

The role of Innovation Hubs
taking start-ups from idea to business.
The case of Nairobi, Kenya

Natalie Chirchietti



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Abstract

In recent years, there has been a growing interest in the start-up scene in sub-Saharan Africa. 'Silicon Savannah' is today widely used to describe the thriving IT industry in and around Nairobi. Kenya's geographical advantage, its favorable economic reforms, and mature start-up ecosystem makes it stand out positively. Since a lot of hype exists around the start-up scene many investors are drawn to it, but in reality very few start-ups are investment-ready. The increasing start-up requirements and needs force incubators to diversify their offer. In contrast, to traditional incubators, an Innovation Hub (Hub) is characterised based on the concept of open innovation and collaboration. A Hub nurtures an enabling environment where a community of entrepreneurs can grow. At the same time, it serves as a nexus point for the local start-up community, investors, academia, technology companies and the wider private sector. It aims to create a structure where people serendipitously interact with others that they would not typically meet. Considering the great interest for and the large amounts of money invested in Hubs by governments, universities, private companies and other interested parties, not only researchers have been raising the question of the actual benefit of Hubs. This research study aims to investigate to what extent the support offered by the Hubs is tackling the challenges faced by start-ups in Nairobi, Kenya. The analysis can serve as a basis for identifying strength and weaknesses in the Hub models.

Key Words: Innovation Hubs, Hubs, Entrepreneurship, Entrepreneurs, Business, Start-ups, Silicon Savannah, Kenya, sub-Sahara Africa, Nairobi, East Africa, IT, technological innovation, Start-up scene, Startup Ecosystem, Open Innovation, Collaboration, Incubators, Accelerators, Co-Working Space, Serendipity

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List of Abbreviations

AEO	African Economic Outlook
AfDB	African Development Bank
BBC	British Broadcasting Corporation
CBO	Community Based Organisations
GALI	Global Accelerator Learning Initiative
GDP	Gross Domestic Product
GES	Global Entrepreneurship Summit
GIG	Global Innovation Gathering
GII	Global Innovation Index
GoK	Government of the Republic of Kenya
GSMA	Groupe Speciale Mobile Association
HDI	Human Development Index
ICT	Information and Communications Technology
IP	Intellectual Property
IT	Information Technology
KNBS	Kenya National Bureau of Statistics
KSH	Kenyan Shilling (national currency of Kenya)
MIT	Massachusetts Institute of Technology
NBIA	National Business Incubation Association
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
SEAD	Social Entrepreneurship Accelerator at Duke
SME	Small and Medium-Sized Enterprise
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
US	United States
VC	Venture Capitalist
WIPO	World Intellectual Property Organisation
YALI	Young African Leaders Initiative

1 Introduction

“Just landed in Nairobi! I’m here to meet with entrepreneurs and developers, and to learn about mobile money – where Kenya is the world leader,”

Mark Zuckerberg, CEO Facebook, 1st September, 2016

In recent years, there has been a growing interest in the start-up scenery in sub-Saharan Africa. Already before Mark Zuckerberg’s first visit to Nairobi, software ‘Made in Africa’ have been used in many applications, such as *M-Pesa*. The mobile-based and web development focused start-up, launched by *Safaricom* in 2007, allows its users to conduct financial transactions and to pay for products and services via their mobile phones without any need for a bank account. Today, *M-Pesa* is used throughout Kenya and neighbouring countries and stands for technological innovation from Africa.

A few years ago, no one in the professional world would have associated sub-Saharan Africa with technological innovation. But ‘Silicon Savannah’ is today widely used to describe the thriving IT industry in and around Nairobi. Since the launch of the *iHub* as an open innovation space for start-ups in 2010, Kenya’s capital, Nairobi, has become the centre of Silicon Savannah. Considerable attention has been paid to Innovation Hubs (Hubs) in general, whereby the *iHub* can be considered a milestone within the evolution of Hubs in sub-Saharan Africa. Hubs help start-ups to develop and launch new business models (BBC, 2012; Huffingtonpost, 2015). They provide a ‘bridge’ between the start-ups and its environment and promote innovation and entrepreneurship.

These Hubs do not solely exist in most Western cities – as inter alia ‘The Hub’ in Seattle and ‘Betahaus’ in Berlin – but have become, as mentioned in the preceding section, increasingly popular across Africa. The number keeps growing on a weekly basis. A recent study by GSMA (2016) tracked 314 Hubs with a distinct focus on technology across Africa (see Annex A). Given this number, a doubling in comparison to the last mapping, conducted by the World Bank in September 2015, can be realised as by then only 117 Hubs were listed. Nevertheless, the number of successful start-ups has not yet skyrocketed. With the increasing popularity of Hubs, criticism arises thereby questioning the real impact of Hubs.

In the last decade, Hubs have attracted increasing attention by researchers. Gathege and Moraa (2013) present one of the first examples of research on Hubs. They describe Hubs on several comparable variables, such as size, age, tenants, partnerships and funders, and identified common features. Due to the nascent nature of the field, only a few authors have yet undertaken distinct research in the field of Hubs. So far, only a handful of definitions exists, elaborating on the exact

nature of Hubs and describing their main supporting infrastructure (UNICEF, 2012; de Bastion, 2013; Friederici, 2014).

The results obtained by Friederici and Toivonen (2015) suggest that future investigation should be made to add up to an enhanced understanding of how new innovation intermediaries work in general. For example, they recommend examining how different Hubs shape collaboration or enact their communities. Due to the limited coverage of Hubs in the academic literature, it remains difficult to critically assess the impact and effectiveness of Hubs. Friederici (2015b) has also found that the measurement of successful start-ups to prove the positive impact of Hubs is not adequate. Accordingly, Friederici (2015b) arrives at the conclusion that there is a need to redefine 'impact'. He suggests that there is an evident need for further investigation around Hubs.

Gaps in research identify that Hubs have been scarcely investigated from the start-ups' point of view. Little inquiry has yet been done to understand the exact needs of start-ups operating in Hubs to further derive conclusions about the necessary support structures within a Hub. Most of the previous studies do not take into account that start-ups operate in a complex environment, but with a rather one-dimensional approach (InfoDev, 2014; Indigo Trust, 2015; Firestone and Kelly, 2016).

During the *Global Innovation Gathering* (GIG), Hub representatives from all over Africa met at the *re:publica conference* in Berlin (5-7 May 2015), and the author of this research study was able to talk to Hub managers from Kenya. These initial conversations along with the findings from the preliminary literature review reveal that there is a need for empirical data on Hubs. Therefore, the researcher decided to conduct her own empirical research to address the detected deficiency, which does not solely exist in the academic literature but seems also to be evident in the practitioner sphere. During an in-depth exploratory study and field-research over a four-month period in Kenya, the targeted country, the researcher collected qualitative interviews. The multiple case study approach, including Hub managers and start-ups, revealed to be the best option for an investigation. The main research question of this study, developed iteratively over the course of the study, is:

To what extent do Hubs support start-ups tackling their challenges encountered in bringing their idea to business?

In other words, this paper aims to investigate the barriers start-ups face and how the targeted Hubs help start-ups overcome these barriers. Afterwards, the researcher evaluates the models of Hubs relevant to supporting start-ups in coping with challenges and analyses the impact of the support

services on the business development. At the same time, the researcher explores which challenges are seen from Hub managers and start-ups likewise and differently.

In particular the research objectives are:

1. Identify the barriers preventing start-ups to develop
2. Examine the support structures of Hubs' provide
3. Explore the factors that determine a thriving environment for start-ups

The research study describes the phenomena of Hubs, outlines activities for further improving the support structures for start-ups, and provides the reader with the essential knowledge and short overview of the current start-up and Hub landscape in Kenya. The overall aim is to understand the role of Hubs and their impact in taking start-ups from idea to business.

2 Evolution of the Start-up Ecosystem in Kenya

To comprehend the impact of Hubs on the Kenyan start-up ecosystem, it is first necessary to understand the factors that influence the increase of start-ups in Kenya. East Africa is the fastest growing region in Africa (AfDB, 2015). Over the last five years, Kenya has demonstrated stable growth rates and a general increase in living standards. As shown in Figure 1 the Human Development Index (HDI) increased in Kenya between 1980 and 2014 from 0.453 to 0.548. This is an increase of 21.1% (UNDP, 2015).

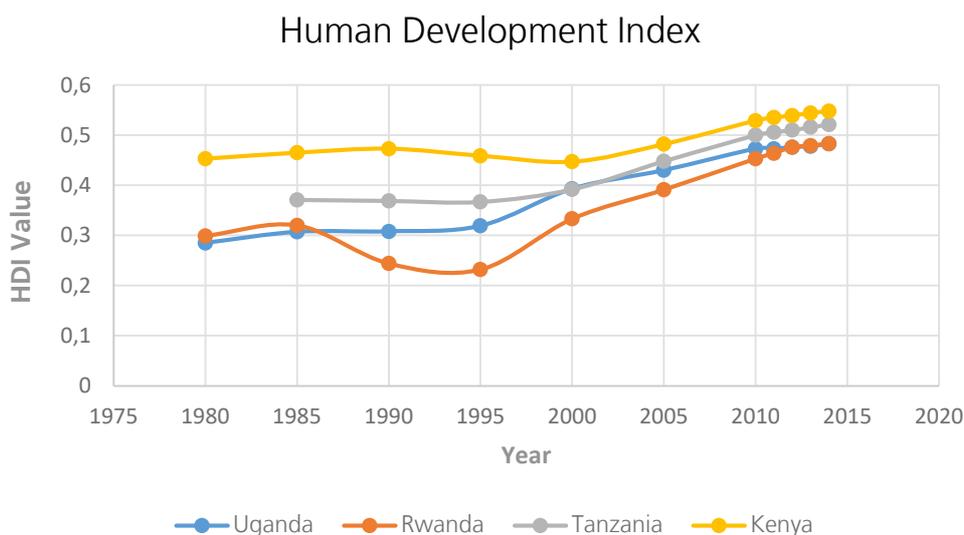


Figure 1: Human Development Index (HDI) (Source: UNDP, 2015)

The strong economic growth in Kenya over the past two decades has been accompanied by the emergence of a sizeable middle class, increased political stability and urbanization (AfDB, 2016).

According to the AfDB (2011) the middle class is defined as those with an income of \$4-20 a day in purchasing power parity. In Kenya this already includes 44.9% of the total population. This middle class can raise both supply of and demand for consumer products and services (Dolislager et al., 2015). In 2008 African consumers spent \$860 billion. The McKinsey Global Institute (2010) estimates this purchasing power will rise up to \$1.4 trillion in 2020, and more than half of the African households will have discretionary spending power.

In the meantime, Africa’s labor force is growing more rapidly than anywhere in the world (McKinsey, 2012). More than 34% of Kenya’s population are aged between 15 and 34 (KNBS, 2010). This substantial workforce can contribute significantly to economic growth. Nevertheless, youth unemployment is still a major issue in Kenya and much of this labor force is not utilised. Seven out of ten people unemployed are between 15 and 34 (AfDB, 2012). One reason for that is that Kenya’s economy is currently dependent on agriculture, which mostly takes places in rural areas (KNBS, 2015). However, young people tend to move to urban areas, where jobs are not generated as fast as the population is growing (AfDB, 2016). This lack of job opportunities is compelling young people in Kenya to start their own business. At the same time, many young people desire to be self-employed (Omidyar Network, 2013). Over 2.3 million small and medium-sized enterprises (SMEs) are active in Kenya and the number is growing (Intellicap, 2016). It is estimated that SMEs in Kenya provide employment for almost 80% of the workforce, though the sector only contributes for 20% of GDP (AfDB, 2015; KNBS, 2015). To increase this contribution to the economy it is necessary develop a SME infrastructure (Gachugia et al., 2014).

Venture Breakdown by Top20 Sectors

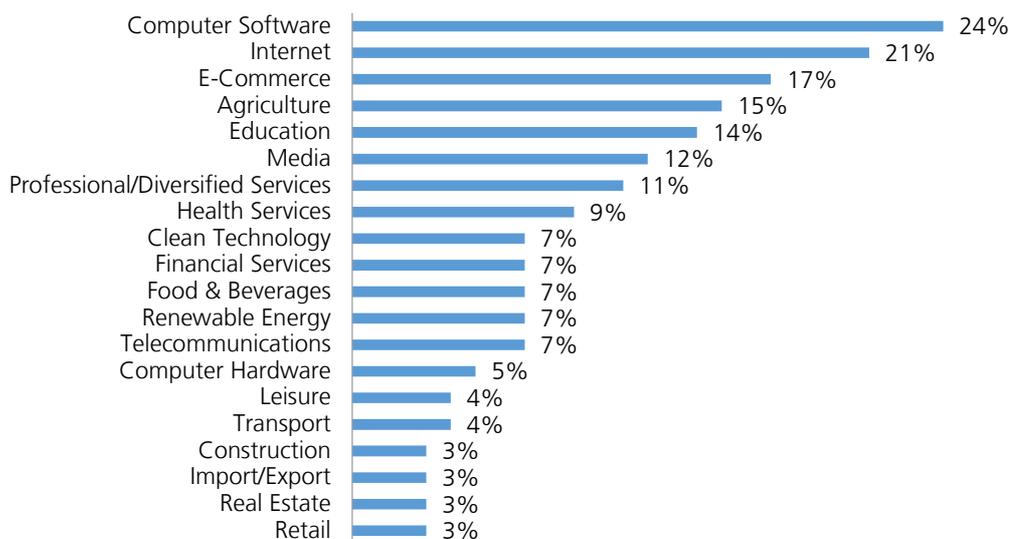


Figure 2: Venture Breakdown by Top 20 Sector (Source: VC4 Africa, 2015)

Besides the availability of human capital, the increased flow of investments in the region is a reason behind the rise of entrepreneurship in Kenya (Intellectap, 2016). Venture capitalists (VCs) invested more than \$400 million into African start-ups in 2014 (VC4 Africa, 2016). Figure 2 indicates that the largest number of start-ups operates in the technology sector this includes computer software, internet and e-commerce.

Most investments coming to the technology sector fund companies in Kenya, South Africa or Nigeria. The Information and Communication Technology (ICT) sector in Kenya is expected to become a major driver for economic growth (Disrupt Africa, 2015). In 2014 the ICT sector already accounted for 8.4% of Kenya's GDP and according to reports from Bloomberg (2014) Nairobi's technology scene could be at least worth \$1 billion by 2019.

The emergence of businesses such as *M-Pesa*, the reputation of Kenya as the 'Silicon Savannah', and the demand for experienced young professionals all make local talent remain, but also bring experts from abroad to the country. The first generation of East Africans that studied abroad and stayed to work for companies like *Google*, *Microsoft* and *Goldman Sachs* return to Kenya to either work for family businesses or start their own companies (Kalan, 2011; I-Dev International, 2016).

3 Start-ups & Innovation Hubs

3.1 Start-ups

3.1.1 Definition and Characteristics of Start-ups

Support for start-ups is becoming increasingly important on an international economic and labor market policy level (GES, 2015; OECD, 2015). However, there is no clear definition of start-ups, entrepreneurs or entrepreneurship (Neck, 2000). In 1934 Schumpeter (2012) describes an entrepreneur as an innovator, who picks up new ideas and starts a business. This business is also referred to as a start-up. According to Baumol (2005) start-ups distinguish themselves from large businesses primarily in terms of their size. They are more flexible and innovative, which can be explained by their flat organisational structure and small founding teams (Grandori, 2013). Start-ups are able to quickly react to changes in the market and technology under remarkably uncertain conditions (Spinelli and Timmons, 2012; Aldrich and Fiol, 1994). In general, start-ups are fast-growing companies designed to rapidly scale-up. This argumentation often fails to consider whether the start-up operates in a developed or developing country, and it is questionable whether Kenyan start-ups can meet these expectations.

In this paper a start-up is seen as a company in the early stage of its operation. Their aim is to take their idea into business and establish on the market. The company is small and consists usually of one or up to one hundred employees.

3.1.2 Challenges of Start-ups

The specific characteristics of a start-up give rise to certain challenges. Grandori (2013) argues that despite their greater flexibility and innovativeness, start-ups are especially vulnerable in the creation and establishment phase. The high-risk nature of these businesses and the fact they are newly created makes start-ups more prone to failure (Aernoudt, 2004). Only a small portion of companies survives their first years (Bøllingtoft and Ulhøi, 2005).

Noltes et al. (2013) argue that large companies benefit from an economy of scale when it comes to developing new products. Even in the 1980s, Casson (1982) argues that many start-ups lack personal, human and financial resources. Since the 80s, these features have not changed significantly. Honjo (2000) points out that the main reason for the high start-up failure rate is that start-ups have less capital and industrial experience.

In fact, White (2011) finds out that entrepreneurs in Africa are challenged by lack of capital, lack of governmental support and corruption. Since a lot of hype exists around the start-up scene many investors are drawn to it, but in reality, very few start-ups are investment-ready. Start-ups in Kenya are usually in an early or growth stage and need much smaller investments than the minimum sought by investors (de Bastion, 2013). Due to this gap start-ups in the early stage rely on personal funds and friends and family for seed funding (Intellectap, 2016). Business angels and angel networks are only now emerging in the region. Currently less than 10% of entrepreneurs receive funding from VCs or business angels (GSMA, 2014; Omidyar Network, 2013).

The majority of start-ups in Kenya (70%) make \$2,900 or less per month, meaning those involved cannot work full time on their ventures (GSMA, 2014). Due to limited space and capital, many start-ups are forced to meet in and work from coffee houses in Nairobi. Often such venues have limited Wi-Fi availability and entrepreneurs are heavily distracted by the noisy surroundings (de Bastion, 2013; Gathege and Moraa, 2013).

A research of *iHub* attributes that many entrepreneurs in Kenya lack presentation skills and the general experience necessary to run a business (Gathege and Moraa, 2013). They typically fail due to a lack of managerial and soft skills and tend to have deficits in team structure, track records and financing. De Bastion (2013) discovers that in the early stage many start-ups lack an efficient sales and marketing strategy and awareness of intellectual property (IP). Furthermore, many start-ups

lack co-operation and networking abilities. If those young people were to receive the education and skills they need, this large workforce can become a significant engine of global consumption and economic growth (McKinsey, 2010).

Considering all these factors, the latest statistics from the OECD (2015) suggest that it is necessary to create a special supporting environment for start-ups, which considers their specific weaknesses and challenges. This statement gains significance since start-ups become more important due to the rise of new technology and the effects of globalisation. Effective support must provide start-ups with information infrastructures, access to networks and financing. According to Aernoudt (2004) and Baird et al. (2013) one way of overcoming these problems can be seen in the model of incubation which helps start-ups to handle uncertainty and obstacles during the early stage. Incubators can support start-ups during the process of establishing their firm and hence help them to succeed.

3.2 Innovation Hubs

3.2.1 Definition and Characteristics of Innovation Hubs

The National Business Incubation Association (NBIA) defines incubator as an organisation that is designed to accelerate the growth of a start-up through a compilation of support services including, for example, office space, capital, training and networking possibilities. They can follow for profit, non-profit or hybrid-models. Their main goal is to produce successful start-ups that will be financially viable and self-supporting. As start-ups typically have limited resources, incubators provide the necessary infrastructure to support the establishment and success of start-ups (Howells, 2006). They create linkages between the entrepreneur and its environment and contribute to regional economic development. When referring to start-ups in the incubator context the term 'tenants' is frequently used.

Incubators became popular in the 1980s, primarily as providers of office space for many start-ups in one place. When it became evident that lack of business expertise influences the success of start-ups, the incubators evolved quickly (Hackett and Dilts, 2004). Throughout the 1990s, incubators expanded their value proposition providing business support services aiming to accelerate the learning process of start-ups (Adkins, 2002; Lalkaka and Bishop, 1996 cited by Bruneel et al., 2012). The increasing start-up requirements and needs forced incubators to diversify their offer. Incubator models developed further and since the 2000s a new type, called Innovation Hubs, were established. Theory on Hubs largely derives from the study of incubators operating in Europe and the United States (US). Evolved from the theories of the networked incubator and the bottom up incubator, Hubs share the same overall traits as incubators described in the literature (Bøllingtoft,

2012; Bøllingtoft and Ulhøi, 2005). It is important to note that statistically there is no significant evidence that different types of incubators lead to a difference in the success rate or affect the impact (Noltes, 2010).

Like traditional incubators, Hubs provide services that help start-ups to get through initial hurdles in starting up a business (Hackett and Dilts, 2004). Those include:

- Help with business basics
- Networking activities
- Marketing assistance
- Market Research
- Fast and reliable Internet access

Nevertheless, those services provide only a partial understanding of Hubs. In contrast to traditional incubators, a Hub is characterised based on the concept of open innovation and collaboration. The review of literature shows clearly that there is confusion over what is meant by the term Innovation Hub. *“‘Hub’ has become a misnomer for many organisations where the label doesn’t quite fit”* (Friederici, 2014). There are a number of definitions that try to describe Hubs. According to the UNICEF guide (2012), Hubs bring together diverse stakeholders, lower barriers to solutions from co-creators, are embedded in their local context, and encourage collaboration through shared physical space. Unfortunately, the definition suffers from a lack of clarity. It is difficult to think of an example of incubators that would be excluded from this broad definition. It is comprehensive and therefore unhelpful to understand what counts as a Hub and what is not.

To add, the Hub nurtures an enabling environment where a community of entrepreneurs can grow. At the same time, it serves as a nexus point for the local start-up community, investors, academia, technology companies and the wider private sector (de Bastion, 2013). Hence, it attracts a diverse, but like-minded group of people (Friederici, 2014). Combining the different resources not only saves costs, but also creates a positive effect for the start-ups and fosters knowledge-transfer. Altogether, it is a source of inspiration (de Bastion, 2013). At the center is the idea that start-ups need additional inputs such as creative product design and financing to develop (Friederici, 2014).

Friederici (2014) says Hubs see themselves not as creators or implementers, but enablers of innovations. A Hub aims to create a structure where people serendipitously interact with others they would not typically meet. Those serendipitous encounters can lead to business collaborations (Lee and Sá, 2012). Many Hubs create space for informal networking, for instance, by including cafés, meeting space and hang-out areas (de Bastion, 2013). Events and meet-ups enable new and

promising businesses to be discovered and funded. Although training and learning mostly takes places informally, most Hubs offer seminars, courses or workshops on business in general, legal issues, marketing and financial management to help start-ups increase their knowledge and field of expertise.

To qualify as a Hub it has not to fulfill all the requirements described above. In reality, a Hub almost never has all the theoretical characterises. In fact, traditional innovation intermediaries, such as incubators and accelerators, have started implementing elements from the Hub concept, resulting in a mixture of organisational models (Friederici, 2014). Some terms are used interchangeably, which might cause confusion.

In this paper, Hubs are defined as physical environments that support start-ups and individuals at different stages of development. It is an umbrella term for a community-driven pre-incubator, incubator, accelerator, hacker space and co-working space that encourages collaboration, networking and innovation.

3.2.2 Development and Current Situation in Kenya

Hubs have been emerging across Africa since the founding of the *iHub* in Nairobi 2010 and the *Co-Creation Hub* in Lagos in 2011 (Gathege and Moraa, 2013). Primarily, a Hub functioned as a physical nexus point where the technological community of developer and hackers gathered. The start-ups they promote are instruments to foster innovation and economic growth as well as tackling poverty (Gathege and Moraa, 2013). In many Western countries, established structures exist to support the transition between university and work place as well as the growth of business clusters and matchmaking between entrepreneurs and investors. However, in many African countries there is a lack of established structures to assist young people in reaching their entrepreneurial potential and to help them make use of their technical and business skills (de Bastion, 2013).

Kenya's geographical advantage, its favorable economic reforms, and mature start-up ecosystem makes it stands out positively (Intellectap, 2016). Hence, it ranks highest on the Global Innovation Index (GII) for low-income countries (WIPO et al., 2015). The laying of the undersea fiber optic cable from Mombasa to Fujairah in United Arab Emirates in 2009 linked Kenya to the global fiber optic submarine system and significantly increased the broadband in East Africa (VC4 Africa, 2016). With the rapid increase of mobile (73.8%) and internet (43.4%) access in Kenya, particularly in urban areas, new markets and business opportunities emerged (de Bastion, 2013; GSMA, 2015). At the

same time, the introduction of *M-Pesa* inspired many people to be entrepreneurs and proactively launch start-ups.

Correspondingly, the Kenyan government launched in 2012 its first *National ICT Masterplan*, a five-year plan seeks to improve the digital infrastructure (ICT Authority, 2012). Through the *Vision 2030* objectives, ICT policies and initiatives the Kenyan government started to encourage start-up and accelerator programmes (GoK, 2007). The governmental project, *Konza City Technology Park*, is supposed to be the 'Silicon Valley of East Africa' by harmonising university research activities with the industry and the government (Anderson, 2015). In addition, international organisations as well as private co-operations empower young people through entrepreneurship programmes such as the US founded programmes *SEAD East Africa Programme* or the *YALI Regional Leadership Centre East Africa*.

Turning to the Hub landscape in Kenya the idea to create a Hub first emerged in 2008 during various Barcamps in Nairobi. The idea was put in practice when *Ushahidi* (an election monitoring and crisis management tool) received funding to open the *iHub* (de Bastion, 2013). The *iHub* is an open community workspace and incubator. *The Bishop Magua building* where *iHub* is located has become a centre for start-up innovation and incubators, like *m:lab East Africa* or accelerators like *Nailab* opened their offices there. They help especially technological start-ups to identify market opportunities, to build and refine their business models and effectively pitch the business to investors. The newly opened *Gearbox* focuses exclusively on hardware start-ups.

Perhaps the most important development in terms of research and innovation is the fact that nearly every university has opened up their own Hub. For example, the Kenyatta University has its *Manu Chandaria Incubation Centre*; the University of Nairobi started *C4DLab* (a software incubation center) and *Fab Lab*, in conjunction with the Massachusetts Institute of Technology (MIT). Most universities collaborate with international partners to enhance knowledge transfer while, at the same time, providing new solutions. The Strathmore University f.e. hosts two important incubation and research labs called *@iBiz* and *@iLab Africa*.

Co-working spaces such as *Nairobi Garage* or *The Foundry* are located nearby and enable peer-to-peer learning and creation of networks. The accelerator programmes of *GrowthAfrica* that have a more general focus, and *Villgro* or *Merck* that look specifically at health care start-ups play an important role in identifying innovative start-ups and providing mentoring and coaching services to start-ups that aim to strengthen their business model. Creative spaces, including *Pawa254* and *Creatives Garage*, cater to creative start-ups and freelancers.

The Hong Kong Based Venture Capitalist, *Nest VC*, tries to encourage the entrepreneurship networks, by providing workshops and access to a worldwide network. Through public-private partnerships also, multinational companies set up research labs in Nairobi to expand their reach. For example, *IBM* collaborates with the Kenyan government to create innovations around big data. On a pan-African level, the network *AfriLabs* is attempting to build a community around the emerging Hubs in Africa. *AfriLabs* aims to foster this network of knowledge and innovation sharing and collaboration. Over the last six years, a diverse landscape of co-working spaces, accelerators and incubators led by academic institutions, civil society, government and co-operations has evolved.

3.2.3 Limitations of Innovation Hubs

Considering the great interest for and the large amounts of money invested in Hubs by governments, universities, private companies and other interested parties, not only researchers have been raising the question of the actual benefit of Hubs. In fact, the researchers doubt the effectiveness of incubation centers such as Hubs (Bøllingtoft and Ulhøi, 2005; Peña, 2004). One reason is that the success of Hubs is mainly measured by the output of start-ups. Friederici (2014) suggests specifying 'success' and 'impact' of Hubs differently. He argues, "*the expectations towards a hub's impact can hardly be codified as pre-specified targets (such as 'number of start-ups launched')*" (Friederici, 2014).

More and more donors demand data, accountability, and sustainability (Akinyemi, 2015). Gosier (2014) notes that the biggest risk to the Hubs is that they will implode under their own weight as soon as donors start to realise that many Hub models are not sustainable. Hubs that primarily rely on grants are forced to demonstrate enough impact to justify their survival. Hubs lack skills in monitoring and evaluating their progress (Gathege and Moraa, 2013). De Bastion (2013) argues that for this reason the primary role of Hubs is to find ways to maintain independent. Friederici (2015b) believes that the role of Hubs is less tangible.

Gathege and Moraa (2013) state that Hubs in Africa miss well-established incubation programmes that assist the start-ups. According to GSMA (2014) start-ups need high-quality mentorship and additional training. Currently, most of the Hubs have limited staff capacity. Most have no expertise in business development and project management. The limited financial sources Hubs operate with can be a reason for that (Gathege and Moraa, 2013).

3.3 Research Gap

The study of relevant literature reveals that start-ups are a major driver to economic growth and job creation. However, most start-up businesses find that in order to grow in scale they need external support. Aernoudt (2004) stresses the need to have an infrastructure in place that assists start-ups tackling their challenges. Hubs, as a new type of incubator, could offer this support. However, it is not clear how new types of incubators like Hubs differ from traditional forms. To begin with, there does not seem to be much consensus with regard to the definition of 'Innovation Hubs' and how it should be evaluated and compared (Firestone and Kelly, 2014; Friederici and Toivonen, 2015). This might be one explanation why the opinion on the effectiveness of incubators differs (Essien, 2015; Oluwagbemi, 2015). Consequently, there is a general demand for more rigorous evaluations of Hub performance (Gosier, 2014; Akinyemi, 2015). Friederici (2015a) emphasises that there is little evidence on the impact of Hubs. Most of the studies on Hubs have focused on outcome (e.g. number of new firms, jobs and firm survival) without looking at the intangible benefits (Bergek, 2008; infodev, 2009, World Bank, 2014). There has been less focus on the indirect and social aspects of Hubs. Previous literature misses to look at the influences of external factors on the success of start-ups.

Though the field of entrepreneurship and Hubs in Kenya attracts a lot of interest, few studies document the relationship between Hubs and their start-ups (GALI and Village Capital, 2016). Predominantly, it is necessary to identify the challenges of entrepreneurs in Kenya in order to help them towards scaling their business. Therefore, Howells (2006) suggests looking deeper at the support offered to the start-ups.

Previous research on incubators especially focuses on Europe and the US. Many researchers emphasise that more attention has to be paid to the local context (Friederici, 2014; Thapa and Sæbø, 2014; Zahra et al., 2014). This research study fills the gap and contextualizes the work of Hubs and their role for start-ups in Kenya by looking at the support offered by Hubs in Nairobi and the challenges faced by Nairobi start-ups. An important contribution of this research work is the study and analysis of empirical data on the barriers preventing start-ups developing and the specific needs expressed by them. This research study aims to investigate to what extent the support offered by the Hubs is tackling the challenges faced by start-ups in Nairobi, Kenya. This analysis can serve as a basis for identifying strength and weaknesses in the Hub models.

The following chapter provides the reader with a summarised form of the research methods adopted to adequately address the research gap identified above.

4 Methods

4.1 Research strategy

This research study investigates the impact of Hubs. This objective applies through the collection and analysis of empirical data. The empirical research of this study focuses on an in-depth case study of Hubs and their start-ups in Nairobi, Kenya. According to Bergek (2008) literature has yet not paid adequate attention to the needs of start-ups and has not defined the environmental conditions in terms of the process of new venture creation. This research aims to fill this gap, to identify the challenges of start-ups in Nairobi, and to explore socio-cultural aspects affecting their success. Furthermore, the literature review clearly shows that there is not yet one commonly agreed definition of Hubs. To fill this gap this research tries to find similarities and distinguish differences between Hubs in Nairobi. The case study approach facilitates the researcher's drive to probe deeply into entrepreneurship studies, by devoting time and energy concentrating on specific aspects of start-up development in Kenya. This approach provides the focus that is required, emphasizes the depth of study, and bases on the assumption that reality can only be understood through social constructions and interactions, and that the context in which the phenomena under study is situated is complex (Saunders et al., 2009). During the in-depth exploratory study, the researcher focuses on start-ups' views, including perceived barriers, while further obtaining other views from the Hub staff in recognition that a start-up acts in a complex environment and its views need to be placed in specific context.

Since there is not much research on Hubs in Kenya, qualitative interviews are chosen as the primary method to gather data. Therefore, the researcher has selected a number of representative cases. The qualitative research methodology is preferred given the need for a deep understanding and local contextualization of the topic (Miles and Huberman, 2008; Thapa and Sæbø, 2014). In essence, this research is primarily qualitative by nature, not quantitative, although quantitative research can often employ interview techniques within social settings and be used in conjunction with qualitative methods (Myers, 1997).

The review of relevant literature emphasizes that Hubs are an area of increasing interest in the wider start-up community; ergo the results of this study are of interest to those grappling with similar issues. This empirical research attempts to look deeply into Hub's approach to support start-ups, the needs of start-ups and aspects influencing the development of start-ups by implementing a case study and by concentrating on collecting qualitative data from both Hub managers and start-ups. The results of this study provide the reader with a miscellaneous picture of the Hub landscape in Kenya and adds to the pool of knowledge around the field of entrepreneurship in Kenya.

4.2 Data collection

This research focuses on achieving an in-depth and qualitative insight into the relation between start-ups and Hubs. The data for the research has been collected during semi-structured, face-to-face interviews with start-ups at the Hub, typically a founder or CEO, using an interview guide (Annex B and C). Together with general company information, a key issue for these interviews is to gain insights into the challenges faced by an entrepreneur in Nairobi and to understand to what extent the start-ups perceive the value of the support offered by the Hub. To concentrate solely on start-ups at the Hubs would produce a one-dimensional perspective, namely experiences and views of the start-ups. In the second step of data collection, staff of Hubs including the manager or CEO, have been interviewed. For each investigated Hub, one staff has been interviewed to gain an overview of the Hub and the support offered. Only if the innovation intermediaries of the start-ups, i.e. the Hub, are adequately embedded in the research, an extensive picture of the perceived challenges within the Kenyan start-up ecosystem can be developed. The research aims to gain a more comprehensive perspective on the impact of Hubs and the relation between start-ups and Hubs. To increase data collection procedure uniformity across the interviewees, the developed interview guides as well as conducted interviews have been in English. The length of the interviews have been typically between 30 and 50 minutes.

The interview guide includes topics and themes identified through document studies and pre-exploration of the issues surrounding start-ups in Kenya. These elements encompass are:

Hub managers or other staff	Start-ups
The overall activities and strategy	Self-description of the start-up
The target group and selection criteria	Challenges faced by the start-up
The support offered to the start-ups	General support offered by the Hub
The internal and external challenges faced by the start-ups	Satisfaction with the support offered by the Hubs

Table 1: Topics and themes of the interview guide

The Hubs in Nairobi have been chosen based on structured sampling. Since existing lists of Hubs are outdated and not complete, the researcher elaborated a new list of Hubs in Nairobi. These Hubs have been put in alphabetical order and divided into equal intervals to elaborate the sample of targeted Hubs. The researcher selected every second name on the list of Hubs in Nairobi. By putting the names of the selected Hubs in alphabetical order, the research has attempted to ensure a maximum of random sampling. It is to be hope that the sample achieves representativeness for the Hub community in Nairobi. Nonetheless, it is possible that through the structured sampling

technique interesting Hubs have been excluded. The selected sample of Hubs included representatives from ten Hubs in Nairobi.

The chosen sample of Hubs includes the following institutions:

1. *Akirachix* provides training, mentorship and outreach programmes for female tech entrepreneurs in Kenya
2. *Creatives Garage* is co-working space and movement for Creatives to network, share ideas, collaborate, learn and gain market accessibility
3. *FabLab* is a Fabrication Lab, originated from MIT, located at the Faculty of Engineering at the University of Nairobi, who does incubation
4. *Gearbox*, the new open makerspace for design and rapid prototyping, incubates and accelerates start-ups focused on electronic manufacturing
5. *Growth Africa* accelerates start-ups and businesses in and into East Africa
6. *iBiz* is a multi-disciplinary business incubation facility at Strathmore University run by *iLab* a Research Centre focused on ICT Research
7. *m:Lab East Africa* is an incubator for growth-oriented start-ups that are focused on developing mobile applications
8. *NaiLab* is a start-up accelerator that offers a 3 - 6 month entrepreneurship programme with focus on growing innovative technology driven ideas
9. *Pawa 254* is an art space for creatives who meet, network, share and collaborate on social impact projects designed to foster social change
10. *The Hub East Africa* is a co-working space that accommodates all sorts of entrepreneurs with focus on knowledge, operation and commercialisation

The interviews of the Hub managers have been recorded and transcribed afterwards. Furthermore, the interviews have been made anonymous, so that the interviewee cannot be identified. The staff are identified as manager A, B and so on. The start-up interviews have not been recorded and only notes have been taken. This may help allay any concerns that start-ups have concerning the transcriptions, with the added benefit start-ups may feel more comfortable to speak open and freely (Alshenqeeti, 2014). To avoid quotations that embarrass the respondents, quotations are not be attributed to specific named individuals. Start-ups are marked as start-up A, B, C and so on.

The data collection has been carried out from January to March 2016. In total, twenty start-ups and ten Hub managers have been interviewed. The researcher spent a total of four months in Nairobi, where furthermore explorative interviews have been hold with people involved in the start-up ecosystem. All spaces have been visited and observed by the researcher in person.

4.3 Samples

In the present study thirty people have participated and have shared their experience through interviews. These thirty individuals have been divided into two groups. Firstly, there are ten people that manage a Hub in Nairobi and secondly, twenty start-ups who work at the Hub on a regular basis.

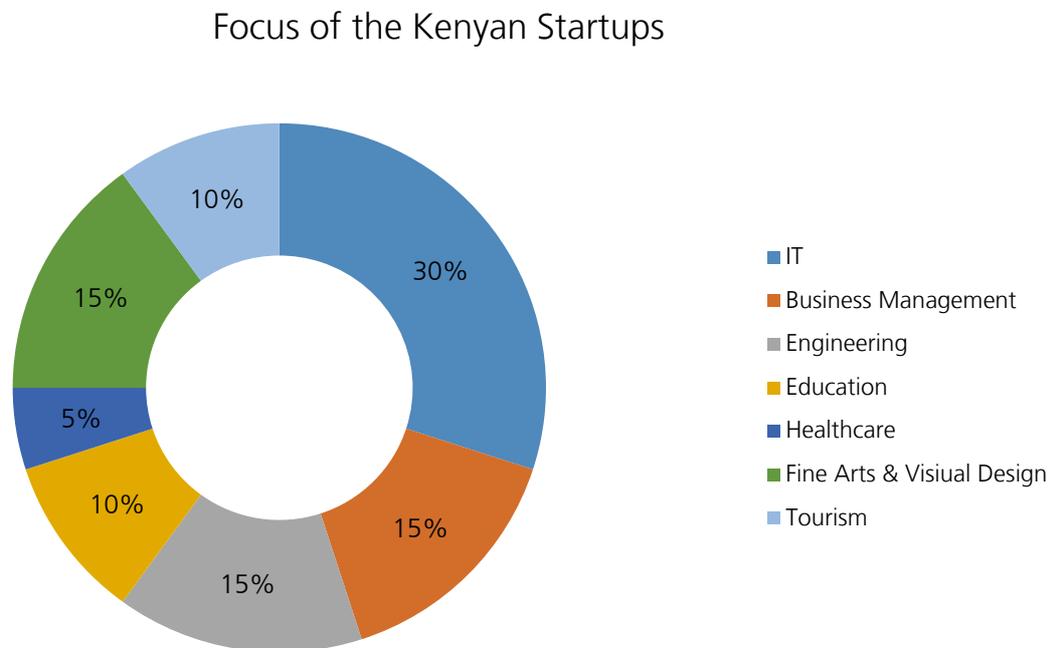


Figure 3: Focus of the Kenyan Start-ups

Figure 3 shows that the majority of the start-ups are knowledge and technology intensive firms. They are developing or producing software products (e.g., mobile applications or web-based tools) or technology solutions for the financial and agricultural sector. Two start-ups target the tourism sector, which plays a significant role in the region (KNBS, 2010). Other three start-ups are anchored in the regional art scenery.

Twelve out of twenty start-ups have limited or no prior entrepreneurial experience. Most start-ups consist of entrepreneurial teams of between two and five employees. All firms are in an early phase of their life cycle. In terms of a stage approach to the evolution of firms, eight out of twenty can be classified as being in the idea phase, where they experience a high degree of uncertainty regarding resources, routines, and product development. Twelve of the start-ups are in the prototype phase, where they require a wider range of resources than in the first phase, such as technological development resources, investors, and financial funding.

4.4 Approach to data analysis

Qualitative analysis have been used to evaluate the expert interviews. First, a category system has been formed to analyse the material evolving from the interviews (Mayring, 2015). Then the texts have been divided into units in order to scan the texts for relevant information. In the last step, called encoding, these components have been assigned to categories.

In the first step, a summary of the material has been made. In this research study, it has been done with the software *EXCEL*, with which the text passages have been matched to the individual categories, which have been formed based on the theoretical considerations, derived from the literature review and interview guide. Only the essential statements, which helped to answer the research questions, have been evaluated. At the end, all relevant text passages have been assigned to categories. To avoid too many categories, only categories mentioned at least two times have been used (Mayring, 2015).

4.5 Difficulties and Limitations of the Study

4.5.1 Cultural differences and bias

Often it is difficult to control biases during empirical research. For example, there may have been misinterpretation of responses because of cultural differences between the interviewee and the interviewer (Marshall and Rossman, 2006). The fact that the researcher is not Kenyan or born in Kenya must be taken into account as she lacks local know-how as well as has been socialized differently. This can create distance between the interviewer and interviewee. These issues are not exclusively related to interviews and can be associated with a number of data collection methods. An in-depth interview at least offers the opportunity to explore meanings, including those that may be culturally specific, nonetheless awareness of cultural differences and their implications is necessary (Hofstede, 2011).

4.5.2 Lack of data

Some challenges that have affected the depth of the findings include the lack of comprehensive, validated and updated data on the start-up sector, its size and its performance. It would have been interesting to include financial data that could aid more detailed analysis of the finance gap across different segments. To obtain data from National Agencies in Kenya is difficult and many bureaucratic requirements are needed. Such situations also create difficulties for future researchers and other investigations.

5 Results

5.1 Lack of skills

5.1.1 Entrepreneurship

The literature review highlights a number of skills that entrepreneurs generally lack. Especially general managerial and soft skills are a challenge for start-ups globally. Early stage start-ups are often not aware of IP and other very important legal issues (de Bastion, 2013). The gap in knowledge about legal issues and IP is also described for Nairobi. Two Hub managers agree that start-ups in Nairobi often lack knowledge and information on legal issues and IP (manager I, G).

According to the literature, start-ups generally tend to have deficits in team structure, track records and financing (Gathege and Moraa, 2013). Similarly, one Hub manager makes an explicit reference to the lack of evaluation and monitoring skills in the start-ups they work with in Nairobi (manager G).

One Hub manager underlines the must of an external person to support the start-ups in their growth journey (manager B). Contrary to this, one start-up states that most start-ups feel that they need some external support, but that this is not actually true (start-up P). What they really miss are financial resources. Due to their side hustles to earn money for living, they cannot fully concentrate on their business.

It is a general observation that in the interviews mainly the Hub manager see lack of skills, not the start-ups. Nevertheless, one start-up emphasizes the great importance of training on entrepreneurship (start-up G). If a start-up does not receive training on how to grow and how to open a business, it is very likely that the start-up is going to fail. The findings from the research show that, in fact, eight out of ten Hubs offer some sort of business and entrepreneurship training, for instance on how to write a business plan (manager E, H, G, D, I, A, J, F). During training, start-ups mostly learn about product development and business strategies.

Considering the revelation that many start-ups lack awareness of IP in the literature review and the findings from the interview the fact that half of the Hubs offer training courses on legal matters is noteworthy (manager B, J, F). Some Hubs have lawyers or invite experts from time to time. These experts are able to answer questions regarding legal issues (manager G, H). This includes both copyright and patent but also information on other regulatory laws and assistance on how to register a company. One start-up adds that the Hub managers are making sure that some part of the money they receive goes to patent and registration (start-up L).

To bridge the deficits in track records and financing four Hubs are offering training in finance, e.g. on accounting or timesheets (manager H, F, G, J). Conversely, one start-up says they need additional training in finance and that their financial projection is weak (start-up E). The question arises whether their particular Hub does not offer such training or if the start-up does not attend any training since it cannot afford the fee for it. Also of interest is that half of the Hubs hold regularly seminars and forums on professional development (manager A, B, E, I, H). The start-ups appreciate those seminars which help them to grow on a personal level (start-up B, D, N, P). Those lessons might develop the lack of soft skills mentioned in the literature review.

5.1.2 Fundraising

The literature review shows that access to financial capital is a major challenge in Kenya. In previous literature, Gathege and Moraa (2013) argue that start-ups usually do not receive funding, because they lack presentation skills. In fact, the interviewed Hub managers of this research agree to this point. Four out of ten Hub managers argued that the start-ups do not know how to approach an investor (manager A, B, D, G). Start-ups need to learn how to negotiate and to raise funds (manager A, G). One start-up notes that finance is new to them. Due to an experience with an investor who doubted that their financial projection was correct and realistic, namely due to the need for additional training on pitching and presentation (start-up E). Another start-up believes that the reason for not receiving any funding is not that their inability to pitch or demonstrate traction. They argue that they have pitched to investors; they have the numbers and the growth to prove it that their business is reliable and still do not receive any funding. Consequently, they wonder if they are not aggressive enough (start-up K).

Some Hubs offer support regarding fundraising. As a matter of fact, they teach their start-ups how to attract investors and how to effectively pitch their idea (manager G, H). Therefore, the start-ups have pitchers training and courses on value proposition (manager G, H).

Another Hub offers free pitching sessions (manager J). Every two weeks they invite entrepreneurs to come and pitch. The Hub manager states that most of the times the pitches of the start-ups are not good but it is valuable to the start-ups since they are able to pitch their idea. The staff offers suggestions that can help the start-ups to further improve their business plan. The Hub of the start-up, which specifically expressed the need for a pitchers training, does not offer this support (start-up E; manager F).

5.1.3 Product marketing

The literature review shows that many start-ups at early stage lack an efficient sales and marketing strategy (de Bastion, 2013). The Hub managers believe that many start-ups do not know how to operate and commercialize their business (manager J). In fact, the start-ups state that value proposition and refining what the product offers is a challenge. There is a general demand for training on marketing and product development (start-up H, L). Surprisingly, especially the Hubs of these start-ups offer training in marketing. Specifically digital advertising, branding and naming is mentioned (manager F, G, H). Moreover, the start-ups learn how to approach their clients. Regarding the content of the training, one Hub manager answers, *“They (the start-ups) go to the market and acquire clients, potential investors and strategic partners”* (manager H).

The question is whether the start-ups do not know about this training or if they have other reasons for not attending training on marketing and product development. Some start-ups say other tasks occupy them so they have no time to attend any training (start-up I, R, S). Another reason can be the fee the start-ups usually have to pay for such trainings. Since it is not for free they cannot afford it.

5.1.4 Technical skills

Though lack of technical skills is not specifically mentioned in previous research, four out of twenty start-ups note that they would like some sort of technical training (start-up A, T, M, I). One of them states that subjects, such as technology, are not taught at school (start-up A).

To bridge this need some IT focused Hubs have trainings on mobile application and web development (manager A, G). During a professional course, students learn how to develop a mobile innovation (manager F). Depending on the focus of the Hub, they offer training on photography, film, graffiti or graphic design (manager I). In fact, all start-ups of this Hub agree on the usefulness of this training (start-up N, O, P).

Interestingly, only half of the start-ups state that they attend such training (start-up A, B, N, O, P, L, M, F; K). Primarily, the start-ups train for free also attended it (start-up A, B, L, M, N, O, P). In the Hubs where the start-ups need to pay for the training, some mention that they are too busy and have no time to attend (start-up I, R, S). The necessity for training depends on the business level of the start-up (start-up T, R). For some, business trainings are not of value since they have prior experience in the field. One start-up states that they recognize that these trainings are not offered any longer. Since all start-ups in this Hub do not attend any training, an explanation for that can be lack of interest or the costs (start-up Q, R, S).

5.2 Lack of experience

5.2.1 Lack of experience in general

The literature review illustrates that start-ups in general lack experience necessary to run a business (Gathege and Moraa, 2013). Honjo (2000) even argues that one of the main reasons for the high failure rate is the lack of experience. During the interview one manager says, "*They are bound to fall into all the pick holes because they don't know better*" (manager I). In other words, the lack of experience is one of the main reasons start-ups fail easily. Start-ups struggle to actualize their ideas (manager I). None of the start-ups states that they specifically lack any experience. Though some say that mentorship opportunities are very helpful (start-up N, P; F).

In fact, many Hubs offer professional guidance to their start-ups. The results show that four Hubs provide mentorship possibilities, which all except one start-up affirmed (manager A, E, F, H). This start-up comments that they have no mentor, but also do not need one (start-up E). Other start-ups find that having someone who is in business for a long time and can share his or her experience with them is very helpful (start-up L, M). One manager argues that sometimes start-ups lack a '360 degree' review of the field or the product they work on (manager B). A mentor can be essential in regards of having a person who understands the industry and can give advisory. He or she can assist in terms of research.

The majority of start-ups have a mentor within the Hub (start-up A, B, F, L, M, N, O) and two outside the Hub (start-up D, I). One Hub manager sees mentorship as a growth point with his Hub (manager B). De facto, their start-up states that they would like to have a mentor (start-up C). Only one Hub offers virtual incubation (manager C). The findings reveal that the relationship to and the value of the mentor differed largely. Some mentors work closely with the entrepreneurs and know the deep need of the entrepreneurs, other are less proactive and communicated with the start-ups only when necessary (manager E, F). The start-ups usually meet their mentor once or twice a month (start-up K, M, N). Those meetings are very beneficial (start-up M, N, O).

One Hub does not have any mentors, but they hire business advisors or lawyers on demand (manager G). However, the start-ups in that particular Hub stress either they do not need an advisor or they simply do not ask for advisory because it is too expensive for them (start-up I, J). Alternatively, the Hubs invite experts from different areas, such as marketing, finance, tax and pricing to support start-ups with their obstacle of having little experience in business (manager I, J). Only one Hub manager argues that they aim to foster a peer-to-peer learning environment where start-ups act as mentors to each other. In terms of technical assistance, they emphasize that their staff are available at any time (manager D).

5.2.2 Lack of structure

The research found out that the start-ups lack structure and procedure to run sustainably. One stated that start-ups typically do not think long-term (manager J). To bridge this challenge, Hubs offer seminars, forums or conferences (manager A, B, C, G). At those seminars, but also during informal meet-ups and chill-outs, the entrepreneurs get the possibility to exchange their experience (manager A, B, G). The topics of those informal meet-ups vary from agriculture, health, education to entertainment and freelance (manager G, J). The start-ups benefited from meeting new people and learning new things (start-up Q). At so called 'creatives roundtables' or 'black and white debates', start-ups from all sections of industry came together to discuss the challenges affecting the industry as a whole (manager B; start-up S). One Hub plans to have an 'entrepreneurship hour' every week to discuss problems people are struggling with (manager I).

Those events offer an opportunity for the start-ups to learn from the problems and experience of others and connect to possible mentors outside the Hub. Through the influence of others, start-ups might get to change their procedures and work towards a long-term aim. In fact, one confesses that he have learned a lot from other organisations and entrepreneurs and in his view become more sustainable (start-up O). Contrary to the literature review, where de Bastion (2013) argues that start-ups lack co-operation and networking abilities, the research shows that many start-ups use the networking opportunities at the Hub and are able to expand their network.

5.2.3 Growth as a challenge

The findings from the research show that sudden growth is a challenge to the start-ups. The managers see the reason lying in the fact that the start-ups are not established (manager C, E, G, I). When the growth is fast, it becomes a challenge to the start-ups (manager J). One says,

"Maybe you're young, you are just from campus or in campus and you want to build this thing, but you have no idea of the market, so you need someone who's more business minded to be able to guide you through the whole process." (manager B)

Through incubation or acceleration programmes, the Hubs try to accompany the growth and be assistant to the start-ups. Half of the Hubs offer incubation (manager C, F, G, H, J). Another two run acceleration programmes (manager E, G). However, not only through incubation do the Hubs attempt to support the start-ups. During evening classes or boot camps, start-ups get intense training and mentorship and learn about leadership and value-proposition (manager A, E). Even the day-to-day advisories from the Hub staff are seen as positive and helpful (start-up Q).

5.3 Information gap

5.3.1 Information in general

The research shows that access to information is a major challenge for start-ups (manager B, C, I, J). Both start-ups and Hub agree that getting access to information in general is difficult in Kenya, thus also the information on governmental activities regarding start-ups (start-up Q, E). The main reason is the difficult process of getting information out of government databases, as they claim information is only left to large companies.

The Hubs try to bridge the gap of information by enabling an environment where a community of entrepreneurs can grow. The literature review illustrates that Hubs serve as nexus point for the local start-up community, investors, academia, technology companies and the wider private sector (de Bastion, 2013). In other words, it attracts a diverse group of people that interacts and shares information (Friederici, 2014).

The network coincidentally helped start-ups' bridge the information gap. As predicted, the research shows that by bringing together different stakeholders and various kinds of people a vivid exchange of information is activated (manager C, D, J). Not only Hub managers but also many start-ups note that through the Hub they are able to access many different people (start-up C, E, K, I, M, O). Most of the time, people share their tables and chairs with other people they talk to each other and socialize. They benefit a lot from the opportunities to network and make connections with many NGOs and other individuals. Only one start-up is dissatisfied. Their network has not changed (start-up J). Surprisingly only one start-up specifically mentions the term 'community' (start-up N).

One criticizes that rather than focusing on one discipline, Hubs should be open to everyone (start-up D). "*The drummers rehearsing next to the engineer solving a problem*" is used to visualize the point (start-up D). By bringing together two contrasting ideas, new and better ideas evolve.

5.3.2 Legal

The start-ups do not only lack the skill to apply what is required legally, but also they simply lack the information (manager I). To bridge this information gap some Hubs have mentors or advisors that support the start-ups (manager A, E, F, H). Though the literature review reveals that one of the primary functions of Hubs is assistance in market research, only one manager states that their mentors also assist the start-ups in terms of research (manager E). Less than half of the Hubs offer legal advice to their tenants (manager G, I, J).

5.3.3 Investment

As the previous chapter and the literature review illustrate is funding a major challenge. Not only is it difficult to match investors with start-ups but also simply the information is not easily accessible (manager C). Though most of them state that by working from the space consequently they get to know many investors, none of the start-ups receives external funding at the point of the interview (manager B, D, E, F, G, H, J). Both start-ups and managers agree that the visibility regarding investors and donors is higher when staying at the Hub. Many investors see Hubs as a place to go when looking for start-ups. The Hubs link start-ups to investors that show interest (manager G). One Hub has a few investors sitting in the office (manager E).

5.3.4 Market and Government

The research shows that there are some challenges that the Hubs do not have any influence on. Those challenges are to do with timing, corruption and other market forces. The research reveals that at the moment Hubs can barely support start-ups to tackle these barriers. For instance, some products are ahead of their time. Necessarily both start-ups and Hub managers agree that a start-up has to ask itself whether the market is ready and if it is the right time for his or her product (start-up L; manager B). One start-up states that it is difficult to find information on the current market situation or competitors (start-up E).

Another challenge seen by one Hub manager is the delays and difficulties in terms of importation. Those hinder the ease of doing business in Kenya (manager D). Surprisingly, only start-ups mention 'corruption' (start-up D, P, Q, R, S). There is no trust in the government (start-up Q). The start-ups claim that the government is not supportive. They state in particular, that government procedures are very slow in Kenya (start-up I, M, P, Q). The start-ups put emphasis on the important role of the government in putting an infrastructure in place (start-up D, T). Only one manager commented on the government and underlines, "*The way our country is...it's not very supportive of individuals or even young start-ups*". She adds, "*Our government does not seem to make it any easier*" (manager I).

5.4 Office space

5.4.1 Work place

Previous research reveals that due to limited space and capital, many start-ups are forced to meet in and work from coffee houses in Nairobi. These venues have limited Wi-Fi availability and entrepreneurs are heavily distracted by the noisy surroundings (de Bastion, 2013; Gathege and

Moraa, 2013). In fact, start-ups as well as Hub managers emphasize that office space in Nairobi is very expensive and that it is not affordable (manager I; start-up N, Q, R, S).

The findings show that start-ups do not have the capital to rent their own space (start-up R). Either space in the city center is not available or too expensive. Larger companies buy buildings in the city center. One start-up says, for example, that they are kicked out of their previous office without notice. Besides this, parking space and the traffic in the city center are challenges and clients start to complain about it (start-up S). From setting up an office to registering a business, a start-up requires a lot of capital (manager I). Reliable internet is very expensive in Kenya. One of the managers notes that it is essential for start-ups to have reliable access to internet if they wish to run their business in a professional way.

The literature review shows the primary function of Hubs is to provide office space. As predicted, all Hubs provide office space to their tenants. The price of a desk or small office varies between each Hub though. Nevertheless, one Hub manager adds that they are not looking at companies at idea stage (manager E). Their start-ups are already established companies, who usually have their offices somewhere else and do not need to use their facilities. Notably, all Hubs have Wi-Fi. De facto, the literature review mentions fast and reliable Internet access as one of the primary functions of a Hub (Hackett and Dilts, 2004).

Though previous research only mentions meeting space for informal networking, the findings show that many Hubs have a board and testing room that the start-ups can rent or use for free to hold meetings (manager G, F; start-up F, H, I, J, N, Q, R, K). At the Hub with artist focus, the entrepreneurs are even able to rent a small theater at a cheaper rate (manager O). Since clients complain about parking space in the city center one adds the benefit of parking space at the Hub. In the way, the Hub is organised, with a rooftop and a garden, many start-ups note that it is convenient to meet clients (start-up N, Q, R). Holding presentations is convenient due to facilities, such as a wide screen TV and projectors (start-up J).

Most start-ups agree that the main reason for staying at the Hub was the convenient workspace, boardrooms and other facilities (start-up D, E, F, G, H, J, K, L, N, O, R, S). Some offer printing services and lockers (manager I, F; start-up H, J). Facilities such as a kitchen or a cafeteria are also appreciated (start-up B, H, N, Q).

5.4.2 Equipment

Equipment is very expensive (start-up C, N), especially for artists who need film equipment, photography gear and access to a music studio, or engineers, who need specific tools such as a 3D

Printer, a chop board, a final cutter and metal work tools. One start-up explains that thieves stole equipment. Without the expensive photography gear, their business is ruined (start-up N).

In fact, many start-ups mention quality tools and material and access to other equipment as a primary reason that they joined the Hub (start-up A, B, C, D, G, H, I, J, L, N, O, Q, R, T). In addition, it is time saving to stay at a Hub (start-up J). They do not have to take care of vacuuming the office floor, collecting rubbish, changing photocopy toner or paying the internet. In fact, they have more time and energy to focus on their business. Particularly important is the security aspect of staying at the Hub (start-up H, J). Leaving their laptops and other equipment at the work place is beneficial. Hence, the start-up who had equipment stolen are glad that they can leave their photography gear at the office.

5.4.3 Professionality

As aforementioned, the rent is very expensive. Start-ups are forced to either work from home or meet their clients at cafés or hotels (start-up Q). Indeed, that is very distracting (manager I). The managers argue if the start-ups work from home, their clients do not take them seriously, and believe they are *“a briefcase kind of person”* (manager I). The start-ups agree. One explains that their main customers are banks and micro finance banks. These are business people and the nature of the business is such that it required them to come and visit the company. Meetings in spaces such as cafés or bedrooms would be highly inappropriate (start-up J).

The office space at a Hub tenders visibility to clients and visitors. The staff acts as secretaries for the start-ups (start-up B, H). The start-ups agree and state that their clients feel happy in the new office (start-up F, Q). Their clients would not trust them nor take their business seriously if they worked from a restaurant (start-up F). The Hub start-up looks more professional and settled. It adds to an image of credibility and professionalism. The Hub managers help to push their work and market their product (start-up C, D).

The managers also played an important role of the Hub in representing the start-ups (manager I, B). They professionalise the work by marketing and branding the start-ups (manager B). One manager says, *“Even if you’re not showing up here every day, if they come to see you, there is a location and we act as your secretaries”* (manager I).

5.4.4 Criticism

Though the office space reveals many benefits, criticism arises. The membership fee is cutting off many entrepreneurs (start-up N). One start-up observes that many others stopped coming to the Hubs, because they cannot afford it. As a result, both Hub managers and start-ups observed that

Hubs mostly attract the middle class and many people do not feel comfortable walking into a Hub (manager A, B; start-up N). They believe only university graduates and tech-savvy people join Hubs and consider it an elitist place (manager A).

Many clever people do not have access to the tools, equipment and other services at the Hub (start-up D). One thinks that many simply need a space like the Hub that welcomes them, gives them the freedom to experiment and links them with the people to advise them. This person might not have an idea, but by playing and working with the machines and learning new things, they come up with an idea.

On the contrary, some Hub managers argue that if they give the services for free the start-ups do not see the value (manager G). For example, one believes that, as a result, everyone in Nairobi would think that he or she has a music career (manager B). The start-ups argue that it would be appreciated but they also predict the space would then be taken up by too many people (start-up N). They suggest it made sense for the Hubs to charge rent, since the Hubs need to pay rent as well.

Some Hub models allow staying for free at the Hub for a period of time. The best ideas are incubated for six month. If the start-ups are successful, the Hub takes shares based on the traction of the start-up (start-up K).

5.5 Mind Set & Social World

5.5.1 Limited technological awareness

Talking about the start-up ecosystem, one manager holds the view that people in Kenya, yet, not have embraced technology (manager C). It becomes a challenge for the technology start-ups in the sense that they struggle convincing others of their innovation. In fact, regarding the topic of attitudes of people in the community, government and media towards them as a Hub, one manager believes that there is "*the outside meaning and the hidden meaning*". They answer that "*the same people, who praise you, would not buy your product because they think its sub-standard*" (manager A). One manager makes an explicit reference to an entrepreneur that after the important people started noticing, they started offering him scholarships (manager B). It seems like the spotlight accelerates the demand for a product (manager I). One start-up says entrepreneurs in Kenya need to be successful internationally before recognised locally. The 'real jobs' perceived by the society are the once in sciences or academia (start-up P).

Though the Kenyan government and external donors agree on the GES in July 2015 in Kenya on supporting entrepreneurs with 1) infrastructure 2) capital 3) easier regulations it is not predictable

how this will affect the attitude of people in the society. Indeed, there has been more attention paid to technology innovation in Kenya. Nevertheless, Kenya's economy is still majorly dependent on agriculture (KNBS, 2015).

One Hub manager sees a "*challenge between the donors*". He argues that when the donors have one person, who has a very good idea, everyone else wants to be associated with that idea and is willing to put a lot of money into this company (manager E). One start-up emphasizes that especially art is not respected much in Kenya and that it is hard to make a lot of money from it (start-up N). In Kenya it is important how the business is packaged (start-up N, Q).

In order to change this perception Hubs run a primary school or high school outreach programme to expose young pupils to technology (manager A, C, F, H). Some Hubs also do career talks and teach them basic engineering and programming skills. They encourage young people to follow an engineering or technology career (manager A, C). Both Hub managers and start-ups agree that the annual festivals are an important opportunity to showcase their work (manager B, I; start-up C, D). It plays a vital role in changing the perception not only of artists but also other entrepreneurs in Kenya. One attributes that such festivals increase citizen participation. It is of significant importance to hold such events in other counties in Kenya (start-up P). Though changing the attitude and perception of people in the society towards start-ups and artists requires a lot of time, Hubs try to change this negative perception. By hosting events, more people learn about the Hubs and their tenants.

Mostly, informal meetings and chill-outs attract many young people. It is not clear how elderly people see those informal meet-ups. Two start-ups from the same Hub agree that the Hub managers are helpful in linking them with opportunities to perform. The staff acts as their managers (manager B, I). One start-up hesitates and says that the Hub managers are not actively linking them with other people. Nevertheless, he sees a benefit in terms of advertising. He notes that the staff writes information about their business (start-up I).

5.5.2 Reputation

Reputation has a substantial role in Kenya (start-up E). Many start-ups give more attention towards social capital, than financial capital. They emphasize the role of their extended family that consists of relatives such as cousins and aunts and uncles (start-up E, P, S). For example, many of their relatives value working at an organisation more than being self-employed. Compared to individuals most organisations in general are trusted (start-up C).

Though some start-ups observe that the attitude towards entrepreneurship changes and becomes more receptive, they stress out many obstacles. Being an entrepreneur is neither secure nor steady. Since their income is not stable they need to bootstrap. They add that the financial situation affects the relationship with their families. (start-up E, O, P). On the contrary, two start-ups explain that their family, but also the community, is very supportive (start-up B, O, Q). They assume that it is linked to the fact that they their business has a social mission. One adds that the government reacts positive, because they are happy to see people supporting children. The government does not want to be a hindrance (start-up O).

One argues that Kenya does not yet have a positive entrepreneurial culture (start-up K). The Hub managers agree and state that it is rare that a VC or business angle invests in a start-up at idea stage (manager G, H). In fact, half of the start-ups say that they look for an investor. One start-up believes it is easier to be funded in European countries (start-up K). They note that investors in Kenya rather buy properties than risking investing in something unknown (start-up K, L). One Hub manager implies that investors are not patient and want their money fast. One start-up says, "*VCs forgot that they were anti banks*" (start-up J). Usually banks are low risk lenders and VCs are supposed to be high-risk investors. In their point of views, VCs are shifting toward banks. They emphasize that the investors "*lost side of what they were supposed to do in the first place*" (start-up J).

The acceleration or incubation programmes that more than half of the Hubs run give start-ups some sort of professionalism and reliability (manager C, E, F, G, H, J). Some Hubs managers state that they actively market and brand their start-ups to make increase visibility and professionalism. One start-up mentions this point as well and says that the Hub does a lot of outreach through social media, newsletters and emails, which professionals their work (start-up N). Besides, another start-up describes the importance of the brand of a Hub and the advertisement around that (start-up L). Particularly many people inside and outside Kenya tweet about Hubs. Furthermore, they explain that e.g. people from Germany and the Netherlands blog about the Hubs and their tenants. Annual competitions, such as the 'App Wiz Challenge' or 'Pivot East', reach a certain visibility. One Hub manager adds that they live stream the pitching events to reach out to people outside Nairobi (manager G).

One Hub started in conjunction with a university to run two professional masters on telecommunications and information system security. The programme attracts some of the largest companies, such as *IBM, Samsung* or *Safaricom*. Since the studies are very practice oriented, some

students rather chose to follow the entrepreneurship path than working for one of the big corporates in Kenya (manager F).

Hubs try to change this negative perception of entrepreneurship and foster a positive image of entrepreneurs. A couple of Hub managers state that to do so they invited corporate or governmental stakeholders of note to hold seminars or forums (manager C, D, F, G). That boosts the reputation. Three Hub managers state that they organise annual conferences to reach out to people outside the Hub (manager A, B, G). Especially competitions and pitching events receive a lot of attention. By live streaming these events even people outside the country can follow. The awarded companies win a lot of recognition.

One start-up mentions *Chamas*, a typical Kenyan investment group, in which members pay a certain amount of money every week or month. In fact, what is interesting about the Chama is the socio-cultural factor of it. Since reputation is extremely important in Kenya no one would dare exploit this trust in order to benefit from the money. The money is then used by the group to invest, give members loans or pay them monthly dividends from their micro-savings. She argues a Chama is not just an informal bank but also a family whose membership is built on mutual trust and understanding (start-up K).

The Kenya Association of Investment Groups (KAIG) defines a Chama as *"Any collection of individuals or legal persons in any form whatsoever including but not limited to: societies registered under the Societies Act, Partnerships and Limited Liability Companies, whose objective is the pooling together of capital or other resources with the aim of using the collated resources for investment purposes"* (KAIG, 2014). The members thoroughly vet new members of any Chama. Joining a Chama is not just about the money, it is about friends. Members desire to belong to a Chama. In fact, the network of a Chama can be job opening. One start-up underlines the benefit of professional guidance from other entrepreneurs. The advice is for free. The experience of people in different careers helps the start-ups to develop.

5.5.3 Social obligations

As already mentioned in the previous chapter, people in Kenya are very tied into social obligations, whether financial support or other exchanges. The family is the centre of gravity. Since Hubs are novel, the entrepreneurs struggle to underline the benefit of it. In rural areas people do not know about incubators or accelerators (start-up L). Some start-ups say that many people do not understand what they do and they need to explain it to their families and friends (start-up H, L). They are not supportive. Since he needs to bootstrap he cannot support his family financially.

A way that Hubs can support start-ups tackling this challenge is by providing a community where the start-ups feel accepted and welcomed. As described in the literature review Hubs nurture an enabling environment where a community of entrepreneurs can grow. In fact, two Hubs managers explicitly mention the community aspect of their Hubs (manager D, I). Although this might be true, only two out of twenty start-ups mention this point (start-up I, O). At the same time one entrepreneur refers to the Hub staff as his family (start-up C).

5.5.4 Recruitment difficulties

Another challenge perceived by many interviewees is recruitment. Both Hub managers and start-ups argue that it is difficult to recruit people with the same vision (start-up F, G, K; manager B). Another start-up states that since the business does not run regularly they are not able to employ staff permanently (start-up H). One start-up argues that it is difficult to find a job in Nairobi. Older people mainly get jobs. Those only pay 'peanuts' to their young employees (start-up Q).

Hubs can go about this challenge by providing a platform for spontaneous collaboration where recruitment is made easier (manager D). In fact, two start-ups mention that the Hub facilitates collaboration and offers possibilities to network (start-up D, L). Three start-ups confirm that the exposure is very valuable to them (start-up J, O, R). They attribute it to the community of people they work with and the people that they usually meet at the Hub (start-up J).

One states e.g. that he met another entrepreneur at the Hub with whom he will collaborate in future. Hence, two underline that the network is especially important in terms of recruitment to them (start-up H, R). Since the Hub staff has access to a broad network, they benefit from it. They state that they the staff is supportive. Many times the Hub employed people on a project base. Either those are start-ups who work in the Hub or students from outside. One start-up emphasizes that there is a lot of local talent in Kenya. They specifically mention the *iHub* as a place where a lot of computer scientists work (start-up T). Through the network recruitment is simplified.

5.5.5 Focus on Nairobi

The overview of the Hub landscape in Kenya shows that, at the point of research, Hubs are mainly in Nairobi, except two Hubs in Mombasa and Kisumu. In fact, one start-up states that people outside Nairobi do not have the opportunity to join a Hub (start-up M). They observed that even in Nairobi people do not know that Hubs exist (start-up L). In their point of view, Hubs are not doing enough advertising. Only through their peers and the media people learn about the Hubs. Rather than communicating directly with the start-ups. The Hubs post information only on *Facebook*, claims one start-up (start-up J).

5.6 Lack of funding

In the literature review, Honjo (2000) points out that the main reason for the high start-up failure rate is that start-ups have less capital. Since a lot of hype exists around the start-up scene, many investors are drawn to it but in reality, very few start-ups are investment-ready. Also the findings illustrate that start-ups are not at a point where investors want them to be or do not have sufficient traction (manager G). One adds, *"Looking from the investor part: getting mature, early stage businesses for investing is a challenge"* (manager I). De Bastion (2013) argues that start-ups in Kenya are usually in an early or growth stage and need much smaller investments than the minimum sought by investors. Due to this gap start-ups in the early stage rely on personal funds and friends and family for seed funding (Intellectap, 2016).

Nearly all the Hub managers acknowledge that funding is a major challenge (manager A, B, C, D, E, G, H, I). According to GSMA (2014) the majority of start-ups in Kenya make \$2,900 or less per month, meaning that those involved cannot work full-time on their ventures. In fact, the interviewees state that since the entrepreneurs need to earn money to take care of themselves, they cannot work full-time on their businesses and have to do side hustles (manager A, H; start-up P, J). The entrepreneurs need a different source of income. Business angels and angel networks are now emerging in the region. Currently, less than 10% of entrepreneurs receive funding from VCs or business angels (GSMA, 2014; Omidyar Network, 2013). Indeed none of the interviewed start-ups received funding from a VC or business angel. Banks are not seen as an alternative. Both Hub managers and start-ups note that loans from a bank came with high interest rate. Start-ups have to show progress or cash flow (manager I; start-up H, R, S).

When start-ups are seeking investment from a VC or business angle they usually lose significant 30%, 40% or even up to 50% of their stake (manager E, H). Offers from investors are usually small (start-up E). Looking for an investor is seen as time consuming. One start-up states that many entrepreneurs become professional pitchers. Under these circumstances they forget about building their business (start-up J).

Both Hub manager and start-up mention the rise of an 'MBA-VC' (start-up J; manager H). This person typically has gone to Stanford or Harvard University, has good communication and fundraising skills and comes to Kenya and starts an Africa fund but never has been an actual entrepreneur. They believe that this person does not appreciate the entrepreneurial journey. The entrepreneurial VC on the other hand does not see this learning curve as a waste of time and understands the up and downs of a business. The entrepreneurial VC is a real mentor. They suspect that the MBA-VC actually understands the value of starting a business. The MBA-VC only wants to

see results (start-up J). The Hub manager says, *"we are insisting on start-ups, when you look for an investor, don't only look for money, look for someone who can also add value to your organisation who can work with you, who'll understand your business and also is connected to like-minded people, to help you and guide your business, when the money doesn't come as projected, they will not kill the business, they will not know where to just get their Return on Investment there will be there to help the business"* (manager H).

Alternatively, start-ups seek to approach an 'impact investor' (manager E). One Hub manager stresses that those impact investors are looking for 'social impact' but most of the times the business of the start-up is not in this area (manager H). One comments, *"You will find someone whose business is to make phones, but now there is a spring and supporting girl's child product...just to have impact"* (manager E). One start-up concludes that in the Kenyan ecosystem start-ups are not impact focused (start-up T).

The fact that in Kenya most of the NGOs, profit organisations, philanthropists and VCs are international stands out from the interviews (start-up K, L; manager G, H). Therefore, most Kenyan entrepreneurs look for an investor outside the country. One manager believes that those investors do not know much about the Kenyan start-up ecosystem (manager G). For this reason, another Hub manager phrased the questions, *"Will they'll be able to understand the local dynamics and help doing it? Will they be able to understand the local dynamic of business?"* (manager H). Three interviewees argue that the start-ups are almost forced to speak a particular language with the international investors (manager D, A; start-up O). One start-up stresses out that it is difficult to know how to frame their proposal, that it is appealing to the international investor (start-up O).

The expectations of those international investors are not fitting to the local context. In fact, the international investors compare the traction of the Kenyan start-ups to the start-ups in Silicon Valley. One start-up explains that at idea stage in Kenya a start-up usually gets \$10.000. In Silicon Valley a start-up usually gets \$500.000 to \$1M. Nevertheless, the investors compare the same numbers. They argue that the input determines the output (start-up K). Alternatively, the start-ups do crowdfunding (manager G). Start-ups need to have access to companies and individuals who can potentially be able to fund them (manager B). Some start-ups work partially for the Hub and therefore use the space for free (start-up N).

One Hub manager argues that the Kenyan ecosystem is really mature and that they need more investors (manager G). In fact, investors favor start-ups that have a solid business and can proof numbers that show traction (start-up H, I, J). The start-ups are not yet in the stage of seed funding (start-up L). Without a prototype it is difficult to secure business (start-up T). Nevertheless, the

investor landscape is changing. In 2013-2014 mostly international investors were around. Since 2015 some angle investors are coming from within Kenya and Africa in general (manager G).

In fact, some of the Hubs theoretically provide funding to their tenants (manager C, H, I). When the start-up is going through an incubation or acceleration programme, it is more likely that they receive financial support. In reality, this funding does not come without interest. One Hub provides milestone funding to their start-ups (manager H). They say that they took less than 10% equity share. One Hub runs a programme called 1+2+3 for the start-up going through their accelerator. They explain that they are taking 1% of their revenue, 2% of their equity and 3% is charged as an investment fee. In other words, if the Hub is able to find an investor who wants to put money into their business, the Hub takes 3% of the amount raised (manager E). Only one Hub gives their entrepreneurs a loan without interest based on milestones (manager A).

According to the experience of one Hub, most of the people are not interested in the award money. In the past, they gave milestone money to the winners of their pitching competition (manager G). The start-ups favor the accelerator programme, the training and the mentorship rather than the small amount of money. The consequence was that they are not giving any prize money to their winners any more. They add that they work closely with partners, who either fund the start-ups or pay the start-ups to work for them. Others see their role rather in connecting the start-ups with potential investors. In reality, most of the start-ups testify that the Hub managers do not actively connect those to investors but it rather happens by chance (start-up D, J). Some Hubs organise networking events, where the start-ups can come and pitch, and the VCs interested can fund them (start-up E, L, M). Interestingly, some start-ups do not want any funding. They state that their business is sustainable (start-up F, Q).

Obviously, there is confusion over the terms incubation and acceleration. The Hubs that are classically seen as incubators say that they run accelerator programmes and the once that classically are seen as accelerators say that they incubate start-ups (manager G, H). A mixture of business models can also explain this confusion.

6 Conclusion

Considering the large amounts of money invested in Hubs by governments, universities, research institutions, municipal agencies and other parties involved, the question of the distinct impact, these Hubs can deliver, is of crucial importance and needs to be addressed in more detail. Therefore, this section aims to evaluate the impacts Hubs in Nairobi are able to deliver to both, the start-ups

themselves and to the city's wider start-up ecosystem in general. The question arises to what extent Hubs can take part in building an ecosystem that permits start-ups to develop easily. It can be concluded that 'Silicon Savannah' is not yet finished.

In order to investigate the role of Hubs, this paper examines the extent to which the support offered by the Hubs fit the needs of their tenants. In the course of this examination, it became apparent that the initial research question is not easy accessible as the impact of Hubs is extremely complex in its nature, thus, a measurement excluding any potential variables is seemingly impossible. The findings reveal numerous challenges Hubs cannot solve themselves nor do they have any influence on these external impacts. The most prominent examples of these challenges are the mindset of people or market forces.

With regard to the first research objective, identifying the barriers preventing start-ups to develop, the findings reveal that start-ups in Kenya face many diverse challenges. For instance, they lack funding, experience and skills, but also are challenged by the negative perception of people in the society and social obligations towards friends and family. Expensive office spaces as well as limited access to information are barriers hindering the successful development and flourishing of start-ups, too.

In practice, as evidenced in this case study, Hub managers are not aware of all these challenges. It has been found, that regarding the second research objective, examining the support structures of Hubs, that Hubs offer support such as office space and equipment, training and other activities as well as mentorship and advisory services. Additionally, they provide access to a network of like-minded people, investors and partners and by that encourage collaboration and increase the visibility of their tenants.

The findings show that not all investigated Hubs offer the same services. To enhance a thriving environment the researcher believes that each Hub needs to extensively examine the needs of their start-ups. The Hubs are under constrain to provide a safe space where start-ups can develop. In this environment Hubs should actively foster collaboration between different stakeholders, such as private companies, investors, NGOs and other start-ups. As a nexus point for those organisations the Hub has a vital role in further developing a flourishing ecosystem.

At the moment the Hubs do not meet those expectations. Another, unexpected, conclusion that derived is that since there is no agreed definition of Hubs among experts and Hubs have not yet established themselves, their vision and the expectations of the start-ups diverge. Whereas Hub managers hold that the main benefit of their Hub is an innovative environment and access to

networks that enables collaboration, start-ups do not see these benefits. Either the organisation does not clearly communicate their mission or such environment effectively does not exist.

The findings identify the main reasons why start-ups stay at Hubs. These are convenient office space, access to equipment, tools and a reliable internet connection. Both Hub managers and start-ups identify similar benefits of Hubs, though on some points start-ups express distinct criticism. Start-ups argue that Hubs currently do not deliver all promised facilitation benefits. Others note they lack adequate mentorship. In fact, many Hubs lack human resources to provide necessary mentoring and advisory services. In how far this lack of adequate staffing is related to a lack of funding of Hubs is thus, beyond the scope of this study.

Although the Hubs taken into consideration offer training, most of the times start-ups need to pay for these services. However, it then becomes an issue of what type of training is being offered, particularly when start-ups complain of a lack of time and money. As the literature review reveals, start-ups require guidance as well as advisory to be able to thrive. In contrast, the findings of this paper show that depending on the business stage of the start-up, they do not necessarily feel the need for training or mentorship.

Lack of information challenges start-ups. The Hubs only partially fill this gap. Information is restricted to a small group of people. One reason is that Hubs do not effectively communicate with their start-ups. Many start-ups state that, in fact, the Hub managers are not directly connecting them to investors, but rather offer possibilities to pitch their ideas or network.

A couple of people criticise the membership fee and argue that Hubs become elitist places, excluding people with less capital. The prediction that funding is a major challenge for start-ups at early stage is supported by the findings of this study. The constraints of funding result in a lack of focus and slow progress on the business as a majority of start-ups are distracted by their side hustles. Many start-ups struggle to find resources to hire additional staff. Recruiting adequate staff with the needed skills and the same vision is a challenge in itself. Surprisingly, some start-ups do not want funding since it usually comes with high interest rates or a dependence on a specific investor.

Neither banks nor the government offer alternatives to the start-ups. Although the literature review reveals that the government obtains the lead in start-up development, its benefit is questionable. Importing tools or other equipment from abroad and accessing government databases is a hindrance. Apart from that, entrepreneurs are challenged by a negative reputation. They gain little acceptance in the society. First start-ups need foreign recognition to be cherished locally. Hubs can foster a positive image of entrepreneurs.

The main conclusion of this study is that Hubs in the Nairobi start-up scene do not necessarily have the impact as illustrated in the literature review. Hub managers are unsure of the main challenges of start-ups and, as a result, misunderstood the challenges of their tenants. Such misunderstandings may be complicated further by imperatives to integrate the right support into the Hub programme without the rationale being discussed with, or explained to, Hub managers, as in this case study.

To date, the work produced by other researchers concentrate on the view of Hub managers. This paper, applying a two-dimensional approach to investigate the role of Hubs, thus offers an extension of the existing research. It offers an insight into the views of two important stakeholders, Hub managers and start-ups. The importance of this work, compared to what has been produced hitherto, lies in comparing and analysing the needs of the start-ups to the support offered by the Hubs. The review of literature reveals that there is a lack of in-depth research on the Hubs' impact.

From a practical perspective, the results of this study can serve as a guideline to show Hub managers the most essential needs of their tenants and on which supporting factors to focus their efforts. By implementing the recommendations, to extensively research the needs of their tenants, to communicate their clear visions and to actively foster collaboration, Hubs can expand their value contribution and help their tenants to become more successful in the end. Moreover, the findings can serve as a basis for companies and organisations within similar industries, such as training centres. In addition, this study can also act as a benchmark for existing and new Hubs, when implementing their Hub model. It can be used as a tool for those involved in Hub activities at the practical level and for policy makers, making decisions on entrepreneurship support. Not only from a practical point of view, but also from the scientific perspective, this research provides the reader with the know-how and awareness that is important to create support structures which allow the start-up to thrive.

Based on the research conclusion, further research is required to validate the impact of Hubs on the development of start-ups. First, the researcher suggests testing the findings in other regional areas in order to find similarities and differences in challenges of start-ups as well as support structures of Hubs. Further general research will help to improve the knowledge base around Hubs. It will be beneficial to conduct a quantitative research to be able to provide a comparable base for Hub research to a certain extent.

Second, the perspectives of other stakeholders can be a promising aspect of further research. Such empirical data could prove of significant impact on the evaluation on this field of study. The researcher recommends investigation around start-ups that are not part of a Hub to identify similar

or different challenges of start-ups. Under regard of external variables it will be of interest to compare those findings with the findings of this study to further investigate the influence of Hubs.

Due to the small base of literature and research on Hubs and entrepreneurs in Kenya, the study's purpose is to provide an overview on service provided by Hubs and their market. To accomplish this, the research was solely guided by loose guidelines to maintain the ability to adjust to the interviewees. This was done at the expense of research depth. Future studies can examine the topic with more quantitative methods once the complex drivers and demands of the market are identified.

The conclusions are based on an extensive review of Hubs in Nairobi, which means that the conclusions only apply to this specific regional context. Instead, this research is appealing to the concept of relatability. What has been researched in this study will be of interest to other researchers and institutions interested in Hubs and that it will add incrementally, to the patchwork of research on Hubs. It should be considered in evaluation of the presented data and the planning of further studies, that the collection of data presents various problems in the surveyed market.

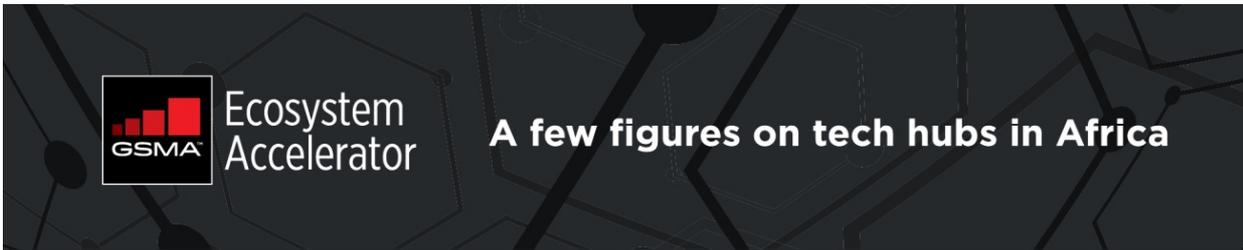
Some limitations occurred during the studies. Since there is a lack of a clear definition of Hubs, the selection of Hubs in this paper should be considered in progressing discussions about Hubs. At the same time not every interview is structured in the same way, hence, causes reduced comparability. A semi-structured interview guide was used to give the researcher the possibility to adapt to the specific situation of participants. The approach was chosen to provide the flexibility necessary to interview the heterogeneous sample in an investigative way and prevent loss of critical information.

To sum up, the research questions to what extent Hubs support start-ups tackling their challenges is only partially answered. The findings show that start-ups are not solely influenced by the Hub. Many influences such as market forces, the importance of family and friends, reputation and acceptance in the society or political decisions have a considerable impact on the start-ups. Each Hub model differs and cannot be standardised. It is the community around a Hub that shapes its model. The researcher discovered room of improvement and found that a mixture of Hub support structures would benefit the start-up most. It must be taken in account that start-ups and Hubs follow different and sometimes conflicting interests. The needs of start-ups differ. Therefore, it is difficult to generalise what they need. At the moment Kenya has not proved to be a 'Silicon Savannah' yet. It shows potential to develop into a base for upcoming innovative businesses, which can change the economic structure of the region in the future.

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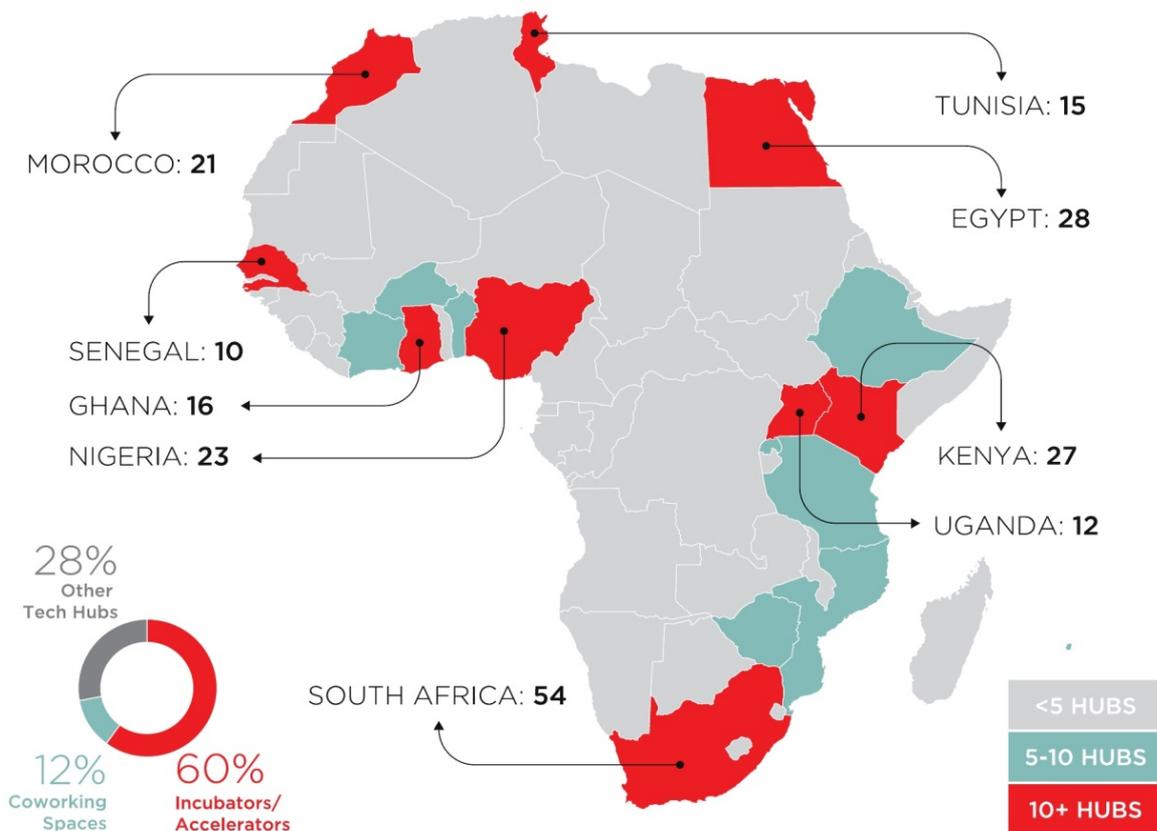
Annex

Annex A: Innovation Hubs in Africa (GSMA, 2016)



AFRICA:

314 ACTIVE* TECH HUBS IN 93 CITIES IN 42 COUNTRIES



<p>5 Countries South Africa, Kenya, Nigeria, Egypt and Morocco totalise 50% of the tech hubs in Africa</p>	<p>4.3 years old Average age of tech hubs is 4.3 years old (average launch date: 2012)</p>	<p>13% of Tech hubs 13% of tech hubs have partnerships with mobile operators. Orange, MTN and Vodafone are the most represented</p>
<p>49% of Tech hubs 49% of tech hubs have partnerships with non telecom corporations. Microsoft, Google and Ashoka are the most represented</p>	<p>1.5 million followers Tech hubs Facebook pages have more than 1.5 million followers</p>	<p>600 thousand followers Tech hubs Twitter pages totalise more than 600 thousand followers</p>

We define "Tech hubs" as: Physical spaces designed to foster the success of tech projects. Among them we distinguish:
 • Incubators & accelerators designed to accelerate the growth of start-ups through business support resources and services
 • Other types of spaces supporting tech projects: innovation spaces, maker spaces, hacker spaces, fab labs, co working spaces
 *Tech hubs are defined as active when they show recent online activity (on their website or on social networks) or have been reported as active by local experts interviewed. 314 were selected on a total of 422 screened
 SOURCES: primary and secondary researches carried out by GSMA Ecosystem Accelerator between May and July 2016

Annex B: Interview guide Hub managers

Organisations name:	
Interviewee(s):	
Role/function of interviewee in the organisation:	
Date/time:	
Location:	

- a) Self-description
 1. What's the story of this Hub? / Maybe you can start with a brief history?
 2. Please describe your organisation's activities in general.
 3. How are you pleased with the achievements of the Hub?
 4. What are your future plans, in 2-3 years?

- b) About the entrepreneurs
 1. How is the age range of your tenants?
 2. Who is your target group? Who can come to your Innovation Hub?
 3. What is the max. number of tenants/start-ups at your Innovation Hub?
 4. Where do your tenants come from?
 5. Which is the highest level of formal education which the tenants have received?
 6. How important are education, training, consulting, and advice for an entrepreneur?
 7. What are the main reasons of a successfully start-up?
 8. What are the main problems you are facing in regards of your tenants?
 9. After which criteria do you select your tenants?
 10. How does your exit strategy for the start-ups look like?
 11. Do the tenants have to pay any membership fee?

- c) Training and Mentorship
 1. In what way do you support start-ups?
 2. How many people attend the training you are offering?
 3. Which topics are covered during the training?
 4. Do you offer consultants/mentors/advisors to your tenants?
 5. Do the tenants have regular meetings with their consultants/mentors/advisors?
 6. How often (e.g. in days, weeks, month) do they meet their consultants/mentors/advisors?
 7. Could you state the content of those meetings?
 8. How would you describe the impact of the support service on the development of their businesses?
 9. What kind of help do you offer during the phase of idea generation?
 10. What about Infrastructure (Space, Shared resources), Business support services (Coaching/Mentoring. Training to develop business skills), Access to networks (Professional services providers, Seed or venture capital)

- d) Business Environment
 1. How is the attitude of people in the community, municipality and media (papers, TV) towards you as an Innovation Hub that contributes to the community?

2. What should the municipality/government do in the next 3-5 years for better economic development?
- e) Work at the Innovation Hub
1. Why did you choose this location?
 2. How do you advertise your activities?
 3. How many successful start-ups have been going through your Innovation Hub?
 4. Who are the most known start-ups?
 5. What makes your Hub different from other Innovation Hubs?
 6. Can you briefly describe your structure? Do you have a board?
 7. What's the main cost item?
 8. How do you generate revenue?
 9. What are the main financing sources of your Innovation Hub?
 10. What kind of business model do you follow?
 11. Do you provide access to external financing such as business angels or venture capitals to the tenants?
 12. Do you provide funding for your tenants?
- f) General Information
1. Professional years of experience
 2. Years of experience in the current organisation
 3. Which is the highest level of formal education which you have received?
 4. How many years of experience do you have before having your own business?
 5. How long has the Innovation Hub been in existence?
 6. What's the name of your CEO?
 7. What's the size of the company?
 8. Which is the main activity of the company?
 9. Industry of operation:
 10. Is the business formally registered?
 11. Legal form of business:

Annex C: Interview guide Start-ups

Organisations name:	
Interviewee(s):	
Role/function of interviewee in the organisation:	
Date/time:	
Location:	

- a) Self-description
 1. What's the story of your business?
 2. Please describe your organisation's activities in general.
 3. What was your motivation for opening this business?
 4. What are your future plans, in 2-3 years?

- b) Success factors of the entrepreneur
 1. What do you regard as success factors of an entrepreneur?
 2. How important are education, training, consulting, and advice for you as an entrepreneur?
 3. Have education, training, consulting, and advice in general helped you to be a better entrepreneur? If yes: how?
 4. In which area of business knowledge and skills have you felt less prepared?

- c) Programme and Training
 1. How did you get to know the Innovation Hub and their programme?
 2. Do you think you have a good overview of the programmes they offer?
 3. In what way do you use the available services at the Innovation Hub?
 4. Did you attend any training offered by the Innovation Hub?
 5. Which topics are covered during the training?

- d) Consultancy, Mentorship and Advisory
 1. Who have been your consultants/mentors/advisors in each phase?
 2. How do you usually initiate a contact with your consultants/mentors/advisors?
 3. Do you have regular meetings with your consultants/mentors/advisors?
 4. How much (e.g. in days, weeks, month) have you received consultation, mentorship and advice?
 5. Could you state what the content of the advice has been?
 6. How important has the advice in the development of your business been for you?
 7. From your experience with the consultants/mentors/advisors, would you say that their services are tailored to your needs, or are they rather general and would apply to many businesses?
 8. What should be done in the field of consultation, mentorship and advice to provide entrepreneurs with the capacities they require to starting a successful business?

- d) General support
 1. Can you hold meetings here?
 2. What kind of help did you receive during the phase of idea generation?

3. How would you describe the impact of the support here on the development of your business?
 4. Have you ever felt that you needed more support to increase the success of your business?
 5. What prevented you to ask for more support?
 6. What are the main reasons for a successfully managed Innovation Hub?
 7. If you would run the Innovation Hub what would you do better, what would you keep?
 8. How are you pleased with the support of the Innovation Hub managers and mentors?
- e) Business Environment, Finance and Network
1. In what way has your professional network changed since staying at the Innovation Hub?
 2. Does the Innovation Hub give you access to a special network?
 3. In what way do you get sponsored by the Innovation Hub?
 4. Is the funding sufficient?
 5. Do you seek access to external financing such as business angels or venture capitals?
 6. How is the attitude of people in the community, municipality and media (papers, TV) towards you as an Entrepreneur and a person who contributes to the community?
 7. What should the municipality/government do in the next 3-5 years for better economic development?
- f) General Information
1. Age (year of birth)
 2. Professional years of experience
 3. Years of experience in the current organisation
 4. Which is the highest level of formal education which you have received?
 5. How long has the business been in existence?
 6. Was the company created one year or more prior to entering the Innovation Hub?
 7. What's the size of the company?
 8. Is the business formally registered?

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