

# ASSESSING THE CONTRIBUTION OF HUBS TO UGANDA'S INNOVATION ECOSYSTEM

## A case study on the role of innovation hubs in Kampala

Linda Amanyanya

Science, Technology and Innovation Research and Development Division

Uganda National Council for Science and Technology

Kampala, Uganda

[lindaamanyanya@gmail.com](mailto:lindaamanyanya@gmail.com) / [l.amanyanya@uncst.go.ug](mailto:l.amanyanya@uncst.go.ug)

### ABSTRACT / POVZETEK

This paper focuses on assessing the role of hubs in facilitating innovation for economic development.

It analyzes the ability of innovation hubs in Kampala to provide three critical elements for innovation - financial support, business development services and networking opportunities.

The paper also explores the development focus of these hubs, as well as the challenges they face in facilitating innovation.

Based on the results of this analysis, it is recommended that comprehensive instruments be developed to facilitate the integration of the different pathways for innovation, and the collaboration of actors in the National System of Innovation (NSI)

This paper emphasizes the need for innovators based outside of research and academic establishments to acquire good understanding of intellectual property assets in order to benefit from the knowledge economy. It is proposed that innovation hubs in the informal innovation pathway address not just the awareness gap that exists, but also the limited capacity in identifying, protecting and diffusing research products and intellectual property generated.

### KEYWORDS / KLJUČNE BESEDE

Innovation, innovation pathway, development, Intellectual Property Management

## 1 INTRODUCTION

In a metanalysis utilizing data from 115 countries, Fagerberg and Srholec (2008) identified the development of an innovation system to be one of the top four out of twenty-five factors, critical for the economic development of any nation [1].

National Systems of Innovation, though comprising of a multitude of actors, often feature two distinct pathways: the formal innovation pathway which features state-supported activities conducted by actors in academia, research institutes and industry, and the informal pathway where players from civil society and grass root organizations take on self-financed innovation activities [2].

Innovation enablers in the informal pathway (i.e private-owned incubators, accelerators and technology hubs) often offer a variety of business-related services including: office/ lab space, product development mentorship and business coaching in addition to networking opportunities, industry linkages, and in some case, seed funding.

What they seldom focus on, especially in the case of Uganda, are services directed at the exploration and management of intangible assets such as intellectual property (IP).

Intellectual Property is a critical component of any innovation ecosystem. IP assets can act as a safety net for innovators in developing economies like Uganda where approximately 75% of start-ups fail to reach the first anniversary of their business operations [3].

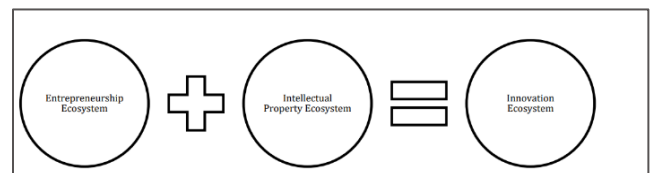


Figure 1: The link between entrepreneurship, intellectual property and innovation [4]

Systems required to facilitate innovation activities are complex and often call for collaboration among various stakeholders in bringing together inputs such as infrastructure, finances and expertise needed for innovation processes such as prototyping and IP registration [5].

While innovators in academic and research institutes may be privy to information on and the benefits of IP, the same cannot be said for actors in the informal innovation pathway.

In order to facilitate consolidated development of the National System of Innovation (NSI) in Uganda, this paper assessed the role of innovation hubs in greater Kampala and her neighbouring suburbs.

Specifically, the study sought to

- i assess the provision of three key elements for innovation, that is, financial support, business development services and networks;
- ii identify the development challenges addressed and the innovation focus in innovation hubs and;
- iii provide recommendations for further development of the NSI.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

Information Society 2023, 9–13 October 2023, Ljubljana, Slovenia

© 2020 Copyright held by the owner/author(s).

## 2 METHODOLOGY

### 2.1 Research Design

Purposive sampling and snow balling were utilized in identifying and approaching participants based in innovation hubs in Kampala.

These participants, ten (10) in total, categorized their establishments as incubators, technology transfer offices, accelerators and technology hubs based on the following descriptions:

- Incubator (IN) – an independent co-working innovation space that creates and develops start-up companies for at least 12 months.
- Technology Transfer Office (TTO) – a facility affiliated to a university or research institution that assists researchers in IP protection, licensing and commercialization.
- Accelerator (ACC) – an entity focused on accelerating or scaling up companies for a few months through structured programmes and funding.
- Science Park (SP) – an entity promoting innovation and competitiveness of associated businesses and knowledge-based institutions in a given community.
- Technology Hub (TH) – a facility focused on generating contacts or leads and/or providing motivation, exposure and self-belief for innovators.
- Co-working Space (CWS) – a facility providing only hot desking, office spaces, boardroom facilities or events to start-up companies.

Depending on the nature of operations and the innovation programmes hosted in their establishments, many participants identified their spaces to fall in more than one category.

Table 1: Innovation hubs by year, category and beneficiaries

Name of Innovation Hub	Year of Establishment	Category	Beneficiaries Supported (24 months)
StartHub Africa	2017	IN, ACC, TH, Others	>200
NARO Incubation Centre	1992	IN, TTO, ACC, TH	51-100
Women In Technology Uganda (WITU)	2012	IN, TTO, ACC, TH	>200
MoTIV	2020	CWS, IN, ACC	>200
Response Innovation Lab	2018	ACC	101-200
NFT Mawazo	2005	IN, ACC, TH	>200
Makerere Innovation and Incubation Center	2016	IN, ACC, TH	51-100
TechBuzz Hub	2016	CWS, IN, TH	>200
KQ Hub Africa	2018	Other	101-200
Design without Borders Africa	2014	Other	>200

### 2.2 Data collection and analysis

The data collection process constituted: a physical assessment of innovation establishments in Kampala; a desk review of information on the innovation hubs identified and; designing and administering a survey tool to assess innovation support.

Three elements were assessed: financial support, business development services and networking opportunities. Data analysis was then conducted in MS Excel and SPSS 26.

## 3 RESULTS AND DISCUSSION

### 3.1 Descriptives

The most commonly addressed development challenges, based on the SDGs were: Decent Work and Economic Growth (8); Industry, Innovation and Infrastructure (9) and No Poverty (1) and the least addressed were: Life below Water (14) and Life on Land (15).

The most supported themes in the innovation hubs were: Education and Skills Development while least supported themes were Transport and Infrastructure and Democracy and Governance. The average quantum of funding provided by hubs was USD \$10,000 - \$50,000

### 3.2 Provision of financial support

Financial support adversely influences an institution’s decisions, ability to engage in innovative activities and the nature of outcomes of their innovation processes [6].

Results indicated that six of the ten innovation hubs were subject to financial constraints as the quantum of funding required by their beneficiaries was greater than the quantum of funding they provided.

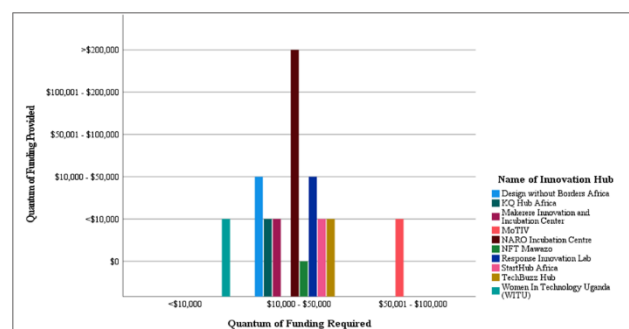


Figure 2: Quantum of funding provided against requirement

### 3.3 Provision of business development services

All ten of the participating innovation hubs provided at least two support services required for business development as presented in Figure 3.

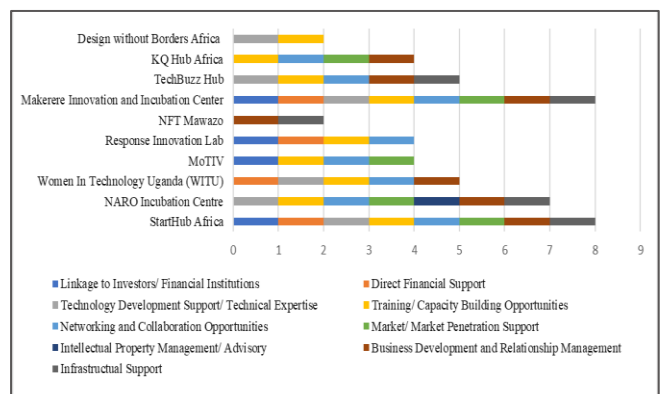


Figure 3: Business support services supported by innovation enablers

Services such as training and capacity building were the most common - provided by nine out of ten of the hubs, followed by networking opportunities, and business development and relationship management.

Intellectual Property Management (IPM)/ Advisory was the least supported service, only available at the NARO Incubation Centre.

While the protection of IP assets by registration can be viewed as a means to obtaining economic reward for innovation [7], many establishments supporting innovators, especially from the tech industry, are not keen on providing IPM support because of the rapid changes in the industry [8]. With a few modifications, a technology that is innovated today can quickly become irrelevant tomorrow. This could be a reason for no IPM services in some of the participating hubs.

Other possible arguments for the absence of this service could be the slow progress in developing markets for IP assets in Uganda, and the presence of a national IPM authority - the Uganda Registration Services Bureau (URSB) which would render in-house IPM services redundant in many of the hubs.

### 3.4 Opportunities for collaboration and networking

Findings from the component of affiliation to academic or research institutes, as well as networking and collaboration opportunities supported by the ten innovation hubs are presented in Figure 4.

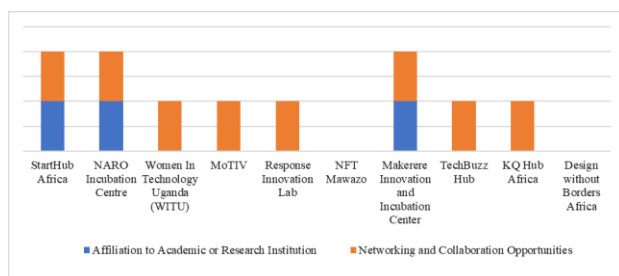


Figure 4: Networking and collaboration opportunities

There is evidence that innovation hubs derive more successful outcomes when they have links of any sort to larger entities including universities, private-sector actors, branches of government, development donors, and with other hubs [8].

Regardless of whether an innovation space is based at a tertiary institution, access to and integration between an innovation hub and a university or an academic/research institute can be mutually beneficial to both entities, as each learns progressively from the other [8].

To further explain the benefits of these affiliations, Bank *et al.* (2018) assert that academic institutions tend to form and maintain more sustainable networks and relationships with both

international and local communities [9]. This may be through the establishment of the International Relations Office or through the Technology Transfer or IPM function.

Either way, these support structures can be a source of opportunities including mobility and exchange programmes, scholarship opportunities and seed funding for innovators.

In turn, innovation hubs can be a source of knowledge and human capital in these relationships.

Peer-to-peer engagement amongst innovation hubs especially through clusters and networks can be beneficial in testing assumptions, combining different competences [10] and in diffusing knowledge [8]. Particularly, the interdependence created by innovation clusters, especially in Science and Technology Parks creates opportunities for exchange and collaboration and could even allow for sharing of infrastructure and services, improving production efficiency in the long run.

Links to parent companies and international collaborations are argued to provide access to better technology and infrastructure as well as more financial and knowledge resources [10].

It was clear that providing networking and collaboration opportunities was essential for many of the participating innovation hubs; What could be improved is the affiliation to research and academic institutions for the benefits afore mentioned.

### 3.5 Limitations to innovation

Innovation hubs experience diverse challenges in their work, depending on their interests and objectives, level/scale of operations and the prevailing socio-economic conditions.

However, many of the factors that inhibit innovation on the African continent, in some way, relate to the economic infrastructure, local institutions, domestic capabilities and the policy context that supports the NSI [11].

Some of the challenges highlighted by the participating hubs included:

- i) Limited technical skills in product development among young innovators.
- ii) Lack of early-stage investment for start-ups.
- iii) Weak IP enforcement.
- iv) A small and disinterested private sector with limited (human and financial) capacity to absorb the generated technologies.
- v) Little to no knowledge on business development and management for incubatees.
- vi) Inefficient follow up with innovators after programme exit.
- vii) Unsatisfactory sustainability plans presented by innovators.
- viii) High risk aversion towards novel ideas in the NSI.
- ix) Discrepancies in appropriate technology versus advanced technology.
- x) Lack of investment readiness programmes for innovators.
- xi) Low quality ideas/ innovations.

- xii) Limited research potential for some projects.
- xiii) Limited market potential for some innovations.
- xiv) Obstructive government regulations and taxes.
- xv) Rigidity in adaptation to changes in the ecosystem.
- xvi) A lack of understanding and appreciation for design innovations in the ecosystem.

In terms of the limited absorption capacity of innovations by industry, it can be argued that the nature of investment in innovations is often long term with uncertain returns, which can repel some investors.

Ayalew and Xianzhi (2019) also reason that the issue of reluctance to reveal innovative ideas could be to the detriment of many innovation firms as it reduces financiers willingness to grant loans or capital [6].

Evidence from the participating hubs suggests that protection through IP registration is not a top priority. Innovators are more likely to rely on 'secrecy' as a protection mechanism yet investors are looking to understand where they are placing their money.

As such, there is a need to bridge the gap between the expectations of investors with the liberties of innovators in Intellectual Property Management.

#### 4 CONCLUSION AND RECOMMENDATIONS

Innovation hubs can be viewed as conduits through which inputs are often aggregated to create optimum conditions for the innovation process [8]. The nature of interaction of the inputs provided by these hubs ultimately determines the outcome of the product development chain. There is therefore a need to develop and sustain mechanisms and instruments to support these innovation enablers for innovation-led development.

The lack of financially-backed appreciation for innovation within larger societal operations is a common phenomenon in sub-Saharan Africa.

Better engagement with academic institutions, companies and local communities is required to influence more youth and individuals to participate in knowledge generation and more technical support along the innovation cycle, particularly in product development and intellectual property management is needed.

Companies and firms can be better encouraged to absorb local innovations developed in the NSI, through subsidies and tax exemptions.

Examples of successful networks and clusters of innovation hubs exist in developing nations such as South Africa [10]. The Government of South Africa has ensured that innovation hubs are far reaching in different townships, diffusing incubation services to stakeholders in all parts of the country.

While clustering is beneficial, adopting a similar decentralized approach, as in South Africa, could increase the reach and level of interest in innovation in the different regions in Uganda, especially outside of the capital - Kampala.

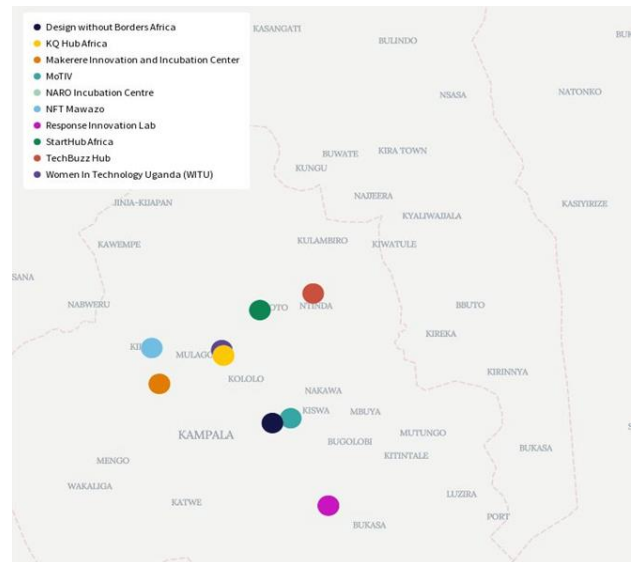


Figure 5: The participating innovation hubs by location

'The functioning of an innovation system depends on its components – the organizations/actors and relations among the components which perform various innovation system activities [11]

System integration that allows national and regional systems of innovation to intersect with sectoral and technological innovation systems, especially through interactive learning among stakeholders in different pathways should be fostered to develop a NSI that is accommodative of and beneficial to Ugandans.

## ACKNOWLEDGMENTS / ZAHVALA

This paper is evidence of the openness and willingness of the innovation hubs in Kampala to engage with other actors.

I am truly grateful to the teams at Design Without Borders Africa, KQ Hub Africa, Makerere Innovation and Incubation Centre, MoTIV, NARO Incubation Centre, NFT Mawazo, Response Innovation Hub, StartHub Africa, TechBuzz Hub and WITU, for sharing their stories of passion and perseverance in facilitating innovation.

Special thanks also to Dr McLean Sibanda, Mr Ronald Jjagwe, Ms Sakina Salem (and the Code for Africa team) and the WIPO Professional Development Program for supporting me in conducting the analysis and in producing this paper.

## REFERENCES

- [1] Fagerberg, J. and Srholec, M. (2008) National innovation systems, capabilities and economic development. *Research Policy*, **37**(9), 1417-1435
- [2] Cele, M.B.G., Luescher, T.M. and Fadji, A.W. (2020) Innovation policy at the intersection: Global debates and local experiences. Cape Town: HSRC Press
- [3] Business Focus (2023) 75% Of Ugandan Start-Ups Don't See Their First Birthdays – Experts. Business Focus, Retrieved August 15, 2023. <[URL](#)>
- [4] Reis, D.A., Moura, F. R. and Aragão, I. M. (2021) Entrepreneurship, intellectual property and innovation ecosystems, *International Journal for Innovation Education and Research*, **9**(2), 108 – 134
- [5] Holloway, C., Ramirez, D. Z. M., Bhatnagar, T., Oldfrey, B., Morjaria, P., Moulic S.G., Ebuenyi, I. D., Barbareschi, G., Meeks, F., Massie, J., Ramos-Barajas, F., McVeigh, J., Keane, K., Torrens, G., Rao, P.V.M., MacLachlan, M., Austin, V., Kattel, R., Metcalf, D. C. and Sujatha, S. (2021) A review of innovation strategies and processes to improve access to AT: Looking ahead to open innovation ecosystems, *Assistive Technology*, **33**(1), 68-86
- [6] Ayalew, M. M. and Xianzhi, Z. (2019) The effect of financial constraints on innovation in developing countries: Evidence from 11 African countries, *Asian Review of Accounting*, **28**(3), 273-308
- [7] Reis, D. A., Moura, F. R. and Gomes, I. M. (2019) The linkage between Intellectual Property and Innovation in the Global Innovation Ecosystem. European Conference on Intangibles and Intellectual Capital. Kidmore End
- [8] Abrahams, L. (2020) Innovation Entanglement at Three South African Tech Hubs, *the African Journal of Information and Communication*, **26**, 1-29
- [9] Bank, L., Nico Cloete, N. and van Schalkwyk, F. (2018) Anchored in Place: rethinking the university and development in South Africa. Cape Town. African Minds
- [10] Oerlemans, L.A.G. and Pretorius, M.W. (2006) Some views on determinants of innovative outcomes of South African firms: an exploratory analysis using firm-level data, *South African Journal of Science*, **102**, 589 – 593
- [11] Egbetokun, A., Atta-Ankomah, R., Jegedec, O. and Lorenz, E. (2016) Firm-level innovation in Africa: overcoming limits and constraints, *Innovation and Development*, **6**(2), 161-174