property and Entertainment Law*, 6(2).
- Friederici, N. (2017). *Innovation Hubs in Africa: An Entrepreneurial Perspective*. Available at SSRN: <https://ssrn.com/abstract=3123840> or <https://doi.org/10.2139/ssrn.3123840>.
- Global Accelerator Learning Initiative (2021a). *A Rocket or Runway? Examining Venture Growth during and after Acceleration*. https://www.galidata.org/assets/report/pdf/Rocket%20or%20Runway_EN.pdf.

- Global Accelerator Learning Initiative (2021b). *Does Acceleration Work?* https://www.galidata.org/assets/report/pdf/Does%20Acceleration%20Work_EN.pdf.
- Global Entrepreneurship Monitor (2022). *Global Entrepreneurship Monitor 2021/2022 Global Report: Opportunity Amid Disruption*. London, GEM. Accessed 15 November 2022 a <https://gemconsortium.org/report/gem-20212022-global-report-opportunity-amid-disruption>.
- Google and International Finance Corporation (2020). *e-Conomy Africa 2020: Africa's \$180 billion Internet economy future*. <https://www.ifc.org/content/dam/ifc/doc/mgrt/e-conomy-africa-2020.pdf>.
- Graham, M., Ojanperä, S., Anwar, M.A., and N. Friederici (2017). 'Digital Connectivity and African Knowledge Economies.' *Questions de communication* 32, No. 2: pp. 345–60. <https://doi.org/10.4000/questionsdecommunication.11579>.
- Gryszkiewicz, L., and N. Friederici. (2014). *Learning From Innovation Hubs: Fluidity, Serendipity, and Community Combined*. <https://innovationmanagement.se/2014/12/15/learning-from-innovation-hubs-fluidity-serendipity-and-community-combined/>.
- Hallen, Benjamin L., Bingham, C.B., and S. Cohen (2016). 'Do Accelerators Accelerate? The Role of Indirect Learning in New Venture Development.' *Social Science Research Network*. Rochester: Elsevier 8, no. 07.
- Hanff, E., and C. Jekinnou (2018). *Challenges and opportunities of incubators in West Africa: A guide to understanding support structures for entrepreneurs in West Africa*. <https://www.tonyelumelufoundation.org/wp-content/uploads/2020/06/World-bank-report.pdf>.
- Impact Hub (2018). *Global Impact Report 2018*. <https://impacthub.net/wp-content/uploads/2018/09/Impact-Hub-Global-Impact-Report-2018.pdf>.
- Impact Hub (2022). *Impact Report 2021-2022: Inclusive and sustainable innovation – at scale*. <https://impacthub.net/stories-of-impact-publications/>.
- InfoDev (2014). 'The Business Models of mLabs and mHubs – An Evaluation of infoDev's Mobile Innovation Support Pilots.'
- InfoDev (2015). 'Business Analytics Toolkit for Tech Hubs'. infoDev: Washington, DC.
- International Telecommunication Union (2022). *Global and Regional ICT Data*. https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ITU_regional_global_Key_ICT_indicator_aggregates_rev1_Jan_2022.xlsx.
- International Trade Centre. (n.d.). *Tech Entrepreneurship Ecosystem in Ghana: Network analysis and mapping of institutions supporting tech entrepreneurship*. Geneva: ITC.
- International Trade Centre (2018). *SME Competitiveness Outlook 2018: Business Ecosystems for the Digital Age*. Geneva, 16. <http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/SMECO2018.pdf>.
- International Trade Centre (2020). *Tech hubs in Africa: How can they support tech start-ups across the continent?* <https://intracen.org/media/file/2407->
- Jackson, T. (1 December 2015). 'CcHub, Venture Garden, Omidyar Network launch \$5m Social Innovation Fund. *Disrupt Africa*. <https://disrupt-africa.com/2015/12/17/cchub-venture-garden-omidyar-network-launch-5m-social-innovation-fund/>.
- Jimenez, A. (2016). 'A Capabilities Approach to Innovation: A Case Study of a Technology and Innovation Hub in Zambia.' In ECIS 2016 Proceedings.
- Kansheba, J.M.P., Marobhe M.I., and A.E. Wald (2022). 'Cushioning the Covid-19 Economic Consequences on Entrepreneurial Ecosystems: The Role of Stakeholders' Engagement, Collaboration, and Support.' *Journal of African Business* 2023, Vol. 24, No. 2 214–234. <https://www.tandfonline.com/doi/full/10.1080/15228916.2022.2078933>.
- Kappel, R. (October 2021). *Africa's Employment Challenges: The Ever-Widening Gaps*. Friedrich Ebert Stiftung. <https://library.fes.de/pdf-files/iez/18299.pdf>.
- Kelly, T. (30 April 2014). *Tech hubs across Africa: Which will be the legacy-makers?* World Bank Blogs. <https://blogs.worldbank.org/digital-development/tech-hubs-across-africa-which-will-be-legacy-makers>.
- Kelly, T. and R. Firestone (2016). 'Digital Dividends: How Tech Hubs are helping to Drive Economic Growth in Africa.' World Development Report Background Papers. <https://documents1.worldbank.org/curated/en/626981468195850883/pdf/102957-WP-Box394845B-PUBLIC-WDR16-BP-How-Tech-Hubs-are-helping-to-Drive-Economic-Growth-in-Africa-Kelly-Firestone.pdf>.
- Kuckertz, A., Brändle, L., Gaudig, A., Hinderer, S., Morales Reyes, C. A., Prochotta, A., . . . Berger, E. S. C. (2020). Startups in times of crisis – A rapid response to the COVID-19 pandemic. *Journal of Business Venturing Insights*, 13(June), e00169. <https://doi.org/10.1016/j.jbvi.2020.e00169>.
- Lall, S. A., Chen, L.-W., & Roberts, P. W. (2020). Are We Accelerating Equity Investment into Impact-Oriented Ventures? *World Development*, 131, 104952. <https://doi.org/10.1016/j.worlddev.2020.104952>.
- Littlewood, D. C., & Kiyumbu, W. L. (2018). "Hub" organisations in Kenya: What are they? What do they do? And what is their potential? *Technological Forecasting and Social Change*, 131, 276–285. <https://doi.org/10.1016/j.techfore.2017.09.031>.
- Marchant, E. (2015). 'Who is ICT Innovation For? Challenges to Existing Theories of Innovation, a Kenyan Case Study' (CGCS Occasional Paper Series on ICTs, Statebuilding, and Peacebuilding in Africa No. 4). Retrieved from http://www.global.asc.upenn.edu/app/uploads/2015/01/Marchant_Who-is-ICT-Innovation-for.pdf.

- Maritz, A., Perenyi, A., de Waal, G., & Buck, C. (2020). *Entrepreneurship as the Unsung Hero during the Current COVID-19 Economic Crisis: Australian Perspectives*. *Sustainability* (Basel), 12(11), 4612. <https://doi.org/10.3390/su12114612>.
- Mason, C., & Hruskova, M. (2021). *The impact of Covid-19 on entrepreneurial ecosystems*. In P. McCann & T. Vorley (Eds.), *Productivity and the Pandemic* (pp. 59–72). Edward Elgar; <https://www.e-elgar.com/shop/gbp/productivity-and-the-pandemic-9781800374614.html>.
- McKinsey & Company (2020). *Survey: South African consumer sentiment during the coronavirus crisis*. <https://www.mckinsey.com/capabilities/growth-marketing-and-sales/our-insights/survey-south-african-consumer-sentiment-during-the-coronavirus-crisis>.
- Monteiro, G. F. A. (2019). *High-Growth Firms and Scale-Ups: A Review and Research Agenda*. *RAUSP Management Journal*, 54(1), 96–111. <https://doi.org/10.1108/RAUSP-03-2018-0004>.
- Ndzinisa, R., & Dlamini, N. (2022). *Responsiveness vs. accessibility: Pandemic-driven shift to remote teaching and online learning*. *Higher Education Research & Development*, 41(7), 2262–2277. Retrieved from <https://www.tandfonline.com/doi/epdf/10.1080/07294360.2021.2019199?needAccess=true&role=button>.
- Nsehe, M. (20 July 2011). *'EBay Billionaire Omidyar Gives Nigerian Tech Incubator \$200,000*. *Forbes*. <https://www.forbes.com/sites/mfonobongnsehe/2011/07/20/ebay-billionaire-omidyar-gives-nigerian-tech-incubator-200000/?sh=6d05c4356e33>.
- Obeyskare, E., Mehta, K., and C. Maitland (2017). *'Defining Success in a Developing Country's Innovation Ecosystem: the case of Rwanda'*. In 2017 IEEE Global Humanitarian Technology Conference. <https://doi.org/10.1109/GHTC.2017.8239245>.
- Park, E.K., Martins, R.M., Hain, D., and R. Jurawetzi (2017). *'Entrepreneurial Ecosystem for Technology Start-ups in Nairobi: Empirical analysis of Twitter networks of Start-ups and Support organizations.'* In DRUID. New York, 30, 3.
- Partech (2020). *2020 Africa Tech Venture Capital Report*. <https://partechpartners.com/2020-africa-tech-venture-capital-report/>.
- Partech (2022). *2021 Africa Tech Venture Capital Report*. <https://partechpartners.com/2021-africa-tech-venture-capital-report/>.
- Piotrowski, J. (2015). *'What is a knowledge economy?'* *SciDev.Net*. <https://www.scidev.net/global/features/knowledge-economy-ict-developing-nations/>.
- Rashid, S., & Ratten, V. (2021). *Entrepreneurial ecosystems during COVID-19: The survival of small businesses using dynamic capabilities*. *World Journal of Entrepreneurship, Management and Sustainable Development*, 17(3), 457–476. <https://doi.org/10.1108/WJEMSD-09-2020-0110>.
- Sambuli, N., and J.P. Whitt (2017). *Technology innovation hubs and policy engagement. Making All Voices Count Research Report*. Institute of Development Studies, Brighton.
- Toivonen, T., and N. Friederici (7 April 2015). *'Time to define what a "hub" really is.'* *Stanford Social Innovation Review*. https://ssir.org/articles/entry/time_to_define_what_a_hub_really_is.
- Treisman, L. (2015). *Capturing Learning from Tech Innovation Hubs Across Africa*. Indigo Trust.
- Treisman, L. (2017). *Capturing Learning from Tech Innovation Hubs Across Africa: 2017*. Indigo Trust.
- United Nations Department of Economic and Social Affairs (2022). *World Population Prospects 2022: Summary of Results*. New York. https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/wpp2022_summary_of_results.pdf.
- United Nations Department of Economic and Social Affairs (2020). *World Youth Report 2020*. <https://social.desa.un.org/publications/world-youth-report-2020>.
- United Nations Development Programme and Mohammed bin Rashid Al Maktoum Knowledge Foundation (2020). *Global Knowledge Index 2020*. New York and Dubai. <https://www.undp.org/publications/global-knowledge-index-2020>.
- United Nations Economic Commission for Africa (2021). *Assessing Regional Integration in Africa X: Africa's Services Trade Liberalization & Integration under the AfCFTA*. United Nations Economic Commission for Africa, African Union Commission, United Nations Conference on Trade and Development, AfDB: Addis Ababa. <https://repository.uneca.org/handle/10855/46739>.
- World Bank (2021). *The Human Capital Index 2020 Update: Human Capital in the Time of COVID-19*. Washington, D.C., International Bank for Reconstruction and Development / World Bank. <https://documents1.worldbank.org/curated/en/456901600111156873/pdf/The-Human-Capital-Index-2020-Update-Human-Capital-in-the-Time-of-COVID-19.pdf>.
- World Bank (2022). *Rural population (% of total population) - Sub-Saharan Africa*. <https://data.worldbank.org/indicator/SPRUR.TOTL.ZS?locations=ZG>.
- World Economic Forum (2014). *Entrepreneurial Ecosystems Around the Globe and Early-Stage Company Growth Dynamics*. Geneva. <http://reports.weforum.org/entrepreneurial-ecosystems-around-the-globe-and-early-stage-company-growth-dynamics/wp-content/blogs.dir/34/mp/files/pages/files/nme-entrepreneurship-report-jan-8-2014.pdf>.
- Youth Business International and GEM (2013). *Generation Entrepreneur? The state of global youth entrepreneurship*. <https://www.youthbusiness.org/wp-content/uploads/2013/09/GenerationEntrepreneur.pdf>

Printed by ITC Digital Printing Service.

A free pdf is available on ITC's website at:
www.intracen.org/publications.



ISBN 978-92-1-003095-3



9 789210 030953