

From silicon valley to silicon savannah: Conceptualizing tech hubs in Sub-Saharan Africa

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Abstract

Tech hubs (THs) and cognate structures are nowadays ubiquitous in the innovation ecosystem of Sub-Saharan African (SSA) countries. However, the concept of THs is fuzzy due to the lack of a clear and universally accepted definition. This ambiguity is further compounded by the diverse range of organizations that self-identify as hubs, or are categorized as such by others. As a result, research on THs in SSA remained limited. Against the backdrop of established research on the interconnectedness of technology, innovation and entrepreneurship in different organizational forms, this paper is meant to provide fresh insights into the study of THs in SSA. To advance future research, first, it reveals what is special about THs in SSA and how they are related to existing concepts. I particularly argue that they contour a fourth-wave model of incubation. Second, four main categories are unfolded to delineate THs in SSA which is the cornerstone for future research.

Keywords

Africa, tech hub, innovation, technology, entrepreneurship

Introduction: tech hubs in Sub-Saharan Africa – a fuzzy concept

I have noticed a dramatic proliferation of tech hubs (THs) and cognate structures such as innovation labs, incubators, makerspaces, hackerspaces, accelerators, co-working spaces and technology parks in Sub-Saharan Africa (SSA) over the last 15 years. The most recent survey finds 1031 THs across Africa with Nigeria (164), South Africa (96) and Kenya (90) accommodating the largest amounts of hubs in SSA (Sarangé and Chuku, 2021). However, in contrast to that, some authors revealed that hubs have also failed and terminated their operations as they are facing challenges in terms of viability and sustainable business models (de Beer et al., 2017; Kolade et al., 2021).

Given its extensive proliferation, ‘hub’ emerged as an umbrella term that is now used everywhere in SSA but has come to signify vastly different things to various individuals including researchers (Friederici, 2018). The terminology is ambiguous due to the enormous variety of hub designations (Atiase et al., 2020; David-West et al., 2018; de Beer et al., 2017). Although THs are obviously an interesting phenomenon to study as part of the vibrant digital innovation and tech ecosystem in SSA (Nkao and Song, 2023), I noticed an overall reluctance of researchers to study them. I argue that this reluctance despite their huge

relevance in practice is mainly because of the fuzziness of the concept, entailing an unclear definition, a diversity of hub designations with different objectives and offerings to entrepreneurs. Therefore, with this fresh perspective note, I aim at advancing the debate on THs in Africa by (a) revealing how THs in SSA differ from established concepts in the innovation and entrepreneurship literature and (b) by introducing four distinction criteria to allow for consistent future research. The note is based on an extensive study of the literature, supplemented by numerous conversations with entrepreneurs and hub managers during research journeys to Kenya, Rwanda and Uganda in 2022 and 2023 that were meant to gain first access to the complex research field of THs in SSA.

What is special about tech hubs in Sub-Saharan Africa?

THs are not a completely new phenomenon but need to be considered against the backdrop of an established literature

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on the interconnectedness of technology, innovation and entrepreneurship in various organizational concepts. For decades, these concepts and their key characteristics, performance and impact on innovation and entrepreneurship have been discussed including clusters (Iammarino and McCann, 2006; Nunzia, 2020), science and technology parks (Mian et al., 2012; Oakey, 2012), innovation centres (Drori and Yue, 2009) and incubators (Smith and Zhang, 2012). Previous research attempted to classify the existing concepts, e.g. based on their management support and technological level (Akçomak, 2011). Other researchers identified three incubation waves that apart from incubators also integrate science parks and innovation centres (Mian et al., 2016). The origins of the incubator concept can be traced back to the 1950s (Bruneel et al., 2012). It originated in the US where the most prominent incubator scene emerged in Silicon Valley (Mencin and Erikson, 2009) followed in subsequent waves by incubators in Western Europe as well as South and East Asia (Mian et al., 2016; Smith and Zhang, 2012).

While SSA is largely absent in such models, I argue that the enormous proliferation of THs contours a fourth-wave model since 2010. Acknowledging the challenges and limitations of transferring entrepreneurial models from the Global North to Africa (Tremblay et al., 2013), I argue that exploring the specificities of THs in SSA can help us understand the global diffusion and evolving nature of established concepts and models. The fourth-wave model coincides with a dramatic increase of THs in SSA since 2010 which is adequately illustrated in Nairobi, whose vibrant TH scene is nowadays called ‘Silicon Savannah’. Unpacking the characteristics of SSA THs as fourth-wave model, first, I argue that they are neither large technology or science parks nor industrial clusters but rather small organizations notably co-working spaces and incubators with varying levels of technology as well as management support to promote innovation and entrepreneurship. Second, soft measures (Smith and Zhang, 2012) are crucial to understand THs in SSA as exemplified by Nairobi’s iconic iHub. From the outset, the hub was meant to promote an internal community of and safe harbour for like-minded tech entrepreneurs that aim at sharing and developing business ideas and innovations as well as an external community to attract investors, industry and academic institutions. Third, THs in SSA are characterized by hybridity in terms of services they offer, funding or their legal structure (Littlewood and Kiyumbu, 2018). This leads me to my second point of how the conceptual fuzziness could be disentangled.

How can the conceptual fuzziness of tech hubs in Sub-Saharan Africa be resolved?

I propose the differentiation of hubs based on four distinct characteristics in order to facilitate comparability and promote further advancements in research. Firstly, it is

important to note that hubs exhibit varying *legal structures and origins*. The World Bank introduced the following categories: hubs led by governments, civil society, academic institutions and hybrid hubs (Kelly and Firestone, 2016). The civil society affiliated hubs could be further distinguished as they may be private and for profit or tied to an NGO. In another legal structure, hubs are part of the organizational structures and are overseen by universities or government agencies. Second, various *funding arrangements* are distinguishable. Hubs are funded externally by international donors including development agencies or MNEs, by venture capital or crowdfunding. In addition, internal funding sources encompass membership, co-working, incubation or other consulting fees. Third, hubs can be distinguished by the primary *services* they provide to entrepreneurs and firms. Their support measures may be rather low by offering co-working and network services, or may include more proactive empowerment and training of entrepreneurs or even acceleration programmes including the refining and marketing of business ideas. In addition, some hubs are also providing funds or access to institutional investors and venture capitalists. Fourth, the *target group* attracted by the hubs needs to be differentiated. This may refer to the phase they are engaged in such as early entrepreneurs in nascent stage of product or process development while they may also attract other firms which are about to market their products or rather all entrepreneurs because such hubs aim for the improvement of skills. Sectoral agglomeration in fintech, telemedicine or agribusiness of THs in vibrant cities such as Lagos, Nairobi, Cape Town or Accra can also determine the target group. In addition, some hubs address specific biographies of entrepreneurs and focus e.g. on the empowerment of female entrepreneurs.

Conclusion: advancing research on tech hubs in Sub-Saharan Africa

The extensive proliferation of THs in SSA since 2010 is contouring a fourth-wave model of business incubation characterized by rather small innovation and entrepreneurship supporting incubators and co-working spaces, community-building and hybridity. In addition, I revealed four distinction criteria – legal structure and origin, funding, services and target group – to disentangle the fuzziness of THs in SSA. They are meant to provide conceptual clarity, simultaneously motivating scholars to kickstart research. The distinction criteria could be the starting point for specific research questions and case selections. A provocative question, for instance, would be on the double-edged sword of international funding. I hypothesize that THs on the drip of external funding are less effective than THs with a sophisticated business model foreseeing tailored incubator and accelerator programs. My conceptualization may also allow for the justification of the case selection in cross-national

comparative analyses by e.g. focusing on specific target groups such as female entrepreneurs. Apart from employing individual distinction criteria, future research may also develop an exhaustive typology of THs in SSA that shows how those distinction criteria are interrelated and that locates specific hubs in such a typology.

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