Editorial Essay

Scaling Technology Ventures in Africa: New Opportunities for Research

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Research on new venture creation in Africa is growing rapidly. This increasing interest reflects both the potential for entrepreneurship to contribute to the economic and social development of Africa, as well as the potential for this research to provide new insights that challenge and extend theories developed primarily from studies of North American and European new ventures. In this editorial essay, we argue for an expansion of this important research stream to include a focus on how technology ventures scale in Africa. We identify seven topics that offer interesting opportunities for research on scaling in Africa: (1) the effect of venture location on scaling; (2) the effect of founding team diversity on scaling; (3) the effect of entrepreneurial strategies on scaling; (4) the effect of nascent ecosystems on scaling; (5) the effect of the institutional environment on scaling; (6) the effect of nascent financial markets on scaling; and (7) the societal effects of scaling. We discuss each of these topics, their potential to contribute to the existing literature, and provide examples of African technology firms that have scaled to illustrate each topic. We conclude with a discussion of how African social, political, and regulatory change, combined with rapidly developing entrepreneurial ecosystems, are creating a context where the successful scaling of technology ventures is becoming increasingly common, and research is therefore increasingly valuable.

Introduction: Entrepreneurship in Africa

Entrepreneurship in Africa is the focus of a rapidly growing stream of research (e.g., Devine & Kiggundu, 2016; Igwe & Icha-Ituma, 2020; Kolade et al., 2021). This increased interest reflects two different, but equally important, motivations. First, there is a growing recognition that entrepreneurship has the potential to drive socio-economic development, create jobs, and generally contribute to the growing economic output of African economies (Bruton, Ketchen & Ireland, 2013; Maseno & Wanyoike, 2020; Sutter et al., 2019). The resulting stream of research has primarily emphasized the potential for small-scale subsistence entrepreneurship and social entrepreneurship to drive development and address social and economic problems (Sydow et al., 2020). It also suggests that high-growth ventures may help power economic growth across entire economies (Dobson et al., 2020; Tobias et al., 2013). Put simply, from this perspective, entrepreneurship has the potential to provide the engine to drive economic progress across the African continent (Rattan & Jones, 2018).

Second, researchers are beginning to recognize that there is much to learn about entrepreneurship from the study of African contexts. As George et al. (2016: 377) argue, “Africa is beginning to capture the imagination of entrepreneurs, corporate executives, and scholars as an emerging market of new growth opportunities”. The continent’s diverse cultural, social, and economic contexts lead to forms and patterns of entrepreneurial activity that challenge taken-for-granted assumptions and expand the current theories of entrepreneurship obtained from research conducted largely in the US and Europe (Devine & Kiggundu, 2016; Walsh, 2015).

Yet, while more and more researchers are studying entrepreneurship in Africa, there has been little attention paid to how African ventures scale once they are founded (see Oborn et al. (2019) and Reypens et al. (2021) for interesting exceptions). This is particularly true of

technology ventures even though there are more than 600 technology hubs in Africa (618 *tech hubs*, 2020), and a growing number of African technology ventures that have successfully scaled (Karombo, 2021). As a result, we know relatively little about the mechanics of scaling technology ventures in Africa. Studying this process could yield important insights about how ventures in resource constrained conditions facing fractured market environments and pervasive informal economies can grow, despite all odds, to medium and large sized firms, and expand internationally across dozens of economies.

The concept of scaling was popularized by practitioners such as Reid Hoffman whose concept of “blitzscaling” refers to the kind of rapid global roll-out of digital business models in markets characterized by a “winner-takes-all” dynamic that requires early scale for those intending to prevail (Hoffman & Yeh 2018; Kuratko et al. 2020). Our notion of scaling is broader than this, focusing beyond simply the speed of roll-out. We follow DeSantola and Gulati (2017) and define scaling as the way in which entrepreneurial ventures deal with the challenge of synchronizing internal organizing and growth. This definition considers how ventures replicate their business at scale, but also how they expand the scope of their activities as they grow. This notion of scale includes several organizational dimensions that are adapted as the venture grows, including organizational design, staffing and organizational culture.

As research on scaling is still in its infancy, we believe there is much to be gained from investigating scaling across varied contexts, and specifically so on the African continent. Exactly as research on entrepreneurship in African contexts has been valuable for researchers interested in understanding new venture formation in this distinctive context (George et al., 2016), we believe researchers interested in scaling will also find processes and patterns of scaling that are particular to Africa. This in turn will help support scaling ventures in Africa and, beyond that invigorate theoretical frameworks to better explain scaling in

contexts different from the archetypical Silicon Valley case as well as support the quest to identify the boundary conditions of our current understandings of scaling (Lazarow, 2020). Moreover, by diversifying the contexts under study in this way, researchers have an opportunity to contribute new insights relevant to the theory and practice of scaling more generally.

Research Opportunities on Scaling Technology Ventures in and for Africa

While there is little academic literature on how technology ventures in Africa scale, it is clear from media reports and anecdotal evidence that technology ventures in Africa face context-specific challenges and scale differently from their counterparts elsewhere. It is also clear that there are an increasing number of technology ventures that have successfully scaled (Bright, 2016). We therefore believe this context represents a compelling opportunity for enriching our theories of innovation and entrepreneurship and developing context-specific knowledge on scaling new ventures in Africa for practitioners and entrepreneurship educators.

We have identified seven research opportunities that we elaborate below. These opportunities arise from the distinct conditions under which technology ventures typically operate in Africa and the innovation solutions that entrepreneurs and investors have developed to deal with such conditions. For each opportunity, we will point to specific cases of technology ventures that have scaled as both motivation for the research opportunity and as examples of the sorts of firms that could be studied.

Research Opportunity 1: The Effect of Venture Location on Scaling

In contrast to the ventures usually studied by entrepreneurship researchers, technology ventures in Africa emerge and scale in different ways from their counterparts in North America and Western Europe. We suggest there are two main archetypes. The first archetype

is the homegrown, “boots-on-the-ground,” venture founded and headquartered on the African continent with a significant operational footprint in African economies. Such ventures tend to be heavily dependent on context-specific resources (e.g., financial and human capital) and domestic institutional infrastructure, including regulatory frameworks. Take, for example, the Kenyan technology venture Cellulant¹ that has evolved from an SMS ringtone provider into a major financial technology venture and raised over \$60 million in equity finance to date. It provides digital financial solutions to a large, low-income customer base in 34 African countries with 10 subsidiaries from Abuja to Dar es Salaam (Kazeem, 2018). The firm successfully navigated fragmented institutional infrastructures and attracted financial resources from a mix of European and US impact and private equity investors².

A second archetype represents what we call “remote-controlled”, born-global ventures founded and headquartered in the U.S., Europe, and China which operate with a small organizational footprint through subsidiaries in African economies. Such technology ventures are founded in resource-rich regions that provide favorable institutional conditions for reaching scale. Zipline³, for example, is a Silicon Valley-based drone startup that tested and implemented its model of rural medical supplies delivery primarily in Rwanda and Ghana. Zipline has raised over \$200 million in funding, retains its core technological capabilities in their San Francisco headquarters but primarily tests and deploys its technology in Africa.

The two archetypes we discussed illustrate that technology ventures may vary in terms of their location – either entirely on the African continent or split between Africa and the Global North⁴ – with consequences for how they scale. Particularly in the context of

¹ <https://cellulant.io>

² We accessed the data aggregator Crunchbase to find additional information about Cellulant’s financial performance.

³ <https://flyzipline.com>

⁴ We refer to the Global North as a term encompassing countries that the World Bank and IMF labels as high income and industrialized economies.

Africa, the contrast in resource access between homegrown and remote-controlled technology ventures is stark and allows for interesting comparative studies exploring contextual (Welter, 2011) and imprinting effects (Marquis & Tilcsik, 2013) on scaling and venture performance. Such studies can explore the research questions such as: How exactly do context-specific resources influence venture performance? How do varying institutional imprints influence organizational design, strategies, and other organizational characteristics as technology ventures in Africa scale up? And, finally, depending on the archetype, what are successful tactics for resource access?

Research Opportunity 2: The Effect of Founding Team Diversity on Scaling

Diversity in entrepreneurial teams is a prominent topic in entrepreneurship research (e.g., Calder-Wang et al., 2021; Kollmann et al., 2017; Lazar et al., 2020). Often, entrepreneurial teams demonstrate remarkable homogeneity despite the value of heterogeneity (Foo, 2011; Zhou & Rossini, 2015). At the same time, we have limited insight into the effects of founding team diversity on scaling. Intriguingly, founding teams on the African continent demonstrate great diversity along many demographic attributes such as gender, race, ethnic group, income status, and level of education, to mention just a few. We see an important research opportunity in systematically studying the effect of founding team diversity on scaling and venture performance in Africa.

In examining diversity, a key distinction in founding teams is whether an entrepreneurial team is composed of domestic, returnee, or expatriate entrepreneurs or a mix of all three. Domestic entrepreneurs are born and educated in an African economy and develop their career exclusively in local organizations, equipping them with deep knowledge about local institutional infrastructures and markets as well as affording them with access to domestic networks and resources.

Returnee entrepreneurs are born on the continent but are often foreign educated and return to the continent either with or without foreign work experience. Saxenian (2006) argued that returnee entrepreneurial communities jumpstarted industrial development in East Asian economies and gave rise to many of the entrepreneurial ecosystems we find there. In Africa, returnee entrepreneurs tend to come from the UK, France and the U.S. and bring with them new knowledge that informs the recipe by which they manage ventures, and international networks that broaden their resource access with the potential to profoundly affect venture scaling.

Finally, expatriate entrepreneurs are foreign-born and foreign-educated, and found African technology ventures. The expatriate entrepreneur represents a founder type likely to be equipped with privileged access to knowledge, networks, and resources but may lack more context-specific knowledge and networks.

These three founder types give rise to unique variations and configurations of founding teams, with distinct consequences for scaling styles and outcomes. Consider the Kenyan startup Twiga⁵. Twiga developed a successful digital distribution model for fast moving consumer goods. It is an interesting case of a successful venture with a founding team made up of a domestic and an expatriate entrepreneur. It was founded by a Kenyan with deep knowledge of the mechanics of Coca Cola's distribution model in East Africa, and a U.S. co-founder who studied markets in the Global South but had no previous work experience on the African continent. Together, they created and scaled a technology venture that received over USD 100m of investment since 2014. Arguably, the hybridization of domestic and foreign knowledge, networks and resources enabled a powerful scaling approach that is contextually embedded and may benefit from strong international networks (Bright, 2019).

⁵ <https://twiga.com>

Another example is the recent acquisition of the Nigerian financial technology venture Paystack⁶, founded by two Nigerian returnee entrepreneurs and acquired by the U.S. fintech venture Stripe for \$200 million (Chen, 2021). Here, the entrepreneurs were able to access Silicon Valley based knowledge and resources early on, through their participation in Y-Combinator. Their deep knowledge of the local institutional infrastructure combined with the deep immersion in the Silicon Valley model of entrepreneurship may have catalyzed venture scaling.

Research on founding team diversity will be a generative research opportunity to provide critical insight into the effect of diversity on scaling and performance. But it is also important to scrutinize the role of investors as there has been a heightened concern among domestic founders that ethnic matching biases investor decision-making towards investing in founding teams that have at least one white U.S. or European founding team member (Mureithi, 2021). As such, research is needed to investigate and scrutinize the role and impact of founder diversity in technology ventures that have reached scale. We suggest two areas of particular promise for future research. First, how does founding team composition in terms of domestic, returnee, and expatriate founding team members affect scaling and venture performance, and how is this relationship moderated by industry and country context? Second, how does the racial and ethnic composition of the founding team affect resource access and their scaling trajectory?

Research Opportunity 3: The Effect of Entrepreneurial Strategies on Scaling

Recent research has begun to explore the different ways in which technology ventures scale in the Global North (Piaskowska et al., 2021). At the same time, the ideal scaling strategy for ventures in emerging economies is hotly debated (e.g., Lazarow, 2020). In particular, the Silicon Valley-style “rapid scaling” approach is often cast as decontextualized

⁶ <https://paystack.com>

and a poor fit for these very different contexts. More work is needed to unpack under what conditions particular scaling strategies may be more or less effective.

Startups in Africa provide an ideal empirical setting to examine the effect of scaling strategies on venture success. Recent work makes a distinction between rapid and organic scaling strategies (e.g., Akinyemi & Osamuyi, 2021; Lazarow, 2020). Rapid scaling strategies of technology ventures tend to pursue the “unicorn model”, seeking to achieve a \$1 billion valuation in the shortest time possible. This model is highly contingent on mature risk capital markets and sophisticated intermediaries who can broker investment deals large enough to boost growth without revenue (Piaskowska et al., 2021).

The Silicon Valley based accelerator Y-Combinator is a leading proponent of this model and encourages its entrepreneurs to pursue 5-7% week-to-week growth. The list of African startups that have participated in Y-Combinator has grown rapidly over the recent years⁷. The Nigerian health-technology startup 54gene⁸, the Nigerian fintech startup Paystack, and the Tanzanian fintech startup Nala⁹ are a few of the companies pursuing rapid scaling strategies. These ventures provide a compelling research opportunity for examining how startups successfully navigate domestic and international resource contexts to mobilize critical resources needed for rapid growth.

A contrast to the unicorn model is the so-called camel model (Lazarow, 2020, October 16): technology ventures that seek growth through organic revenue, often with limited or no external investments. The insight here is that scaling does not need to depend on an exponential, hockey stick curve of user adoption. Instead, camel-type scaling strategies, to stick with the metaphor, focus on converting users to paying customers and focus their efforts on growth in profitability. Ventures demonstrate great variation in their strategies as some

⁷ For regularly updated figures see <https://www.ycombinator.com/companies/?regions=Africa>

⁸ <https://54gene.com>

⁹ <https://www.iwantnala.com>

raise no or little risk capital to fund the start-up stage and yet others seek large investment rounds for their growth stage.

Consider, for example, Ghana's e-commerce venture Hubtel¹⁰. From founding in 2005, Hubtel grew without external capital to become Ghana's largest e-commerce platform. Or the Kenyan logistics venture I-procure¹¹ that built out digitally mediated supply chain infrastructure to further develop the market of agricultural supplies with limited external capital from impact investors. Similarly, the Nigerian fintech venture Interswitch¹² spent almost a decade growing the venture before accepting external capital and achieving over USD 1 billion in valuation.

The variation in scaling strategies provides a rich context for studying context-specific scaling strategies and their impact on venture success. Researchers could ask the following questions. First, how do different scaling strategies manifest themselves in organizational design? What entrepreneurial actions do they afford? Second, what are the trade-offs implicit in different scaling strategies? What are their limitations and advantages, for instance in terms of venture resilience? The different national lockdowns related to COVID-19 provide an opportunity to use a quasi-natural experiment to explore the resilience of high-growth technology ventures.

Research Opportunity 4: The Effect of Nascent Ecosystems on Scaling

Implicit in existing understandings of scaling is that to rapidly scale firms need a highly differentiated and mature entrepreneurial ecosystem to allow firms to specialize and outsource all non-core activities (Autio & Rannikko, 2016; Wurth, Stam & Spigel, 2021). Yet, technology ventures in many African economies face the challenge of having to scale

¹⁰ <https://hubtel.com/about/>

¹¹ <https://iprocu.re/>

¹² <https://interswitchgroup.com>

amidst nascent entrepreneurial ecosystems. How can technology ventures successfully scale in these conditions?

Technology ventures in nascent ecosystems must develop complex internal competencies to make up for the nascent developmental stage of the entrepreneurial ecosystem. As a result, technology ventures must scale complexity rather than simplicity. To illustrate this idea, consider the various technology ventures that have emerged across the continent such as the new Amazons and Spotifys of Africa. Intriguingly, these ventures develop capabilities early on in their lifecycle to solve non-core problems for which outsourcing partners do not yet exist. As a result, their organizational designs are characterized by complex internal role structures and a portfolio of specializations to deliver the core product. These "full-stack" firms operate with minimal outsourcing and relatively large employee pools to create a comprehensive set of in-house solutions that strategically minimize dependency on the broader environment.

Consider the ecommerce venture Jumia¹³, founded and catalyzed by the Berlin startup studio Rocket Internet which scaled an Amazon-inspired platform approach to eleven African countries and listed in 2019 on the New York Stock Exchange. Jumia had to develop its own logistics and payments solutions to efficiently ship goods and enable payments transactions for its users as such services did not yet exist as they entered their target markets (Forbes, 2016) . Similarly, the audio streaming technology venture Mdundo¹⁴, founded by Danish entrepreneurs in Nairobi, Kenya, scaled to 25 African countries and listed on the Nasdaq First North Growth Market in Denmark. Unlike other streaming providers, Mdundo was not able to just buy local artist music catalogues from international players such as Sony and focus on rolling out its platform. Instead, Mdundo had to enforce and police a legal copyright regime

¹³ <https://www.jumia.com.ng>

¹⁴ <https://mdundo.com>

for music and individually sign each artist, effectively creating their own music catalogues (Kazeem, 2020, September 16). These examples illustrate the challenges that technology ventures face as they seek to scale in contexts characterized by nascent entrepreneurial ecosystems.

Interestingly, we can also observe ventures that do not conform to the full-stack design that we described. On the other end of the spectrum, we see firms orchestrating an international tapestry of roles and resources. These are firms with a globally decentralized organizational structure where functions are geographically distributed, often without formal subsidiaries, and often outsourced. These technology ventures manage their institutional environment by de-emphasizing geographical proximity and instead globally distributing managerial and engineering roles. Intriguingly, role location is not determined by access to new markets but by access to cost-effective resources as well as personal networks, leading ventures to distribute work across the U.S., Europe, and the African continent in an effort to stay lean. In the case of the fintech venture AZA Group¹⁵ that has developed a cross-border payments infrastructure, such an international tapestry was stabilized and formalized over time as ventures mature. The venture has raised over \$50 million in external financing and was originally founded in Kenya but seven years later operated with offices not just on the African continent but also in London, Luxembourg, and Madrid.

Our observations suggest interesting research opportunities exist in exploring how technology ventures create organizational structures to effectively navigate nascent ecosystems in pursuit of scale. This would include the quest to document the organizational solutions that African ventures engineer to co-evolve with their ecosystems. Such work may uncover design characteristics of ventures thus far not covered by extant work. What is more, a longitudinal research perspective would be able to shed light on how venture-level

¹⁵ <https://azafinance.com>

capabilities are configured and reconfigured as the ecosystem matures once new ventures emerge that more effectively solve supply chain and partnership challenges.

Moreover, the heterogeneity in organizational designs makes for an ideal empirical setting to examine how designs affect venture performance. This includes the question pertaining the balance of drawbacks and advantages that the increased complexity of vertically integrated organizational designs brings for African scaling ventures. More generally, technology ventures in Africa offer intriguing research opportunities to better understand how choices about organizational structure affect the trajectory and rapidity of scaling.

Research Opportunity 5: The Effect of the Institutional Environment on Scaling

The critical role of the institutional environment in entrepreneurship has been discussed in some depth (e.g., Bruton, Alhstrom & Li, 2010; Phillips & Tracey, 2007; Tolbert et al., 2011). In discussions of entrepreneurship in Africa, researchers have paid considerable attention to the characteristics of the institutional context in African economies and the existence of “institutional voids” that create challenges for entrepreneurs (Webb, Khoury & Hitt, 2020). Furthermore, researchers have noted the influence of corruption on entrepreneurship (Anokhin & Schulze, 2009), and colonial legacy laws have been shown to stifle business dynamism (Pierce & Snyder, 2020). While the complex institutional contexts facing African entrepreneurs can be cast as a significant challenge to scale technology ventures, they can also be seen as a source of entrepreneurial opportunities. That is, similarities across African economies in their institutional infrastructure may enable rapid scaling across similar such economies with little danger of competitive entry from ventures originating from very different institutional circumstances (Jahanbakht et al., 2021).

For example, Kenyan technology venture OkHi¹⁶ was founded to provide a service that addresses the lack of an institutionalized address system, for instance by enabling customers to open bank accounts or receiving a package without an address. These institutional circumstances are the norm in many low-income economies. Intriguingly, OkHi is able to scale its technological and logistical advances across markets and sectors. Recently, OkHi has expanded to Nigeria and partnered with Nigerian fintech unicorn Interswitch¹⁷ to solve the “know your customer” problem in the vibrant digital payments space. Currently new customers must be physically verified by individually visiting each household, greatly complicating Interswitch’s desire to scale quickly.

Similarly, the Kenyan technology venture BRCK¹⁸ has developed an alternative to the recently failed Loon project of Google X to provide the last billion people on the planet with a low-cost and highly reliable Internet infrastructure. Legacy solutions, such as fiber cables, are not cost-effective for rural regions and people living in extreme poverty. In response, BRCK has developed a decentralized network of routers coupled with a gig economy platform that gives users free internet access, enabling it to potentially outperform global competitors. Here, the lack of internet infrastructure, the high cost of connectivity for the poor, and high unemployment sparked an innovative approach that may scale to many other African economies and beyond as BRCK’s expansion to Mexico has shown.

We see intriguing research opportunities at the intersection of entrepreneurial opportunities, the institutional environment, and scale. First, researchers could explore how technology ventures identify entrepreneurial opportunities that are applicable across similar institutional environments and how they adapt as they seek to exploit such opportunities as they scale up.

¹⁶ <https://www.okhi.com/>

¹⁷ <https://www.interswitchgroup.com/>

¹⁸ <https://brck.com>

A second opportunity lies in comparing internationalization efforts by technology ventures. At this point, a critical mass of technology ventures exist that have scaled internationally to dozens of African economies to access new customer markets. Yet, we know comparatively little about successful scaling strategies that involve early internationalization in ventures' lifecycles as opposed to the kind of "deep scaling" within an economy – primarily the US – common in the Global North.

Lastly, we know little about the role of the State in scaling technology ventures in Africa. In the Global North, the State is often seen as an enabler of high-growth entrepreneurship by funding technological advancement, creating demand for innovation, and shaping relevant institutions (Mazzucato, 2016). In African economies the relationship between the state and scaling technology ventures is likely to be different. For example, governments such as Zimbabwe, Kenya, and Rwanda demonstrate varying levels of progressiveness in their policies when it comes to accelerating high-growth technology ventures and as such make for intriguing empirical settings to evaluate the link between government policies, levels of entrepreneurship, and venture performance. Beyond that, there are important questions about how entrepreneurs access State-level resources and engage with the State as they scale.

Research opportunity 6: The Effect of Nascent Financial Markets on Scaling

Venture scaling depends in part on risk capital investment and liquid exit markets (Gilbert, McDougall & Audretsch, 2006). In addition, new forms of financing such as crowd funding and initial coin offerings (ICOs) are becoming increasingly important for the founding and growth of technology ventures (e.g., Howell et al., 2020; Stevenson et al., 2019). But how is scaling financed in Africa?

Even a cursory examination of the African context reveals a heterogeneity of funding models. International capital sources play an influential role as over 70% of venture capital

funding comes from outside of the African continent from investors based in the U.S., Europe, Middle East, China, and Japan (Maher et al., 2021). In addition, African ventures are funded by a variety of instruments including development aid grants as well as local and global corporate venture capital. Overall, it is striking to note the dependency of technology ventures on international sources of capital, implying the local markets for risk capital are relatively underdeveloped.

These specific funding patterns provide research opportunities on the relationship between the type and timing of funding and successful scaling. For example, increasingly development finance institutions such as the World Bank's International Finance Corporation are investing in technology ventures and State development agencies including USAID (U.S.) and GIZ (Germany) are providing development aid grants. How do such financing instruments affect the scaling trajectory of technology ventures? Research on this topic could be usefully framed against, and contrasted with, extant research on the impact of public subsidies on the performance of technology ventures in the Global North (Pahnke, Katila & Eisenhardt, 2015).

More generally, how do the specific financing patterns that we observe in Africa shape the trajectory and prospects of technology ventures? Extant research has noted how Silicon Valley investors support their investees by assisting decision-making and bringing industrial expertise (Arthurs & Lowell, 2006). It would be interesting to explore what kind of expertise geographically distant investors bring to the table, and how this influences venture strategies and performance. Lastly, related to a point we have made above, the strong dependence on external funders who operate primarily outside of the African continent raises the question how investors' cognitive biases and proclivities towards ethnic matching (Bengtsson & Hsu, 2015; Younkin & Kuppaswamy, 2018) may shape investment decisions and affect venture outcomes. In sum, research is needed to systematically disentangle the

patterns of funding and to understand what works to support scaling in this very different context.

Research Opportunity 7: The Societal Effects of Scaling

While particularly US-based tech companies have undoubtedly had a large impact on world society, the established Silicon Valley model for scaling technology ventures is not without its critics (e.g., Foroohar, 2021; Taplin, 2017), with an emerging literature pointing to the potentially negative effects of a model that puts such an emphasis on rapid scaling (e.g., Palmer & Weiss, 2021). On the African continent, too, the ideas, symbols, practices, and the language associated with rapid scaling have proliferated (Ndemo & Weiss, 2017). But we lack a nuanced understanding of the societal effects of technology ventures and how the gains and pains of rapidly scaling technology ventures are distributed across different stakeholders.

We imagine that the increasing number of scaling technology ventures providing financial infrastructures (i.e. AZA, Flutterwave, KopoKopo), new health services (i.e. AccessAfy, Zipline, 54gene), services to farmers (i.e., iProcure), logistics services (i.e., Sendy), and communication infrastructures (i.e., BRCK) will support economic development as they help reduce transaction costs and information asymmetries, and facilitate social mobility, access to health services, and youth employment. As technology ventures on the continent mature, scholarly analyses that critically evaluate individual, community, and macro socio-economic effects will provide fresh insights into the development benefits of technology ventures.

At the same time, the increasing prevalence of scaled technology ventures may lead to maturing entrepreneurial ecosystems and institutional change. For example, we expect that the monetary pay-off from these ventures will create a new entrepreneurial elite akin to Silicon Valley's tech billionaires. As such, examining the broader spillover effects on

ecosystems and institutions once prolific entrepreneurs on the African continent achieve success can be a promising future research area.

Another area of study concerns the dark side of entrepreneurship (Shepherd, 2019) and the potentially destructive effects of scaled technology ventures. For example, what will be the effect of market monopolies on the vast informal economies on the continent? The introduction of Uber has already attracted significant protest by gig workers (Griswold, 2019), and the advent of digital lenders may lead individual borrowers to overextend themselves (Odundo Owuor, 2019). Beyond that, scholars need to critically examine the international resource dependences that we have highlighted above. We have observed that many technology ventures tend to be incorporated outside of the continent, reducing the taxable base for national economies. Further, recent work has claimed that Silicon Valley style rapid scaling is out of place on the continent (Friederici et al., 2020). We worry that ventures which nevertheless try to implement such a model may become vulnerable to organizational misconduct and wrongdoing (Palmer & Weiss, 2021), evident in the case of Jumia which had misrepresented its performance when listing on the New York Stock Exchange. Lastly, scholars are unearthing dynamics of digital colonialism (Kwet, 2019) in which foreign multinational technology corporations increasingly control domestic resource flows on the continent, culminating in the export of data. As scholars of innovation and entrepreneurship, we need to extend our focus to better understand the societal effects rapid scaling engenders.

Conclusion

The current literature on scaling remains underdeveloped. In fact, it is still fair to say that “the study of growth has conceptually lagged behind the study of new venture formation and processes that operate at founding” (DeSantola & Gulati, 2017: 641). As much work needs to be done, we believe that the study of scaling technology ventures in Africa provides

a compelling context for developing our understanding of scaling. Equally importantly, given the potential impact of technology ventures on the socio-economic development of African economies, research is needed to inform practice and policy.

We have pointed to seven areas that we believe have important potential to uncover new empirical insights generative for theory development. We do not mean for this list to be exhaustive, but rather to provide examples of areas where researchers interested in scaling might begin to look for interesting research opportunities. We hope that our discussion will motivate researchers interested in scaling to look to the African continent as an interesting research context. In addition, we encourage researchers who have been studying entrepreneurship in Africa to consider broadening their research focus to include the scaling of technology ventures.

It is also worth keeping in mind that the continent is changing in ways that will make scaling more likely and even more interesting to study. First, there are important regulatory reforms such as the Africa Free Trade Agreement¹⁹ that have the potential to reduce fragmentation, make it easier for firms to expand across national boundaries and thereby facilitate the scaling of technology ventures.

Second, while the entrepreneurial ecosystems in many African countries remain nascent (Madzikanda & Dabuo, 2021), they are developing quickly. For example, Uganda, Tanzania and Rwanda are creating a joint stock market which may provide exit opportunities for indigenous technology ventures (Kazeem, 2020, September 24). In addition, the volume of venture capital investments has increased on the continent even during the pandemic (Kene-Okafor, 2021), signaling international investors see promising opportunities. These trends reflect a general improvement in the access to entrepreneurial finance both

¹⁹ Please see <https://africancfta.org> for more information on this exciting initiative.

domestically and internationally that is likely to encourage scaling in Africa, providing a further reason why research is needed.

Third, as markets grow and develop, the competitive dynamics of African markets are changing, specifically once foreign technology companies enter, and their presence become more salient. This raises the interesting question of when and to what extent African technology startups will succeed against international technology giants such as Uber, Tala, and Amazon. The advantages of local knowledge and connections are clear, but the well-developed technology infrastructure of the global firms is daunting. Understanding when and where local companies win out against global entrants provides many important research opportunities.

Fourth, the situation facing many technology startups in Africa is very different from that facing similar ventures in the Global North. Some of them solve problems that simply do not exist in more developed countries. At the same time, this creates opportunities for technology leapfrogging (James, 2009), in the sense that they can take their solutions to the Global North. Take for example, the riveting success of the mobile banking application M-Pesa in Kenya (Omswansa & Sullivan, 2012) that made mobile banking ubiquitous long before it become adopted in other parts of the world. The M-Pesa examples points to the potential for some Africa-born products to effectively compete against incumbents globally.

Overall, there are indications that markets in Africa are becoming more integrated, entrepreneurial ecosystems are rapidly developing, technology adoption is accelerating, and innovation is gaining momentum. All of these trends will increase the opportunities for high-growth technology ventures to scale their businesses not just in Africa but globally. We hope the exciting research opportunities generated by these trends will motivate entrepreneurship and innovation researchers to focus much more on this context for their research.

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