UBUJAMII

Alleviating challenges in youth-driven innovation

unicef

fondation BOTNAR

DBM

C4DLab Innovation Lab

UNIVERSITY OF NAIROBI

PBL EAST AFRICA

Ministry for Foreign Affairs of Finland

Aalto University

Christabel Gero
Johan Pricam
Liina Hilkamo
Martin Schubert
Ngacha Njeri
Terry Ondiko

Acknowledgements

This project was carried out as a combined effort by the Problem Based Learning Fellows from the University of Nairobi and Aalto University, with close consultation and guidance from their respective universities. Special gratitude goes to the team's mentors Fernandos Ongolly and Anahita Rashidfarokhi who offered their valuable insights throughout the learning journey. Our appreciation goes also to the clients UNICEF ESARO and Fondation Botnar, led by Johannes Wedenig, who provided the challenge for this project. Through Wedenig and the rest of the team, we received valuable insights to navigate the challenge utilizing the design thinking methodology. Additionally, they provided us with valuable contacts throughout the project.

Our special acknowledgement goes to the University of Nairobi and Aalto University for providing an inspiring learning environment for the team. We would also wish to extend our gratitudes to the C4DLab director Dr. Tony Omwansa and Aalto Global Impact director Riina Subra from Aalto University for the possibility to take part in this international collaboration. It offered us a lot of opportunities and challenges as well as a possibility for cross cultural learning. During the field research in February 2020, the staff and volunteers at C4DLab, led by Gladys Gatiba, played a crucial role in providing administrative support and a conducive learning space for us and the mentors to connect and share our experiences. The administrative support and feedback by everyone at C4DLab was immensely important and valuable in this academic journey.

We would also like to extend our gratitude to our interviewees and those who responded to our online survey. This project would not have been successful without the insights, feedback and comments that we received from them. The data received from the interviews and the online questionnaire gave us a thorough understanding of the challenges our interviewees have faced and the needs and wishes they would have for our solution.

The team was motivated to create a solution to the challenge given by the client, and worked hard despite the occasional challenges related to cultural differences and remote work. We attribute this academic achievement to the material and spiritual provision from the almighty God for keeping us safe and sound amidst our individual strengths and weaknesses.

Table of contents

Glossary & Acronyms

Digital innovation: An innovation that has at least some digital component. The innovation does not need to be fully digital in order to be classified as a digital innovation.

Entrepreneur: An entrepreneur is an individual who creates a new business. This project has been focusing on the intersection between entrepreneurship and innovation; i.e. entrepreneurs who base their businesses around their innovations.

Innovation & innovator: Innovation is about creating new ideas. This can be an idea for a product, service, concept or something else. An innovator is an individual who creates an innovation. This project has been focusing on innovators who use their innovations to solve real life problems, often through creating startups based on the innovations.

Innovation ecosystem: The innovation ecosystem includes all the actors that promote innovation in Nairobi. Some examples of these actors are educational institutions, the government, innovation facilitators like hubs and accelerators and non-governmental organisations.

Innovation facilitator: An innovation facilitator is an organisation that facilitates innovations. Common innovation facilitators are hubs, incubators and accelerators.

Systemic bottlenecks: Systemic bottlenecks are challenges that are faced by many innovators, like a lack of mentorship or information. These challenges often originate from flaws in the innovation ecosystem. The goal of this project was to alleviate some of the systemic bottlenecks found in the innovation ecosystem in Nairobi.

Youth: For this project, youth was defined as people under the age of 30.

C4DLab: Computing for Development Lab
COVID-19: Coronavirus disease 2019
IDBM: International Design Business Management
MoICT: Ministry of Information, Communication and Technology
NGOs: Non-Governmental Organisations
PBL: Problem Based Learning
Q&A: Questions and Answers

1. Introduction

This report presents the process and final solution of the project tackling the systemic bottlenecks related to youth-driven digital innovation in Nairobi, Kenya. The project was done for UNICEF Esaro and Fondation Botnar, and the multidisciplinary team working on the challenge consisted of students from Aalto University and University of Nairobi. The students were brought together by the PBL East Africa project. The 6-month project was carried out utilizing the design thinking methodology, meaning that the project followed the design thinking phases of empathizing, defining, ideating, prototyping and testing.

Africa is a youthful continent where during the next 35 years, two thirds of the population will be children and youths (Wedenig, 2019a). A lot of hope is placed in the innovation potential of the youth for tackling societal challenges (Wedenig, 2019b). According to the Census 2019 study (KNBS, 2020), 38.9% of youths in Kenya are unemployed. However, innovations and entrepreneurship create jobs especially for the youths: 71% of employees in Kenyan ventures are between the ages of 12 and 35 (VC4A, 2018, 35).

As Sebba et al. (2009) state, that youth-led innovation can have a major economical, cultural, and social impact for a society. Even though a lot of effort has been put in innovation programs and infrastructure in Africa, the results have not yet been at par with the investments. This is greatly due to the fact that the innovation ecosystem is not properly working for the local youth. (Wedenig, 2019b.)

Making the ecosystem more accessible for the youth would thus not only benefit the youths themselves but the entire society.

Despite the vibrant ecosystem, entrepreneurs still face many challenges when aiming to innovate in Kenya and all around Africa. Common issues all around the continent include access to financing, limited infrastructure and an inexperienced labour market. Additionally, corruption, inadequate laws and regulations as well as cultural differences across Africa pose challenges for startups. In many countries, the local culture is also problematic especially for women, as they are struggling to be taken as seriously as male entrepreneurs. (VC4A, 2018.) All of these issues are also familiar for the young innovators in Nairobi, but in addition, they have a hard time in finding support and building a social network in the innovation ecosystem, and many of them don't have a proper understanding of the ecosystem in the first place.

In this project, the team studied the Kenyan innovation ecosystem from the young people's point of view. The aim was to understand what kind of challenges the youths face when innovating in Nairobi, and what they would need to better take part in the local innovation ecosystem. By listening to the youths' own experiences and thoughts about the ecosystem, the team gained a broad understanding of the current innovation challenges as well as the motivations the youth have for innovating. In their research, the team focused on young innovators under the age of 30. Special focus was put on innovators who work with a digital solution and who either aim to start or have started their own business.

To tackle some of the biggest challenges the young innovators encounter in Nairobi, such as the lack of networks, support and information, the team created Ubujamii – an online community that connects, supports and encourages young innovators. As stated by Sebba et al. (2009, 5), networks play an important role in youth-driven innovation. Through networks, youths can get support and advice from both other innovators as well as more experienced experts. Networks also enable collaboration and bouncing ideas off one another. (Sebba et al., 2009, 5.)

Before jumping deeper into the final solution, this report will explain the process of the project as well as the research conducted as a part of the project. The following chapter will present the process and methodology of the project, including the timeline of the project, information about how the teamwork was carried out remotely and a deeper dive into what kind of research the team conducted during the six months. The chapter on findings presents the results of the research process, including the current status of the ecosystem and the challenges the youth face when innovating in Nairobi.

After presenting the background of the project and the process, it's time to take a look at the solution the team has developed. Chapter 4 presents what Ubujamii is, how it works and what makes it unique. In addition, the chapter discusses the limitations of the solution. In chapter 5, the team makes suggestions on the implementation and further development of the solution.

In chapter 6, the team reflects on the learnings, challenges and highlights of the 6-month project. The chapter covers everything from team dynamics to the tools and processes used throughout the journey. Lastly, the conclusion chapter sums up the entire project.

2. Project journey – the who, when, and how

This chapter introduces the multidisciplinary project team and how they worked in a remote setup. It also presents the timeline, which highlights in detail the schedule from the start of the project to the final stage of report writing and presentation. The subtopic research explains the research methods that were used to understand the systemic bottlenecks to youth-driven innovation, and also sheds light on how the collected data was analyzed. Finally, the subtopic design development explains the tools and methods the team used for the development of the concept.

2.1 The team

The multidisciplinary team working on this project consisted of three students from University of Nairobi, Kenya, and three students from Aalto University, Finland.

The collaboration started in December 2019, when the project brief was released by the client. The Finnish sub-team was formed through the IDBM Industry Project course in Aalto University and the Kenyan sub-team was formed through the C4DLab fellowship at University of Nairobi. The program that brought the sub-teams together was PBL East Africa.

The team has collaborated remotely, with the exception of the 2-week field research conducted in Nairobi, Kenya. The remote work was largely enabled by various online softwares. For daily communication, the team used WhatsApp to reach each other quickly and efficiently. Team, client and mentor meetings were conducted using Skype and Zoom, and all files were stored in Google Drive. Miro was used for brainstorming and workshopping.

Figure 1: Team picture

From left to right on the above figure:

Liina Hilkamo, Master's student in International Design Business Management
Terry Ondiko, Economist, Bachelor of Economics from University of Nairobi
Martin Schubert, Master's student in Engineering and Business
Ngacha Njeri, M&E Specialist.PhD Candidate at the University of Nairobi
Johan Pricam, Master's student in International Design Business Management
Christabel Gero, Policy researcher; Master of Science in Population Studies

2.2 Project timeline

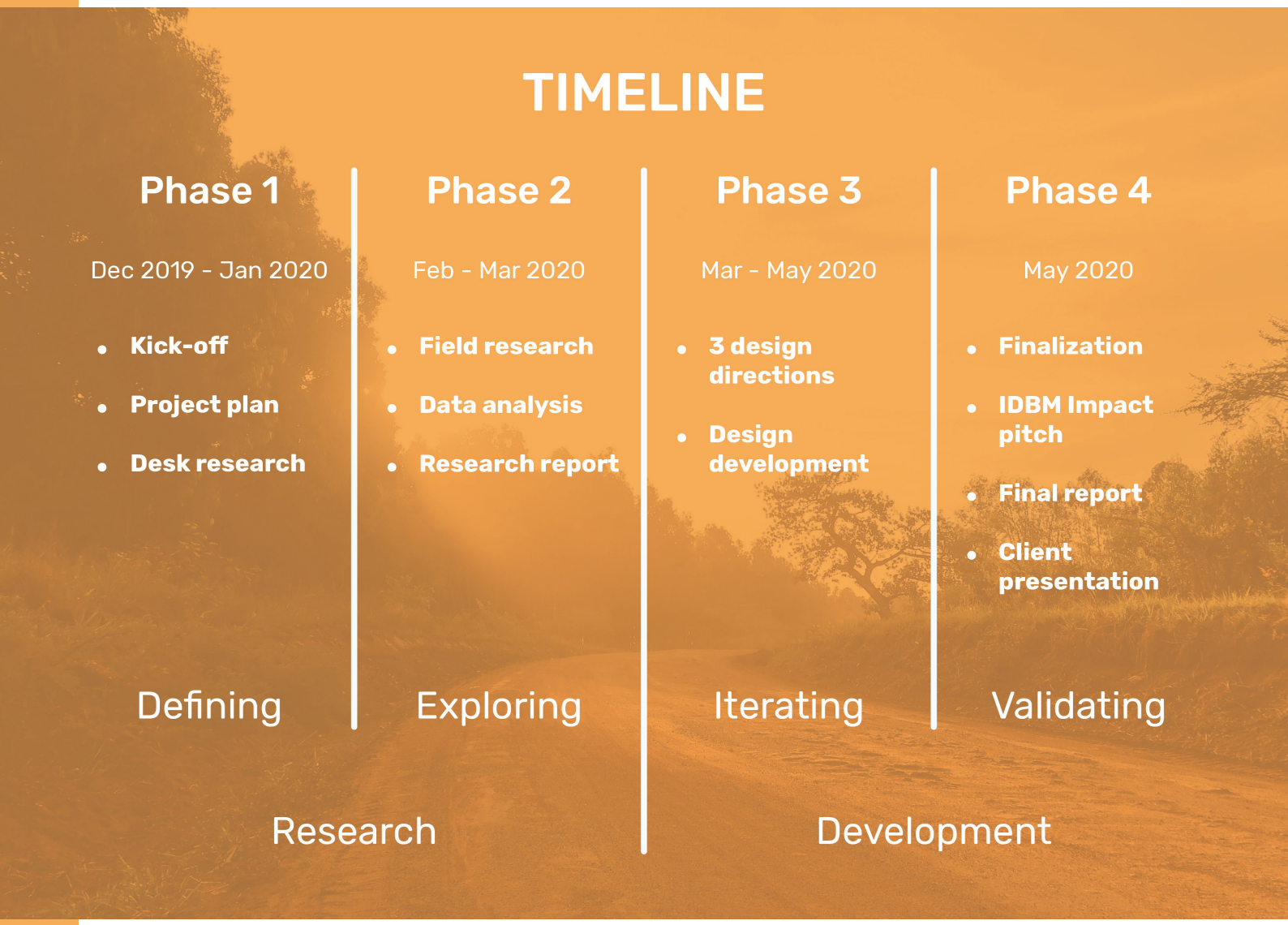


Figure 2: Timeline

The 6-month project was carried out between December 2019 and May 2020. The project was divided into four distinct phases with phases 1 and 2 focusing mainly on research and phases 3 and 4 focusing on design development. The activities were as follows:

Phase I: Defining (December 2019 - January 2020)
The team members had their first WhatsApp call in December 2019. During the first weeks of the project, the team members got to know each other and their hopes and aspirations for the project. The members also planned and scheduled the activities that were to be done during the different stages of the project. In addition, background research, ecosystem observation and analysis was carried out.

Phase II: Exploring (February- March 2020)

On February 14th, 2020, the team members from Aalto University arrived in Nairobi, Kenya for a two-week joint fieldwork. The fieldwork period was an intense period of working, learning and adapting to a new environment. Interviews of the youths and stakeholders were conducted and an online questionnaire was administered to aid in the data analysis stage.

Phase III: Iterating (March - May 2020)

The team ideated, designed and developed a preliminary concept on the challenge of alleviating systemic bottlenecks to youth-driven digital innovation. The team members from Finland returned, but the collaboration continued remotely. Different aspects of the concept were investigated thoroughly through online research and benchmarking. The team members also iterated and further developed selected parts of the solution through interviews conducted remotely with the targeted youths.

Phase IV: Validating (May 2020)

The team worked on the value proposition through the business model canvas and by further concepting the platform features and structure. The team also agreed on things such as the platform name, mission and values. As the last step, the team pitched the solution at Aalto University and drafted this final report depicting the whole project journey.

2.3 Research

The research conducted as a part of the project was a qualitative study of the Nairobi innovation ecosystem and the youth's experiences of innovating in Nairobi. The research consisted of two parts: desk research and field research.

The objectives of the research were as follows:

- To better understand the innovation ecosystem in Nairobi
- To determine the challenges that young people face when innovating digital solutions
- To understand how youths' challenges in digital innovation are currently solved and addressed to accelerate their participation
- To map out youths' needs in digital innovation that could make them actively take part in digital innovation
- To analyze different pathways and experiences of today's young innovators and understand their failures or successes amidst the digital ecosystem

2.3.1 How the research was conducted

The first step of the research was conducting desk research. The goal of the desk research was to get a better understanding of the key concepts of the project, such as digital innovation and entrepreneurship, and to familiarize with the current state of the innovation ecosystem. Entrepreneurship and the African innovation ecosystem has been researched widely during the past decade, which enabled the team to get a comprehensive understanding about the topics already before the field research. Each team member studied the topic independently, and by summarizing the most important findings, the team shared all the key learnings with each other.

The field research took place in February 2020 when the Finnish members of the team traveled to Nairobi to join their Kenyan peers. The team was based at the C4DLab at University of Nairobi. During the two weeks, the team collected data through semi-structured interviews, paper questionnaires and an online survey. The research respondents were divided into two categories, the youths, who represented the target audience of our project, and the expert stakeholders, who consisted of different actors of the digital ecosystem. The respondents were found through online research as well as through the team's contacts and help from C4DLab. In addition, snowballing was used to get interviewee recommendations through conducted interviews. The final count of research respondents for the field research was 54, out of which 24 participated in interviews (15 innovators, 9 expert stakeholders), 3 filled out a research questionnaire (1 innovator, 2 expert stakeholders) and 27 responded to the online survey (27 innovators).

To enable proper analysis of the data, the interviews were conducted in pairs, where one team member was responsible for taking notes of the interview while the other team member was conducting the interview. All the interviews were audio recorded for transcribing and getting further clarifications. In addition, the notetaker made a detailed summary of the interview afterwards. Along the field research, the research tools, interview guides, paper questionnaires and online surveys were also updated to ensure their relevance.

2.3.2 How the data was analyzed

All the information obtained from the interviews and paper questionnaires were analysed using a qualitative data analysis method known as thematic/content analysis. Here, important information received from the interview respondents was analysed and clustered together to identify the main issues affecting youths in the digital innovation ecosystem.
The goal of the data analysis was to find the general themes in the data, as well as to find themes that answer all of the research questions. The first step was to write down all interesting points answering the research questions in a premade template, while listening to the recordings of the interviews. The second step was to create an affinity map of the findings. With the help of sticky notes, the data was reorganized to smaller clusters to identify similarities in the data, and thus make the data analysis easier.

Figure 3: Affinity mapping

When the affinity mapping was done, it was time to analyze the themes that had emerged. Two of the research questions had very similar answers, so the sticky notes for the challenges youths are facing and the sticky notes about what youths would need to be able to innovate better were combined. Different colours were used for expert and youth interviews, to be able to see how the answers from the two groups distinguished from each other. In order to get an understanding of the quantity of the answers for different topics, similar information from a respondent was not included more than once.

To better understand the users of the potential solution, two personas were also created based on the data about innovators (see next page).

The personas represent a youth in the initial stage of innovation as well as a youth who already has a working business model. The aim was to capture the different challenges that youth face during the different stages of their innovation journey. The data obtained from the online questionnaire was used to support the findings from the interviews. The data helped the team to verify the trends in innovation and identify the main ways through which the identified bottlenecks can be alleviated.

Figure 4 & 5 (next page): Personas

PERSONA 1

NAME/AGE

- Barbra Njeri, 24

PERSONALITY

- Extroverted
- Interested in technology
- Quite organized

BACKGROUND

- Still at school, studiying computer science at the
- University of Nairobi
- Previous interest in innovation
- Currently starting her own innovation (digital platform)
- Living in Nairobi, originally from Siava
- Successful innovations like MPesa have motivated her

MOTIVATION

- Source of income
- Innovation can lead to better employment opportunities
- Being her own boss

CHALLENGES

- Funding
- Lack of contacts and knowledge on available networks
- Lack of information about innovation and the ecosystem
- No good mentor to seek help from
- Inadequate technical skills (programming)

HOW ARE THE CHALLENGES SOLVED NOW?

- Getting some help from C4DLab (facilities, little mentorship)
- Taking part in a competition/program to get funding for her innovation

OPINION ABOUT THE ECOSYSTEM

- Does not really know it very well

PERSONA 2

NAME/AGE

- Abdul Warri, 28

PERSONALITY

- Introverted
- Business minded, not very technically skilled
- Has a drive to succeed

BACKGROUND

- Bachelor's degree in Agribusiness management
- Has a fairly successful startup in the agricultural sector (3 years old, 8 employees)
- Has tryied to innovate prviously but gave up
- Lives in Nairobi, originally from Garissa

MOTIVATION

- Recognition among his community
- Experienced a problem while growing up, now wants to solve it

CHALLENGES

- Existing laws and policies by government
- Financing for scaling
- Marketing of his product
- Talent acquisition
- Everyday risk of failure in innovation
- Fear of resentment from clients of innovating products

OPINION ABOUT THE ECOSYSTEM

- The ecosystem doesn't work, only the strongest survive
- Disconnection between innovators and the government
- Education gives some backgound knowledge but no skills for entrepreneurship

2.4 Design development

The Design Development stage involved a lot of collaboration from the team members as the team worked together to produce a design that reflects the desires of the client and needs of the users. To ensure the success of the design development stage, each member was always tasked with working on a particular area on a rotational basis.

2.4.1 What the team did

Three Design Directions
Based on the conducted research, the team ideated 3 design directions that they pitched to the client representatives. These directions were:

- Providing information about the ecosystem and innovation in general
- Creating support networks
- Making fundraising easier

After engagement with the client, the team settled on combining the first two design directions and decided to focus on an online platform that solves networking problems as the area of exploration on the challenge. The fundraising option was dropped because it was seen as a very bureaucratic challenge difficult to tackle within this project.

Investigating Aspects
To be able to develop the online platform, the team identified a long list of questions to be answered. To be able to investigate all needed aspects within just a couple of weeks, the team divided into pairs to focus on one specific task every week. The questions were investigated through online research, existing literature and interviews. The findings were presented to the rest of the team in the next meeting, and members had a chance to ask questions or comment on the same. This enabled an efficient way of working within a limited timeframe.

2.4.2 Tools and methods used for design development

Even though the field research was over, the team continued to conduct interviews to develop their ideas further and to hear potential users' views and wishes on the ideated solution. Most of the innovators the team interviewed were excited about having a platform where they could meet mentors and other innovators and share their own experiences and innovations. The team also continued to do online research and benchmarking to get knowledge and inspiration for the development of the concept. Online research was backed up by listening to podcasts and reading articles and books on online communities. For benchmarking, the team viewed many solutions that tackle similar issues, such as Indie Hackers, LinkedIn, and Ajira.

2.5 Research limitations

There were various challenges that the team faced during the research face. What caused many challenges before the field trip was the fact that the team, who had never met each other face to face, had to build a connection remotely. Working and communicating remotely was also limited by the sometimes poor network connectivity from some of the members. During the field trip, the team had a limited time and resources for the field research. Additionally, there was a lack of response from some respondents who had initially confirmed their availability on the interviews, and scheduling difficulties when all the members were occupied at the same time. Compared to the original plans, the team was not able to interview all intended groups of young innovators, such as those from informal settlements. Naturally, working in a new environment and having a lack of previous experience in field research posed limitations for the research as well.

After the field trip, the previous limitations were partially addressed as the team had gotten to know each other and had established more clear ways of working. However, some more limitations came up. These included the COVID-19 pandemic that made it hard to continue with the physical interviews. Additionally, poor connectivity and lack of electricity for some periods affected the immediate combined inputs of members during the brainstorming sessions. Finally, the different timeline schedules between the Aalto University students and the University of Nairobi students forced the team to make a compromise on the schedule that they would use.

3. Research findings – the problem

The two most important themes that arose during the data analysis were the state of the ecosystem and the challenges faced when innovating. The state of the ecosystem naturally affects the innovation possibilities largely, and can thus offer important information on why some challenges, such as lack of support and information, are faced by many innovators.

3.1 State of the ecosystem

The ecosystem is generally described to be vibrant, growing and continuously improving. The youths also find that there are a lot of opportunities to innovate. However, there is a clear lack of coordination between the different players of the ecosystem. The words often used to describe this trend were “disjointed”, “broken” or “individualist”. Some respondents also stated that those coming from informal settlements have a hard time accessing the ecosystem.

The most important actors in the innovation ecosystem according to the youths are the private organizations, followed by startups and educational institutions. For the expert stakeholders, hubs and the government were cited to be the most important, followed by educational institutions. Other key actors considered by both groups were NGOs and events related to innovation. Even though there are many actors in the ecosystem, many respondents felt that the innovation facilitators and initiatives do not really respond to the needs of the youth.

"I don't believe we have an ecosystem, I believe we have an ego-system [...] an ecosystem is a self supporting environment. It's all about individuals with ours." - Expert with a long history in the ecosystem, currently mentoring and coaching innovators.

3.2 Innovation challenges

From the analysis of our qualitative data, the team was able to identify four main challenges most youths face while innovating. These challenges were innovation support, funding, finding information and innovation mindset.

3.2.1 Lack of support

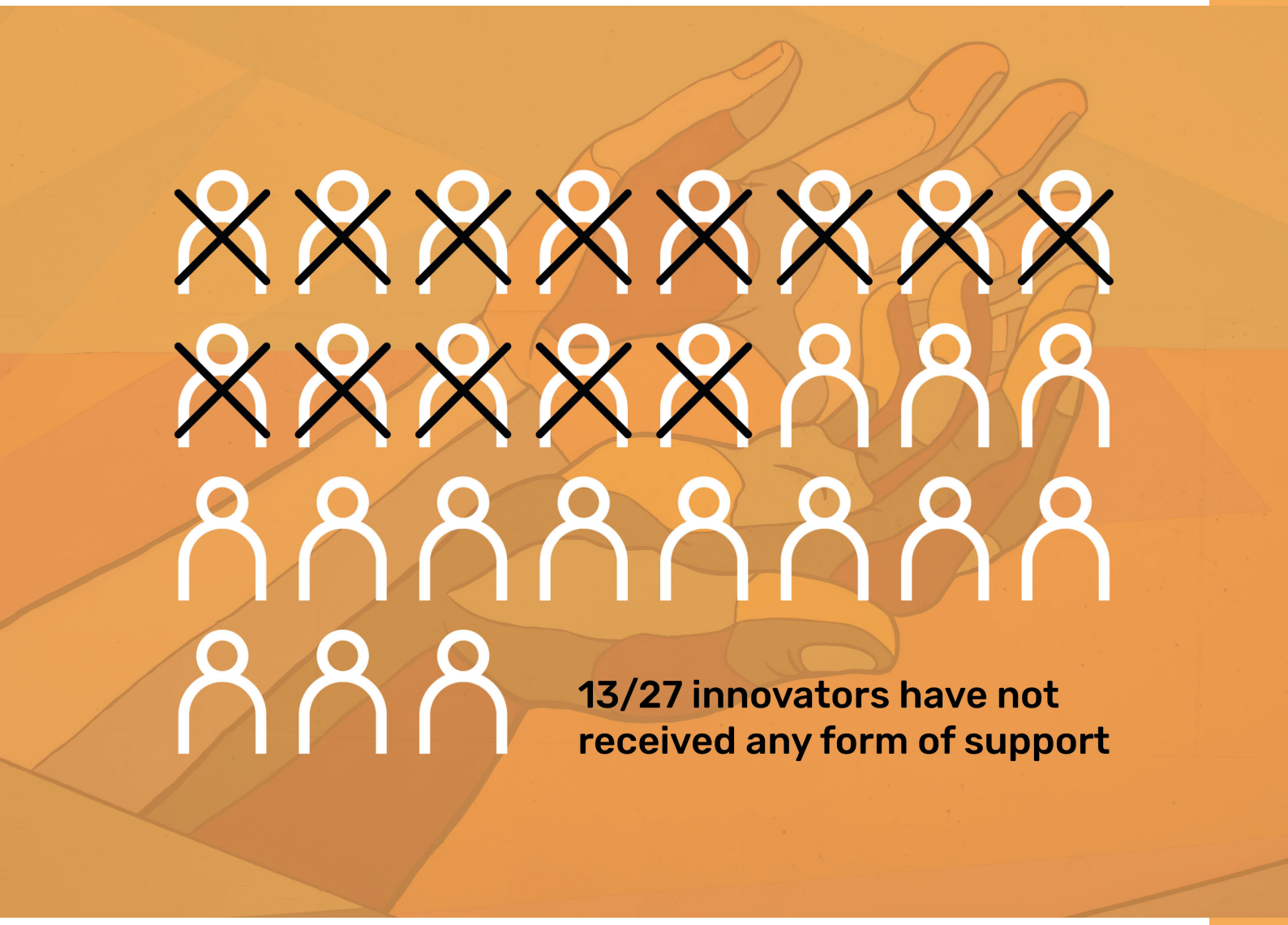


Figure 6: Lack of support rate among the respondents of the online survey

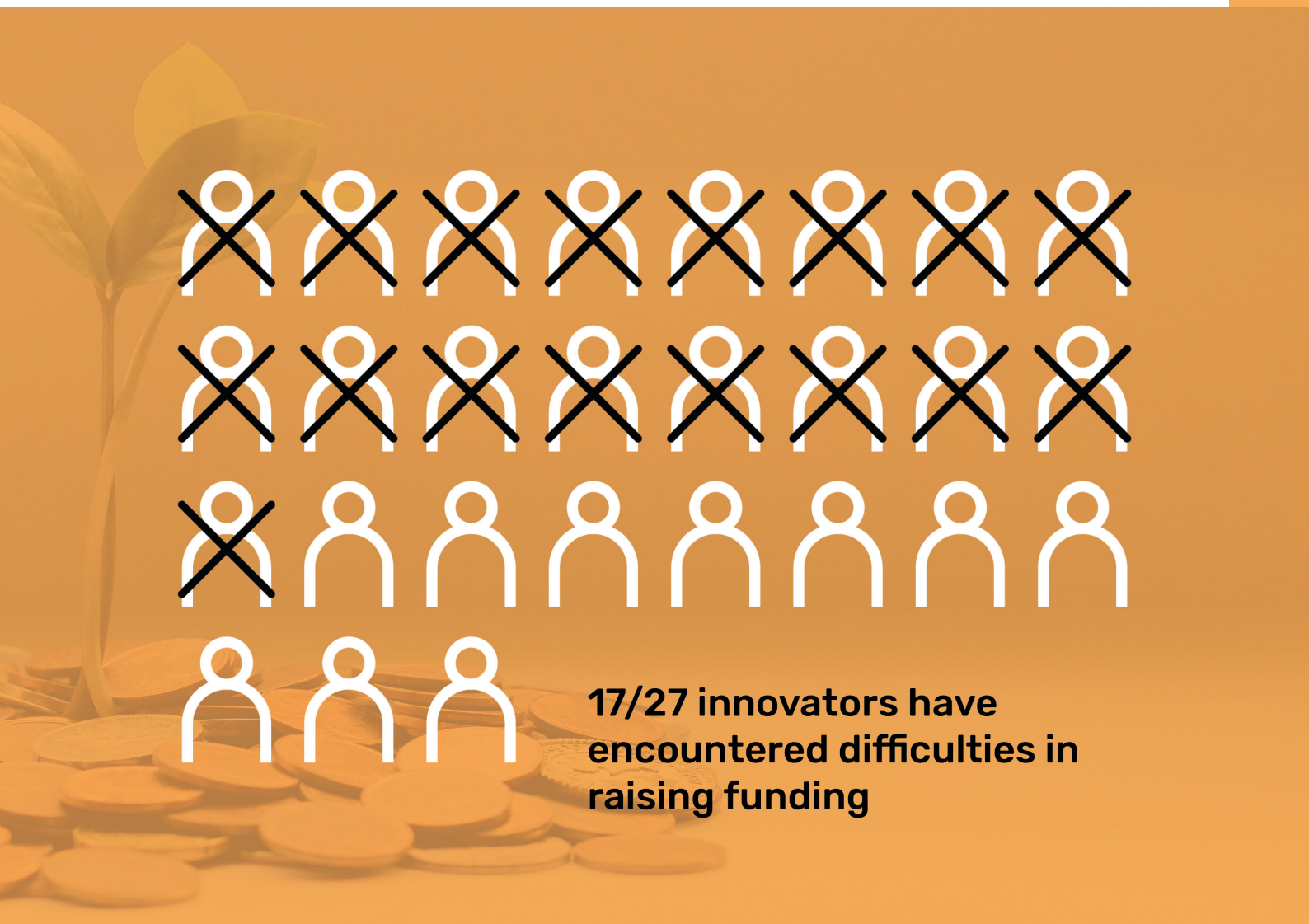
Most youths stated that there is a general lack of support in the ecosystem, and that they have not gotten enough support during their innovation journey. In this context, support includes for example, help with developing the innovation and help with solving challenges related to e.g. business, informational or legal issues. In addition to support, the youths lack relevant networks. Because they don't know other innovators or ecosystem members, the youths end up facing their challenges alone.

Most youths also stated that they either would need mentorship now or would have needed it earlier. Good mentorship is hard to come by, especially if the innovator does not have relevant social networks.
Many also stated that the government does very little in order to support innovation. The respondents would like to see the government do more in terms of creating an innovation ecosystem where relevant support is easily accessible for young innovators.

"It is just a place whereby only the strongest survive. So, you have to know people, you have to at least have some kind of godfather for you to penetrate. But if you are working alone, it's a very hard place." - Entrepreneur (33) with a 2-year old startup, regarding the innovation ecosystem.

3.2.2 Lack of funding

Figure 7: Funding issues rate among the respondents of the online survey



According to the youths, one of the biggest challenges young innovators face is getting funding for their innovations. Funding is needed both in the initial stages of the innovation process, for example when developing the product, as well as in the later stages of innovation, for example when scaling the business. In addition to this, some youths felt that the income insecurity in the startup field is an issue, as it de-motivates youths from innovating.

Some concerns were also raised that there is a lack of local funding in Kenya, i.e. that a big part of the investments to startups come from outside. At the same time, there is also an issue with foreign investors worrying about Kenya being a too risky environment for investments.

"Seed capital is essential. Without that, it doesn't matter how much knowledge you pump on them [the youth], you are doing nothing" -
Ecosystem expert involved with teaching youths relevant skills.

3.2.3 Lack of information

The team also found a general feeling amongst the youths that lack of information is an issue. Here the team identified two main themes: information about the ecosystem, and information about innovation in general.

Many youths don't know what the ecosystem consists of, i.e. what actors, events and programs there are and what opportunities the ecosystem can offer them. They also felt that the ecosystem is hard to navigate in and called out for more information about the innovation ecosystem in general.

There is also a lack of information on how to innovate. Many youths don't have previous knowledge and experience in innovation and would need information about practical things regarding innovations. This includes how to manage businesses, when and what kind of funding one should seek, what are important skills needed for innovation and other general information related to the innovation process.

Education plays a significant role in the lack of information. In general, youths think that their education is sufficient for getting the basic knowledge and skills needed to build their innovation. However, they also stated that the educational system gives little knowledge about innovating and entrepreneurship. This means that youths do get knowledge within their field of expertise, but are not equipped with the skills needed for using that knowledge to solve real world problems as an entrepreneur. As many respondents stated, the current educational system creates employees, not entrepreneurs.

3.2.4 General mindset

Many experts had the opinion that one of the biggest reasons why youth-driven innovations fail is the lack of patience and resilience amongst the youths. They want to move forward too quickly, without developing the idea and finding out what customers actually need before they introduce their products to the market. If the innovation process doesn't move fast enough, or they face too many challenges, they might give up the whole project. According to the expert stakeholders, it takes time to build a successful company, but many youths don't have the patience for it.

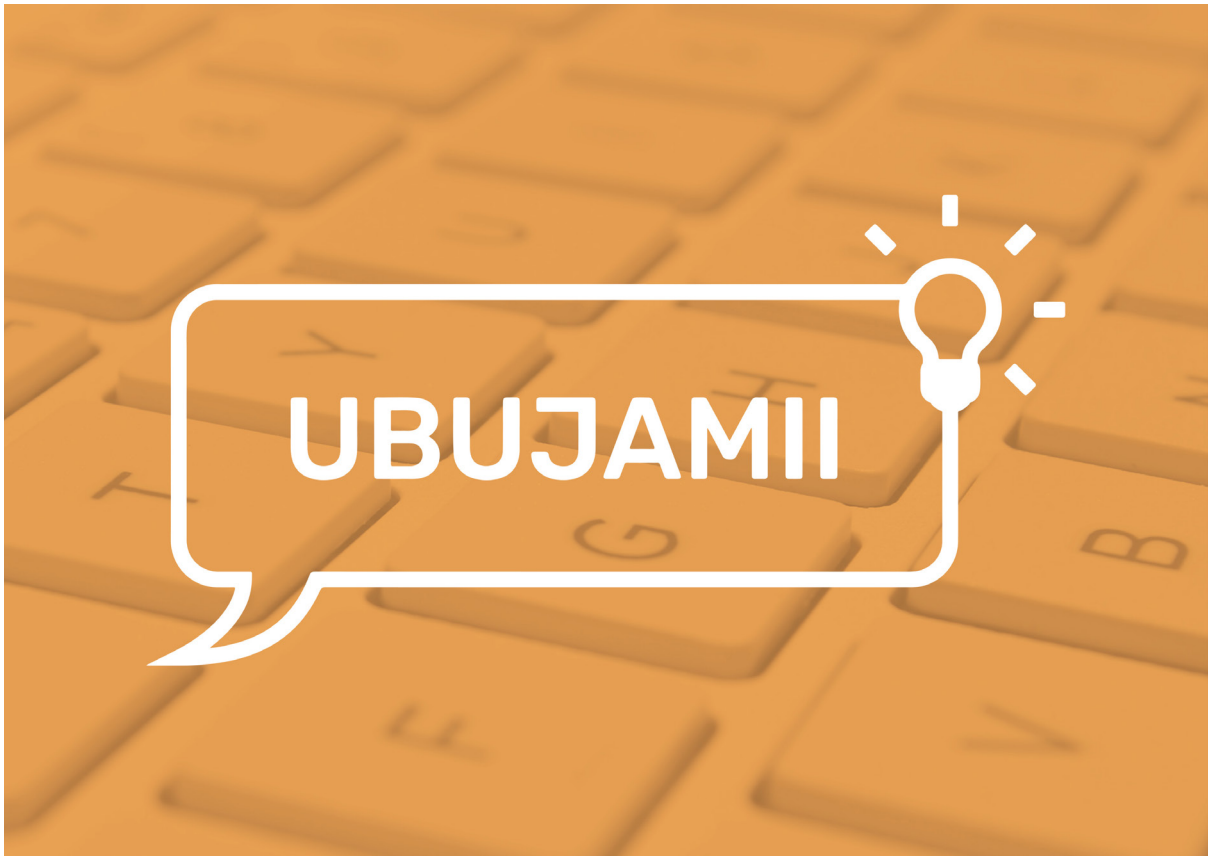
Another problem with the youth, is that they are too focused on making money, instead of developing a good business model. Some experts were also worried that the current models in the ecosystem makes youths "addicted to grants", i.e. having the mindset that innovations won't succeed without grant money. Several experts urged the youths to not aim at making quick money, but instead prioritize developing the business.

The final trend is related to the general mindset around innovation in Kenya. In the Kenyan society, youths are encouraged to get a good education, a safe job and a family, leaving no room for innovations. Entrepreneurship is generally not seen as a successful career choice. This also means that many youths see innovation as a secondary activity or lose focus on their innovations due to family or work-related obligations. There is also a general lack of encouragement for innovation in society, for example within families and from the government.

One reason for entrepreneurship not being seen as a career alternative is the fact that there is a lack of existing role models in the ecosystem, and the youths are not aware of successful entrepreneurs. Seeing someone else succeed could motivate more youths to take part in innovation.

"Make innovation a lifestyle, not something that only certain people have, but something everyone can do." - Youth currently developing an innovation idea.

4. Ubujamii – the solution



This chapter will describe Ubujamii, the concept of the solution that the team developed to tackle the challenges young innovators face in Nairobi. First, Ubujamii will be described and the arguments for why the team chose to develop this solution will be presented. In the second section, different ways for the future administrators of Ubujamii to ensure that it grows to its fullest potential will be described. Finally, the limitations of the concept will be critically analysed.

4.1 What is Ubujamii?

4.1.1 Choosing the solution

There are many different challenges to be solved in the innovation ecosystem in Nairobi. However, many of them stem from the same problem; the young innovators don't have relevant networks for innovation. By making contact with other people in the field of innovation, the youths can find like minded people to discuss their ideas with, get information about the ecosystem and support on their innovation journeys. Networking was also identified as one significant challenge in the African youth digital innovation workshop that one team member attended in Cape Town, South Africa in February 2020. Together with the client, the team decided to focus on this topic for alleviating the challenges faced by young innovators in Nairobi.

Already in the beginning, the client wanted the solution to have at least some digital component, to make it more scalable. In order to be accessible to as many innovators as possible, the team decided to develop a concept for an online community around innovation and entrepreneurship in Nairobi. By creating an online innovation community, three out of four of the main challenges identified during the fieldwork are alleviated. These are the lack of support and information, as well as the general mindset around entrepreneurship and innovation in Nairobi. The team named the online community Ubujamii, a combination of the Swahili words ubunifu and jamii which in English means creativity and community.

Some important criterias for the concept were kept in mind throughout the development process. The solution had to be novel and add value to the innovation ecosystem, as well as easily scalable to other parts of Kenya as well. Even though the project focused on the young innovators, the team wanted the solution to include other stakeholders and ecosystem members as well. In addition, the concept had to be inspiring, encouraging and accessible for the users.

4.1.2 Ubujamii in a nutshell

Ubujamii is an online based community that supports and encourages innovation and entrepreneurship. At the core of Ubujamii is an online community platform that allows interaction between people in the innovation ecosystem. The main feature on the platform is a discussion forum, where users can discuss with each other about different topics regarding innovation and entrepreneurship. They can for example ask questions, share their experiences or just read about other people's insights. Users are also able to connect with each other, thus growing their innovation network. In addition to this, the platform will provide a database of actors in the ecosystem, as well as a calendar for upcoming innovation events. Ubujamii will also organize both virtual and physical meetups for the members of the community.

By using the community platform, innovators can get help with their challenges through the discussion forum, as well as inspiration and encouragement to continue innovating. The database of actors and the event calendar provides further information about the innovation ecosystem and the opportunities it offers. Since Ubujamii is both free for its members and based online, it is accessible for everyone interested, as long as they have a computer or a smartphone and access to the Internet. This means that even those who are not usually able to benefit from innovation facilitators, due to e.g. financial reasons or living in remote areas, can benefit from Ubujamii.

The goal of Ubujamii is to alleviate the challenges young innovators in Nairobi are facing today. There are already some actors and initiatives in the innovation ecosystem in Nairobi that share this goal. However, there are a few things that make Ubujamii stand out from all other current solutions. First of all, Ubujamii is free for the innovators, so even those with little wealth can benefit from it. Second, since the community platform is online, Ubujamii is accessible for everyone with a computer, smartphone or tablet as well as Internet access. Third, Ubujamii is not a closed community meant for only a certain group, such as people from a specific university or innovation facilitator, or people living in a certain location in Nairobi. Instead, Ubujamii aims to bring together everyone in the innovation ecosystem, something that has shown to be much needed in Nairobi. Even though there are actors and initiatives that incorporate some of these aspects into their operations, there are currently none that successfully manage to incorporate all three in addition to efficiently alleviating innovation challenges. Ubujamii, however, will do just that.

Figure 8: Ubujamii's missions

4.1.3 User groups & dynamics

On the Ubujamii platform, the team identified three main groups of users. The first one is 'innovators'. This includes people who are currently doing innovations or are interested in innovating. The second group is 'experts'. Experts are people who have a lot of knowledge about innovation, but who do not currently innovate themselves. The last group is 'other stakeholders'. This group includes people who neither do innovations nor have enough knowledge about it to be considered experts, but who still have an interest in participating on the platform. Some examples are investors, government officials and someone working for an innovation facilitator, such as an accelerator or a hub.

All groups get different benefits from participating on the platform. The innovators receive mentoring and support from both experts as well as other innovators. They also get inspiration and encouragement to continue innovating by reading posts on the forum. Lastly, they create connections and get visibility for themselves and their innovation. Also experts create connections and get recognition by being active in the community. While they do not innovate themselves, through mentoring innovators, experts gain experience of working with different innovations, as well as personal satisfaction from helping innovations become successful. Other stakeholders is a diverse user group, but by following the discussions on Ubujamii

they gain relevant information to develop their own organizations and operations. By being active in the community, other stakeholders also get more visibility for their own organizations. In addition to this, all user groups can benefit from the database of actors and startups, as well as the calendar listing innovation events.

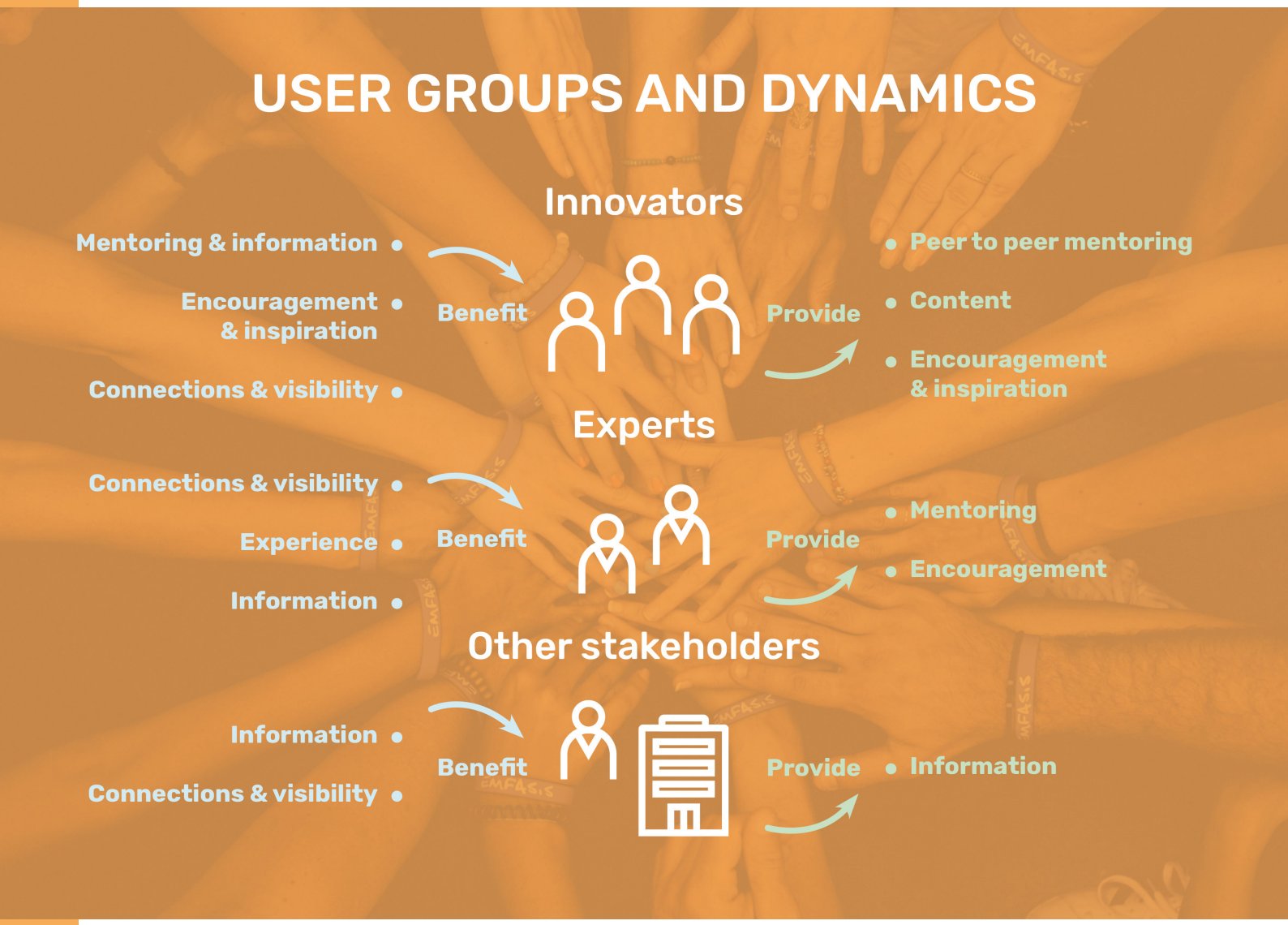


Figure 9: Ubujamii's user groups and dynamics

4.1.4 Features

Discussion forum

The main feature on the Ubujamii platform is the discussion forum. On the forum, users can discuss topics related to innovation and entrepreneurship, post updates on their own progress or ask questions about the challenges they are facing. By following and participating in the discussions, the users gain more knowledge and information about innovation and can get help with challenges they are facing themselves. When reading about other people's problems and success stories, innovators not only learn from others, but also get inspiration and encouragement to continue innovating.

Since all discussions and posts are not equally interesting for everyone, it will be necessary to filter discussions based on topic when the platform grows. One way of doing this is by using tags on a post to indicate what topic the post is about. Users can then filter what they see based on those tags, and search for topics they are interested in. Matching content to users can also be done with the use of artificial intelligence that suggests content based on a user's prior activity on the forum. However, it is important to keep in mind that when using automatic filtering the users might only get exposed to a certain type of content, and thus miss out on the variety of content on the platform.

During the field research, the team found that innovators have many questions to ask about their challenges, but no one to ask them from. Ubujamii is a great place to get answers to these questions from those members that have the needed knowledge to help. However, in a busy and lively forum, any specific post can quickly get lost at the bottom of the page. Therefore, to ensure that all questions get seen long enough, posts with the tag "question" will also be visible in a separate section. In addition, by allowing other users to upvote questions they are interested in, the unanswered questions can be ranked based on their importance. This way, we ensure that people with the knowledge to answer an important question will be able to find it in the first place.

Profile creation & connection

On the Ubujamii platform, users will be required to create a real profile, including their name and picture as well as a short description of themselves. This requirement makes it possible for community members to connect with others on the platform. They can send friend requests and messages privately if they want to get to know each other further. With this feature, users will be able to expand their personal innovation network. An important difference between Ubujamii and many popular social networks is that the content the users see in the forum will not change based on who they add as friends. If users would mainly see things their friends post, Ubujamii would quickly develop into several different 'bubbles', instead of being one community.

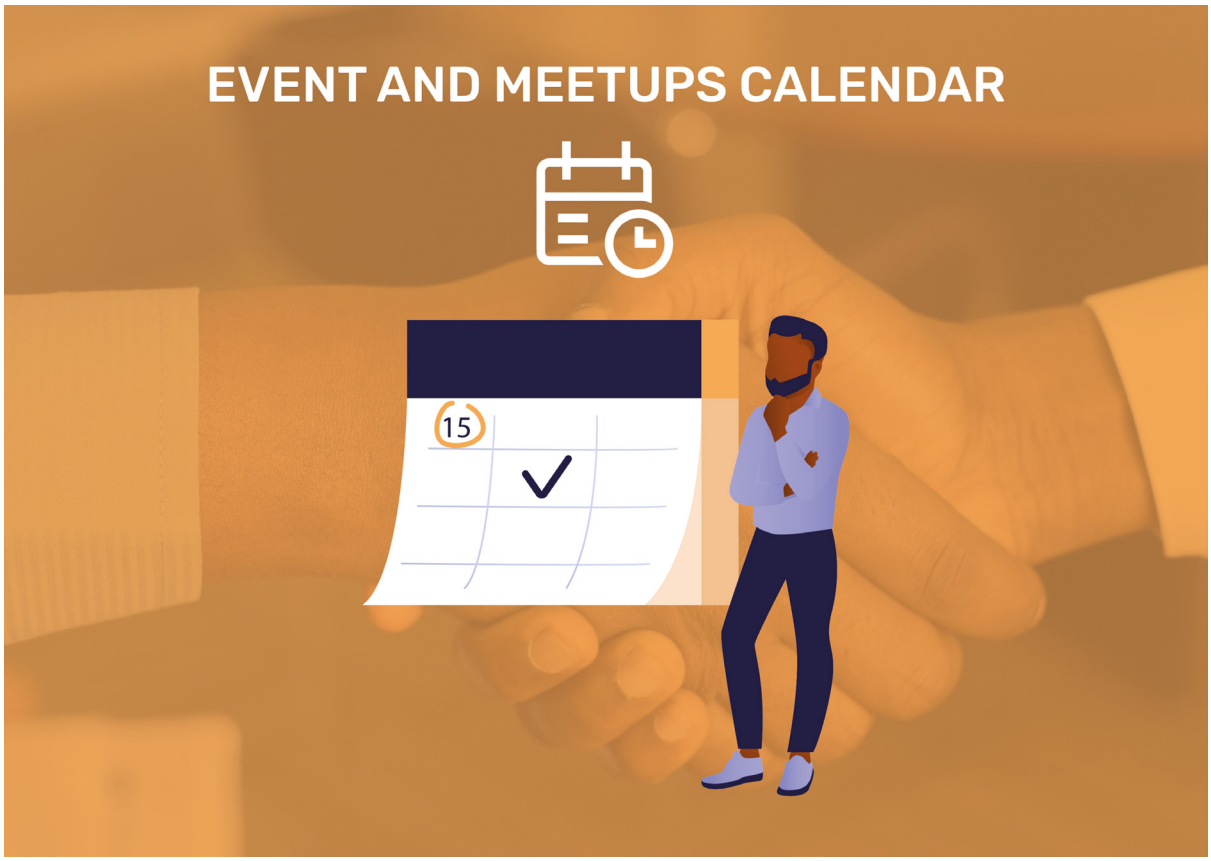
Having real profiles on the platform instead of anonymous ones also increases the trust between users, since they will be able to know who they are interacting with. In addition, it helps individual users to get to know the other members of the innovation community, as well as making themselves known. Since the personal reputation of the users is at stake, they are also more likely to behave well and follow the code of conduct, compared to if their profiles were anonymous.

Database and knowledge

During the field research, the team found out that many users are unaware of existing actors in the ecosystem, such as innovation facilitators like hubs and incubators. The Ubujamii platform allows for all actors to register their organizations and describe them. This creates a database of ecosystem actors where innovators can easily search for opportunities that are relevant for them. In addition to this, entrepreneurs on the platform can register the startups they have founded, which makes the database interesting also for potential investors.

Event and meetups calendar

The team also found out that many innovators are unaware of different innovation events happening in Nairobi. On the Ubujamii platform, ecosystem actors will also be able to register events they are organizing, creating a calendar listing all events happening in the innovation ecosystem.



4.2 Creating an active and vibrant community

When several members actively participate in the community, the value of participation increases for other members as well. Conversely, when members become less active, the benefits of being in the community decreases for everyone. Due to this network effect being an integral part of the nature of an online community, it is crucial to design the community in a way that promotes active participation and fosters interaction between members of the community (Kraut, Resnick and Kiesler, 2016). This includes building trust between participants as well as towards the administrators, encouraging social engagement and ensuring that the content of the discussions in the community is relevant for the members.

4.2.1 Launching the platform

The first challenge in creating an active community comes when launching it. Once Ubujamii has a certain number of members, it will provide all the benefits described earlier in this chapter. Before that, however, the Ubujamii platform will bring little value to the first users, who in the worst case will find the community useless and stop participating in it. Therefore, it is essential for the platform to have explosive initial growth, in order to quickly get an initial user base. When the initial user base is established, other potential users will be more likely to want to join Ubujamii.

If an explosive initial growth is not possible, another way to build up the initial user base is to offer something else on the platform than just the benefits from the community (Stanford, 2009). This could be done for example in the form of blogs or videos about innovation. When the user base of the platform grows gradually, the online community grows with it, eventually becoming the main feature.

The team believes that there is a large enough demand for Ubujamii among the innovators to make the first strategy the more viable option. Therefore, the team recommends that the launching of the community happens through a specific event, such as a hackathon or a competition. For the event, participants would be required to create a profile on Ubujamii, and thus be acquainted with the platform. Since this event should aim at attracting as many innovators as possible, it could gain visibility by being marketed by the partners of Ubujamii, or by cooperating with existing innovation initiatives, such as Nairobi Innovation Week. The team recommends that the event is done not only online, but also with a physical gathering.

4.2.2 Building trust

In order for members to be willing to actively participate in the community, they need to be able to trust the other community members. By requiring users to sign up with real profiles, other users can better know who they are interacting with. It is also important for the administrators to remove users who breach the code of conduct, since that guarantees that all users of the platform follow the common guidelines. Finally, by organizing events and meetups, members can better get to know others that are active in the community.

It is also important that the users can trust the platform and the administrators of Ubujamii, since they otherwise might be sceptical to using the platform in the first place. The administration of the platform needs to be transparent and act responsibly, for example by following a strict privacy policy that protects the data of the users. By working together with a more established organisation, such as UNICEF, new members will be more likely to trust the platform. Conversely, if Ubujamii collaborates with actors that are not generally considered trustworthy, it also decreases the trust towards Ubujamii.

4.2.3 Platform rules and moderation

A requirement for people to participate in an online community is that it provides content that is relevant to them and an atmosphere they resonate with (Stanford, 2009). This means that it is crucial to ensure that the discussions on the forum stay on the topic Ubujamii is meant for; innovation and entrepreneurship, and that the tone of the discussions is friendly and supportive. If these criteria are not met, there is a high chance that users will eventually leave the community. An example where this is happening is in the Facebook group "Kenyan Entrepreneurs". In this group, many of the posts are about marketing and selling different products and offerings, which means that those interested in entrepreneurship have to look elsewhere for discussions about that topic. Ubujamii also has a big risk of turning into a platform for marketing and selling products, if there is no supervision of the discussions. By using active moderation, the administrators can prevent Ubujamii from going down this road.

Basic rules:

- Stay on the topic of innovation and entrepreneurship
- No verbal abuse, promote a supportive atmosphere
- Communicate in English or Swahili
- No marketing or selling

With a code of conduct, the rules and guidelines of the community can be shared with all users. The code of conduct should be clearly visible, to ensure that users know and follow the guidelines. To promote a positive atmosphere, the punishments for not following the guidelines should be clearly stated and gradually become more severe if a member is continuing to breach the code of conduct, in the worst case leading to being banned from the community. To encourage other users to follow the code of conduct and contribute to a supportive atmosphere, the administrators could highlight a "post of the week", where the discussion has been exemplary.

The team recommends using human moderators on Ubujamii, but depending on the size of the community there might be a need to also implement peer moderation and automated moderation when the community grows. In order to encourage peer moderation, the administrators should provide a user-friendly channel for reporting negative content or behaviour. To ensure that the moderation does not lead to negativity in the community, the users also need to be able to contact the moderators if they feel that they have been treated wrongly.

4.2.4 Other ways to encourage participation

An important aspect of increasing participation in an online community, is by providing means of social engagement (Kraut, Resnick and Kiesler, 2016). This is already done in Ubujamii with the use of a discussion forum, as well as being able to connect and message with other users. In addition to this, the team recommends Ubujamii to regularly organize meetups where members of the community can get to know each other and interact in an offline context. These meetups can be organized around bigger events in the ecosystem, or on their own with different programs. Since there are many people who will not be able to attend physical meetups like these, it is a good idea to also host virtual meetups, for example with workshops or Q&A sessions.

As mentioned earlier, for many users Ubujamii will be a place to ask questions and get answers to them. In order to encourage community members with a lot of knowledge about innovation to provide answers to these questions, it can be a good idea to implement a function where these members get personal notifications when questions about topics similar to their own knowledge are posted. Both matching tasks to people interested in that specific topic, as well as personal requests for contribution instead of general community-wide requests, are shown to increase contribution in online communities (Kraut, Resnick and Kiesler, 2016). It is important, however, not to reduce the community members' motivation to contribute by excessive spamming of notifications. In addition, a feature where users can thank those who have provided good answers to them should be implemented, since acknowledging positive contributions to a community increases the motivation for a member to do so in the future as well.

The team recommends that the administrators of Ubujamii should not rely on providing rewards for positive contributions to the community, as this can be misused by the members. Providing rewards for contributions can also lead to decreased intrinsic motivation to contribute (Kraut, Resnick and Kiesler, 2016). However, symbolic rewards can serve as acknowledgement for being a helpful user on the platform, which can encourage users to be active in the future as well. The digital tokens used on Yoma (see chapter 5) can serve this purpose, as long as they are used only for acknowledgement of long-term positive contributions, not as a reward.

Finally, in order to reach out to as many potential users as possible, it is necessary to ensure that Ubujamii is accessible on different electronic devices, such as computers, smartphones and tablets, as well as compatible with many different operating systems. In addition, since a big part of the user base is estimated to be young innovators who are used to modern user-friendly applications, the platform needs to have a user interface that is enjoyable to interact with.

4.2.5 Staying active and relevant

In any community, there are members who for different reasons eventually leave the community. If too many users leave the community, it will in time die out by itself. Therefore, it is crucial to work for both keeping old members interested, as well as acquiring new members to the community. In order to keep current members content, the administrators need to quickly respond to any problems that emerge in the community. Also, by maintaining the platform and keeping the content up to date, there are less reasons for members to leave the community. By having a good continuous interaction between the administrators and the users of the platform, Ubujamii can stay relevant also in the long run.

The team recommends Ubujamii to be constantly active and visible on social media to ensure that new members get exposed to the community. This can be done by for example promoting success stories of members and activities in the community. Also, by organizing and participating in innovation events, Ubujamii stays more visible in the ecosystem. It is also important to ensure that new members quickly feel like a part of the community, since this increases the likelihood of them staying in the community (Stanford 2009). An idea for Ubujamii would be to send out a notification to a few users every time a new person signs up on the platform, asking them to make initial contact with the new user. Compared to general greetings by the administration, personal greetings of new members are shown to better make new members feel included in the community (Stanford, 2009).

4.3 Limitations of Ubujamii

Despite all the positive benefits Ubujamii can provide to innovators in Nairobi, it only does so to those with an Internet connection and a device with which to access the community platform. This means that there will be some who can not benefit from Ubujamii, especially youths from poor families. Since the aim of the client is to expand Ubujamii to cover not only Nairobi, but eventually also the rest of Kenya, Internet usage is something that needs to be taken into account, especially in rural areas of Kenya. The fact that this is the main limitation of Ubujamii is quite ironic, considering that the main reason for developing an online community was to be accessible for as many young innovators as possible. However, the team estimates that this situation will continue to get better over time due to technological advancements and infrastructure investments in Kenya.

While Ubujamii solves challenges related to the lack of support and information, as well as the general mindset around entrepreneurship and innovation in Nairobi, it does not directly help innovators to get funding. From the field research the team found that a lack of funding is one of the biggest problems youths face while innovating. Ubujamii might of course attract investors as well, who can provide funding for some innovators, but the team does not anticipate this to happen on a major scale. On the other hand, by providing information and support to the innovators, they might have a lesser need to get funded if their innovations can be self-sustained, or at least they will be better equipped to create innovations good enough to attract potential investors.

Out of the three main user groups identified, the experts are the only ones who are more valuable to the community than the community is to them. The other two groups of users are more balanced in terms of what they provide to the community and what they get out of it. Since the participation of innovation experts greatly benefits the innovators, the team recommends to further investigate how their active contribution and commitment to Ubujamii can be ensured.

So far Ubujamii is just a concept that has neither been thoroughly validated nor prototyped and tested. While the team continued to work with young innovators while developing the concept, there is still a need for more collaboration with the future users. Based on the research done throughout the project, the team believes that there is a clear need for an online innovation community like Ubujamii, but further validation and testing of the features should be done before a first version is developed and implemented.

5. Future of Ubujamii – the next steps

This chapter presents additional features that can be implemented to Ubujamii in the future, and a business model for the main costs and potential revenue streams on Ubujamii. Yoma, the platform where Ubujamii is planned to be implemented, as well as ideas and suggestions for expanding Ubujamii across Kenya and Africa are also discussed in this chapter.

5.1 Further development of the community

At the core of Ubujamii are the young innovators and their needs, and therefore the community platform should be further developed together with the users. The features described in the previous chapter present just the first version of the platform, but it is possible to implement new features if the users see a need for them. The team has identified three possible development directions, which are education about innovation, communication on updates regarding innovations and matchmaking.

In addition to the existing features, Ubujamii could educate young innovators on the topic of innovation with for example video lectures and open online courses. One on one sharing of information about the local innovation ecosystem could also be valuable for the users. Through articles, videos or podcasts covering topics regarding innovation, the young innovators would get familiar with the ecosystem as well as get inspiration from other innovators' success stories.

Updates on the progress of innovations could also be communicated through posters and reports that are easily uploaded on the online community. This will facilitate faster tracking of different innovations at their different levels and encourage the innovators at every stage on their journey. The first iteration of Ubujamii relies on the users to find connections relevant for themselves. In the future, the platform could also suggest potentially interesting people for the users based on their interest, and thus serve as a matchmaker between for example mentors and innovators.

5.2 Business model

The main costs for Ubujamii will be the development of the community platform, legal fees and administration, such as technical maintenance, moderation and organizing events and meetups. Implementing additional features, as well as expanding out of Nairobi to other locations in Kenya and Africa will also contribute to the total costs. Since Ubujamii does not aim at generating revenue, it will mostly rely on funding from donations and fundraising.

However, the team has identified some principles when evaluating different models for revenue to sustain the community platform. Most importantly, the innovators can not be charged anything for using Ubujamii. Many of them would not be able to afford it and since the value of the community relies on a network effect, it is crucial to attract as many members as possible. Experts and mentors can not be the target for generating revenue either, since their participation in the community is too valuable to risk. Other stakeholders on the other hand, such as innovation facilitators and investors, are not a vital part of the community and they have adequate finances. Therefore, the team recommends that this user group should be the main target for potential revenue streams.

As an example, investors could be granted premium access to the database of registered startups, which would allow them to better find good investment opportunities. It is crucial, however, that this is done while respecting data privacy rights and with the compliance of the entrepreneurs of the startups. Another example is charging private innovation facilitators for additional opportunities to gain visibility for their organizations. The way Ubujamii is currently structured allows individual persons to write and comment on posts on the forum, but not organizations. For a payment, the ecosystem actors already registered in the database could get the possibility to write a certain amount of posts. However, the team recommends that this is done in a way that reduces the risks of excessive marketing on the platform.

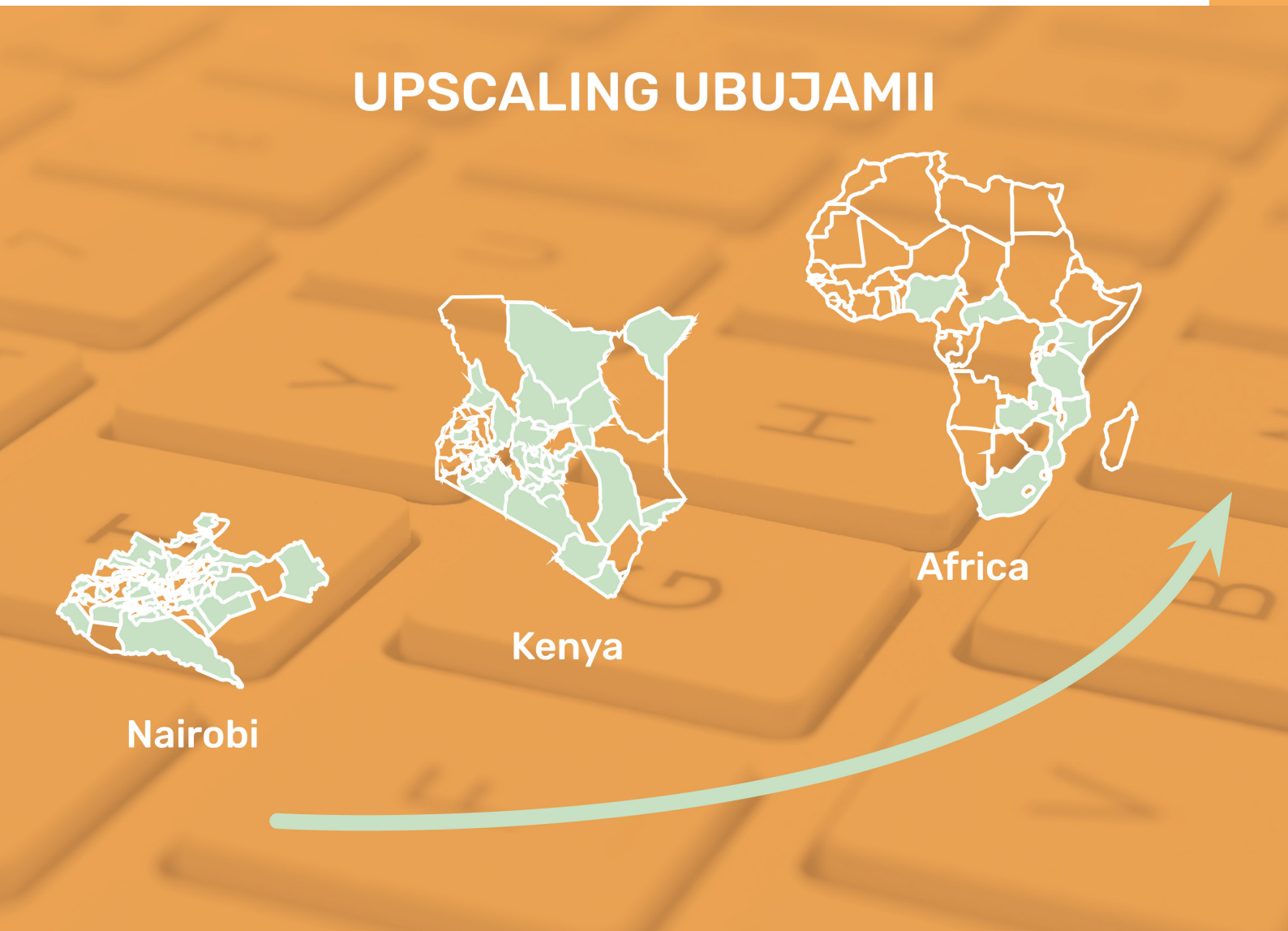
5.3 Implementing Ubujamii

Ubujamii is designed to be implemented as a part of the African Youth Agency Marketplace Yoma. The platform, hosted by RLabs and developed with support from the UNICEF and Fondation Botnar partnership, aims at encouraging African youths to develop new skills and gain experience through engaging in their community. By participating in different projects in their community, the youths can earn digital tokens that they can spend on for example educational courses arranged on Yoma, or food and sanitary products. Through Yoma, the youth are able to stay active and develop their skills and knowledge, while creating a social impact on the communities around them. (Parker, 2020.)

What makes Yoma and Ubujamii a great match, is that both platforms support youths in different ways. Ubujamii also complements Yoma well, since Yoma does not have an aspect of online community, but is a platform merely for matchmaking. Yoma has not yet been launched, and having Ubujamii as a part of the platform already when launching would be beneficial also for Yoma. Since there are synergies between the two solutions, being able to market them together could increase the interest towards the combined platform.

5.4 Upscaling Ubujamii

Figure 10: Upscaling Ubujamii



In this project, the team focused on innovation in Nairobi, which is why also the concept, Ubujamii, was designed to alleviate bottlenecks in youth-driven innovation specifically in Nairobi. Even though the solution is designed with the Nairobian youth in mind, there are no obstacles in expanding the solution outside of Nairobi. On the contrary, already from the beginning the team has aimed to create a concept that is easily scalable across Kenya, and eventually Africa.

Ubujamii aims to collaborate with hubs and other facilitators in the country, and forge working relations with relevant government ministries such as MoICT. Through these actions, Ubujamii intends to broaden its geographical coverage to reach all the 47 counties in Kenya. In the long run, this will promote an innovation culture in the entire country, and thus help solve the issue of unemployment among the youths.

As mentioned earlier, in the future, the aim is to also expand Ubujamii to other countries in Africa. This will be done by creating local versions of Ubujamii in different countries, instead of using one community for the whole continent. The team believes that since the innovation ecosystems are so different across Africa, and due to the nature of a community, this is the most suitable way to go. At the moment, the amount of forums where youths can interact and exchange ideas on innovation is limited in many countries. By launching local versions of Ubujamii across Africa, youths can connect with like minded peers and find local support. It is, however, important to note that the innovation ecosystem in Kenya is one of the most mature in Africa. Since the topics of innovation and entrepreneurship are not as well-known in many other African countries, the number of potential users might be smaller than in Kenya. However, launching Ubujamii in other countries also spreads awareness of innovating and thus increases the amount of young innovators all around Africa.

6. How was it – the reflection

This chapter consists of our reflection on the project. We have reflected on three main aspects: our internal dynamic, the work and process, and the relation experienced with the client. The end of the chapter is concluded by individual final thoughts on the entire journey, where each member highlights the most memorable and self-impacting traits of the project.

6.1. Team dynamic

6.1.1 Composition and team building

Our team consists of 6 people: Liina Hilkamo, Martin Schubert and Johan Pricam from Finland and Terry Ondiko, Christabel Gero and Ngacha Njeri from Kenya. None of the members knew each other before the start of the project, and it appeared then as important to have a proper team building to ensure the success of our collaboration. Considering that we were split between two countries and continents, the team building took place in many ways at different stages. The Kenyan and Finnish team members got to know each other separately before we all met together virtually.

The entire team met physically for the first time in mid-February when the field trip began. During the field trip, we got to know each other in a variety of workshops, classes and activities. One example of this was the visit to BOMAS of Kenya (BOMAS meaning many households in Kiswahili), where we got to learn about the different tribes and their practices in Kenya. This was a very vital stage since it helped us to gain cross-cultural intelligence, an important skill that was used for the interview sessions that followed. This team building process was a unique experience for each of us.

6.1.2 Cultural and background diversity

Our team is very diverse in terms of culture, experience and domain of expertise. From the fields of design to business and technology, from Bachelor and Master's degree levels to a PhD candidate, we properly illustrate multiculturalism and transdisciplinarity. Such a team nature is for us a great source of learning and brings an important additional value to our collaboration. Not only along the project have we learnt from our different personalities and ways of working, as it is the case for any teamwork, but also from this mix of African and European culture. Indeed, the Kenyan team members have for instance learnt a lot about collaboration methods and tools more commonly used in Europe. The Finnish team members have discovered and fully experienced the African work culture and mindset.

Such a diversity has naturally also some brought challenges to the collaboration, as described in the work and process chapter under research limitations. To manage the multicultural and multidisciplinary challenges, our team had to put efforts on ensuring a good communication, being mindful in our choice of words and managing a constant understanding with each other.

6.1.3 Work management and communication

Managing the work among a multicultural and multidisciplinary team was both a big challenge and a rewarding experience for all of us. An important condition for its success was regular and active communication. During the project, we learnt to collaborate in an organized manner by scheduling weekly meetings and committing to the team agreements that were established before the start of the project. Being able to work together synergistically and taking shared decisions required a constant understanding between us. This understanding and level of collaboration could not have been reached without psychological safety in the team that we tried to develop as much as possible. The feeling of psychological safety was established by maintaining a comfortable atmosphere and enjoyable environment. We also tried to distribute the work and share responsibility evenly as well as give room for expression for everyone. Constantly updating each other on the work as well as checking personal moods at every meeting contributed to reinforce positiveness.

Even though we tried our best to manage the work and to communicate properly, there was still room for improvements. These are the main points for us to progress on in our future team projects and professional career:

- The leadership and decision making was not always shared fully equally among us all along the process.
- The sharing of the work was unbalanced for a few phases of the project.
- The internal communication was not active enough at the start of the project.
- Some of the milestones were not completed on time.

6.1.4 Evolution

The evolution of the collaboration and team dynamic from the start of the project until the end was very noticeable. We got much closer to each other both on a personal and professional level. As a team, we have become more efficient, organized and able to take important decisions quicker. We also understood each other much better after the field trip and having experienced physical contact. The evolution has also been considerable for us on a personal level. The human experience in this teamwork was very rich. We are very satisfied with the journey the team went through together and will likely keep it in mind as a reference for many future projects.

6.2. Work and process

6.2.1 Setting

The overall setting of the project was particularly complex. The remote collaboration and communication between us and all the stakeholders of the project was a very teaching experience. During the second half of the project, the COVID-19 situation forced the sub-teams to start meeting each other remotely, which meant that all face-to-face meetings stopped. The brief of the project was also very challenging as none of us had been given such a problem to tackle in the past.

6.2.2 Overall process

The overall process of the project utilized the design thinking framework. It helped us to structure our journey, visualize clear steps as well as define proper objectives and milestones for the project. The design thinking framework was completely new to some of us, and even for the rest applying it for such a long period of time and tackling a real life challenge for a real client was a new experience. The project has been a great opportunity to experience it properly for the first time.

6.2.3 Dealing with many stakeholders

Another significant aspect of the project for our team was the need to constantly interact and deal with many stakeholders. These were our clients, mentors, professors, research respondents and other stakeholders with various degrees of connection to our project. Even though challenging, this experience has been very relevant for us in terms of professional communication and management.

6.2.4 Design tools and methods

We discovered and handled lots of new tools and methods during this project. In nearly every stage of the project, we had to use methods or tools that we had little or no experience in using. Finding tools and methods suitable for our needs and learning to use them was often challenging as we were doing it independently.

During the research phase, we first learnt how to do desk research. Then, we undertook a proper in-depth field research, which most of us did for the first time. During this field research, we learnt to design, conduct and summarise semi-structured interviews and got to experiment and use online surveys and questionnaires. During the analysis phase, the team learnt how to do qualitative analysis using affinity mapping methods. We also familiarized ourselves with quantitative analysis. During the design development phase, we learnt the concept of design sprints and got to run brainstorming sessions and workshops by ourselves. Developing a concept by investigating all the possible aspects of it, using interviews or in-depth research as tools, was also a new experience.

This project also brought us an awareness of other tools or methods that we did not use, but that might have been helpful also in this project. We are curious to experiment with for example quantitative analysis tools and other ideation methods in future projects.

6.2.5 Collaboration softwares

This project has been a great occasion to learn or to better handle also different collaboration softwares. Even though Google Drive was familiar for most of us, we all got a better understanding of it. Indeed, it has been a crucial tool for us to sort, organize and construct our work. Zoom, which most of us had not used before, has been our number one way of interacting with the team and also with all the other stakeholders. The third major software we discovered was Miro. The tool that was previously unknown to us ended up being very useful, if not crucial, for remote brainstorming, workshops and concept development.

6.2.6 Project challenge and result

The nature of the complex challenge that we were given to tackle has been a great opportunity to increase our knowledge on different topics such as digital ecosystems, innovation and entrepreneurship in Africa and the situation of the youth in Kenya. The outcome of our project, Ubujamii, gave us the opportunity to get general knowledge about online communities, digital businesses and online networking tools.

We all feel satisfied and proud with the final solution and what we have learnt during the process. Nevertheless, we are aware that our concept has room for improvement. If it had to be done again, we would spend more time and energy on user validation, as we have barely done that during this project. We also didn't have the opportunity to prototype and test our solution, which would have helped us to enhance the concept and enrich our personal experience.

6.3. Client relation

The relation we had with our clients UNICEF and Fondation Botnar was mainly maintained through Johannes Wedenig, our main UNICEF contact. From time to time we also connected with Alfred Mukasa and Moses Rono from UNICEF Kenya. We only met a representative of Fondation Botnar once, while doing our field trip in Nairobi.

The first contact with our clients was established physically for the Kenyan team members and remotely for the Finnish team members. After the first contact, most of the meetings with our clients were held online. The meetings mainly consisted of updating them on the advancement of our work, making sure we kept aligned with their objectives as well as getting their view on the project.

The overall communication with the client can be described as occasional and distant. This was a challenge for us, especially at the start of the project when we wanted to deepen our understanding of the project background and the brief of the challenge. Better communication could have also helped us get to know about e.g. Yoma in advance or to ensure that our solution is fully aligned with the client's expectations. This would have also increased the likelihood of actually having our solution implemented. During the project, we got used to dealing with the lack of communication. In addition to the scarce collaboration, the feedback we got from UNICEF was very limited. We were often left alone with a total freedom, which also posed some challenges. Nevertheless, such a relation with the clients increased our sense of autonomy and responsibility. It also gave us the possibility to release our creativity without limitation when ideating on our concept.

Regarding the NGO and non-profit nature of both of our client organizations, and also due to different objectives and expectations from their side, the relation we had with them was different than a usual business relation between a consultant and a client. Being part of a bigger partnership including many other ongoing projects and actors, we felt like we did not get much attention from them.

It also felt unusual to have this total freedom to do almost whatever we wanted to, which is rarely the case in a traditional consultant-client relation. Moreover, the aspect of change management which usually requires big discussions between the consultants and the client at the end of a project, has not been put on the table at any time in our project. When this report is being written, there are still many uncertainties and unknowns regarding the continuation of the project and the future of our solution.

As it was with its pros and cons, the client relation experience we got from this project will serve us as an example and source of learning for future business projects.

6.4. Final thoughts

Figure 11 (next page): Team members' final thoughts

Liina Hilkamo

" Wow, what a journey. During the past six months we've all grown immensely as both individuals and professionals, and can be super proud of what we've achieved. It has been far from easy, but at least we've gotten to experience this together. I bet writing my thesis will feel like a piece of cake compared to this project. "

Terry Ondiko

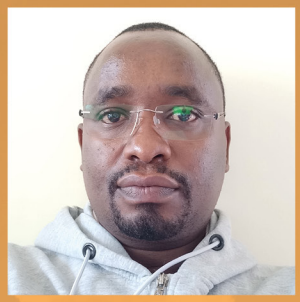
" As they say, there is always a first time for everything. Saying yes to the PBL Fellowship opportunity has been an eye opener to the various strengths and some weaknesses I didn't know existed in me. From this I have emerged as a person with a twisted approach to real life problems and also gained cross cultural intelligence from working with a diverse and dedicated team. "

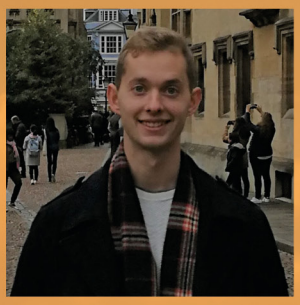
Johan Pricam

" I would like to outline the amazing teamwork we all had together. Thanks to each of my wonderful team members, I learnt and improved a lot both on a professional and personal level. We spent very nice times together without any major conflicts and the evolution of the whole dynamic between us along the 6 months has been really pleasant to witness! Thank you team! "

Ngacha Njeri

" This learning journey has been a source of inspiration. Am glad as a team and as an individual as I breath a sigh of relief and gulp enough air and shoulders high to be counted as part of the team that weaved an online community fabric that provides networking whiskers to growing demands of digital innovation ecosystem. All in all - huh - there is a deal at hand I can attest to that...Thumbs Up great comrades. "





Martin Schubert

" After five years of university, I have finally got an opportunity to use the knowledge from my studies to tackle real-world problems in a way that actually have an impact. The project has been quite challenging and demanding, but by working as a team we have managed to overcome those challenges and create an outcome that all of us can be proud of. It has been a great journey team! "

Christabel Gero

" Problem Based Learning has offered me an opportunity to think outside my comfort zone and learn how to approach issues in a holistic manner. I have enjoyed teamwork while working in a joint team with Aalto University, and learnt concepts such as design thinking that I will gladly apply while solving challenges that come my way. "

7. Conclusion

The number of youths in Kenya is in constant growth, and youth unemployment rates are already high. Through innovation and entrepreneurship, it is possible to tackle many of the existing societal challenges in Kenya, while at the same time creating new jobs. Even though the innovation ecosystem in Nairobi is one of the most mature in Sub-Saharan Africa, there are still many challenges that young innovators struggle with. This project, done for UNICEF ESARO and Fondation Botnar, focused on designing a concept that alleviates the systemic bottlenecks in youth-driven digital innovation in Nairobi, Kenya. The project was done using the design thinking methodology, with the perspective of understanding and alleviating the innovation challenges from the young innovators' point of view.

From the field research, the team found that the youths struggle with many different challenges throughout their innovation journey. Some of the main challenges are a lack of support and mentorship, having little knowledge about innovation and the local innovation ecosystem, lack of funding as well as the general mindset around innovation and entrepreneurship in Nairobi. The team realized, however, that many of the challenges can be alleviated by promoting and facilitating networking between the innovators as well as other ecosystem stakeholders.

With this insight, the team started developing a concept for a suitable solution. In order for the solution to have a big impact, it needed to be accessible for many young innovators. It was therefore decided that the solution should have an online component, which in addition makes it easier to expand to other parts of Kenya and potentially other parts of Africa. After having continued to interview and collaborate with the future users of the solution, the team eventually created a concept for an online community called Ubujamii.

Ubujamii is an online community where the young innovators can interact with other people in the innovation ecosystem. By connecting innovators as well as other ecosystem stakeholders, Ubujamii supports innovators in every step of their innovation journey and works to improve the general mindset around innovation and entrepreneurship in Kenya. By being free as well as easily accessible and open for everyone, Ubujamii stands out from the other actors and initiatives in the innovation ecosystem in Nairobi. The name Ubujamii combines the Swahili words ubunifu and jamii, meaning creativity and community. This is precisely what Ubujamii is all about: building a community that fosters creativity and the development of new innovations.

References

KNBS (2020). 2019 Kenya Population and Housing Census.

Kraut, R.E., Resnick, P. and Kiesler, S. (2016). Building successful online communities : evidence-based social design. Cambridge, Massachusetts: The Mit Press.

Parker, M. (2020). African Youth Agency Marketplace: Growing in Action. Available at: https://smartdevelopmenthack.hype.de/servlet/hype/IMT?documentTableId=5116153436857249666&userAction=Browse&searchTerm=cGFya2Vy&templateName=&documentId=5fd17d719f5451dd5525a4049d97a55c&searchContextId=3c3d21a1f21a8492ef9c38fbbcc6878d [Accessed 21 May 2020].

Sebba, J., Hunt, F., Farlie, J., Flowers, S., Mulmi, R., & Drew, N. (2009). Youth-led innovation: Enhancing the skills and capacity of the next generation of innovators.

Stanford (2009). Designing Online Communities from Theory. Available at: https://www.youtube.com/watch?v=XfC5uzLDo1c [Accessed 24 May 2020].

VC4A (2018). 2018 Startup Ecosystem Analysis Kenya. Venture Finance in Africa Research.

Wedenig, J. (2019a). Youth innovation challenges. Presentation at University of Nairobi C4DLab 22.11.2019.

Wedenig, J. (2019b). Project proposal – Systemic bottlenecks in youth-driven digital innovation

Appendices

Appendix 1: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **449893**

Date of Issue: **10/March/2020**

RESEARCH LICENSE

This is to Certify that Mr.. Simon Ngacha Njeri of University of Nairobi, has been licensed to conduct research in Nairobi on the topic: ALLEVIATING SYSTEMIC BOTTLENECKS TO YOUTH DRIVEN DIGITAL INNOVATION IN NAIROBI for the period ending : 10/March/2021.

License No: **NACOSTI/P/20/3914** Ammended

449893

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearence from relevant Government Agencies
5. The License does not give authority to tranfer research materials
6. NACOSTI may monitor and evaluate the licensed research project
7. The Licensee shall submit one hard copy and upload a soft copy of their final report (thesis) within one of completion of the research
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice

National Commission for Science, Technology and Innovation
off Waiyaki Way, Upper Kabete,
P. O. Box 30623, 00100 Nairobi, KENYA
Land line: 020 4007000, 020 2241349, 020 3310571, 020 8001077
Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix 2: C4DLAB RESEARCH PERMIT LETTER

P.O. Box: 30197 – 00100, GPO Nairobi
University of Nairobi
College of Biological and Physical Sciences
Tel: +254 790 413 836 Email: hello@c4dlab.ac.ke

C4DLab

University of Nairobi

16th January, 2020.

The Executive Secretary

National Council for Science, Technology and Innovation (NACOSTI)

P.O. Box 30623-00100

NAIROBI

Dear Sir/Madam

RE: STUDENT RESEARCH PERMIT

1. **Njeri Simon Ngacha - Reg No: UON-IF/2983/2019**
2. **Christabel Gero - Reg No: UON-IF/4090/2019**
3. **Terry Ondiko - Reg No: UON-IF/1626/2019**
4. **Martin Schubert - Reg No: 481043 Aalto University (Finland)**
5. **Liina Hilkamo - Reg No. 562904 Aalto University (Finland)**
6. **Johan Pricam - Reg No: 797423 Aalto University (Finland)**

This is to confirm that the above named students are taking part in the University of Nairobi Innovation Fellowship by the C4DLab at the University of Nairobi.

As part of the fellowship, fellows are required to work in groups of 5 or 6 with a team lead to complete a project report that contributes to their final grade and certificate. His group has completed their project proposal entitled ***'Alleviating Systemic Bottlenecks to Youth Driven Digital Innovation in Nairobi, Kenya'*** and they are now embarking on fieldwork. I write to request for your facilitation to process his research permit so that they can proceed with data collection.

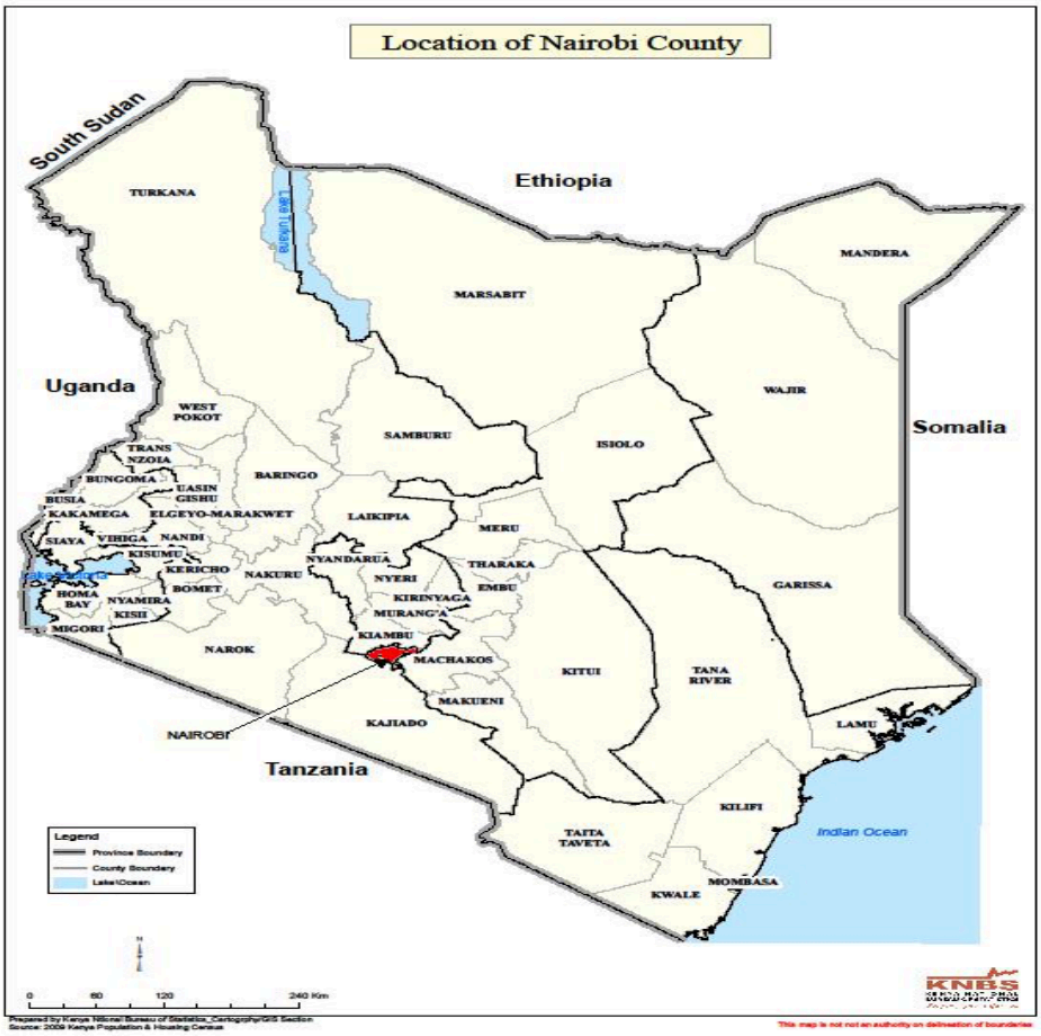
Any assistance accorded to him will be highly appreciated.

Yours Sincerely

DR. TONNY K. OMWANSA
DIRECTOR, C4DLab
tomwansa@c4dlab.ac.ke

Appendix 3: Location of Nairobi in Kenya

Nairobi County is one of the 47 counties in the Republic of Kenya. It borders Kiambu County to the North and West, Kajiado to the South and Machakos to the East. Among the three neighbouring counties, Kiambu County shares the longest boundary with Nairobi County. The County has a total area of 696.1 Km^2 and is located between longitudes 36° 45'East and latitudes 1° 18'South. It lies at an altitude of 1,798 metres above sea level.

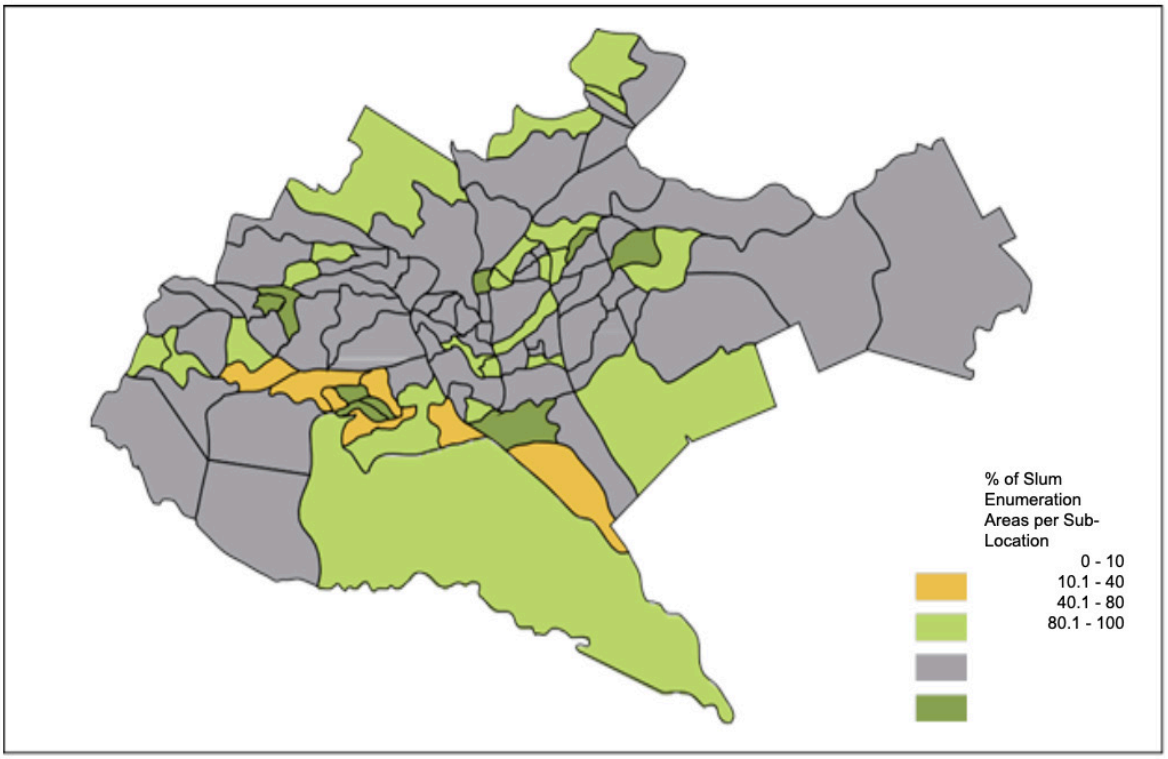


Source: Kenya Bureau of Statistics, 2013

Appendix 4: Nairobi County Administrative/Political Boundaries

Source: Kenya National Bureau of Statistics, 2010

Appendix 5: Nairobi County Number of Slums per Sub location



Source: ***www.kibera.org.uk***

Appendix 6: Area of the County by Administrative Units

Nairobi City County is divided into nine sub-counties namely; Starehe, Kamukunji, Kasarani, Makadara, Embakasi, Njiru, Dagoreti, Langata and Westlands. The County has 27 divisions 64 locations and 135 sub-locations as shown in Table below.

Sub-County	**Area(km^2)**	**Divisions**	**No. of Locations**	**No. of Sub-Locations**
Starehe	10.6	3	6	12
Kamukunji	11.7	3	9	18
Kasarani	85.7	2	11	24
Makadara	20.1	3	5	11
Embakasi	52.1	3	6	13
Njiru	156.2	3	6	10
Dagoreti	38.7	3	8	16
Langata	223.4	4	7	16
Westlands	97.6	3	6	15
Total	**696.1**	**27**	**64**	**135**

Source: Provincial Commissioner, Nairobi, 2013