

COSTECH

THE TANZANIA COMMISSION FOR SCIENCE  
AND TECHNOLOGY (COSTECH)

★ T U R N ★

BUNI INNOVATION  
HUB AND DAR  
TEKNOHAMA  
BUSINESS INCUBATOR  
GRADUATE TRACER  
STUDY AND IMPACT  
ASSESSMENT  
2011 - 2020

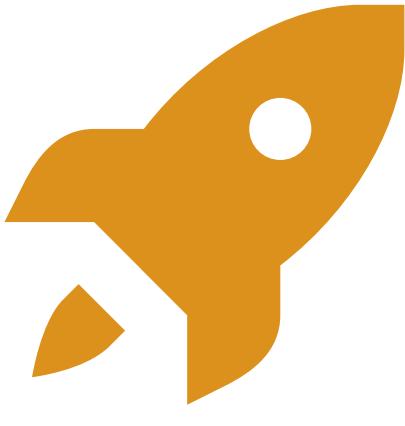


## THE HUBS IN NUMBERS

BUNI INNOVATION HUB AND DTBI IN NUMBERS

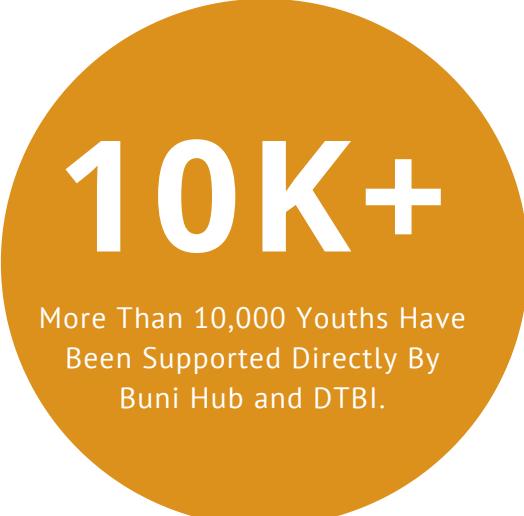
30K PLUS JOBS HAVE BEEN  
CREATED BY THE HUBS  
CAPITALIZING ON GIG AND  
DIGITAL ECONOMY

Buni Innovation Hub and DTBI have been able to create more than 30,000 employment opportunities directly and indirectly.



**30K+**

More Than 30,000 Jobs Have  
Been Created From Buni Hub  
and DTBI Directly and  
Indirectly.



**10K+**

More Than 10,000 Youths Have  
Been Supported Directly By  
Buni Hub and DTBI.

10+ YOUTHS HAVE BEEN  
SUPPORTED DIRECTLY.

More than 10,000 youths through events, capacity-building programs, seed-stage finance, access to networks, professional support, research, and linkage to local, regional and global opportunities



**1B+**

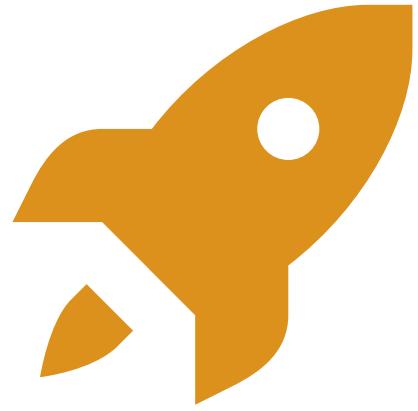
Some Companies Pays More  
Than 500 Million TZS in Taxes  
Annually.

BILLIONS OF TZS IN TAX  
CONTRIBUTION.

Billions of Tanzanian Shillings in Tax Contribution With Some Companies Paying More Than 500 Million as Taxes Annually.

# THE HUBS IN NUMBERS

BUNI INNOVATION HUB AND DTBI IN NUMBERS



## LARGEST COMMUNITY OF INNOVATORS AND ENTREPRENEURS

A Community of More Than 20,000 People Online and Offline Engaging With Innovation and Technology Entrepreneurship Activities.

**20K+**

More Than 20,000 Community Members From The Innovation Hubs.

## SUPPORTED ESTABLISHMENT OF INNOVATION HUBS ACCROSS THE COUNTRY

Buni Innovation Hub and DTBI Have Supported Establishment of Innovation Hubs Across the Country 10 Hubs Are Directly Related to The Two Hubs.

**10**

10 Hubs Have Been Directly Connected to Buni Hub and DTBI.

**100+**

Buni Innovation Hub and DTBI Have Worked and Engaged With More Than 100 Local, Regional and Global Organization.

## 10+ PARTNER INSTITUTIONS AND ORGANIZATIONS

Buni Innovation Hub and DTBI Have Worked and Engaged With More Than 100 Local, Regional and Global Organization.

# TABLE OF CONTENTS

5	SUMMARY
	Summary of Findings
7	INTRODUCTION
	Introduction
9	CHAPTER ONE
	Understanding Buni Innovation Hub and DTBI
18	CHAPTER TWO
	Innovation Hubs Impact On Startups
29	CHAPTER THREE
	Innovation Hubs Impact on Other Hubs
38	CHAPTER FOUR
	Impact on The Ecosystem
53	CONCLUSION
	Conclusion

# SUMMARY

## SUMMARY OF FINDINGS

The Commission for Science and Technology (COSTECH) established Dar Tekohama Business Incubator (DTBi) in 2011 in collaboration with the World Bank's infoDev. The aim was to nurture and grow ICT using enterprises to create successful formal businesses. Buni Innovation Hub was established in 2011 as part of the TANZICT Project, a bilateral project between Tanzania and the Finnish government to support building the knowledge society.

Buni and DTDI have played an important role in promoting science, technology, and innovation in Tanzania. The two hubs have been at the core of the Tanzania Innovation Ecosystem since the early days of 2013s whereby there were just two innovation hubs Kinu and Buni were the only hubs and up to now, there are more than 50 innovation hubs across the country. DTDI and Buni have supported innovation hubs through capacity building, mentorship, and technical support programs. They also have supported in creating several innovative products and solutions addressing challenges facing the communities, governments, development agencies, etc. in the sectors of health, telecommunication, communication, banking, transportation, food security and financial inclusion.



Over the years, Buni and DTDI have supported more than 10,000 youths through events, capacity-building programs, seed-stage finance, access to networks, professional support, research, and linkage to local, regional and global opportunities. Through these support programs, youths from Buni and DTDI have had a competitive edge for establishing their own businesses and easing their way towards employment. Thousands of young people who went through different programs offered at Buni Innovation Hub and DTDI currently sit in strategic positions in innovation and ICT firms, including banks, telecom companies, innovation hubs, etc.

# SUMMARY

## SUMMARY OF FINDINGS

Buni and DTBi have been able to create more than 30,000 employment opportunities directly and indirectly through startups and SMEs. These startups and SMEs have on average created 5 to 30 jobs. Indirectly, employment opportunities have been through disruptive solutions that have emerged from the hub e.g. Point of Sales devices from companies such as Maxcom Africa, Packing System, from companies such as Econnex (Formerly ITMaxx), and events such as Sahara Sparks, Bits and Bytes and Innovation Week which create employment opportunities for third-party vendors and service providers. The hubs have contributed to the national economy, with some businesses paying an estimated tax of 500 Million TZS per year. Buni and DTBi's influence in the ecosystem has impacted Tanzania's position in the Global Innovation Index, whereby Tanzania ranks 88th in the world and 4th in Sub-Saharan Africa through different innovations, data, and insights generated from the two hubs. Innovations such as electronic waste 3D printers and drone mapping initiatives for resilience in urban areas have received local, regional, and global attention by producing a positive image for the country. hence attracting different development partners and investors. Buni and DTBI are among the earliest hubs in Africa which have formed strategic partnerships with regional and global affiliations

and networks such as AfriLabs, SAIS Connected hubs and Google Developer Community thus acting as a link between Tanzania's innovation ecosystem and ecosystem across the continent and globally. For years, Buni and DTBI have been resource and knowledge centres for practitioners, experts, academicians, researchers, and partners looking for information about innovation initiatives in Tanzania. DTBI has generated enough information to the general body of knowledge for academicians and researchers. New practitioners are looking to start their own innovation hubs and implement innovation, technology, and entrepreneurial interventions in the program. Knowledge, experience, and lessons learned from Buni and DTBI have been adopted to informal local, regional and global interventions on best practices of establishing, running, and managing innovation hubs. The two hubs have influenced more than 50 other hubs led by academic institutions, development partners, and private entity. Such innovation hubs include Kiota Innovation Hub-Iringa, St. Joseph University in Tanzania, University of Dodoma, Mbeya University of Science and Technology, CoICT at the University of Dar es Salaam, Arusha Institute of Accountancy, Al-Maktoum College of Engineering, WFP Innovation Hub and UNICEF Innovation Center which have a driving engine of innovation and self-employment in the country.

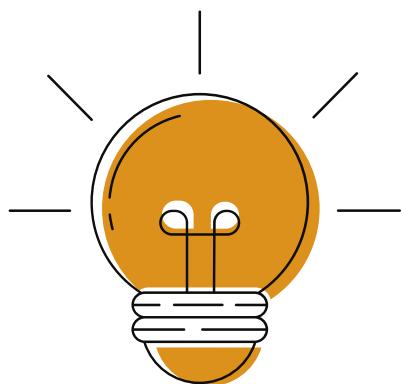


# INTRODUCTION

## INTRODUCTION

Innovation hubs have played a crucial role in accelerating digital transformation and entrepreneurship in the African continent, equipping youths with technology and entrepreneurial skills. In this context, an innovation hub is a physical space with a community of practice; innovators, entrepreneurs, tech-enthusiasts, designers, etc. Its focus can range from fabrication, coding, entrepreneurship training, co-creation, co-working space, etc. Buni and DTBi are identified to be within the group of innovation hubs known as "Technology Hubs" or "Tech Hubs".

GSMA defines technology hubs as physical spaces designed to foster technology projects, further clustering them into those that accelerate the growth of startups (incubators, accelerators, etc.) and other types of spaces supporting tech projects (hacker-spaces, makerspaces, digital labs, etc.). The number of innovation hubs in Tanzania has increased in the last 8 years from just three hubs Buni, DTBi, and Kinu Co-creation Space to more than 40 hubs scattered across the country, according to the Human Development Innovation Fund (HDIF) report (Lahde, 2018).



Buni and DTBi have played a crucial role in supporting the growth of the Tanzania Innovation Ecosystem. Both Buni and DTBi have collectively worked with thousands of youths and hundreds of startup companies in Tanzania. Buni was established to support innovators, tech-enthusiasts, and entrepreneurs with capacity building and skills development whereas DTBi was established as a technology business incubator to support startups with incubation services. Buni's primary focus was to build and develop youths' capacity building and skills development by building their foundation on digital entrepreneurship while DTBi's focus was to accelerate its digital entrepreneurial growth through incubation programs. In 2017, the World Bank report identified the Dar es Salaam startup ecosystem as being in the nascent stage with Buni and the University of Dar es Salaam being the main hotspots for Dar es Salaam's entrepreneurial activities. Buni and DTBi have supported the establishment of other hubs and entrepreneurial programs across the country by strategically collaborating with other players in the ecosystem.

# INTRODUCTION

## INTRODUCTION

Members and beneficiaries of these hubs are scattered across the ecosystem, engaging, running, and managing innovation spaces; starting startups, researching innovation, working as experts, etc. Also, some hubs such as Kiota Innovation Hub RLabs Iringa and the Microsoft Innovation Space at the University of Dodoma were directly connected to Buni and DTBI, in which in one way or another, the two hubs played a major role in their establishment, growth or both. The two hubs have been working to bring together different ecosystem players to encourage their active involvement in supporting startups and entrepreneurs in the ecosystem.

These players include development partners, investor networks, corporate partners and public institutions. In an attempt to study the impact of the two hubs on the Tanzanian innovation ecosystem, COSTECH decided to conduct a beneficiaries tracer study in order to evaluate/assess how did Buni and DTBI help the beneficiaries, what are they doing from 2013 to 2018; what role are they playing in accelerating the growth of the Tanzania innovation ecosystem and the overall impact generated by after they have left the two hubs.



# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI

Buni Innovation Hub started in 2011 known by that time as the TANZICT Innovation Space located at the COSTECH Building. The name, Buni Innovation Hub, Buni Hub or Buni started to be adopted in June 2013 primarily with a core objective of localizing the concept of innovation space to the local youths. The hub was part of the components of the TANZICT Project which focused primarily on developing the Tanzania Innovation Ecosystem, Tanzania Innovation Program (TIP).

Buni Innovation Hub had four core programs; Buni Internship Program, Buni Mentorship Program, Buni Makerspace, and Buni Community Outreach. The Buni Internship program was the foundation of everything that was happening at the hub. It primarily focused on equipping the students with crucial employability and entrepreneurship skills. Buni Mentorship Program was a follow-up program after the internship program for those who have committed to work on their ideas further to develop Minimum Viable Products (MVPs). Buni Community Outreach was designed to recruit new members of Buni Innovation Hub by working with on-campus students communities e.g University of Dar es Salaam ICT students community (UDICTC). The Buni Makerspace was established in 2014 to support makers who were part of the Buni Community with a place for rapid prototyping and fabrication. The Internship Program primarily targeted university students during the 8-9 weeks of field attachment.



Buni Innovation Hub will recruit these students and make them work in teams to come up with solutions to problems facing the community. Through learning by doing, the students will attain the skills needed for them to build a business. For example, every Friday students were encouraged to present their product to an external audience behaving like investors but primarily mentors to their ideas. Few outstanding ideas (projects) with clear business models were encouraged to join the next stage of the program the Mentoring Stage (Mentoring Program). The output of the internship program was open-source projects, projects for final academic submission, and early-stage startups.

The Mentorship Program was the last program offered by Buni Innovation Hub before presenting the startup to DTBi. The mentorship program's focus was to ensure the beneficiary has at least a basic understanding of a business model and has already started to work on the Minimum Viable Product (MVP). Participants of the program had a chance to submit their request to join DTBi for further support through the pre-incubation and incubation program. The startups that went through this journey include TIME Tickets, Bela Vendor, Prinpo, Edu Taarifa, Shule Wiki, and others.

# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI

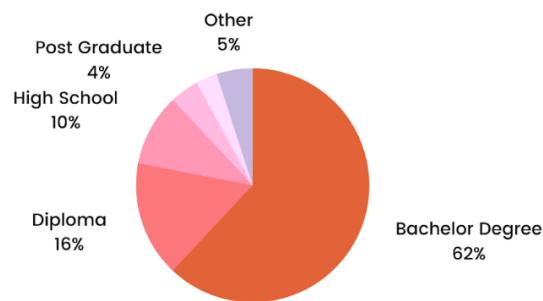


Figure 7 | Member Distribution By Level of Education at Buni Innovation Hub

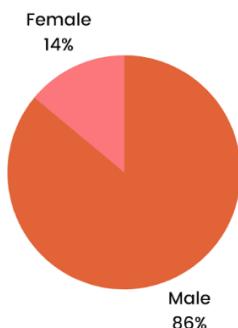
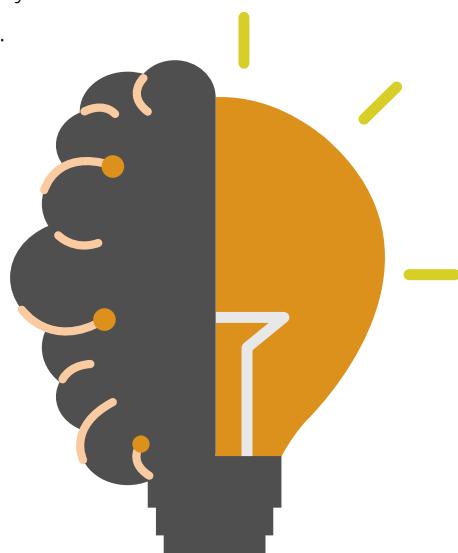


Figure 8 | Member Distribution By Gender at Buni Innovation Hub

Community outreach programs recruited innovators from academic institutions and other community networks to join the hub. Often after joining, the hub members would either move to the internship program or mentorship program depending on their status and availability of the programs. Both programs primarily focused to groom foundational entrepreneurship skills to the beneficiaries including; problem-solving skills, collaboration and working in teams, ideating and creative thinking, design, etc. The goal of the program was to ensure at least the students or beneficiaries know how to pitch their solutions, work with others, design their prototype, etc. These programs were designed to prepare the beneficiary with the next stage of support they will receive from DTBI or other incubators (accelerators) in the ecosystem.

Between 2013 - 2018 over 2,500 members were registered, this was after the initial registration of 1,700 people between 2011-2013. In total, 688 members registered were between June 2015 to June 2018. Over 60 percent of those who registered were University Students (Degree Level), 16 percent Diploma Level, 10 percent high school students, 4 percent postgraduate, 3 percent secondary school and the rest choose not to disclose.



# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI



Figure 9 | Member Distribution By Registration Type at Buni Innovation Hub

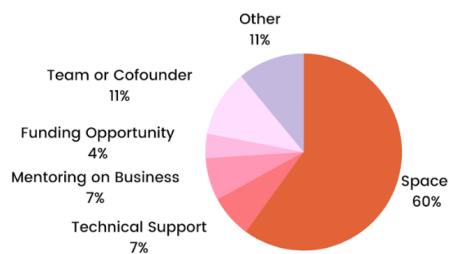


Figure 10 | Member Distribution By The Support They Need at Buni Innovation Hub

Buni has always faced gender challenges in balancing between female and male beneficiaries of the hub. The percentage of women using the space has never gone above 10 percent since its establishment. This is why programs such as Buni Divaz and FemTanz were piloted to encourage the involvement of more young girls. In 2016, a lot of activities to promote women in tech were happening at the hub with partners such as Apps and Girls, SheCodesForChange, etc, to encourage more involvement of ladies at the hub. The distribution by male and female beneficiaries by June 2018 was 14 percent female and 86 percent male. Figure 9 shows the levels of membership of the Buni beneficiaries. Eight percent of these were Management members, looking to learn how to run and manage innovation hubs.

Their responsibilities included organizing events and community meetups; and handling branding, communication, security, and the general operations of the hub. Others were Buni Champions (10 percent), who were industry experts and mentors providing technical and business support in teams and individuals participating in Buni programmes voluntarily. Others were Buni Interns (50 percent), students from different learning institutions. These were committed to practical training in the hub. Another category was of Buni Mentored Startups (19 percent) looking to scale their ideas or early-stage startups and non-profit making startups. Buni Makers constituted 6 percent, and freelancers 7 percent. All individuals at the hub worked on electronics projects using the makerspace.

# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI



Figure 9 | Member Distribution By Registration Type at Buni Innovation Hub

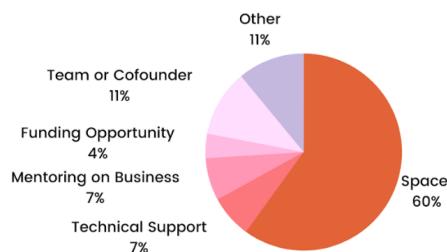


Figure 10 | Member Distribution By The Support They Need at Buni Innovation Hub

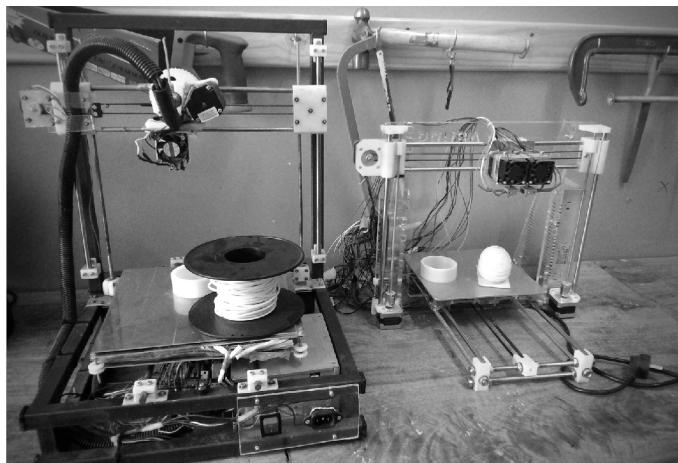
One of the most important values the hub was offering to the community the space to work. Figure 10 shows the distribution of beneficiaries of the services of the hub. The greater majority (60 percent) came for free working space. The second-largest category was of community members looking for a team or potential cofounder. The smallest category was those looking for funding opportunities. The Buni programs were a success that by 2016 Buni managed to engage over 3,000 youths on its programs, working with more than 675 students from the local universities supporting 30 projects. As part of the Internship Program, five (5) companies were able to secure seed funding from the TANZICT Innovation Fund and 50 other companies working as freelancers, mentored startups, or pre-incubation projects. 15 companies were mentored in the mentorship program, 10 companies exiting to join DTBi for incubation

program, and 4 community outreach programs were carried out in 4 universities which include St. Joseph University in Tanzania, University of Dar es Salaam, College of Business Education (CBE), and the Institute of Finance Management (IFM). Buni was able to work and engage with development partners e.g. World Bank, Hivos, IIED, Mastercard Foundation, MAVC Project, etc. in building the local innovation ecosystem. The scope of Buni was changed in 2016 upon the success of the program, mushrooming of other hubs and the exit of the TANZICT program. A new plan was developed which led COSTECH management to strengthen Buni as a learning hub for other hubs that will be formed in the ecosystem. Therefore Buni supports the establishment of innovation hubs in collaboration with universities while building the capacity of new hubs.

# EARLY DAYS

PAGE 13

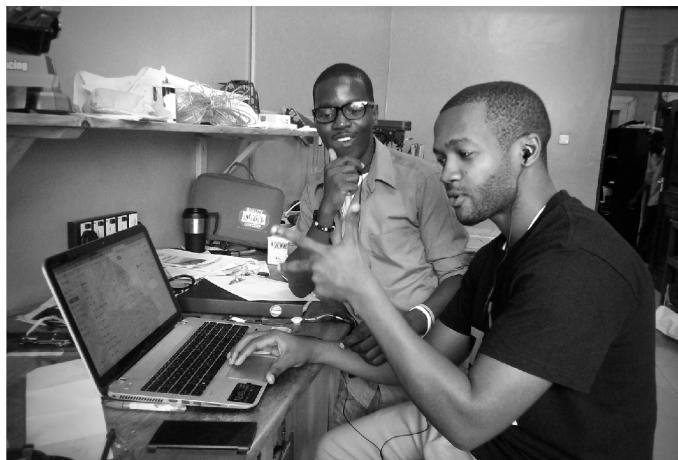
BUNI HUB AND DTBI STARTUPS AND COMMUNITY



# EARLY DAYS

PAGE 14

BUNI HUB AND DTBI STARTUPS AND COMMUNITY

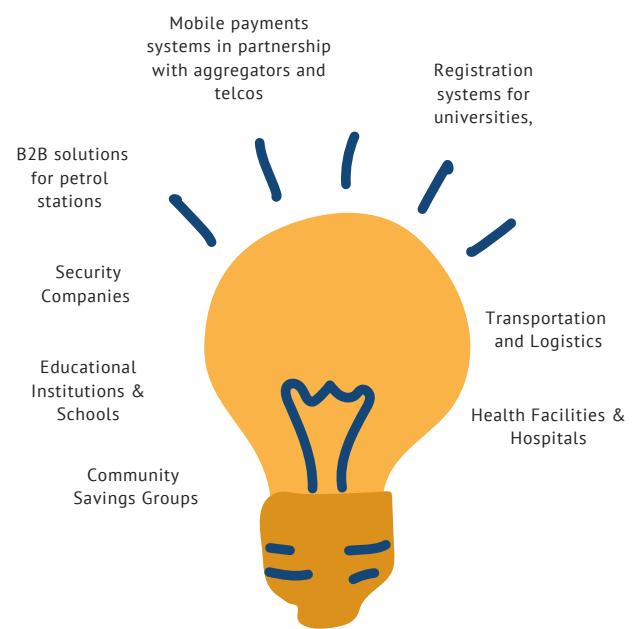


# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI

Dar Teknohama Business Incubator (DTBi) is a technology incubator that formally started operations in 2011 registered as a non-profit company through Public-Private Partnership. It was a PPP between the government of the United Republic of Tanzania (through COSTECH), the World Bank (through InfoDev), and private sector partners. The incubator is running as an autonomous entity with its own Advisory Board operating as a non-profit company limited by guarantee. DTBi provides infrastructure support, strategic planning, coaching, and business development services to early-stage information technology companies. The mission of DTBi is to catalyze an ecosystem for growing and monetizing creative startups and SMEs in Tanzania. DTBi was primarily established to support Tanzanian businesses, NGOs, and governments requiring innovative ICT solutions designed for their specific needs. The incubator was established to help create technology entrepreneurs build startup companies to address complex societal problems using ICTs and technological approaches. It supports emerging businesses to grow and create employment opportunities and economic prosperity in Tanzania through digital technologies and a growing need for incubation services to new and early-stage technology-related businesses. In addition, the incubator promotes financial technology innovations as well as creating awareness on Intellectual Property (IP) issues.

By 2014, DTBi was able to build a strong profile of different ranges of services. The incubator had 42 entities (startups and companies) supported physically and virtually. The developed solutions are presented hereunder



Solutions That Emerged From Buni Hub and DTBI By Sectors

Of the 42 beneficiaries, 29 were incubatees (14 startups and 15 companies) and 13 were pre-incubatees. For the companies, 10 were residents and 5 were virtual. Beneficiaries were distributed with respect to the stage and nature of incubation services they received. Physical incubatees had more privilege and access to physical facilities than the remote ones even though both received similar support.

# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI

Pre-Incubation	Incubation (Startup)	Incubation (Company)
<ul style="list-style-type: none"> <li>• ICT/Technology related business idea</li> <li>• Solution/prototype development in progress</li> <li>• Pre-revenue generation</li> <li>• Commitment: \$13 or equivalent TShs monthly service fee.</li> </ul>	<ul style="list-style-type: none"> <li>• Finished Product/Solution</li> <li>• Annual revenue &lt; 10m</li> <li>• Commitment: \$50 and \$25 or equivalent TShs. monthly service fee for resident and virtual startups respectively.</li> </ul>	<ul style="list-style-type: none"> <li>• Registered and licensed</li> <li>• Annual revenue &gt; 10m</li> <li>• Commitment: A Percentage of revenue growth (Royalty Model) – 10% and 8% of annual revenue growth for resident and virtual companies respectively.</li> </ul>

Figure 13 | Three Incubation Phases  
Dar Teknohana Business Incubator

DTBI support process was designed to be in three stages; Pre-Incubation, Startup Incubation, and Company Incubation. Each category had qualification criteria and specific types of services offered to beneficiaries. The qualifications for the pre-incubation (3-months) stage were; it had to be an ICT/Technology related business idea, a potential solution (prototype) still in the development stage, pre-revenue generation, and the ability to pay a commitment fee of \$13 or equivalent in TZS per month. For incubation (startup) (6 Months), the qualification was; it had to be a finished product (solution) having annual revenue of fewer than 10 Million TZS and the founder willing to pay a commitment fee of (\$50/\$25) or its equivalent in TZS as a monthly fee for resident and virtual startups respectively. For incubation (company), (3 to 4 years) the company had to have been registered and licensed with annual revenue of more than 10 Million TZS and willing to pay a percentage of revenue as royalty, 10% revenue growth for residents and 8% revenue growth for virtual companies. Figure 13 below shows the three stages of the incubation process at DTBI.

DTBI's primary focus was to groom entrepreneurship culture among Tanzanian youths through the adoption of ICT to solve problems. The incubator wanted to help youth-led businesses to attain the necessary skills and resources needed for their businesses to flourish. The hub wanted to equip youths with the entrepreneurial mindset of accepting failure and taking risks, something which was new in the Tanzanian culture. It introduced concepts such as "bootstrapping", working with minimum resources available, and capitalizing on what one already had e.g a Personal Computer to build your business. The incubator also helped the businesses to establish systems and structures within their business e.g having proper accounting records, business plans (modelling), people management, etc. The hub also helped the businesses to identify relevant practical solutions to organisational problems. DTBI's other role was to link the Tanzania innovation ecosystem to the outside world by forming strategic partnerships and collaborations with other regional and global partners.

# CHAPTER ONE

## UNDERSTANDING BUNI INNOVATION HUB AND DTBI

Buni was primarily designed to be a coworking space to focus on capacity building and skills development of youths. The main objective of Buni was to ensure its graduates possess enough skills to be accelerated or incubated. Having a business was a plus to a graduate but the most important task was to ensure they have the necessary skills and tools to become successful entrepreneurs. This focus was a bit different from DTBI in which their primary focus was to groom the next generation of successful technology businesses from Tanzania. This made Buni to focus on early-stage support of a startup and DTBI on later-stage needed support for a startup. See the framework below which shows how programs from Buni and DTBI were dependent on each other.

Activity	Role
Incubation Program	DTBI
Pre-Incubation Program	DTBI
Mentoring Program	Buni Hub
Internship Program	Buni Hub
Community Outreach Program	Buni Hub

By 2018 it was estimated that more than 5,000 youths had accessed both Buni Innovation Hub and DTBI at different capacities (interns, freelancers, incubatees, etc.) and levels (mentees, pre-incubatee, and incubatees). The number of registered applicants has evolved over the years because the registration of members was constantly revisited after some period of time to ensure the database of beneficiaries stays updated in order to determine the effects of the hubs in the ecosystem.

Buni Innovation Hub through community outreach recruited innovators from academic institutions and other community networks to join the hub. Most of the time after they join the hub they would either move to the internship program or mentorship program depending on their status and availability.

These programs were designed to prepare the beneficiary with the next stage of support they will receive from DTBI or other incubators (accelerators) in the ecosystem.

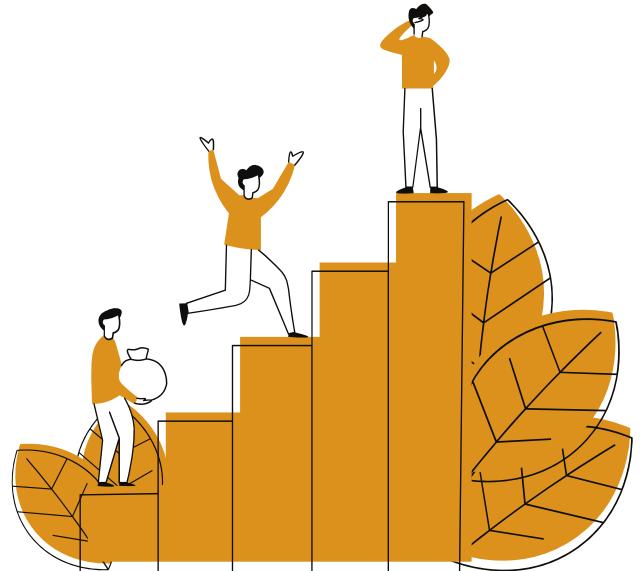
The Internship Program primarily targeted university students during the 8-9 weeks of field attachment. Buni Innovation Hub will recruit these students and make them work in teams to come up with solutions to problems facing the community. Through learning by doing, the students will attain the skills needed for them to build a business. Few outstanding ideas (projects) with clear business models were encouraged to join the next stage of the program the Mentoring Stage (Mentoring Program). The output of the internship program was open-source projects, projects for final academic submission, and early-stage startups. The Mentorship Program was the last program offered by Buni Innovation Hub before presenting the startup to DTBI. The mentorship program's focus was to ensure the beneficiary has at least a basic understanding of a business model and has already started to work on the Minimum Viable Product (MVP). Participants of the program had a chance to submit their request to join DTBI for further support through the pre-incubation and incubation program.

# CHAPTER TWO

## IMPACT ON STARTUPS

Buni worked with an average of 1500-2500 youths annually in different programs and engagements it offered. DTBi engaged with 20-30 early-stage and growth-stage businesses. Graduates of both the Buni and DTBi had a considerable impact on startups and early-stage businesses. The majority of the existing startups in the current ecosystem have at least one member who previously engaged with either during their career growth. Profound success stories include SmartCodes, Magila Tech, IPF Softwares companies.

Some of the graduates of Buni and DTBi attracted investment and funding to support their businesses using capacity building and skills they developed through the programs offered by the innovation space. The TANZICT Innovation Fund and Data for Local Impact Innovation Fund (DLI) offered funding and support to more than 30 graduates of Buni and DTBi innovation space to implement their business ideas and projects. Examples of these are BelaVendor Pads (founded by Lulu Ameir), Go Join Africa Safari by Patrick Moshi, Mobishop by Yakub Leslie & team, StockPoin by Benedict Tesha & team, and Mobile Donation System by Abdul Bashiri. Others were SMS Notification System founded by Thomson Lutta & team, M-parliament by Godfrey Magila, Bongotoonz by Musafiri Mbilinyi, Land Ownership Documentation System by Grace Makanya & team, GetPOS by Fayaz Valli, and TiME-system by Josephat Mandara & team. Some startups attracted financial support from multiple funders. One of these is Guavay, which was supported by TANZICT, SIDA, and HIVOS.



Some of the startups succumbed to the valley of death, and their experience transcended to other products and services. For example, LODS System of Grace Makanya faded, and resulted in Agri-Info by Rose Funja, which operates to date. GetPOS didn't pick momentum but the holding company GetCore Group operates as a service company offering a range of ICT services to various firms. Its products include GetHR, GetPRINT, GetPMMS, and GetLOGISTICS.

The Buni and DTBi innovation space has contributed to employment. Functional alumni employ 1-5 people on average. Sixty-nine percent of the respondents from the engaged startups employed at least five people. Thirteen percent of these have created over vacancies (Figure 14). The business evolution has implications on employment. The inclusion of the figures of the second-generation businesses that evolved from start-ups registers 3000 employment opportunities

# CHAPTER TWO

## IMPACT ON STARTUPS

Examples of second-generation businesses are Smartcodes and MagilaTech (over 15 and so employees respectively). The figure excludes companies such as Maxcom Africa, also the innovation centre's graduate, that created merchant operations and remote services through POS devices employing even more people.

Solutions that the Buni-DTBI innovation space helped co-create have been adopted by the market. The programs that Buni offered required the trainees to test and validate their ideas and concepts with actual customers before development and deployment. This culture made successful companies with products and services for private, public, and nonprofit sectors. The solutions are credible and help address the clients day-to-day challenges. Examples of clients served by one of the graduate MagilaTech include Millicoms (Tigo Tanzania), Tanzania Revenue Authority (TRA), Local Government Authorities (TAMISEMI), and PACT. Of the surveyed startups, 94 percent acknowledged their solutions being used in the market (Figure 15). The companies are rolling out products regularly in the Tanzanian market.

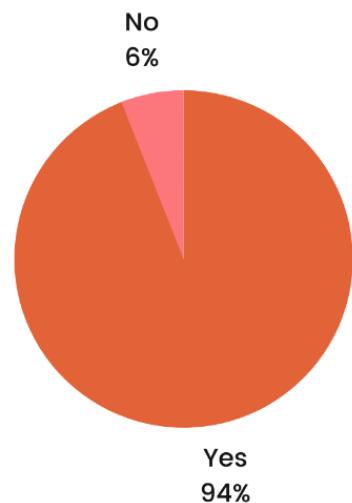


Figure 15 | Innovation (Product or Service) Being Adopted (or Used)?

Some of these solutions have been able to attract thousands of users because of the nature of the market they address. Products such as VSOMO, co-created by MagilaTech, VETA, and MNOs has attracted more than 50,000 users from across Tanzania. The M-Paper product by the graduate SmartCod has more than 250,000 active users. The solutions by some graduate companies offering Business-to-Business (B2B) solutions have been adopted by SMEs in the market for keeping records, managing inventories, and facilitating transactions. The Buni-DTBI innovation space enabled startups to test and deploy their products in a safe environment. Most of these companies were able to cross the valley of death (moving from idea to product) because of the support of these hubs. Some of the solutions are used internationally in developing markets. For example, MagilaTech works with Advanced Info Service (AIS), the largest telecommunication company in Thailand. The product it serves through this partnership has more than two million Users.

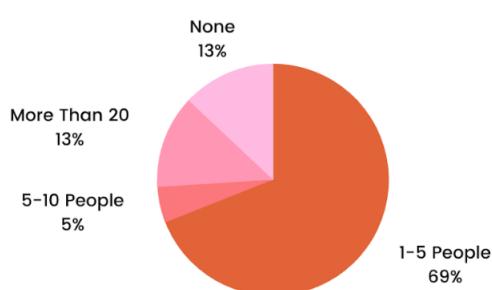


Figure 14 | Number of People Employed By a Startup

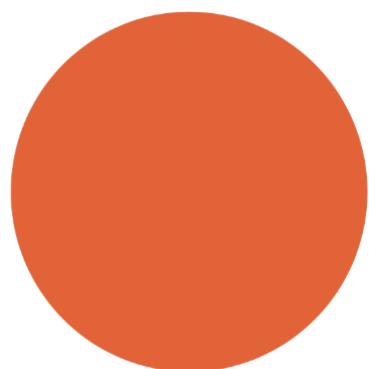
# CHAPTER TWO

## IMPACT ON STARTUPS

The products developed by graduates of the Buni-DTBI innovation space are helping transition Tanzania towards digital transformation and 4IR. Solutions such as TIME tickets have been transforming consumer behaviours and digital adoption in the events and entertainment sector. Before TIME tickets people used to pay for events tickets manually. The approach was undermined by inconveniences such as under-declaration, which was precipitated by ineffective tracking. The obvious advantage of e-ticketing has resulted in widespread adoption. The success of TIME tickets has seen new businesses and competitors emerging in the digital ticketing market such as Nilipe. This is an exponential impact of the support of the innovation space.

Compliance of the startups to legal and regulatory requirements for establishing and running a business in Tanzania. All the companies involved in this study have registered their business with BRELA at the least, and have certificates of incorporation (Figure 16). The program and training offering by the innovation space helped businesses the attitude of business formalization early on in their growth process. All the interviewed persons and companies comply with tax payments, except two that are in the pre-revenue phase. One of the startups disclosed it pays up to TZS 500 taxes annually. This compliance increases government revenue and contributes to their sustainability.

The support by innovation space in the early stages of business growth was critical. The functioning businesses, including those that have evolved into different learning paths, assumed form in the innovation space during the first to third year of their infancy. The environment and services offered by the hubs accelerated their growth significantly compared to those that evolved outside the incubator environment. This is largely because they were not cushioned against the wrath of the valley of death that made them vulnerable during their infancy. Most die in their first year of existence due to a lack of technical and financial support. In this study, 38 percent of the startups exited their first year and continued to operate elsewhere see (Figures 17 and figure 18). Over half of the graduate startups exited before their fourth year. This is dual success given that they survived the vulnerable stages and transitioned to new environments in good time. Some graduate companies extended their stay in the innovation space to capitalize on the opportunities it accorded.



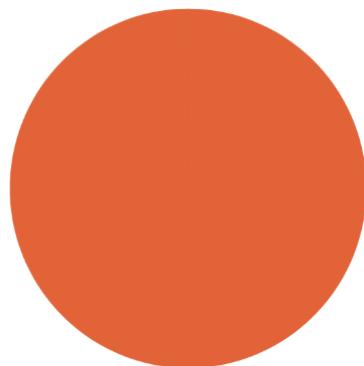
**Yes**

**100%**

Figure 16| Is Your Company Registered as Business at BRELA?

# CHAPTER TWO

## IMPACT ON STARTUPS



**Yes**  
**100%**

Figure 16| Is Your Company Registered as Business at BRELA?

One of the startups responded to pay up to 500 Million Tanzanian Shillings of taxes annually. These startups have a massive impact on the national and regional economy in terms of the creation of employment opportunities as well as increasing government revenue.

The service offered by both Buni Innovation Hub and DTBI was very important at the early stages of the business's growth. Most of these businesses stayed at the hubs for less than five years between 1-3 years. The environment and services offered by the hubs accelerated their growth compared to businesses outside the incubator environment. Most of the startups die in their first few years of operations especially the first year due to a lack of technical and financial support. Buni Innovation Hub and DTBI provided some of these services that are essential for a startup especially in those early days. From the respondents, 38 per cent of the startups exited in their first year but still were able to continue working on their businesses elsewhere see figure 17 and figure 18. More than half of the startups exited before their fourth year.

One important thing to note is that some of the businesses had an opportunity to leave the incubator early but because of the support and access that comes with the incubator some of the companies decided to continue to stay at the facility to capitalize on the opportunities.

Buni Innovation Hub and DTBI were able to help startups establish relationships with corporates and public agencies to further grow their products and services. DTBI played a very crucial role in linking startups with corporate companies see figure 19, 69 percent of respondents confirmed to have existing strategic partnerships. Some notable achievements include linking MagilaTech to Tigo for the Tigo BackUp, linking Justin Kashaigili of Twende App to Tigo hence Tigo Twende, linking Mbutho Chibwaye of Digital Brain to Tanzania Commission For Universities (TCU), who created the solution for students selection, etc. The relationship between the startups and the two hubs made the founders have enough credibility once presenting their solutions to the prospective clients. These solutions have been having a huge impact, for example, the TCU registration system developed by Digital Brain has been used to register hundreds of thousands of students into local universities. These collaborations and partnerships have also encouraged partnerships such as Smartcode and Vodacom partnership on Vodacom M-Paper and the most recent partnership between Vodacom and Smartlab (an accelerator under Smartcodes) on Vodacom Accelerator Program. The foundation of these kinds of collaborations was built from the early days of the two hubs; Buni Innovation Hub and DTBI.

# CHAPTER TWO

## IMPACT ON STARTUPS

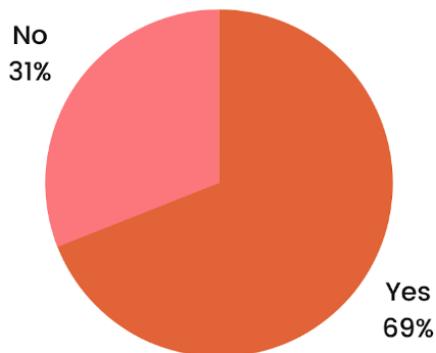


Figure 19| Do You Have Any Existing Partnerships?

The innovation space supported the establishment of relationships with corporates and public agencies to advance their products and services. DTBi played a key role to link startups and corporate companies (Figure 19). Sixty-nine percent of respondents acknowledge existing strategic partnerships out of this initiative. Notable achievements with the partnerships include linking MagilaTech with Tigo for the Tigo BackUp product, Twende App to Tigo for Tigo Twende, and Digital Brain to Tanzania Commission For Universities (TCU) for students selection service. The relationship earned the startups credibility in pitching their solutions to prospective clients. These solutions have had a profound impact. For example, the mentioned TCU registration system has been used to register hundreds of thousands of students into local universities. The partnerships have grown through pragmatic collaborations that bear the hallmark of the innovation space. For example, Smartcode and Vodacom partnered for the M-Paper product. Vodacom and Smartlab, an accelerator under Smartcodes, partnered for the Vodacom Accelerator Program.

The foundation of such collaborations is the culture that the innovation space helped built from the early days.

The innovation space is shaping ICT, innovation, entrepreneurship agenda, policies, and regulations in the country. One of the roles of the TANZICT project, the parent project of Buni Innovation Hub was to review and release a revised ICT policy. This included gathering insights from stakeholders and beneficiaries of Buni and DTBi. The two hubs have been championing discussions around legal and regulatory frameworks surrounding different technologies and entrepreneurial agendas. For example, the initial conversation on the regulation of drones began at COSTECH when the first drone was made at Buni, and the conversation on their use in flood mapping and drug delivery kickstarted. Also, discussions about social enterprise and the legal status of for-impact businesses' legal status started at Buni seven years back. For the latter, the discussion never led to regulatory changes but sparked interest for stakeholder support of social enterprises as new types of businesses for social good. Solutions from graduates of Buni Innovation Hub and DTBi have been shaping the trends and adoption of new technologies by the government. The solutions from DTBi were the first to be adopted to digitize tax collection systems at the LGA and central government levels. Some of the solutions had influenced conversations on how ICT should be adopted in crucial sectors, including registering students and managing patients records.

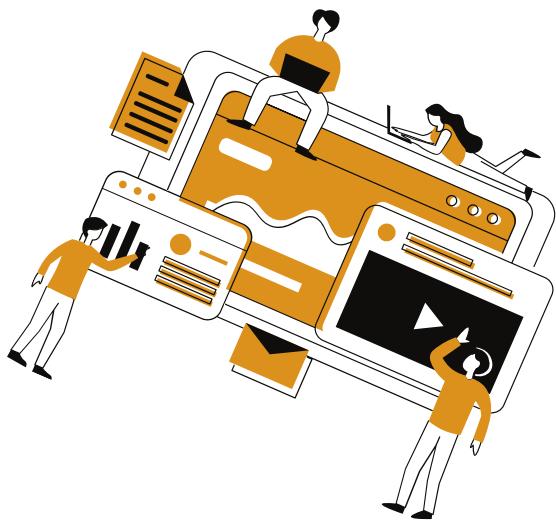
# CHAPTER TWO

## IMPACT ON STARTUPS

The solutions increased trust in digital approaches to address challenges. For example, companies such as Maxcom Africa created digital solutions for government payment collections, which eventually influenced the digitization of public payment systems. The current centralization of payment systems would not be possible without the foundation built by these pioneering companies. Some of the services include payments of bus tickets, electric bills, water bills, and other services. Some of the earliest Point of Sales (PoS) devices were from companies such as Maxcom Africa. Buni and DTBi produced some of the earliest Fintech startups from the ecosystem and influenced the current generation of Fintech.

Some of the solutions supported by the Buni and DTBi hubs have had massive sectorial disruptions. Products such as M-Paper disrupted traditional newspapers. The app allows users to access newspapers digitally.

This has made authorities question the approach of digital publications. Second-generation graduates of Buni Innovation Hub have developed products such as Agritech's IoT farming solutions, and Agrobot, a chatbot that provides information to farmers. The founders were invited by the Ministry of Agriculture to share how these technologies will disrupt the agriculture sector and how the future will look like. Buni Innovation Hub and DTBi have been a place where new innovative digital technologies with social impact have been emerging. These technologies address problems across the different sectors including education, health, agriculture, and finance.



Buni Innovation Hub and DTBi equip youths with relevant skills and provide facilities for them to realize their potential. Most of the youths coming to Buni Hub look for a place to work. Buni is therefore a co-working space with critical shared resources for the realization of ideas, including the internet, workbenches, brainstorming boards, and meeting rooms. DTBi provided a more focused environment for those with an ambition to grow their business by offering dedicated office space at a reasonable price. Together, Buni and DTBi reduced the barrier of entry for innovators and entrepreneurs in the field of technology entrepreneurship.

# CHAPTER TWO

## IMPACT ON STARTUPS - ENTREPRENEURS AND INNOVATORS CASES

The following is the list of businesses, products, and solutions that emerged from the hub co-founded by the graduates of the hub. The businesses were part of the Buni Hub and DTBI programs to support young entrepreneurs and early-stage businesses.

Case 1 | Lulu Ameir co-founded Bela Vendor at Buni Hub. She came to the hub as an internship program member. She was working on different projects with other students from other local universities before starting to work on her sanitary napkins (pad) vending machine. Currently, Lulu is a mature businesswoman running a business with multiple business partners both local and international. Lulu was also part of Buni Divaz, the female wing of Buni which was looking at improving the number of women in Buni programs.

<b>Founder and Startup Name</b> Lulu Ameir - Bela Vendor Tanzania	<b>Employment Created</b> 4 Employees	<b>Product (Service Offered)</b> Sanitary Napkins (Pads)Vending Machine
<b>Years of Operation</b> 4 Years	<b>Investment Raised</b> 25,000 USD (From DLI)	<b>Website and Links</b> <a href="https://dcli.co/impact-story/be-a-lady-vending">https://dcli.co/impact-story/be-a-lady-vending</a>
<b>Business Description</b> The official name of the company is LKJ company limited operating with the brand name Bela Vendor. The company offers MHM education as well as produces dispensing machines for sanitary napkins (pads) in schools.		<b>Link to Buni Hub (DTBI)</b> Lulu Ameir was part of the Buni Internship Program before she started her company and became part of the Buni Mentorship Program. Lulu was able to raise funds from DLI through DTBI.

Case 2 | Grayson Julius joined Buni Innovation Hub in 2012 with multiple ideas. He was part of the Buni Mentoring Program working on a startup African Fashion. A mobile application that was listing different African designers and providing access to clients to buy their products. Unfortunately, the application was not able to turn into a viable business. A few years later Grayson co-founded IPF Softwares as a software development company moving from a single product to an ICT solutions company. The startup has been very successful in developing applications for local, regional, and global clients.

<b>Startup Name</b> IPF Softwares	<b>Employment Created</b> 15+ Employees	<b>Product (Service Offered)</b> IPF Softwares offers ICT solutions. The company offers a range of services including applications and software development.
<b>Years of Operation</b> 4 Years	<b>Investment Raised</b> Undisclosed	<b>Website and Links</b> <a href="https://ipfsoftwares.com/">https://ipfsoftwares.com/</a>
<b>Business Description</b> IPF Softwares is a full-fledged software development house composed of a team of young and energetic software engineers, innovators, and designers focusing on developing digital solutions adopting human-centered design and entrepreneurial approaches.		<b>Link to Buni Hub (DTBI)</b> Grayson has been part of both Buni Hub and DTBI working with different companies such as MoView <sup>33</sup> a movie tickets company, African Fashion, and others. Grayson was a beneficiary of the Buni Mentoring Program and DTBI Pre-Incubation Program.

# CHAPTER TWO

## IMPACT ON STARTUPS - ENTREPRENEURS AND INNOVATORS CASES

Case 3 | Godfrey Magila was a beneficiary of DTBI from the beginning of his career. He was among the earliest members of the incubator. The incubator offered Godfrey and his team the opportunity to network and form a strategic partnership with local, regional, and international companies including the likes of Millicom (Tigo Tanzania), Airtel, and others. DTBI through COSTECH managed to introduce Godfrey to different public agencies where he was (is) able to offer solutions for different public agencies and institutions. Godfrey is one of the most notable successes from the two hubs.

<b>Startup Name</b> Magila Tech	<b>Employment Created</b> 15+ Employees	<b>Product (Service Offered)</b> MagilaTech is a Software Development and Cybersecurity company offering a range of services on systems design and protection.
<b>Years of Operation</b> 5+ Years	<b>Investment Raised</b> Undisclosed	<b>Website and Links</b> <a href="https://www.magilatech.co.tz/">https://www.magilatech.co.tz/</a>
<b>Business Description</b> Magilatech is one of the leading, innovative, impact-based software development and cybersecurity companies in Tanzania. The company creates high-tech products and secures cyberspace through infrastructure and application security. The company primarily offers solutions in Edu-tech, fintech, and telecommunication.		<b>Link to Buni Hub (DTBI)</b> Godfrey Magila and his team were the earliest incubatees of DTBI. The company has worked with the incubator since its establishment.

Case 4 | Michael Kimollo is a co-founder of Hype Interactive. He and his partner, Musa Kalokola were part of the Buni Innovation Hub in 2013-2015 part of the Buni Internship Program and Buni Mentoring Program. Before starting Hype Interactive Michael and Musa co-founded Soka App, a mobile application that provided real-time football match results covering the local leagues in Tanzania with a vision to scale the product in Africa. They worked on the product for more than 6 years before recently forming a partnership with a local media house Mwanaspoti.

<b>Startup Name</b> Soka App and Hype Interactive	<b>Employment Created</b> 5+	<b>Product (Service Offered)</b> Mobile and Software Applications for Businesses(B2B) and Consumer (B2C) solutions.
<b>Years of Operation</b> 5+ Years	<b>Investment Raised</b> Undisclosed	<b>Website and Links</b> <a href="https://hype.co.tz/">https://hype.co.tz/</a>
<b>Business Description</b> Hype Interactive is a company focusing on the power of beautiful user interfaces to create solutions that respond to the needs of the users through a user-centered approach. The business was co-founded by two youths, one outstanding graphics designer and the other outstanding software developer.		<b>Link to Buni Hub (DTBI)</b> Michael Kimollo is a co-founder of Hype Interactive. He and his partner, Musa Kalokola were part of Buni Innovation Hub in 2013-2015 part of the Buni Internship Program and Buni Mentoring Program.

# CHAPTER TWO

## IMPACT ON STARTUPS - ENTREPRENEURS AND INNOVATORS CASES

Case 5 | TIME Tickets was co-founded by three vibrant youths Josehat Mandara, Mwasapi Kihongosi, and Goodluck Akyoo. The company is one of the leading online ticketing platforms. They have been able to provide tickets to more than 100 events and to more than 13,000 people. TIME Tickets started at DTBI as part of the incubation program. The product was also a beneficiary of the TANZICT Innovation Fund for innovative business solutions. TIME Tickets currently is a product under the company Dephics Co. Limited, a company managed by the three founders of TIME Tickets.

<b>Startup Name</b> TIME Tickets	<b>Employment Created</b> 5+	<b>Product (Service Offered)</b> A digital ticketing platform for events and meetups.
<b>Years of Operation</b> 5+ Years	<b>Investment Raised</b> 10,000 USD +	<b>Website and Links</b> <a href="https://www.timetickets.co.tz">https://www.timetickets.co.tz</a>
<b>Business Description</b> TIME Tickets is a digital ticketing platform that is part of Dephics Co. Limited along with other products <i>WEZESHASasa</i> <sup>38</sup> and <i>Tausi Jukwaa</i> <sup>39</sup> . The company offers ICT solutions and ICT consulting services.		<b>Link to Buni Hub (DTBI)</b> The company was part of the DTBI Incubation program. They were also the beneficiaries of the TANZICT Innovation Fund offered by COSTECH and the TANZICT Project. Also, they were beneficiaries of the DLI Fund.

Case 6 | Ahadi Katera founded Guavay when he was finalizing his college degree at the University of Dar es Salaam. Ahadi Katera was part of the Buni Hub community Outreach Program and DTBI Incubation program. He was actively involved in projects such as Dare to Change Dar and the Hivos Energy Change (Safari) Lab. Ahadi is a serial entrepreneur who has started different businesses. He currently runs two businesses; Guavay and a pharmaceutical company.

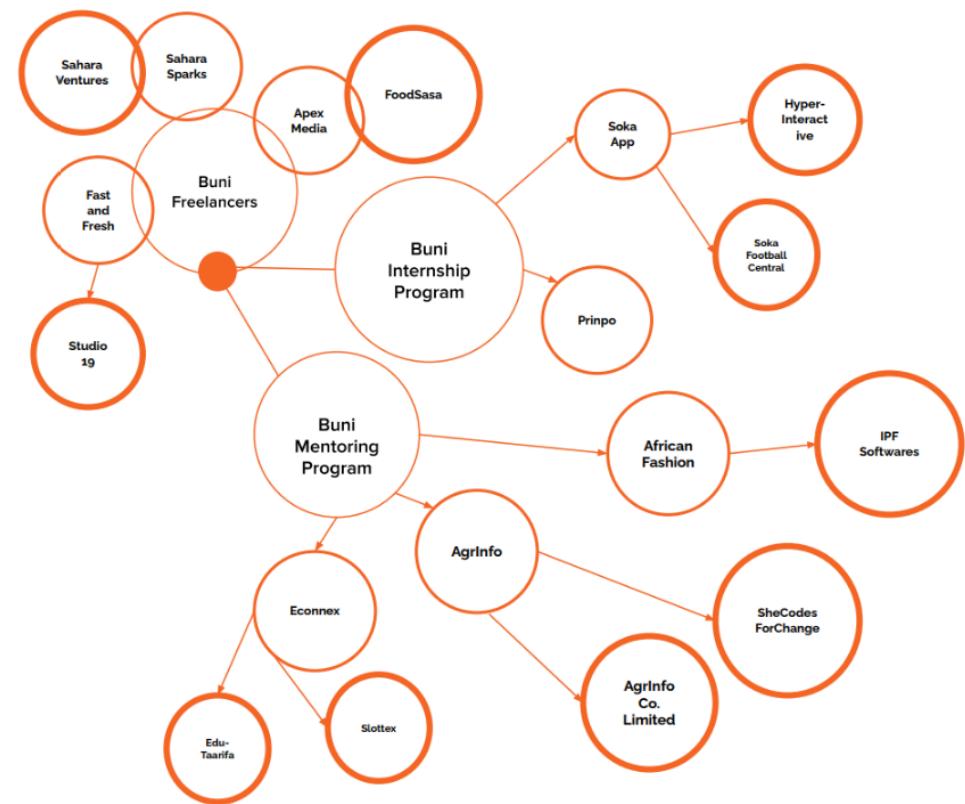
<b>Startup Name</b> Guavay	<b>Employment Created</b> 5+ people	<b>Product (Service Offered)</b> Organic Fertilizer
<b>Years of Operation</b> 5+ years	<b>Investment Raised</b> 100,000 USD +	<b>Website and Links</b> <a href="https://agriprofocus.com/organisation/guavay-company-limited">https://agriprofocus.com/organisation/guavay-company-limited</a>
<b>Business Description</b> Guavay is building local supply chains with existing waste collectors to utilize the huge fraction of bio-degradable waste from food markets, households and restaurants - vegetable scraps, food waste, wood chips, sawdust and other decomposable waste. The company has developed a scientific formula that uses bio-waste mixed with special nitrogen plant species to make nutrient rich organic fertilizer.		<b>Link to Buni Hub (DTBI)</b> Ahadi Katera started to engage with Buni Hub and DTBI when he was still a student. He was part of the DTBI Pre-Incubation program and Buni Hub Community Outreach Program

# CHAPTER TWO

## IMPACT ON STARTUPS - RELATIONSHIP MAPS

The relationship map shows the relationship between the entrepreneurs and the two hubs. The map shows how the entrepreneurs emerged from the different programs offered by the hubs and how they went on to establish successful businesses in the ecosystem.

Relationship Case 1 | Buni Internship and Mentoring Program - the internship program and the mentoring program were part of the core programs Buni Hub offered; the Community Outreach Program, The Internship Program, The Mentoring Program, and The Makerspace. Buni also offered a space for freelancers. The diagram below shows the primary (normal circles) and secondary (bolded circles) impact of Buni Hub programs. This is for a small group of selected entrepreneurs.

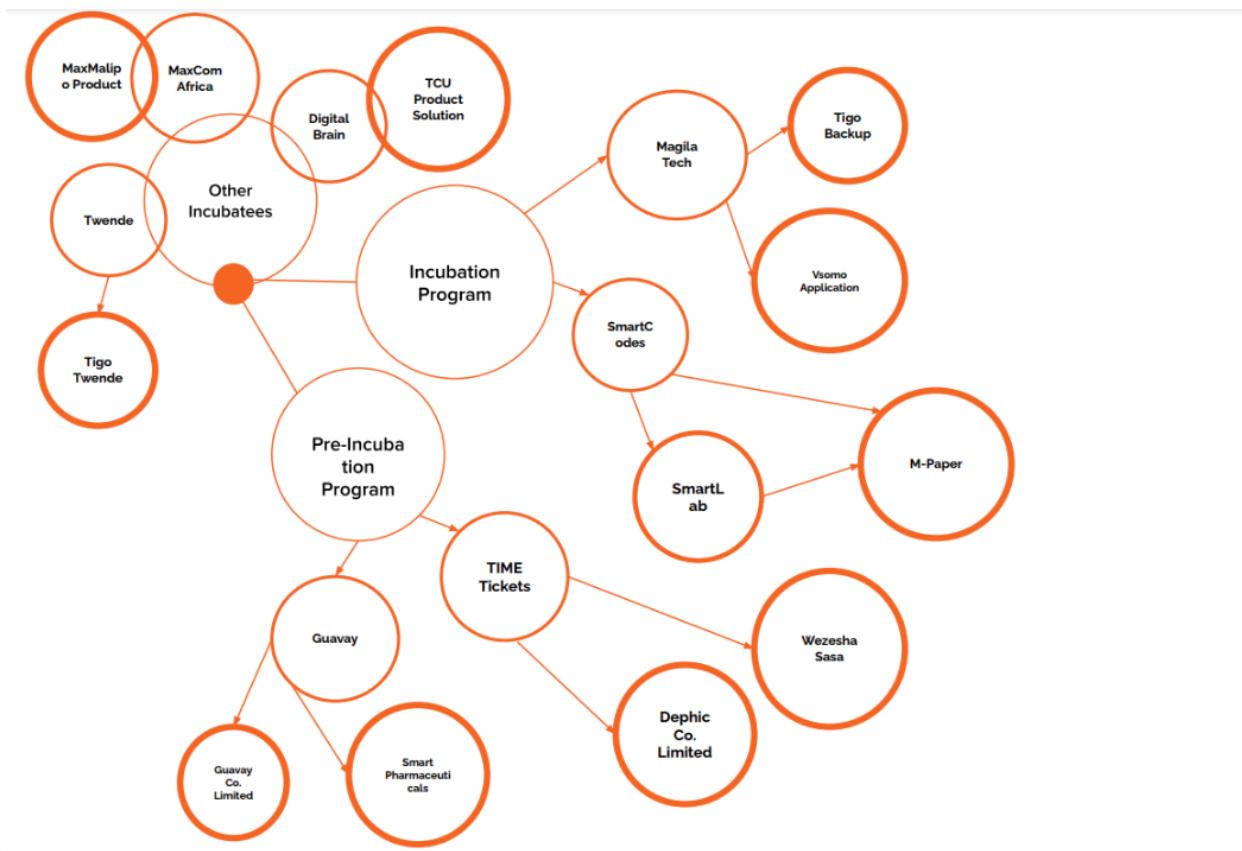


The Buni Freelancers support program is where companies such as Sahara Sparks, Fast and Fresh, and Apex Media were born as part of so many other startups that used the space. The second generation of these companies influenced the establishment of companies such as Sahara Ventures, Food Sasa, and Studio 19. The founders of these companies were the same founders who benefited from Buni Hub Programs. Buni Mentoring Program supported companies such as Edu Taarifa, AgrInfo, and African Fashion App. The founders of these companies went ahead and formed second-generation startups such as AgrInfo Co. Limited, SheCodesForChange, IPF Softwares, and others.

# CHAPTER TWO

## IMPACT ON STARTUPS - RELATIONSHIP MAPS

Relationship Case 2 | DTBI Incubation and Pre-Incubation Program - the Incubation and Pre-Incubation Programs were part of the core programs DTBI offered; the pre-incubation program, the startup program, and incubation program. DTBI offers these services through virtual and physical programs. The diagram below shows the primary (normal circles) and secondary (bolded circles) impact of DTBI pre-incubation and incubation programs. This is for a small group of selected entrepreneurs.



The DTBI incubation program included early-stage businesses such as Magila Tech and Smartcodes. These companies went ahead and founded products such as Vodacom M-Paper, Tigo Backup, Vsomo, and the accelerator SmartLab. The Pre-Incubation program had companies such as Guavay, TIME Tickets, and others that went ahead and consolidated themselves into established businesses such as Guavay Limited Co. and Dephic Co. Limited. The first generation of the businesses incubated and pre-incubated by DTBI influenced the second wave businesses of ICT consulting and development firms in Tanzania. Some of these might have not been documented but their roots can be traced back to DTBI through founders and entrepreneurs involved with the businesses.

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS

Beyond impacting and supporting young entrepreneurs, Buni and DTBi were also established as pilot projects to study the innovation hubs and incubator approach in Tanzania. The two hubs have played a crucial role as a centre of knowledge and experience in running and managing innovation spaces in Tanzania. The hubs have been a source of human and other resources for new innovation hubs in the country. For example, a significant number of those who work in the innovation ecosystem in Tanzania have engaged with the two hubs before, including people who are working in corporate setups, innovation spaces, the public sector, and academic institutions.

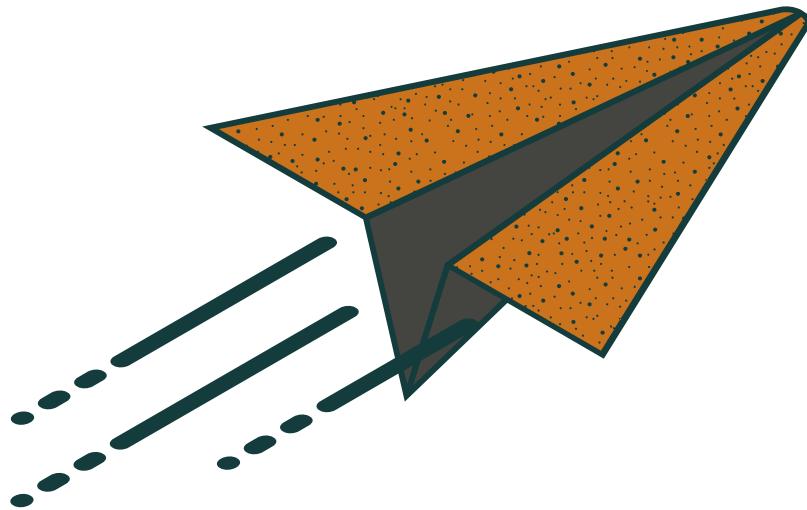
Buni and DTBi have played a crucial role in supporting other innovation hubs with sustainability plans through technical support in strategy development and community engagement. Different training offered at the hubs and outreach programs to build the capacity of the hubs has helped the hubs to work on their business models and rethink their value proposition to ensure they remain relevant in the ecosystem. Buni and DTBi have also played a crucial role in helping other innovation hubs establish strategic partnerships with local and international organizations looking to work with hubs at a grassroots level. For example, projects such as Hatua Project engaged with hubs such as Elimu Lab Sengerema, the ReFab Dar project worked with UDICTI Incubator and STICLab, and Data for Local Impact Innovation Challenge (DLI) which worked with almost all sub-national hubs



to recruit innovators. In addition, projects such as Seed Stars from Switzerland was able to establish Seedspace DSM whereas the Sahara Sparks event inspired the formation of the Sahara Ventures group. Buni and DTBi helped expose sub-national innovation hubs to regional and global partners looking to work with hubs outside Dar es Salaam. Most of these hubs are still engaged with Buni and DTBi for further partnership and support. Buni and DTBI have influenced professions to create a new niche career such as Innovation Experts, Innovation Hub Manager, Incubator Manager, Community Manager, Coaches, etc., which were new to the ecosystem. The two hubs conducted mentorship, training, and support programs e.g. Training of Trainers (ToT) for innovation hub managers; sharing of tools, manuals and frameworks have helped other hubs to tap into these resources without having to do a lot of work. A significant number

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS



of people who work as hub managers, incubator managers, startup coaches, etc., have learned from the two hubs earlier on in their careers. Figure 22 and Figure 23 shows the influence of Buni Innovation Hub on individuals running or managing innovation hubs. All of them at some stage in their career have engaged with either Buni Hub, DTBI, or both. Buni Innovation Hub and DTBI played a crucial role in supporting the innovation hubs to build and establish sub-national innovation ecosystems. For example, the ecosystem in Iringa became very vibrant after the emergence of Rlabs Iringa and Kiota Innovation Hub. More activities and ecosystem services were established, innovation events were organized and there was more involvement of academic institutions. These sub-national innovation ecosystems that are championed by innovation hubs are seen in other places also like the support of DTBI in the university of Dodoma encouraged the formation of in-campus innovation hubs and encouraged more students to develop an interest in innovation and entrepreneurship.

Innovation Hubs supported by the two hubs have played a crucial role in empowering youths and creating direct and indirect employment opportunities. Over 40 percent of the hubs participating in the survey responded to have employed between 5-10 people who are running and managing the innovation space, see Figure 24. It is estimated the number of innovation hubs in Tanzania in 2017 increased by 100 percent with new hubs emerging from across the country. In Dar es Salaam alone, there are more than 30 co-working spaces and innovation hubs targeting innovators and entrepreneurs from different backgrounds and fields. These hubs reach between 10-3000 community members depending on the nature of the program. For instance, growth-stage incubators support few beneficiaries due to resource constraints and the small number of growth-stage businesses whereas early-stage innovation hubs support larger groups because of the nature of the programs since they can be offered in groups.

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS

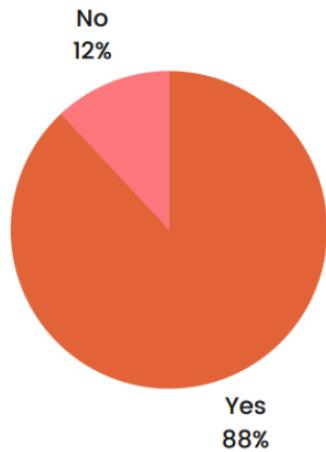


Figure 22 | Have You Been A Registered Member of Buni Hub

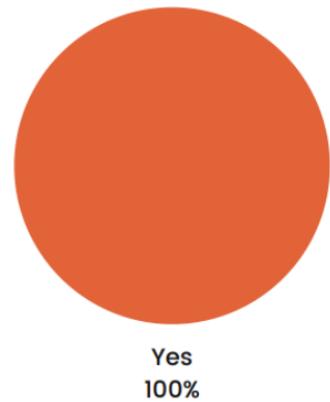


Figure 23 | Have You Been A Registered Member of DBTI

Buni through the TANZICT Project and programs such as TAFFIN played a crucial role in nurturing talents and ensuring skills transfer between advanced innovation hubs in Europe and hubs in the local innovation ecosystem in Tanzania. From the TAFFINN program founders of innovation hubs and individuals working to support entrepreneurship through entrepreneurship centres (incubators and accelerators) had the chance to visit and learn programs and activities and gain experience in running and managing the hubs. Some of the hubs who benefited from the program include; RLabs Iringa, Kinu Innovation Hub, Kiota Innovation Hub Iringa, and University of Dar es Salaam ICT Incubator.

These programs are what build the foundation for innovation hubs that are seen today emerging in the ecosystem and individuals such as Johnpaul Barreto, Yusuf Sessanga, Christina Mwase, Dr Fatma Simba and others are champions of innovation in their own respective fields; Innovation Consulting, Grassroots Innovation, University Innovation Programs, etc. Buni and DTBI played a crucial role in creating human resources to run and manage innovation hubs in the ecosystem. In recent years, the hubs have been perceptive towards the support and capacity building they received from Buni Hub and DTBI through different interventions. These include the "Buni Hub of Hubs" program for managers.

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS

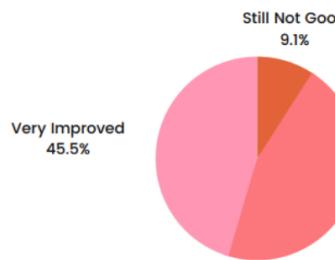
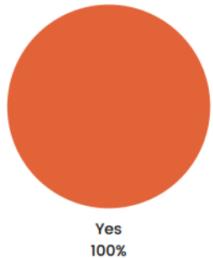


Figure 24 | Improving Quality of Your Activities or Programs Through The Support from Buni Hub

Figure 25 | Business and Technical Skills After Capacity Building From Buni Hub and DTBI

Figure 26 | Ability to Build Partnerships and Network After Buni Hub and DTBI Capacity Building

Buni and DTBi have also played a crucial role in helping other hubs raise funds and establish strategic partnerships with funders. From the early days of TANZICT and most recently through the Human Development Innovation Fund (HDIF) partnership with COSTECH, hubs have benefited from seed grants (10,000 USD - 100,000 USD) to finance their programs and activities. Most of these hubs primarily depend on grants as their major means of funding their activities and programs. From the hubs engaged in this report, some of their funders include; HDIF (UKAID), USAID, COSTECH, Segal Family Foundation, etc. Figure 27 below shows how the hub access finances to run their activities, Figure 28 on whether they have been able to raise or not, and Figure 29 shows the type of dunning accessed. This shows most of the hubs heavily rely on grants to run their operations.



# CHAPTER THREE

## IMPACT ON INNOVATION HUBS

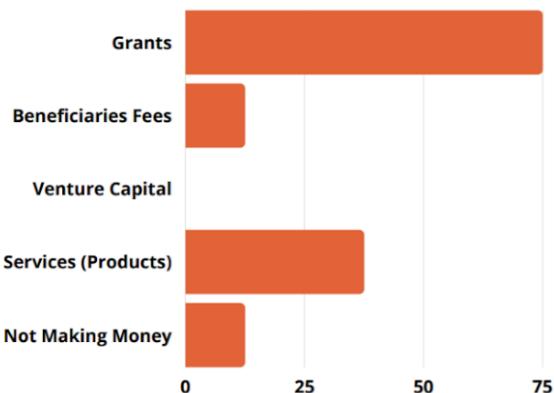


Figure 27 | How is Your Hub Making Money For Daily Operations



Figure 28 | Have You Ever Been Able to Raise Funds For Your Hub

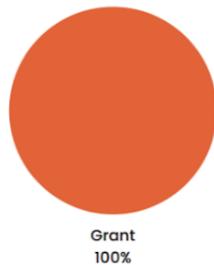


Figure 29 | Loan or Grant

Buni and DTBi played a crucial role in making the concept of innovation hubs more credible and appealing to the local universities. Through the TAFINN exchange program that primarily targeted academics. Academicians from Tanzania were introduced to the concepts of third-generation universities and see practically how universities embrace innovation and entrepreneurship. For example representatives from Nelson Mandela Africa Institute of Science and Technology (NM-AIST), Institute of Finance Management (IFM), College of Business Education (CBE), University of Dar es Salaam, Iringa University, State University of Zanzibar (SUZA), and other institutions benefited from this program. It also led to the establishment of hubs and in-campus innovation communities in the universities. In recent years there has been a developed interest from universities to establish on-campus innovation hubs.

Buni and DTBi played an important role in influencing the policies and pushing the agenda of innovation in the country. Buni and DTBi played a role as study projects for policymakers to learn and understand the impact of innovation hubs in addressing community problems and creating employment opportunities for Tanzanian youths. Before the two hubs more emphasis was on science and technology and there was no much information about innovation ecosystem in Tanzania. The existing public document that was talking about innovation was the National Science and Technology Policy of 1996 and a few academic publications. Through reports that were generated by Buni and DTBi on the influence of the two hubs, more emphasis on discussions around innovation emerged. Companies such as Maxcom Africa received Presidential accolades for their achievement which attracted a lot of policymakers to develop a

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS

an interest in the sector. Buni and DTBi also facilitated and hosted policy-related discussions with different stakeholders. Indirectly, beneficiaries of the two hubs are also sitting in strategic positions influencing policies through organizations. Figure 30 below shows Buni and DTBi's beneficiaries' involvement in policy activities related to innovation hubs and the innovation ecosystem at large.

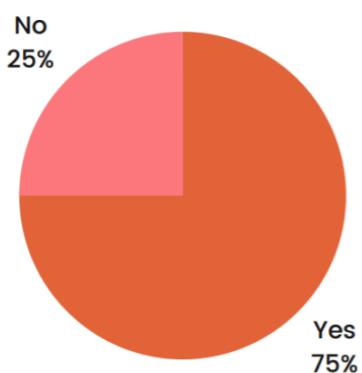
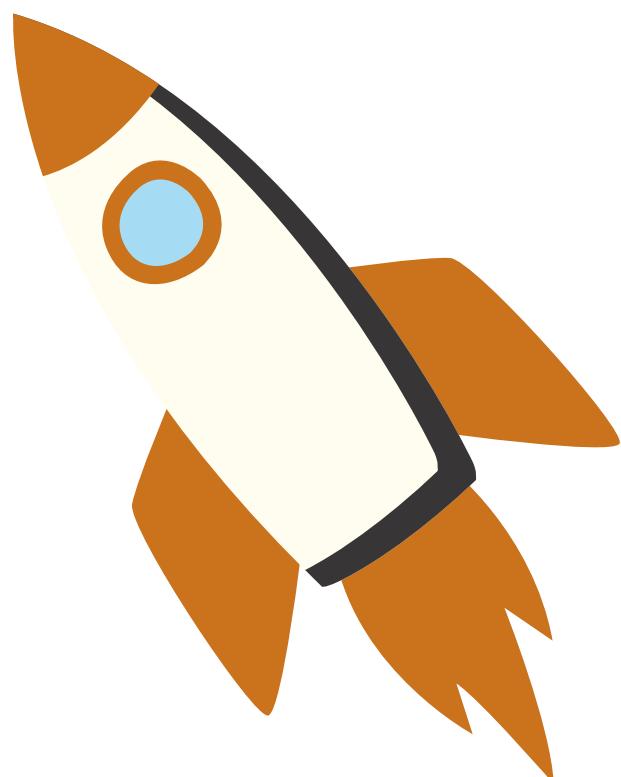


Figure 30 | Have You Been Involved in Any Initiative to Influence Policy or Policymakers About Hubs or Innovation?



In general, the decision to establish Buni and DTBI was a strategic decision that influenced the formation and growth of other innovation hubs. The two hubs being open and owned by the government created opportunities for anyone with the potential to access the services. This is for both community members of the hubs and institutions that were learning best practices to run the hubs.

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS - HUBS CASES

The following is the list of innovation hubs (hubs, labs, incubators, makerspaces, etc) that emerged from the hub co-founded, co-founded by the hub graduate, or influenced by the support of the hub. The innovation hub might not have been established by COSTECH, Buni, or DTBI but human and other resources might have been adopted or supported by the two hubs.

Case 1 | Kiota Innovation Hub was established within the campus of Iringa (Tumaini University) supported by the TANZICT Innovation Program replicating the Buni Innovation Hub program in an academic setup. The hub was part of the Tanzania Innovation Program (TIP) program of TANZICT to support the establishment of the innovation hubs. Other beneficiary hubs of this program included; RLabs Iringa, Zanzibar Innovation Space, Mbeya Living Lab, Elimu Lab Sengerema, etc. Some of these hubs/labs still operate and some are no longer working.

<b>Hub Name</b> Kiota Innovation Hub	<b>Youths Served</b> 1000+	<b>Product (Service Offered)</b> Supporting ideas and innovation from students and staff of the Iringa University through mentoring and other support programs.
<b>Years of Operation</b> 5+ Years	<b>Sector</b> Multiple Sectors	<b>Website and Links</b> <a href="https://www.linkedin.com/company/kiota-hub">https://www.linkedin.com/company/kiota-hub</a>
<b>Hub Description</b> Kiota Innovation Hub is an innovation hub within the campus of Iringa (Tumaini) University building capacity and developing skills of the university students and staff to come up with innovative ideas and nurture the culture of innovation.		<b>Link to Buni Hub (DTBI)</b> The capacity building of the hub was done by Buni Hub and the funding support of the hub came from the TANZICT Project.

Case 2 | SmartLab is an innovation platform that links learning institutions with corporate partners to empower groundbreaking solutions that will impact communities. The hub was founded by the founder of Smartcodes, Edwin Bruno who was the beneficiary of the DTBI incubation program. The hub is one of the most active members of the ecosystem offering different programs and partnering with different stakeholders. The most recent notable achievement of the hub is the program Vodacom Accelerator in which they co-implemented in partnership with Vodacom Tanzania.

<b>Hub Name</b> SmartLab	<b>Youths Served</b> 100+	<b>Product (Service Offered)</b> Acceleration of business ideas and products from youths by collaborating with academic institutions and corporates.
<b>Years of Operation</b> 3 Years	<b>Sector</b> Primarily Mobile and Fintechs	<b>Website and Links</b> <a href="https://smartlab.co.tz/">https://smartlab.co.tz/</a>
<b>Hub Description</b> SmartLab is an innovation platform that links learning institutions with corporate partners to empower groundbreaking solutions that will impact communities.		<b>Link to Buni Hub (DTBI)</b> Edwin Bruno and his team were the earliest beneficiaries of the DTBI. The knowledge on running and managing the accelerator and incubator program was gained from Buni Hub and DTBI.

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS - HUBS CASES

Case 3 | Sahara Accelerator is a corporate-sponsored and venture-backed accelerator program targeting businesses looking for growth-stage financing. The accelerator is part of the Sahara Ventures group which includes sister companies Sahara Sparks and Sahara Consult. The founders of the three companies were once part of the management team of Buni Innovation Hub. The team learned to run and manage the startup accelerator and incubator program from Buni Hub and DTBI.

<b>Hub Name</b> Sahara Accelerator	<b>Youths Served</b> 2000+	<b>Product (Service Offered)</b> Acceleration and Investor Readiness Program for startups and SMEs looking to raise grants and commercial investments.
<b>Years of Operation</b> 3 Years	<b>Sector</b> Multiple Sectors	<b>Website and Links</b> <a href="https://saharaventures.com/sahara-accelerator">https://saharaventures.com/sahara-accelerator</a>
<b>Hub Description</b> Sahara Accelerator		<b>Link to Buni Hub (DTBI)</b> Jumanne Mtambalike and his team co-founded <i>Sahara Accelerator</i> , part of the Sahara Ventures group. The team behind the accelerator was all part of the Buni Hub management team. The knowledge and experience to run and manage the accelerators they gained from Buni Hub and DTBI.

Case 4 | STIC Lab was a makerspace established by the late Mr. Stanley Mwalembe who was a lecturer at the Dar es Salaam Institute of Technology (DIT) hence the name Stanley Mwalembe Innovation Center (STIC) Lab. The center was primarily just a traditional workshop with people doing metal and woodworks. After the establishment of Buni Makerspace and the Refab Dar, the center transformed itself into a knowledge center for additive manufacturing and started to produce 3D printers. Up to today it is the only place with people with deep knowledge and expertise on additive manufacturing and digital fabrication.

<b>Hub Name</b> STIC Lab	<b>Youths Served</b> 2000+	<b>Product (Service Offered)</b> Additive Manufacturing and Digital Fabrication
<b>Years of Operation</b> 5+ Years	<b>Sector</b> Digital Fabrication	<b>Website and Links</b> <a href="https://www.sticlab.co.tz">https://www.sticlab.co.tz</a>
<b>Hub Description</b> STIC Lab is a digital fabrication lab and a makerspace based in Kitunda working on digital fabrication and additive manufacturing.		<b>Link to Buni Hub (DTBI)</b> STIC Lab was transformed after the establishment of <i>Buni Mini Makerspace</i> and the <i>Refab Dar</i> <sup>50</sup> . The center transformed itself into the knowledge center for additive manufacturing and started to produce 3D printers.

# CHAPTER THREE

## IMPACT ON INNOVATION HUBS - HUBS CASES

Case 5 | Data Lab the Tanzania Data Lab (dLab), as a non-governmental organization, was formed in June 2018 as a progression of the three successful projects named; Tanzania Data Lab (dLab), Data Zetu, and Data for Local Impact Innovation Challenge (DLIIC). COSTECH through DTBI and Buni Hub played a crucial role in the successful implementation of the project through human resources and office space. DLI was partially hosted at DTBI and most of the applicants of the innovation fund were from Buni and DTBI.

<b>Hub Name</b> Data Lab	<b>Youths Served</b> 2000+	<b>Product (Service Offered)</b> The dLab is at the forefront of building a data-driven ecosystem in Tanzania – at a national level and among individuals - by working concurrently to augment the demand for data, increase the supply of it, and improve local technical capacity.
<b>Years of Operation</b> 5 Years	<b>Sector</b> Data Science	<b>Website and Links</b> <a href="http://www.devex.com/organizations/tanzania-data-lab-dlab-136254">www.devex.com/organizations/tanzania-data-lab-dlab-136254</a>
<b>Hub Description</b> The Tanzania Data Lab is a data science hub in Dar es Salaam that has come out of a partnership between the Millennium Challenge Corporation (MCC) and the United States President's Emergency Plan for AIDS Relief (PEPFAR). dLab is at the forefront of building a data-driven ecosystem in Tanzania.		<b>Link to Buni Hub (DTBI)</b> COSTECH through DTBI and Buni Hub played a crucial role in the successful implementation of the project through human resources and office space.

Case 6 | Seedspace was not established by Buni Hub or DTBI but the original Tanzania support team was led by Maryam Mgonja who was part of the Buni Hub management team. Later on, Mohammed Shellimoh who is also a direct beneficiary of Buni Hub through Kiota Innovation Hub joined the Seedspace team in Tanzania. Buni Innovation Hub and DTBI provided an opportunity for new hubs to hire skilled individuals to run and manage the newly emerging innovation space. Maryam is currently working at Ifakara Innovation Hub as a Director.

<b>Hub Name</b> Seedspace	<b>Youths Served</b> 2000+	<b>Product (Service Offered)</b> Additive Manufacturing and Digital Fabrication
<b>Years of Operation</b> 3+ Years	<b>Sector</b> Coworking	<b>Website and Links</b> <a href="https://www.seedspace.co/en/co-working/dar-es-salaam/">https://www.seedspace.co/en/co-working/dar-es-salaam/</a>
<b>Hub Description</b> A startup hub and co-working space based in Dar es Salaam. Seedspace is part of the global network of startup hubs and co-working spaces.		<b>Link to Buni Hub (DTBI)</b> Some of the individuals who worked with the original team of the Seedspace worked at Buni Hub and they were exposed to the innovation ecosystem through the two hubs.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM

Buni Innovation Hub and DTBI have been playing a crucial role in supporting the growth of the innovation and technology entrepreneurship ecosystem in Tanzania. In 2017, Buni Innovation Hub was identified by the World Bank as the core (hotspot) of the Dar es Salaam Startup Ecosystem in the report Tech-Startup Ecosystem in Dar es Salaam. Even though the report categorized the ecosystem to be at its nascent stage it was clear the biggest champion of its growth is Buni Innovation Hub and the University of Dar es Salaam. DTBI has been playing a crucial role in linking the corporate sector to the startup ecosystem in Tanzania working with banks, Mobile Network Operators (MNOs), and international companies such as Microsoft, IBM, and others.

Buni Innovation Hub and DTBI have been acting as an anchor of the ecosystem linking different key stakeholders of the ecosystem together in a more productive way. The two hubs are working with universities (and research agencies), international agencies, the corporate sector (banks, telcos, etc), the public sector, investor networks, etc. The two hubs have been the landing page and a gateway into the Tanzanian innovation and technology entrepreneurship ecosystem. Most of the programs to support innovators and entrepreneurs in the country were initially piloted or at least kick-started at the two hubs. These projects include; RefabDar, Negawatt Challenge, Human Development Innovation Fund (HDIF), Data For Local Impact Innovation Fund, etc.

**Impact On Academic Institutions**  
Buni Innovation Hub and DTBI Played an Important Role in Accelerating Tanzania's Universities Efforts Towards The Third Generation Universities By Encouraging Universities to Adapt Innovation and Entrepreneurship Programs Through In-Campus Hubs and Other Programs.

**Impact on The Development Partners**  
Buni Innovation Hub and DTBI Played an Important Role Accelerating Development Partners Involvement in Supporting The Ecosystem Through Different Innovation For Impact Programs.

### Impact on Private Sector

Buni Innovation Hub and DTBI Played an Important Role in Engaging The Corporate Sector in Tanzania to The Innovation Ecosystem. Banks, Telcos, and Other Firms Were Engaged to The Ecosystem Through Activities Carried By The Two Hubs.

**Buni Innovation Hub and DTBI at The Core of The Tanzania Innovation Ecosystem.**  
The Two Hubs Have Played an Important Role Linking Together Different Players of The Innovation and Technology Entrepreneurship Ecosystem in Tanzania

**Impact on Other Ecosystem Enablers**  
Buni Innovation Hub and DTBI Played an Important Role in Supporting Other Ecosystem Enablers; Hubs, Accelerators, Incubators, Events, etc for Further Growth of The Ecosystem. The Two Hubs Have Influenced Formation of Hubs Across The Country.

### Impact on Civil Society

Buni Innovation Hub and DTBI Played an Important Role to Introduce Local, Regional, and Global NGOs and CSOs to The Tanzanian Innovation Ecosystem. The Two Hubs Also Paved a Way For Number of Projects Around Innovation For Social Good Through These Strategic Partnerships.

**Impact on The Government**  
Buni Innovation Hub and DTBI Played an Important Role in Promoting Innovation in The Country and On Addressing The Issue Unemployment Among Youths. The Innovators From The Two Hubs Have Developed Solutions For Different Public Agencies.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM

Buni Innovation Hub and DTBI played a crucial role in establishing and supporting community events that created a spark of interest from youths in innovation, technology, and entrepreneurship. Events such as Buni Talk, Mobile Monday Dar, Startup Grind, Dar Developers Dash, etc were the first events to be organized in the Tanzania innovation ecosystem. These events opened the door for the events and activities that are happening right now such as HDIF Innovation Week, Sahara Sparks, and Bits and Bytes. These events are what link the ecosystem in Tanzania to other ecosystems in Africa, promoting what is happening in the ecosystem, as well as bringing together the ecosystem partners. The founders of these events in one way or the other have worked or engaged with Buni Innovation Hub or DTBI at different stages of starting, executing, and scaling their activities.

Buni Innovation and DTBI have been playing a crucial role in supporting the growth of the innovation and technology entrepreneurship culture within the academic institutions. DTBI runs a series of sessions in different universities across the country, especially the University of Dodoma, to identify and support youths with innovative ideas as part of their final year projects. Buni Innovation Hub through the Buni Hub Internship Program, the hub worked with over 600 students from more than 10 universities to help them develop entrepreneurial and problem-solving skills.



Buni Hub piloted communities of innovators in four campuses at the University of Dar es Salaam, St. Joseph College of Engineering, Institute of Finance Management (IFM), and Dar es Salaam Institute of Technology (DIT). These communities were the engine to generate new innovators who established successful startups such as Soka App. Graduates of this program are the founders of some successful startups and entrepreneurial programs in the ecosystem. For Example, Paul Mandele from the third round of the program became a crucial member of the management of the hub, Emmanuel Justine from the second batch currently is the Accelerator Manager, of Sahara Accelerator, and Michael Kimollo from the first batch is the Co-founder of Hyper-Interactive. The two hubs have been linking the innovation and technology entrepreneurship ecosystem to the government and policymakers. They have been the “sandbox”, a place for the government to learn how innovators, tech-enthusiasts, and entrepreneurs work and operate to design and support a friendly environment for Tanzanian youths operating in the sector.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM



Buni Hub and DTBI have been a go-to place for politicians and policymakers who are looking to understand the innovation ecosystem in Tanzania including how to design policies and regulations that favours young entrepreneurs in the country.

The two hubs have been a place to test and adopt new technologies in the ecosystem. Buni Innovation Hub was the first place to test and deploy technologies such as 3D-Printing, Drone Technologies, IoT Solutions, etc. Graduates of Buni Innovation Hubs worked in startups such as Prinpo, a startup that looked on how 3D printing solutions, ColiFly, a startup that was involved in drone technologies, AgriInfo, adopting drone technology to solve and address land conflicts, and Victronix, a startup that developed and designed a number of IoT solutions. It is unfortunate that some of these startups are no longer operating but their impact has been witnessed in the second generation startups that work in the same areas. Startups such as Agritech, using IoT technologies in the agriculture sector, and Robotech Lab, which adopt different IoT, 3D printing, and Robotics.

The knowledge, exposure and foundation gained from the two hubs have helped individuals to start their own programs.

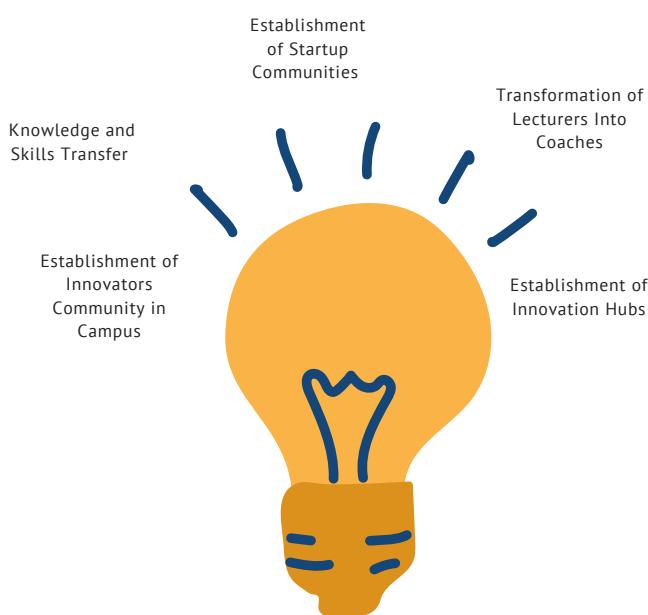
Buni Innovation Hub and DTBI have been hosting programs and activities designed and implemented by different partners of the ecosystem; local, regional, and global. Programs such as Coder Dojo, Nokia Mathematics, Apps and Girls, SheCodesForChange, AfriMakers, and others were all once hosted or implemented at Buni Hub and DTBI. These programs opened up the door for new programs of the same kind such as Projekt Inspire, Coders and Makers, Mitz Kits Program, and others that currently happen in the ecosystem. All these programs and interventions are carried out mostly by former members of Buni Hub and DTBI.

Buni Innovation Hub and DTBI played a crucial role in nurturing and hosting communities of innovators, entrepreneurs, and tech-enthusiasts. Communities such as Dar Google Technology User Group, Rail Girls (Enthusiasts on Ruby Computer Language), Mozilla Community, Tanzania Social Entrepreneurship Community, FemTanz, (an initiative to support women-led businesses), etc. Even though some of these communities are no longer operational, they opened up the door for new communities of tech-enthusiasts, innovators, and entrepreneurs such as; SheFound (an initiative to support women-led business), Tanzania Blockchain Community, Tanzania AI Lab, Python Tanzania, SiliconDar, and others. These communities of practice are what drive the changes and transformation we are witnessing in Tanzania's innovation ecosystem.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - ACADEMIC INSTITUTIONS

Buni Innovation Hub and DTBI had a great impact on academic institutions directly through programs such as the TAFINN exchange programs and indirectly through communities of innovators and entrepreneurs operating on campus. Buni Hub through TANZICT program worked to establish programs to support innovators and entrepreneurs at universities such as the State University of Zanzibar, Tumaini (Iringa) University, Mbeya University of Science, and Technology (MUST), Nelson Mandela Africa Institute of Science and Technology (NM-AIST) and others. Even though only one university, Tumaini (Iringa) University was able to start the hub, Kiota Innovation Hub, the rest of the institutions were left with knowledge and exposure on how to start and run on-campus innovation programs that we see currently are being implemented by beneficiaries of programs such as TAFINN Exchange Program.



Summary Impact on Academic Institutions

Through the internship program, Buni Innovation Hub worked with 70 students from St. Joseph College of Engineering. The students were recruited through the university outreach program. Students went through the same process as the students from the University of Dar es Salaam and this was the birth of the startups such as *Weledi, Follow, and Prinpo* which later on moved to the Buni Mentoring Program, a program which was designed to support students who wanted to further transform their projects into startup companies.

Through the university outreach program, Buni Innovation Hub worked with the University of Dar es Salaam ICT Students Community (UDICTC) to recruit students with ideas and projects to take part in the Buni Hub internship program. More than 200 students from the University of Dar es Salaam took part in the program. From the program companies such as Soka App, Usidumae, etc emerged from the program. The internship program also worked with students from the University of Dar es Salaam Industrial Engineering Students Organization (UDIEMSO) to support them on their projects in partnership with an initiative called Dare to Change Dar which was piloted by students from Cambridge University. The Dare to Change Dar program saw the emergence of the startup Guavay founded by Ahadi Katera which is still operational.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - ACADEMIC INSTITUTIONS

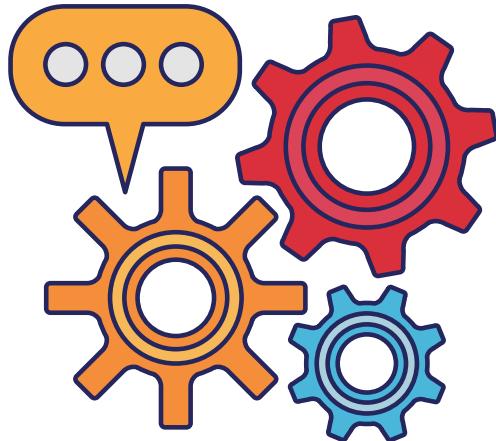


Through the TANZICT Coaching program hosted at Buni Hub for lecturers and experts, different lecturers and experts got the chance to be introduced to the concept of coaching. The aim of the concept of coaching was to introduce the academic lecturers to ways to work and engage with entrepreneurs in the academic setup. Representatives from 6 academic institutions took part in the program. The program also introduces the lecturers to the concept of team entrepreneurship "TiimiAkatemia", an approach adopted to train students entrepreneurship in an academic setup. This program was very important for new on-campus innovation hubs since academic lecturers were now able to support entrepreneurs on campus.

Buni Innovation Hub and DTBI provided knowledge, experience, human resources, and materials needed by other innovation hubs in the ecosystems. On-campus innovation hubs enjoyed the existing experience of Buni Innovation Hub and DTBI adopting the approaches and tools of the two hubs to design and implement their own innovation hub. Buni Hub hosted a series of training to lecturers and staff of academic institutions to explain to them the Buni Hub and DTBI model and ways they can adopt some of the programs to their own academic setups. This experience was very crucial in giving these institutions a place to start with their own hubs. It also helped them to define their programs, build their community, and to work on their overall strategies.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - PRIVATE SECTOR



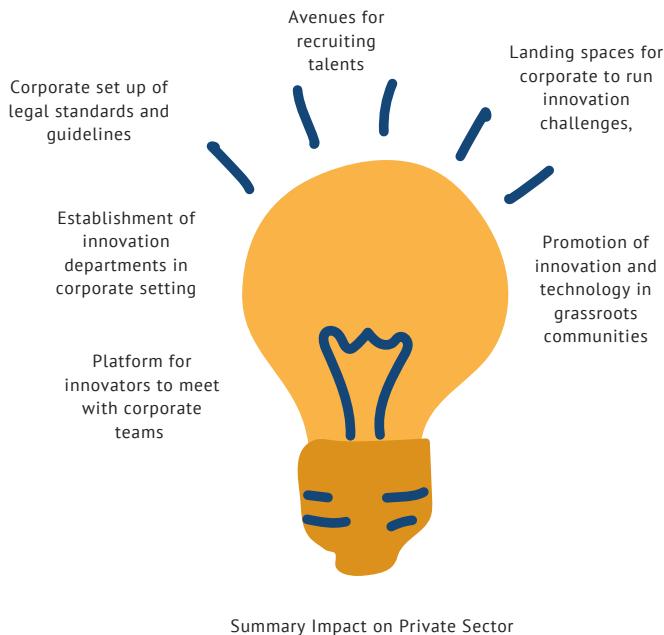
Buni Innovation Hub and DTBI played an important role in engaging the private sector in the innovation ecosystem. In the early days of the ecosystem, there was less involvement of private companies. Telecom companies and banks have recently actively engaged in boosting innovation. DTBI efforts to engage Mobile Network Operators (MNOs) in the management of DTBI and nurturing strategic partnerships with startups encouraged more involvement of the MNOs to the ecosystem. Programs such as Vodacom Accelerator, etc are follow-up programs from the programs that DTBI carried with Airtel and Tigo in the early days of the growth of the ecosystem.

DTBI opened up the door for startups to work with corporate setting up legal standards and guidelines on these kinds of relationships that can be established. Beneficiary companies such as MagilaTech and Twende benefited from these legal procedures when establishing their partnerships. MagilaTech's Tigo Backup and Twende's Tigo Twende, Both enjoyed the support of DTBI when negotiating partnerships with the MNOs, DTBI ensured the interests of the startups are well considered as well as the interests of the corporate companies.

Buni Innovation Hub and DTBI influenced the trend of corporate companies in Tanzania to establish internal departments of innovation. In recent years the companies have started to hire individuals to run and oversee innovation within their companies. Banks such as NMB and CRDB have dedicated offices that deal with innovation adoption and implementation. These organizations have also benefited from talents that emerged from Buni Hub and DTBI. For example the former member of the Buni Management team, Jacqueline Dismas works with NMB in their innovation department. Buni Innovation Hub and DTBI influenced technology transfer between startups and corporates and encouraged different movements that opened the door for innovation. For example, Buni Innovation Hub hosted hackathons on open innovation technologies such as Open APIs adoption and integration between MNOs and startups. GSMA in partnership with Buni Hub conducted workshops to promote the Open API concept which encouraged companies to open up their platforms to innovate to engage with their solutions. This also encouraged the trend of opening up the API. For example companies such as Vodacom, Tigo and Airtel made their API available for the general public. Buni Innovation Hub and DTBI provided a platform for corporate companies to recruit and acquire talents for their businesses. Companies used to come to Buni Hub and design innovation challenges to recruit talents. Companies such as Squad Digital and SCANAD used Buni Innovation Hub to recruit Graphic Designers and Developers for their teams.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - PRIVATE SECTOR



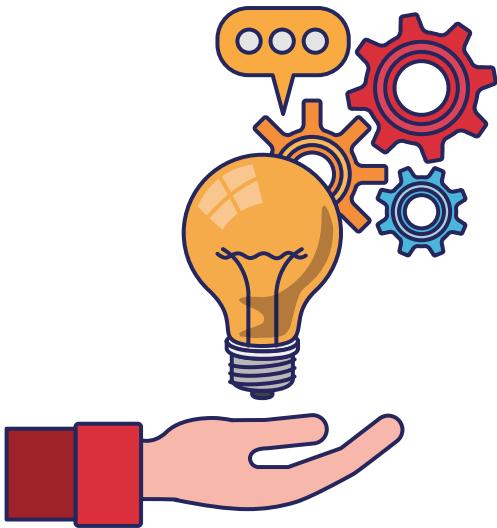
Buni Innovation Hub and DTBI offered opportunities for them to recruit talents with skills who already understood the needs of the markets. Most of these youths worked as freelancers hence had deep experience on what they were looking for. Buni Innovation Hub provided a landing space for corporate who were running innovation challenges and hackathons to look for new ideas and solutions. Buni Hub hosted a number of these events with Tigo and Vodacom in partnership with DTBI. These events encouraged further collaboration between startups and corporates as well as offered corporate solutions they have been looking for. This relationship helped corporations to use less investment in R&D instead to get solutions to their problems through hackathons and other events. Companies such as Intel hosted the Intel Appthwack Challenge to recruit developers to develop their platforms. The winners of the challenge after the regional competition emerged from Buni Hub.

DTBI also worked with MNOs on implementing CSR programs that focused on promoting innovation and technology in grassroots communities. For example, DTBI worked with Airtel to promote technology in local primary schools by establishing computer labs and training programs for teachers and students. The training offered was made public for youths to Access. The program named Airtel Fursa Lab which happened at Kijitonyama Primary School in Kinondoni was part of these partnerships. These partnerships were also established with local, regional, and international companies. For example, Buni Hub and DTBI championed the Nokia Mobile Mathematics Solution which was coming to address the challenges facing slow learners in local schools. The program had more than 9000 examples, exercises, and theory notes. The program was facilitated by Nokia, Microsoft, and Tigo and it was hosted at Buni Hub and DTBI.

Buni Innovation Hub hosted conversations through events that ensured the involvement of corporate companies in the ecosystem. In the early days of the ecosystem platforms such as Mobile Monday Dar also known as MoMoDar provided a platform for innovators to meet with corporate teams to discuss different issues in the technology sector that were important to the ecosystem and the nation at large. The platform also created an opportunity for innovators to showcase their products and for corporations to introduce their new products or challenges for innovators to hack and offer solutions.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - DEVELOPMENT PARTNERS



Buni Innovation Hub and DTBI played an important role in promoting the concept of innovation for development. The two hubs were the go-to place for development partners looking to adopt innovation, technology, and entrepreneurship as a tool for socio-economic development. Some of the organizations include; the World Bank, Hivos, Mastercard Foundation, UN Agencies, and Embassies. The two hubs offered a strategic entrance to the ecosystem for these organizations. A lot of for-impact projects have been implemented through the two hubs.

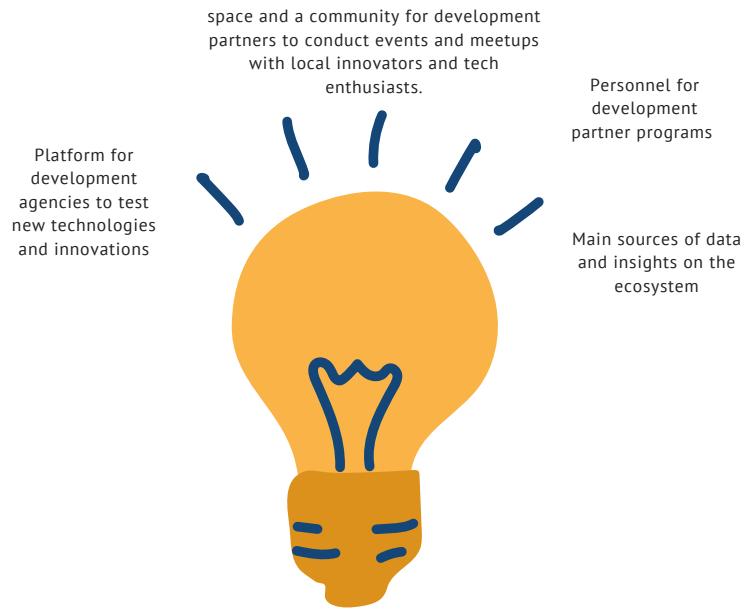
Buni Innovation Hub and DTBI offered a platform for development agencies to test new technologies and innovations before deployment to the mass market. For example, a project such as Refab Dar which was looking at using 3D printing technologies to address social challenges piloted most of the work at Buni Innovation Hub. This made Buni Innovation Hub a go-to place for people looking to learn about additive manufacturing and 3D printing. The initial thinking of the project was to focus on creating 3D printer filament from recycled plastic waste.

The project was not successful in doing that instead, it pivoted to become a training program for anyone looking to learn about 3D printing in health, education, manufacturing, and arts. The project builds a foundation of most of the 3D printing technologies initiatives that we see today in the ecosystem. Buni Innovation Hub and DTBI were the main sources of data and insights on what is happening in the ecosystem. Development partners heavily relied on the information shared by the teams at the hub to design programs and interventions that were innovation-related. Programs such as Human Development Innovation Fund (HDIF), Data for Local Impact Innovation Fund (DLI), Negawatt Challenge, etc learned from the interventions (success stories and failures) of the programs conducted at Buni Hub and DTBI before designing their own programs and interventions. This also goes to the mapping activities and generation of reports. The first HDIF ecosystem mapping activities in partnership with ANZA and the World Bank Dar es Salaam Startup Ecosystem Report of 2017 relied heavily on insights shared by Buni Hub and DTBI through previous studies and insights shared by TANZICT Project and InfoDev.

Buni Hub and DTBI also played an important role in producing talents and personnel to develop partner programs working to implement innovation programs. The personnel from Buni Hub and DTBI were the ones sitting in strategic positions on programs and projects carried by Hivos, MAVC, World Bank, Seedstars, and Ifakara Health Initiative (IHI) to mention a few.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - DEVELOPMENT PARTNERS



The projects such as Negawatt Challenge, Refab Dar, DLI, MAVC Tanzania, and Hivos Energy Safari were all implemented by talents and individuals from Buni Hub and DTBI. Buni Innovation Hub and DTBI also played a crucial role in mobilizing relevant youths to be engaged in the programs and activities implemented by the development partners. Buni Hub and DTBI offered space and a community for development partners to conduct events and meetups with local innovators and tech enthusiasts.

Programs such as the World Bank Sanitation Hackathon and the GSMA Mobile Money Hackathon relied on talents and hackers from Buni Innovation Hub and DTBI to come up with innovative solutions. The two hubs were also a place for international organizations to introduce their programs to local communities. Events and organizations such as Anzisha Prize, Acumen Fund, Ashoka Fellows, and others used the two hubs to promote their activities and to engage with the local ecosystem.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - CIVIL SOCIETY



Buni Innovation Hub and DTBI played an important role in supporting civil society including CSOs and NGOs working on promoting innovation and technology for social change. Buni Innovation Hub hosted organizations such as Tanzania Social Entrepreneurship Forum (TASEF) and Projekt Inspire at the hub to run and conduct their activities. TASEF was among the earliest communities of social innovators in Tanzania and Projekt Inspire opened up the door for organizations working to promote STEM in schools (primary and secondary). Projekt Inspire partnered with Buni Hub to run weekend programs for kids introducing them to making and science experiments, the program titled Toto Tech. Because of Projekt Inspire, a number of other projects emerged including RoboTech Lab, SheCodesForChange and Coders, and Makers.

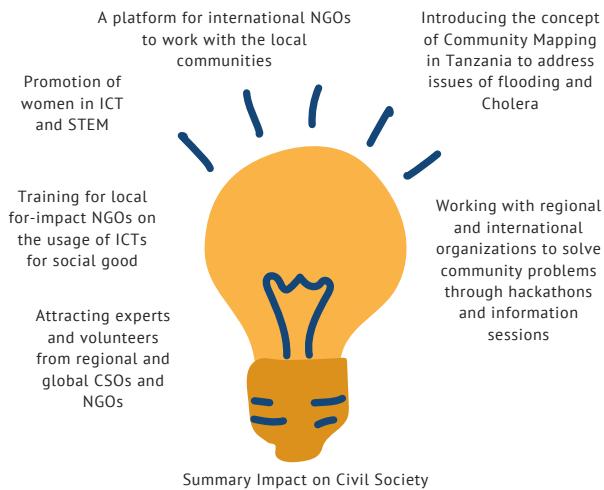
Buni Innovation Hub and DTBI also worked with organizations that promote women in ICT and STEM some of the beneficiaries included; SheCodesForChange and Apps and Girls. These organizations have impacted thousands of young girls by introducing them to coding and making.

Buni Hub was the hosting organization when they were starting their initial activities. The organizations worked with Buni Hub to promote ICT for girls in secondary schools. Trainers and mentors for the programs were Buni Hub community members primarily techies who were using the space. SheCodesForChange and Apps and Girls contributed to most of the female talents we see in the ecosystem today. They also played an important role in inspiring new programs to support women in tech and entrepreneurship. Programs such as SheFound, an initiative to support female founders and entrepreneurs, CodeLady, an initiative to support young female coders, and even the Buni Divaz initiative were inspired by these initiatives. Buni Hub and DTBI also offered the same platform for regional and international NGOs such as Women in Information Technology Africa (WITA) and Rail Girls.

Buni Innovation Hub and also offered a platform for international NGOs such as Hivos, IIED, TechForTrade, Afrimakers, and RLabs to work with the local communities. Hivos and IIED through the Energy Safari Project worked with Buni Hub to introduce the latest technologies in renewable energy and engage with Buni Hub to study the behavior of consumers towards renewable energy. Buni Hub worked with United Kingdom NGO, TechForTrade on additive manufacturing technologies, the project which saw the first electronic waste 3D printer in Africa being assembled at Buni Hub in 2015.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - CIVIL SOCIETY



Buni Hub and DTBI also worked with Afrimakers to introduce the concept to local innovators through a series of workshops on weekends. These workshops helped to create a generation of makers who went to build things liked 3D printers, drones, IoT solutions, etc. The engagement with RLabs facilitated the concept of living labs in grassroots hubs especially in Iringa, Mbeya, and Sengerema. Approaches and the model to support youths and women in rural communities through innovation and ICTs were mainly studied from RLabs South Africa.

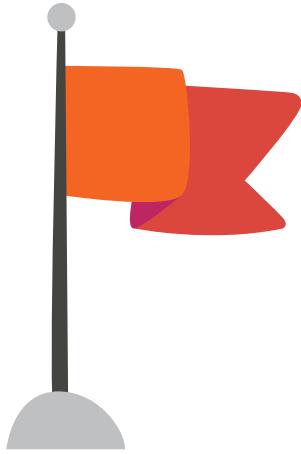
Buni Hub and DTBI hosted a lot of events on technology and entrepreneurship for social good working with CSOs and NGOs. Buni Hub hosted technology for good governance and accountability workshops with Hivos through the Making All Voices Count (MAVC) program. The program led to the Hatua Project aimed at promoting ICT for good governance and accountability.

Other organizations that worked with Buni Hub and DTBI include; CoderDojo, Global Entrepreneurship Week, Buni Hub and DTBI also worked with regional and international organizations to solve community problems through hackathons and information sessions. Buni Hub and DTBI worked with 2 Seeds Foundation, an American NGO to address market challenges for local farmers using ICT solutions. 2 Seeds Foundation was working with the Kariakoo market to help the pricing information of farms produced to reach the farmers at the grassroots level. Buni Innovation Hub also worked with researchers from the University of Dar es Salaam and the University of Twente and other partners on a project called Sema. The project looks to address water challenges facing the community through digital solutions. The project involved other partners such as SNV, UNICEF, UN-HABITAT, Ministry of Water, etc.

Buni Hub and DTBI hosted international organizations introducing new technologies and approaches to solve different problems in the country. Some of these organizations include Humanitarian OpenstreetMap (HOT) and Energy Change Lab. HOT in partnership with the World Bank was the first one to introduce the concept of Community Mapping in Tanzania. The concept has a lasting impact in areas like Tandale where it was carried out. Tandale is one of the areas with a planned map addressing issues of flooding and Cholera.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - CIVIL SOCIETY



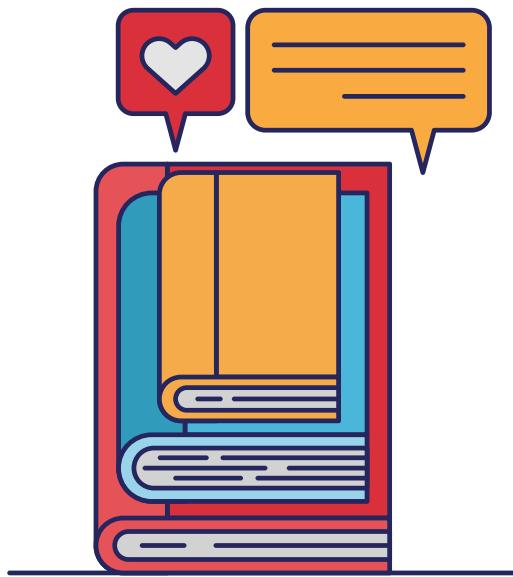
The project had a number of partners including the University of Dar es Salaam, Ardhi University, etc. The project opened up several other mapping projects which also made the Zanzibar Mapping Initiative the largest drone mapping exercise in the world from experience gained in the previous projects. The Energy Change Lab spearheaded different projects in the renewable energy sector and influenced policies around renewable energy by working with different players in the energy ecosystem in Tanzania including Rural Energy Agency (REA), and others. The lab also conducted pilot projects to assess the quality of electricity supplied in urban areas and advise accordingly. Buni Hub and DTBI also hosted different projects focusing on capacity building and skills development of youths. Projects such as ILO's Kazi Nje Nje program and Start and Improve Your Business (SIYB) were hosted at Buni Hub providing youths with the opportunity to learn and attain employability and entrepreneurship skills. Buni Innovation Hub also hosted activities from partners such as Digital Opportunity Trust and Dare to Change Dar Program (DARE) initiatives

that aimed at transforming youths' mindset towards entrepreneurship and innovation. DOT is among the most active NGOs currently working in the ecosystem to promote entrepreneurship and skills development. They have worked with hundreds of youths in that area.

Buni Hub also hosted training for local for-impact NGOs on the usage of ICTs for social good. Some of the beneficiaries include Chama Cha Tanzania (CHAVITA). Buni Hub offered training to representatives of CHAVITA from across the country on Social Media Management in Train of The Trainer (TOT). The program helped in transforming communication via digital platforms among CHAVITA members. The training introduced the members to basic social media tools and how they can use them to communicate with their members and partners. The training to promote CHAVITA and improve the organization's visibility of digital platforms. Buni Hub and DTBI attracted experts and volunteers from regional and global CSOs and NGOs who came to support local NGOs and CSOs in different areas including Frugal Innovation, Front End Innovation, Design Thinking, etc. These training and support programs helped local NGOs and CSOs to revisit their strategies and redesign their approaches to ensure sustained impact. Courses offered by reputed global organizations such as IDEO and ACUMEN were offered to community members working in projects that involved engaging with the community for social good.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - GOVERNMENT



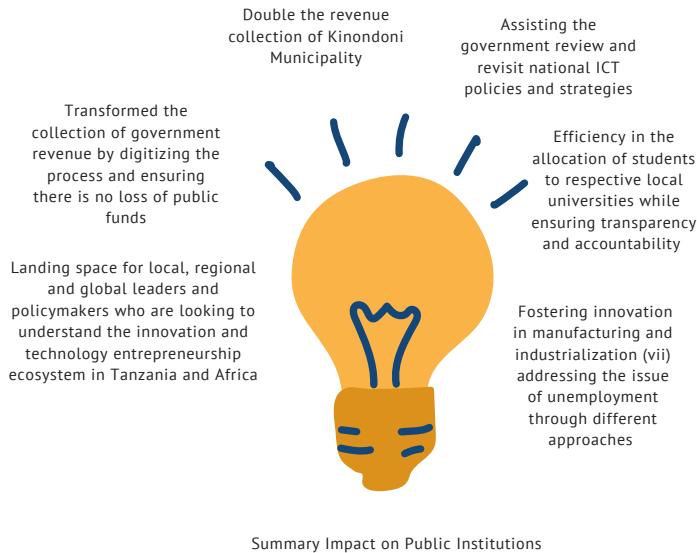
Buni Innovation Hub and DTBI played a critical role in introducing new innovative digital solutions to promote good governance and accountability within government systems that ensured government increased revenue and efficiency. Companies such as MagilaTech, Maxicom Africa, and Digital Brain created solutions that completely transform the collection of government revenue by completely digitizing the process and ensure there is no loss of public funds. Maxicom Africa was the first company to completely digitize the payment of utility bills to public agencies such as TANESCO and DAWASCO. The company also disrupted the cashless transaction sector in the country by introducing the first generation of the Point of Sales (PoS) devices which were used to pay for different services while linked to Mobile Money and Mobile Banking Systems. MagilaTech offered security solutions and gateways to different public agencies helping them to digitize their processes.

Digital Brain Limited which was incubated at DTBI created a solution that completely transformed how the Tanzania Commission For Universities (TCU) operates. The solution provided efficiency in the allocation of students to respective local universities while ensuring transparency and accountability. Mbutho Chibwaye invented the Central Admission System (CAS), a system that has helped to enrol thousands of students in Tanzania higher education. Before Digital Brain innovation students were enrolled in multiple institutions making the government misallocate student loans which caused massive losses. It was also taking a lot of time to assign specific students to specific institutions. Digital Brain went ahead to create a number of solutions.

DayOne Softcom Technologies was one of the earliest incubatees of DTBI the company offered a solution to LGA to maximize LGAs efficiency in tax collection. The solution was able to more than double the revenue collection of Kinondoni Municipality. The solution also received support from the World Bank to be rolled out in 18 more districts across the country. The system came to address the challenges in collecting tax from the informal sector and ensuring there are no loopholes in the sub-national tax collection systems. The solution helped to address corruption in tax collection systems. The impact of enhanced collection saw an increased budget of the LGA to invest in projects for education and health including establishing health facilities and schools within the districts.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - GOVERNMENT



Buni Innovation Hub and DTBI played an important role in helping the government review and revisit national ICT policies and strategies, and engage with local ICT talents. The team at Buni Hub and DTBI were actively engaged in advising and reviewing the National ICT Policy of 2016. Buni Hub and DTBI worked with government agencies such as TCRA and UCSAF to promote Tanzanian ICT talents at the regional and global levels. Innovators from Buni Hub and DTBI have won several accolades from ITU and other international organizations. Buni Hub has worked closely with UCSAF to conduct outreach programs in rural secondary schools across the country to introduce ICT skills to young girls.

Buni Innovation Hub and DTBI have been a landing space for local, regional and global leaders and policymakers who are looking to understand the innovation and technology entrepreneurship ecosystem in Tanzania and Africa.

Buni Hub and DTBI have hosted Prime Ministers, Vice Presidents, Ministers, Ambassadors, etc who were keen on learning the Tanzanian innovation and ICT ecosystem. The two hubs have generated insights, data, and reports that have advised the government on appropriate approaches to support innovators, tech enthusiasts, and entrepreneurs across the country.

Buni Innovation Hub and DTBI have played an important role in fostering innovation in manufacturing and industrialization. Buni Hub played an important role in supporting makerspaces which are used for rapid prototyping. Buni Hub supported the establishment of STICLab in Kitunda to promote smart manufacturing using 3D printing technology. By 2017 STICLab was able to manufacture 3D printers locally and sell them to local manufacturers. DTBI supported Guavay, a local startup that manufactures organic fertilizers. The company has been able to raise investment to scale its production and activities creating employment opportunities for youths as well as addressing the problem of farmers accessing organic fertilizers at a reliable cost.

Buni Innovation Hub and DTBI have played an important role in addressing the issue of unemployment through different approaches; creating direct and indirect jobs, reducing the skills gap, and advocating for policies that favour employment.

# CHAPTER FOUR

## IMPACT ON THE ECOSYSTEM - PUBLIC INSTITUTIONS

By 2013 DTBI alone already created 116 direct jobs and 3000 indirect jobs through the few outstanding firms that emerged from the incubator. This number increased tremendously in recent years. It is estimated that more than 30,000 jobs have been created through the two hubs and this is through the programs conducted at the hub, the training that happened at the hub, projects carried out by the two hubs, and strategic partnerships established by the two hubs. Buni Hub has served more than 5000 youths who were engaged in different capacity-building and skills development programs. Through Buni Hub community outreach programs students in universities were

introduced to industry-specific skills which increased their employability chances. Over 80 percent of the students who went through the Buni Internship Program, more than 800 students either started their own startups or got employed by local technology firms. Since DTBI's establishment in 2011, a total of 29 ICT-based solutions (innovations) from 27 incubates (both residential and virtual) were commercialized through different arrangements and agreements with private entities and government departments. Out of which 559 direct and more than 16,000 indirect employment were created. The table below shows an employment creation map by DTBI and Buni Innovation Hub.

<b>From Startups (Primary)</b> Buni Innovation Hub and DTBI have created more than 2500 jobs from direct employment of youths to startups. The two hubs have worked with more than 400 startups with an average number of employees between 4 - 20.	<b>From Programs (Tertiary)</b> Through programs such as Buni Hub community outreach and internship programs, thousands of youths get the chance to learn industry-specific skills and to be linked with employers.  <b>Buni Innovation Hub and DTBI Employment Creation Map.</b> (Map Showing Opportunities and Jobs Created Through Buni Hub and DTBI)	<b>From Startups (Secondary)</b> Buni Innovation Hub and DTBI have created more than 15,000 jobs from technologies emerging from the two hubs; POS Devices, 3D Printers, etc. The network of merchants using some of these devices have been able to self-employ in the digital sector
<b>From Projects (Direct Jobs)</b> Buni Innovation Hub and DTBI have created more than 500 jobs from direct employment through projects and programs carried by different partners. On average a project will employ 7 to 15 people. In the past 8 years, Buni Hub and DTBI have been involved in more than 30 projects.	<b>From Skills Program (Tertiary)</b> Buni Innovation Hub and DTBI Played an Important Role to equip youths with on-demand digital skills e.g graphics designing, software development, etc hence giving them an opportunity to work in the gig economy. At least 3000 youths have directly benefited from these programs.	<b>From Projects (Secondary)</b> Some of the projects that were carried out by Buni Hub and DTBI as mapping projects, innovation funds for startups, and outreach projects. Have influenced the beneficiaries to get job opportunities through the skills and talents adopted from these programs. e.g Digital Mappers, etc.

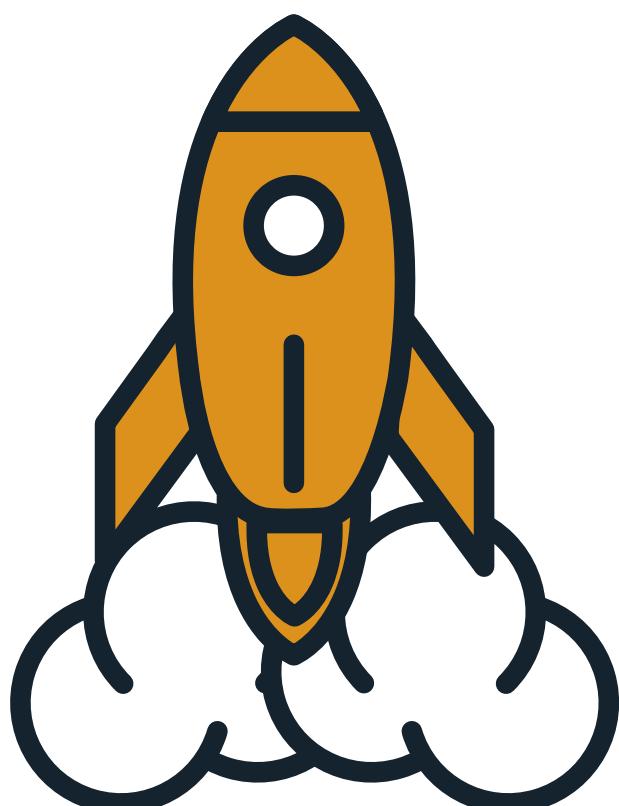
# CONCLUSION

## CONCLUSION

Buni and DTBi programmes helped build into the startups and businesses the culture of aligning goals and products and services to the market and the broader systems. This is important for complying with the regulatory environment, adaptivity to supply chains, and positioning the businesses to take advantage of an evolving innovation ecosystem. The Buni and DTBi graduates also have a culture of adaptability involving evolution through trial and error, which has enabled a significant number of them to evolve into second-generation businesses with changed or diversified product lines.

The businesses have also developed redundancy through sharing other companies and products, which buffers them against shocks and vulnerability of the changing environment. As a result, these businesses have earned the credibility for collaboration and institutional support, helped create employment opportunities, offered commercialised solutions, and helped prepare society for the digital culture. The products and practice have had exponential results in increased revenues and convenience for the government and citizenry and opened new platforms for the enterprise.

The activities of Buni and DTBi have helped popularise innovation and influenced policies and shaping the regulatory environment to support innovation for development. Tanzania is now supporting innovation on equal footing with science and technology and charting new learning and commitment curves. The national ruling party manifesto has acknowledged the importance of innovation spaces and reiterated its strategic support for innovation, which is a major development of the decade. COSTECH is actively promoting discussions with innovation intermediaries and hosts, and regulators to evolve and support innovation. This visibility and prioritisation of innovation is important for resource allocation, legislative support, and collaboration with development partners that have focused on promoting innovation for the next few years.



# CONCLUSION

## CONCLUSION

The Buni and DTBi hubs have helped COSTECH perform its function as a prime advisory of the government, and national co-ordinator and promoter of STI in Tanzania. Through its activities, COSTECH forges collaborations among discrete innovation actors to realise research outputs, innovations and developed technology and its transfer from ideas and concepts. The actors include individual innovators and researchers, governance institutions, the academia, entrepreneurs, businesses, innovation spaces, manufacturers, and media) to promote scalable solutions, products, and services realised in systems.

Through these collaborations have resulted in temporary and permanent actor linkages, and pockets of opportunistic ecosystems. In essence, COSTECH is uniquely placed and is effecting transformation from discrete actor functionality to a multiplicity of sectoral and geographically distributed ecosystems, and eventually, a national innovation ecosystem catalysing exponential innovation outputs. Buni and DTBi have been instrumental in helping COSTECH develop a national ecosystem by affecting the development of other hubs nationwide and supporting their functions. With an evolving system in place, Tanzania is positioning itself increased innovation outputs to support national development goals.



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