

DIGILOGIC

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# D3.5 Co-creation impact labs final report

Qualitative & quantitative results per region

Revision Version: 1.6

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## EXECUTIVE SUMMARY

**Critical mile logistics** in Africa represent a powerful system for smart logistics innovation and impact. The critical mile can be defined as a product's journey from a local warehouse to the end consumer. It includes numerous support services between those two points, representing opportunities for smart innovations, such as mapping, tracking, cold chain management, geo-localisation, and hardware. The critical mile is also a key logistics segment to achieve the socio-economic development goals in Africa. It enables access to markets and, in return, to goods and services and strengthens key functioning supply chains like agriculture, health or manufacturing.

Despite a range of promising digital solutions, the critical mile in Africa continues to suffer from weak support structures, limited collaboration, duplication and fragmentation. This leads to inefficiencies and increased costs. These **challenges** prevent existing smart solutions from scaling and from transforming the critical mile logistics system.

The DIGILOGIC Co-creation Impact Labs program took place between July 2022 and October 2023 and aimed to tackle these issues by enhancing problem-solving and co-creation skills among European and African participants, selected among entrepreneurs, would-be entrepreneurs, ICT professionals, students with specific interest in logistics, businessmen and women and innovators.

The program was conducted in six thematic Co-creation Labs of 16 hours each. The Labs employed a structured methodology comprising problem analysis, resource examination, and collaborative co-creation. Participants worked in teams to develop a solution to a real-world issue in the African Logistics Critical Mile. During the Labs, the teams were presented with a problem statement; keynote speakers selected among African businesses or experts were engaged to give more context to the issue or to show how it is currently being approached. The teams then elaborated a solution, prototyped it and pitched it in front of a jury, which was tasked with providing feedback. The teams were supported during the whole lab by facilitators hailing from the project partners.

The Labs saw 231 people attending in total, 192 of which were unique participants. 20% (39) of these participated in multiple labs.

Feedback surveys and interviews were conducted after the Labs to ascertain the validity and impact of the program. The responses highlight high overall satisfaction of the participants and stress the validity and relevance of the skills acquired during the Labs both for the job market and for the business development. Among the most relevant results, 78% of entrepreneurs who responded to the feedback surveys reported that the Labs helped them approach their business obstacles from a new perspective, and 86% expressed interest in continuing to work on the solutions developed during the Labs in their businesses.

In this report, we provide the details on the design and methodology of the Labs, the practical implementation details and the assessed outcomes and impact, while also enumerating valuable lessons learnt and conclusions.

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## ABBREVIATIONS

|               |  |
|---------------|--|
| <b>AU</b>     | African Union                                  |
| <b>B-Hive</b> | Bongo Hive                                     |
| <b>DHM</b>    | Digital Hub Management                         |
| <b>DIH</b>    | Digital Innovation Hub                         |
| <b>DOP</b>    | Design Option Paper                            |
| <b>EIT</b>    | Entrepreneur in Training                       |
| <b>EU</b>     | European Union                                 |
| <b>FINN</b>   | Friuli Innovazione                             |
| <b>ICT</b>    | Information and Communication Technology       |
| <b>IIB</b>    | Impact and Innovation Board                    |
| <b>IP</b>     | Intellectual Property                          |
| <b>IPF</b>    | INNO Partnering Forum                          |
| <b>CCLabs</b> | Co-creation Laboratories                       |
| <b>LCM</b>    | Logistics Critical Mile                        |
| <b>MEST</b>   | Meltwater Entrepreneurial School of Technology |
| <b>MVP</b>    | Minimum Viable Product                         |
| <b>MOOC</b>   | Massive Open Online Course                     |
| <b>QR</b>     | Quick Response                                 |
| <b>RRI</b>    | Responsible Research and Innovation            |
| <b>RTO</b>    | Research and Technology Organization           |
| <b>STEM</b>   | Science, Technology, Engineering and Mat       |
| <b>UI/UX</b>  | User Interface / User Experience               |
| <b>VTT</b>    | Technical Research Centre of Finland           |

# 1 CO-CREATION IMPACT LABS PROGRAM DESIGN

To complement the DIGILOGIC capacity-building program for young innovators and induce a hands-on, problem-solving approach, 6 Co-creation Impact Labs were offered between July 2022 and October 2023. During the Labs, a series of real African business cases and problems in the Logistics Critical Mile were presented and analyzed with the support of European and African DIHs facilitators. Participants had the chance to collaboratively work on feasible solutions to answer logistics needs, leveraging digital technologies. The target groups of the Co-creation Labs were innovators, would-be entrepreneurs, self-employed people, startupper, SMEs' managers, and corporates' employees, ICT professionals. Participants could be from the European Union and African countries.

## 1.1 TASK DESCRIPTION, RESPONSIBILITIES AND TIMELINE

FINN led co-creation laboratories, providing digital solutions to real African small business case studies, addressing logistics challenges hindering profitability and business scale-up. Students from the capacity building program (Task 3.3), EU innovators, tech facilitators, and relevant SME entrepreneurs were invited to join the labs.

AU DIHs played a crucial role in facilitating the identification of business cases through their network. For instance, they addressed the need of a small wholesaler to find more economic ways to bring fabrics made by an informal women's cooperative to markets.

FINN designed, specific co-creation lab frameworks based on problem statements, choosing the most appropriate methodology, experts, and determining the lab's duration.

The Impact labs, conducted twice per semester between M18 and M36, provided tech empowerment through a hands-on approach, targeting vulnerable groups. They focused on building feasible solutions to address real needs, incorporating co-creation, design thinking, visual thinking, know-how exchange, fast prototyping, and other engagement techniques. Facilitators from DIH staff and tech experts were actively involved.

A total of 6 IMPACT labs, each lasting 12 hours, were organized to address a maximum of 2/3 business cases each. Each lab had an average of 15 in-person attendees and an additional 15 connected remotely, totalling 180+ participants.

EU-AU innovators and DIHs experts facilitated discussions on real African small business cases, aiming to find digital solutions that alleviate logistics obstacles, ultimately fostering profitability and business scale-up.

### DIGILOGIC PARTNERS' RESPONSIBILITIES

FINN was the DIGILOGIC partner in charge of Task 3.4, "Co-creation Impact Labs." FINN hired an external Lab Manager with specific expertise in co-creation techniques. The entire process was overseen by FINN, ensuring quality compliance. FINN appointed the Labs Co-Manager and other roles needed, utilizing internal staff.

All DIGILOGIC partners actively participated as follows:

- All consortium members contributed feedback and inputs to the Labs design phase. MEST supported the liaison with IIB members during this phase.
- PROTOTIPI was responsible for the marketing strategy and promotion, aligning it with the project communication plan.
- MEST, B-Hive, DHM, VTT, and ENDEVA supported the realization of Co-creation Labs by assigning the role of mentor to their staff members. For each Co-creation Lab, four mentors were active.



- B-Hive, as the owner of the DIGILOGIC community platform, ensured technical support to FINN for promotion and application.
- ENDEVA, responsible for DIGILOGIC Monitoring & Evaluation strategy, ensured consistency in the design and rollout of data collection to measure Labs results.

The timeline for these activities followed the project schedule.

## TIMELINE

The Co-creation Labs' calendar covered a period from June 2022 until October 2023.

Each lab stretched over 2 weeks. A calendar looked like the one below (precise scheduling was adapted to opportunities and needs arising from different DIGILOGIC activities).

|             |   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J           | F | M           | A | M | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
| A           | E | A           | P | A | U | U | U | E | C | O | E | A | E | A | P | A | U | U | U | E | C | O | E |
| N           | B | R           | R | Y | N | L | G | P | T | V | C | N | B | R | R | Y | N | L | G | P | T | V | C |
| Impact Labs |   | Contents    |   | L |   |   |   | L |   |   |   | L |   |   |   | L |   | L |   |   |   | L |   |
| CONCEPT     |   | definition  |   | A |   |   |   | A |   |   |   | A |   |   |   | A |   | A |   |   |   | A |   |
|             |   | and experts |   | B |   |   |   | B |   |   |   | B |   |   |   | B |   | B |   |   |   | B |   |
|             |   | onboarding; |   | 1 |   |   |   | 2 |   |   |   | 3 |   |   |   | 4 |   | 5 |   |   |   | 6 |   |
|             |   | recruitment |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

## 1.2 SCOPE OF THE ACTIVITY

Co-creation Labs had a threefold scope.

They represented:

1. an opportunity for DIGILOGIC European and African DIHs to work together and learn from each other (valorization and strengthening of the peer learning experience);
2. an opportunity to onboard and boost collaboration with specific stakeholders from the ecosystem mapped.
3. a hands-on experience for participants, businessmen/women, would-be entrepreneurs, students and inventors that dealt with logistics last mile bottlenecks in Africa.

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*Co-creation Labs provided a tangible opportunity for African and European innovators and entrepreneurs to refine their problem-solving attitude and the capability to spotlight the potential of digital technologies in the Logistics Critical Mile. Thanks to the hands-on methodology and the groupwork the matchmaking among different mindsets and backgrounds created an added value for all the participants. The networking opportunities and the peer-to-peer principle were strengthened by the DIGILOGIC Community platform.*

---

## 1.3 TARGET GROUPS

The Co-creation Labs had the ambitious goal of involving 180 individuals. The expectation was to engage people from both the European Union and Africa and offer them an opportunity to get to know each other and develop common projects. The geographical outreach covered the countries touched by the project, namely: Italy, Germany, Finland, Ghana, Nigeria, Zambia, South Africa, Kenya, Malawi, Zimbabwe, Namibia, Mozambique. However, participants could be accepted also if based in other European or African countries, due to the decision to run the Labs in a fully digital environment. Below, the potential participants were listed per category. Ideally, most of the applicants addressed were innovators, startupper, and small business owners (60%). Additionally, several facilitators and experts enabled the Co-creation Lab experience.

### Innovators, startups

- University students with significant interest or even first experience in logistics, entrepreneurship, innovation
- DIGILOGIC beneficiaries from other project activities: students that have completed the DIGILOGIC capacity building programme, beneficiaries from the mentorship scheme, Challenges applicants
- Would-be entrepreneurs that are developing a business idea
- Tech startups founders or employees
- IT developers

### Businessman/women

- Micro and small enterprises owners
- Informal economy actors in the logistics critical mile
- ICT/tech company managers

### DIH facilitators, experts

- DIGILOGIC DIHs staff and mentors belonging to their network

To reach these target groups, we based our effort on the network of DIHs across the two continents, starting from the synergies that DIGILOGIC consortium members were able to roll out. Partners and stakeholders involved through the HLAB and IIB boards were exploited as well.

#### 1.3.1 Selection criteria

The following was the criteria for selecting participants for the Labs:

- Be a member of the DIGILOGIC Community
- English fluency is a must
- Either have the ability to join a virtual collaborative environment (computer, camera, headset, stable internet connection) or to join physically at DIGILOGIC DIHs' facilities to participate in the lab sessions\*<sup>1</sup>
- Gender balance, giving preference to the candidates from the less represented group.

## 1.4 CO-CREATION METHODOLOGY

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<sup>1</sup> To increase inclusiveness DIGILOGIC partners are invited to offer physical facilities to partake the Labs and promote this opportunity to local target groups.

The Co-creation Labs provided a practical learning experience for up to 30 participants in each session, facilitating the development of problem-solving and co-creation skills. This was achieved by harnessing DIGILOGIC's expertise in key areas such as entrepreneurship, digitalization, and logistics.

The program was designed to encompass six thematic Labs with the overarching goal of delivering tangible benefits to African businesses, hence the formal title, Co-creation Impact Labs<sup>2</sup>.

The focus of each Lab was chosen within the most relevant areas for the Logistics Critical Mile in Africa. The same methodology, described below, was repeated six times between July 2022 and December 2023.

The primary scheme for the Co-creation Labs program included the following key components:

1. **PROBLEM:** In this stage, a comprehensive analysis of end users' issues in the African logistics critical mile was conducted, taking into consideration the complex contextual parameters affecting businesses.
2. **RESOURCES:** This phase involved the examination of digital technologies, tools, innovative business models, and real-world examples from successful businesses, closely supported by resources such as DIGILOGIC TREND RADAR and the DIGILOGIC Community platform library.
3. **CO-CREATION LAB:** In this collaborative setting, teams from both African and European regions (where possible) worked together to develop smart and impactful narratives, prototype solutions, and enhance their intercultural business communication skills.

Beyond the immediate learning outcomes, the Co-creation Impact Labs were aimed at inspiring several broader objectives:

- Facilitating increased collaboration between individuals in Africa and the European Union within the logistics industry.
- Fostering the exchange of fresh knowledge and insights between the EU and African regions.
- Challenging and evolving narratives about Africa and the EU, promoting learning and unlearning processes about their respective countries.
- Demonstrating the immense potential inherent in the African startup, scientific, and economic communities.

#### 1.4.1 Program Principles

**Collaboration:** The labs were intentionally designed as a platform to foster EU-Africa collaboration. Consequently, they actively promoted collaboration and partnerships that extended beyond DIGILOGIC's implementing partners.

**Personal & Skills Growth:** Achieving success as an entrepreneur in logistics, and beyond, required (a) gaining access to peers and (b) exploring various tools and methodologies, with some succeeding while many others failed. Throughout the lab, participants were provided with the necessary resources to generate innovative ideas and tackle real-world problem cases. The labs prioritized personal and skills growth over the mere generation of new ideas. By the end of each lab, participants emerged as more resilient innovators, better prepared to facilitate and drive innovations in the logistics sector.

**Multicultural/Transnational exchange:** DIGILOGIC, and particularly the Co-creation Labs, focused on activating and engaging a multinational, transcultural group of participants, facilitators, coaches, and keynote speakers. The lab management ensured cultural awareness was taken into account. This program, therefore, offered

<sup>2</sup> The full name of the Task3.4 “Co-creation Impact Labs” is often shortened in Co-creation Labs. However, the focus on the impact that Labs aim to create is kept both in the topics and approach choices.

significant value to participants, as contemporary and future entrepreneurship will unmistakably be guided by globalized thinking.

## FACILITATION

### WHY FACILITATION MATTERS

The success of the co-creation labs relied significantly on the effectiveness of a well-coordinated and skilled team of facilitators. This is especially crucial in a digital environment, where team building and alignment heavily depend on technical competencies, and establishing and maintaining personal connections can be more challenging.

### TEAM SETUP AND RESOURCE REQUIREMENTS

To run online co-creation labs with 30 participants from two continents, the following roles were foreseen:

1. **Lab Manager:** Responsible for the overall moderation of the lab, including some plenary sessions, onboarding facilitators, and coordination with keynote speakers and jurors. Required skills included being a design thinking expert with superb moderation skills, strong experience in digital facilitation, deep knowledge of the program design, a people-oriented approach, and methodology expertise. It was advised to engage one Lab Manager who would lead through all labs, ensuring continuous learning for the DIGILOGIC consortium.
2. **Lab Co-Manager:** Main contact point for the participants during the labs and main coordinator of all involved facilitators. Background facilitator, who managed the participation of participants and facilitators, sent invites and reminders, and managed chats & tech requests during the labs. He/she led the interaction of each Lab in the DIGILOGIC Community. Required skills included project management, people management, and event management. It was advised to install one Lab Co-Manager who would lead through all labs, ensuring continuous learning for the DIGILOGIC consortium and the WP/task leaders.
3. **Technical Support:** A person dedicated to ensuring the smooth functioning of the platform used for the Labs' sessions (presentation, audio, breakout rooms management, recording, etc.).
4. **Groups Facilitators:** Every workgroup (up to 7 participants per group, 4 groups total, 4 facilitators total) was introduced to a group facilitator that was specifically responsible for the group's understanding of the process, well-being, and group dynamics. The facilitator could facilitate interventions with the working group if necessary. The facilitator met his/her work group at least once before or after a lab session and ensured that progress was made.
5. **Keynote Speakers:** In each Lab, two keynote speakers were sought to bring direct experience and inspiration. One keynote explored the problem statement addressed, and a second keynote presented a possible solution to that problem, already on the market, by presenting his/her entrepreneurial journey - ups and downs and tips and tricks for everyone developing their idea and solving the challenge.
6. **Jurors:** Usually, three jurors were invited to the fourth session of each Co-creation Lab. The plan was to engage the two keynotes and a third expert, either in entrepreneurship, innovation, or directly an expert in the technical field covered during the lab. Jurors listened to the groups pitching and gave them their feedback after a Q&A round. Their job was to decide the group that better accomplished the lab assignment under several criteria but most of all to provide valuable insights that participants could use to further deepen the new skills acquired.

#### 1.4.1.1 Intellectual Property Rights (IPR) on co-created solutions

IPR was not addressed because the solutions primarily stemmed from learning activities. During the early stages of our co-creation process, comprehensive IPR considerations, including matters of ownership, protection, and rights, were not prioritized, primarily due to the solutions being in their initial phases, mainly consisting of initial ideas and early prototypes

## 1.5 LABS DEPLOYMENT

The co-creation labs are only successful, if

1. Participants gain new **entrepreneurship skills and logistics knowledge** by exchanging and working with highly qualified mentors and coaches,
2. Participants **enjoy their experience** and thereby increase their learning and likeliness to work in logistics innovation in the future,
3. Facilitators have an enjoyable and **well-structured experience** that helps them present high-quality content to the teams,
4. The **digital divide/gap** between all participants and staff/facilitators/keynote speakers can be bridged successfully.

Hence, the program makes use of formats that enable knowledge growth, personal development, and group sharing. The program inventors commit themselves to the following program design rules:

1. Participants spend **max. 4 hours online per meeting/workshop** to ensure continuous learning.
2. Every session makes use of at least **2 different tools** to increase experience and activation among the participants.
3. **Knowledge transfer is targeted** either by direct methodology/content presentation, or in “learning by doing” formats.
4. In the concrete project team setup, **peer learning** is used to ensure the participants to improve their capabilities and learn from other disciplines, cultures, and ambitions.
5. All participants have the opportunity to check in with the Lab Co-Manager **individually**, beyond group work, to ensure individual learning progress, manage expectations and avoid frustration.

**Each Lab lasted 16 hours, divided into 4 sessions over 2 weeks.** All the activities took place online.

Labs’ participants were encouraged to upgrade their learning experience by:

- Taking on-demand classes or exploiting additional resources offered in the DIGILOGIC Community platform - these opportunities were duly mentioned by the Labs facilitators.
- Continuing the group work between and beyond the Labs schedule upon interest.

All participants who completed the Lab received a certificate. At least 75% attendance was required in order to be awarded the certificate of participation.



FIGURE 1 CERTIFICATE OF PARTICIPATION

### 1.5.1 Labs Program Formats

The lab formats had the objective to enable both (a) knowledge transfer and (b) a good experience for the participants. In order to achieve these objectives, the following considerations were made:

**(a) Knowledge/Capacity building formats** that work well in virtual training and innovation programs are:

- Impulse/Topic keynote: An impulse can raise awareness for a specific topic, trigger individual thinking processes and redirect conversations, if necessary, by providing unknown new information.
- Group workshop: Group sessions are useful to work on common tasks such as problem discoveries, visions, strategies etc.
- Group mentoring: a facilitator joins a working group and helps solve specific problems.
- Focus time: individuals work on specific tasks individually without facilitation (usually tasks are taken from group workshops)

**(b)** Besides knowledge transfer, to raise excitement and work well as a group, the work groups require **dedicated time and capacities for team building** (to build a connection and mutual trust) - as well as the right tools and methods to facilitate digital work together. This is especially important in a digital environment. Hence, team building exercises were hosted during the process.

### 1.5.2 Labs Program Logic

The Co-creation lab imitated a **concrete, real-life project scenario**, in which its participants work like in a startup. The module has been designed along 3 major steps. It starts with a problem analysis and deep-dive and provides overview and access to relevant resources (e.g., knowledge, tools, technology) to co-create concrete solution prototypes.

To deploy a successful program **three main steps** have been identified:

1. **Problem Analysis:** where DIGILOGIC partners and key stakeholders identify & analyze a real-life user problem (e.g. last-mile water shortage in certain areas) or small business case studies (e.g. technology/profitability challenge of an existing business) in last mile logistics in Africa

Choice of one topic/problem per lab (6 total), every group in one lab receives the same problem to work on (e.g., “how might we” question)

2. **Resources Allocation:** it is about providing useful information and helpful process materials for all stakeholders of the lab (facilitators & active participants & jury members) to get ready for their roles in the lab. These means some different actions:

**A. Participant group distribution**

The Labs team creates beforehand groups with up to 7 participants each; the number is approximately the same every group. The groups are built according to diversity spread, knowledge base, learning fields & expectations. Gender and geographical balance has been sought. One facilitator per group is appointed.

**A1. Participants onboarding**

One hour onboarding session with all participants to set the expectations for the Lab, hours of additional work, facilitator role, build teams, and set guidelines for working together. Led by the Lab Manager few days before each Lab.

**B. Facilitators Onboarding**

One hour onboarding session with all facilitators to help understand the lab purpose & structure, role requirements, the problem case their group works with. Led by the Lab Manager the week before each Lab.

**C. Participants’ access to useful resources**

Labs team provide useful pre-reading and helpful process materials for accepted participants to each Lab before and during the Lab using the DIGILOGIC Community feature dedicated to the e-learning. The scope of this action is:

- understand relevant market insights
- learn about relevant digital technologies
- understand the “WHY” of innovation methodologies (such as service design/design thinking)
- understand the basics of digital product building and business model creation

Online reading & video resources to be shared/suggested to the applicants:

- DIGILOGIC TREND RADAR
- DIGILOGIC Community platform library
- DIGILOGIC Podcasts
- TED Talks
- Logistics networks
- News articles
- DIGILOGIC events

3. **Co-Creation Labs roll-out:** co-ideate & co-design a concrete solution prototype in Africa Logistics Critical Mile as intercontinental & intercultural teams.

**Duration:**

*Up to 16 hours of simultaneous group work & panel work plus individual/group self-study deep dives*

### 1.5.3 Labs Outline

## DIGILOGIC CO-CREATION LAB

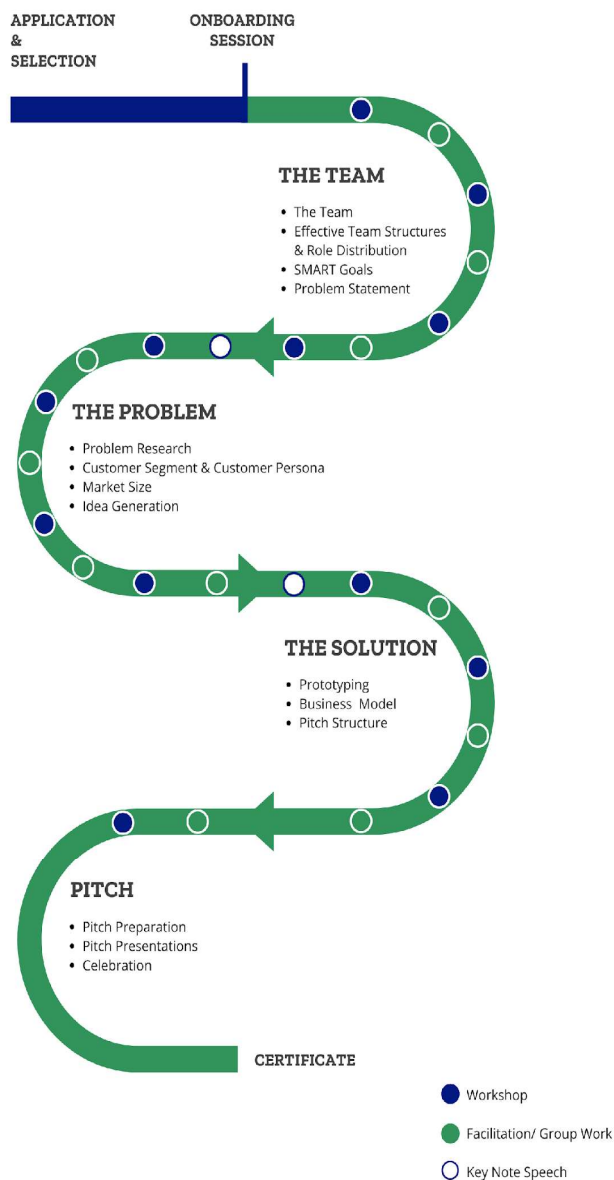


FIGURE 2 - CO-CREATION LABS OUTLINE

### Timeline: 2 weeks total

Week 1: Session A - B

Week 2: Session C - D

### Getting to know each other - Individual Pre- session activity (Padlet)

#### Pre-session:

(1-hour/plenary & groupwork)

- Welcome & Program outline



- Team Building activities and getting to know each other
- Intro to the digital tool Padlet
- Plenary: Setting the expectations for the Labs - hours of additional work, facilitators role
- Groupwork: guidelines for working together as a team

#### **Session A. Kick-off & Problem Introduction & Team Design Session**

(4-hour session / plenary & groupwork):

- Welcome & Program intro, led by Lab Manager & team
- Facilitators and Teams introduction (1' introductions)
- Plenary: Effective team structures
- Groupwork: role distribution session (roles: product owner / designer / developer)
- Showcasing and announcing the problem to the groups
- Keynote speech by the Problem owners - followed by Q&A by groups
- Plenary: Desk research & Problem tree and problem statement
- Groupwork: Problem tree and problem statement

Session A goal: In the first Lab session, the Lab Team welcomes the participants, introduces and discusses the purpose and goals of the lab, distribute roles within the work groups, and introduce the problem worth solving for each group.

#### **Session B. Business Objective & Customer/user grouping**

(4-hour session / plenary & groupwork):

- Deep-dive the problem
- Plenary: SMART Goals
- Groupwork: identify objective & ambition, success factors, risks & restrictions, user groups, impact potential
- Plenary: Field Research & Customer segment and customer persona
- Groupwork: Customer segment and customer persona
- Plenary: Who else is solving the problem? Keynote speech + Q&A
- Plenary: Intro to Idea Generation

Session B goal: In the second Lab session, the teams work on a clear business objective based on their knowledge about the problem. The business objective builds the ground for all groups to engage with those that have the problem described, and work on a user-centric solution afterwards.

#### **Session B/bis. Customer/user grouping**

(Independent group work):

based on Business Objective, groups research customer base incl. needs and threads by doing field research  
- Groups generate potential solutions and ideas.

Session B/bis goal: the groups emphasise with the users' problems by either studying existing research about the users' group, or by directly engaging with the end users' (observation/interviews). The groups start to generate solutions/ ideas

#### **Session C. Service Brainstorm & Concept & Prototyping**

(4-hour session / plenary and groupwork):

- Plenary session to identify high-potential ideas (business and impact criteria)

- Groupwork: Ideas' analysis and decision making
- Plenary session: Intro - Prototyping
- Groupwork: Groups generate a Low Fidelity prototype using digital tools
- Plenary: Pitch presentation

Session C goal: Expert-led plenary session to ideate concrete product/service ideas and a (digital) prototype based on analysed problem(s), defined business objectives, and acquired knowledge about user needs.

#### **Session C/bis. Preparation for the solution presentation**

(Independent group work)

- groups continue elaborate their prototypes leveraging on expertise within the DIGILOGIC Community platform (groups have been invited to get in touch with experts on their own through the platform features: direct messaging, posts on the main wall etc.)

Session C/bis goal: The work groups continue to elaborate on their prototypes with the goal of creating a presentable version of it for the Demo Session (Session D).

#### **Session D. Presentation of groupwork & celebration**

(4-hour, groupwork + plenary, with an external jury)

- Groupwork: 2 hours - self-organized time focused on pitch practice
- Groupwork: final check-in with mentors (30')
- Plenary session: the groups present their solution during a fixed time (5') followed by Q&A from the jury members (5').
- Winner announcement, feedback round provided by the jury members to all the teams. Lab closure (celebration pic, announcing the best team prizes, next steps)

Session D goal: The work groups present their prototypes, generate feedback from a jury of experts, and celebrate their successful completion of the lab. The Demo Day, a crucial component of the Co-Creation Lab, marks the apex of the teams' solution development. Framed as a "learning by doing" opportunity, it is not centered on traditional winner selection but aims to provide teams with practical experience in presenting their solutions. During Demo Day, each team showcases their developed solutions to a jury panel, emphasizing the learning experience and the iterative nature of the Co-Creation Lab.

While there isn't a definitive "winner" in the traditional sense, the process facilitates constructive evaluations by industry experts and mentors, focusing on feedback to contribute to continuous improvement. This aligns with the collaborative and iterative nature of co-creation, encouraging teams to refine their ideas based on the insights gained during Demo Day.

An added dimension from Labs 3 to 6 introduces a symbolic prize: the possibility to benefit from Digilogic business consultancy, awarded based on the jury's recognition of the best solution. This symbolic award not only motivates teams but also acknowledges exceptional efforts and innovation. While the primary focus remains on learning and iterative refinement, the introduction of the symbolic prize enhances the incentive for teams to strive for excellence, recognizing and celebrating creativity, problem-solving, and potential real-world impact.

The Digilogic business consultancy, as a symbolic prize, tangibly acknowledges the teams' achievements, adding an extra layer of recognition and support within the collaborative learning environment of the Co-Creation Lab.

## 1.6 PARTICIPANTS RECRUITMENT

### 1.6.1 Needs assessment

In May 2022, a preliminary survey was distributed to all DIGILOGIC Community members to identify their needs and preferences regarding potential topics. The survey aimed to assess the needs and interests of community members in preparation for the implementation of the Digilogic Co-creation Labs (CCLabs), with a focus on individuals already engaged in logistics within the DIGILOGIC community.

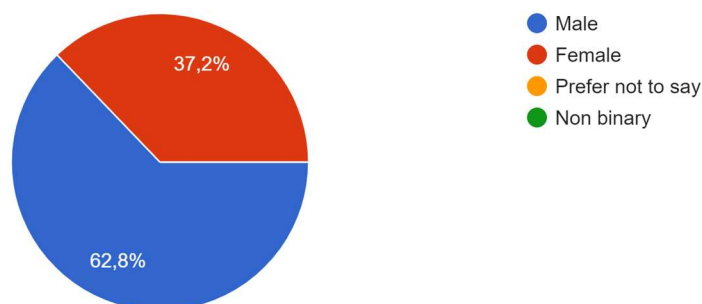
The survey, scheduled to be sent by May 20, 2022, with an end date in August 2022, prioritised anonymity and simplicity, avoiding mandatory fields. Technical considerations involved exploring the feasibility of sending Google Forms through messages or, as Plan B, utilizing mass-mailing to a database of addresses downloaded by the B-Hive team.

Key survey questions covered aspects such as gender identification, employment status, involvement in logistics business ideas, expectations from the program, and preferences for lab values. Responses provided insights into specific logistic topics of interest, interest in a mentor-led experience for digital solution prototype development, and preferred modes of joining virtual labs.

Overall, the survey aimed to garner valuable insights to refine the design and content of the Co-creation Labs. Here Below a snapshot of the results based on the 78 collected answers spotlighting community members' needs and preferences.

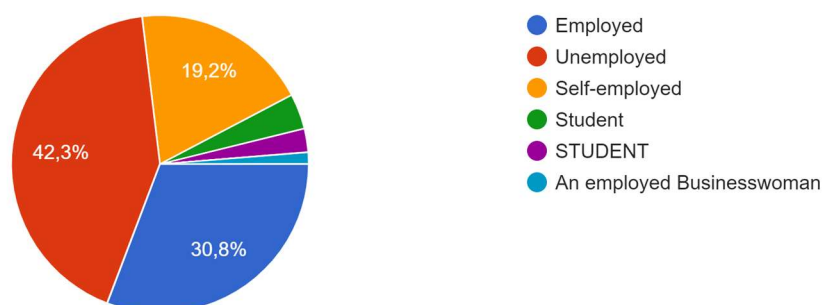
You are

78 risposte



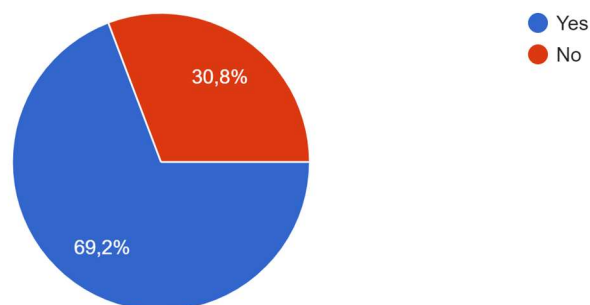
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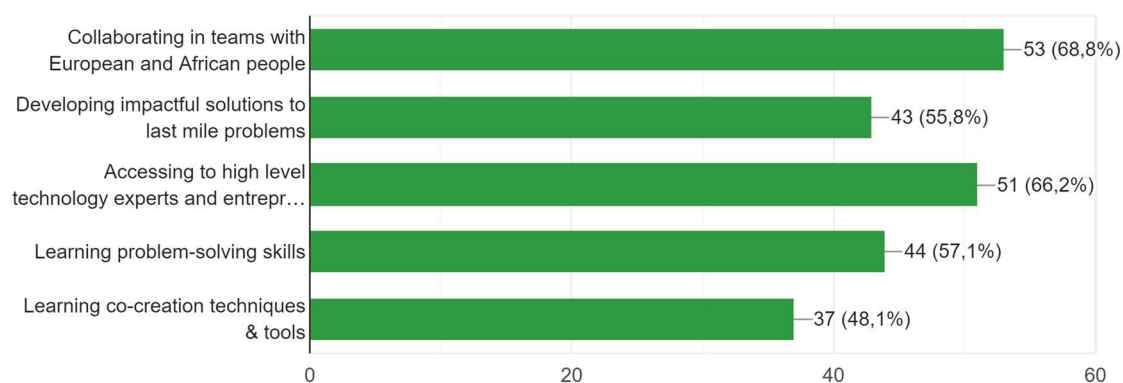
### 3. Are you developing a business idea in the logistics field?

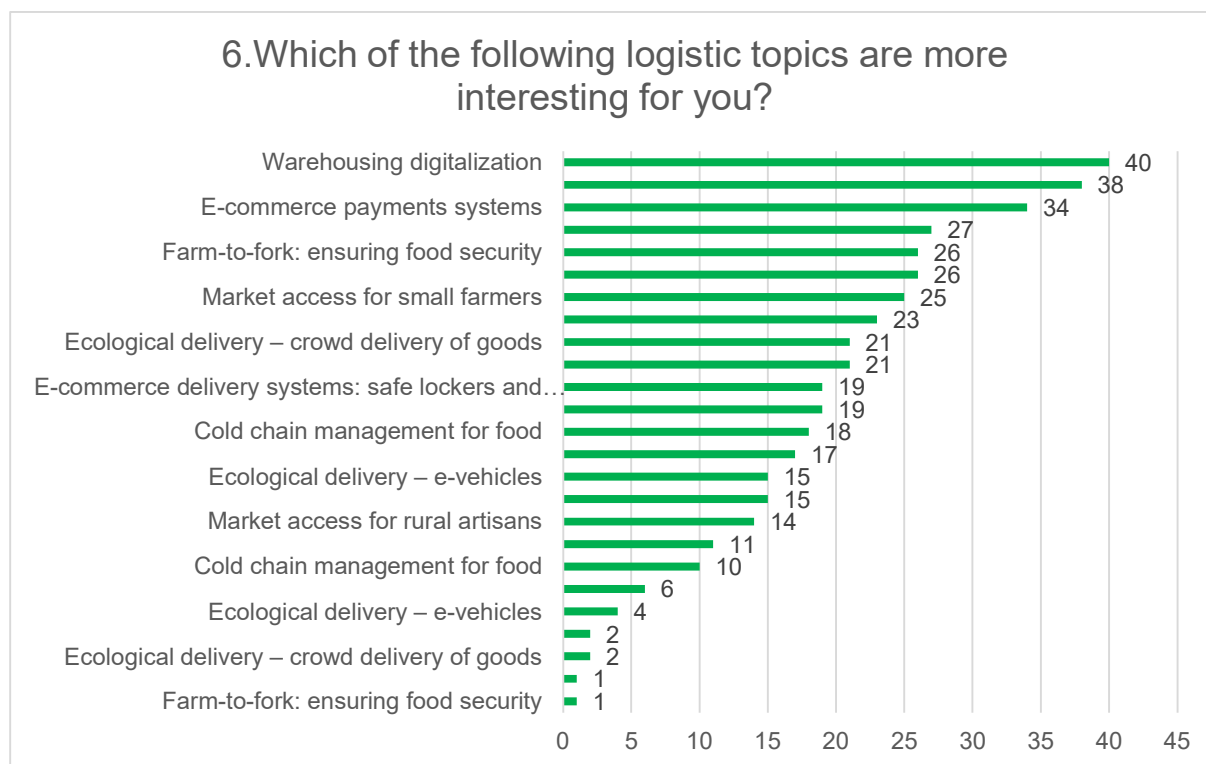
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### 5. Which of the following is more important for you:

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#### 8. How will you join the virtual labs?

77 response

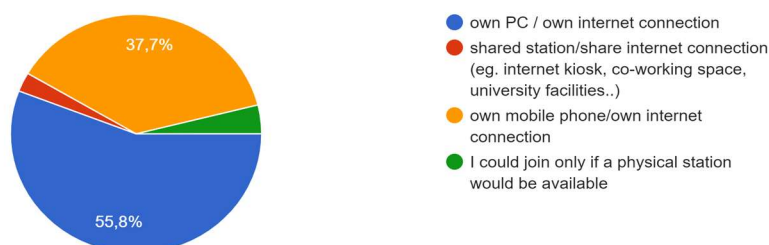


FIGURE 3 - ANSWERS TO THE PRELIMINARY SURVEY

### 1.6.2 Recruitment strategy

In the execution of the Co-creation Labs (CCLabs) initiative, a robust recruitment strategy was implemented, seamlessly combining a targeted marketing campaign with personalised onboarding efforts. This concise overview encapsulates the key elements that shaped the recruitment process, ensuring the successful implementation of CCLabs.

The recruitment approach centred on a well-crafted marketing campaign and tailored onboarding efforts, leveraging established relationships within the DIGILOGIC network. Transparency and timeliness were deemed paramount, with titles and schedules for each lab disclosed a minimum of four weeks before commencement, providing potential participants with sufficient time for preparation.

Applicant prioritisation was meticulously carried out, resulting in a diverse and highly qualified participant pool tailored to the specific objectives of the Co-creation Labs. Discussions among consortium members centred on the potential for participants to engage in multiple labs, contingent upon the availability of vacant seats.

Active engagement from all DIGILOGIC partners played a pivotal role in disseminating the Co-creation Labs program promo flyer, expertly developed by PROTOTIPI, the designated partner for project communication. The multiplier effect of stakeholder engagement significantly contributed to the widespread dissemination of information about the opportunity to participate in the Labs.

Various marketing materials, including website news, social media posts, email facsimile text, and flyers, were meticulously crafted for optimal outreach. A targeted 1-to-1 outreach strategy was adopted by Friuli Innovazione, MEST, and Bongo Hive towards relevant networks and organisations, spanning incubators, universities, business associations, and diaspora communities.

This streamlined and comprehensive recruitment strategy played a pivotal role in the success of the Co-creation Labs, attracting a dynamic and qualified participant base while fostering innovation, collaboration, and impactful outcomes.

### **1.6.3 Application and selection**

Applicants filled in a registration form through the DIGILOGIC Community Platform where they are asked to declare their intention to commit for the whole duration of the programme and decide if they are likely to use own equipment or to get advantage of the equipped stations provided by DIGILOGIC DIHs.

A commission screened the applications and form the groups according to the need of having balanced representations of different target groups, gender equality principle, geographical matchmaking.

## **1.7 PROGRAM EVALUATION**

In order to evaluate the impact of the program, two initiatives have been put in place: a feedback survey, submitted to participants at the end of each Lab, and guided interviews with participants.

### **CO-CREATION IMPACT LABS FEEDBACK SURVEY**

An evaluation survey was submitted at the end of each Lab to all the participants. The questions were slightly different according to participants' profiles.

### **INTERVIEWS WITH PARTICIPANTS**

In addition to the surveys that were submitted after the end of each lab, the M&E team conducted guided interviews with participants.

Interview partners were selected by following a maximum variation sampling strategy. Put simply, since a full coverage was not achievable, the M&E team aimed at speaking to a diverse range of interview partners. In particular, the sample should cover male and female respondents, nationalities, and occupation/background (students, would-be entrepreneur, SME/Startup founder or employee). While the findings that are based on this

sampling strategy are not representative statistically, they can give more context to the survey findings and help us understand how exactly lab participants are impacted by DIGILOGIC.

The interviewing process was designed low threshold to reach high responsiveness. The M&E team contacted potential interview partners after their lab participation via email. Interviews were then held via a video-conference platform. The interviews were structured along a short interview guideline. The two major themes of the interviews were networking and upskilling. Interviews were transcribed and analysed using computer-assisted qualitative data analysis software MaxQDA including the AI-assist options.

## Interview guideline

### Introduction

- THANK YOU for participating in the interview!
- Context: Conducting evaluation of DIGILOGIC which is a requirement for EU

Do you have any questions before we dive in?

### Warm-up

How did you learn about the lab? What made you decide you wanted to apply?

### Main part

#### 1. Networking:

Please tell me about the people that you met during the lab, (who? In what position are they? Where do they come from?)

#### 2. Upskilling:

Please tell me what you learned in the lab.

### Leave-taking

Now before the interview is complete, I'd like you to complete three sentences.  
If I had not participated in the lab, I wouldn't know...

THANK YOU!

## 2 CO-CREATION IMPACT LABS IMPLEMENTATION

To ensure a replicable format it was decided to use problem statements with similar structure to address different bottlenecks in African logistics critical mile.

To be consistent with the DIGILOGIC system change approach, FINN focused the discussion about the topics to be covered on the levers for change already identified as the bigger opportunities to be taken into consideration.

Both DIGILOGIC consortium partners and IIB board members were asked to add their ideas on a collaborative board as initial step.



FIGURE 4 - POTENTIAL TOPICS FOR THE LABS ([LINK TO THE MURAL](#))

The final decision on topics to be covered was the result of the comparison between the ideas collected among consortium partners and stakeholders and the preferences expressed by the DIGILOGIC Community Members (potential beneficiaries) through a preliminary survey, whose results are reported below.

- Market access for small farmers (41, 53,2%)



- Logistics around humanitarian aid: keeping track of goods (40, 51,9%)
- E-commerce payment systems (40, 51,9%)
- Warehousing digitalization (39)
- E-commerce delivery systems: drones (28)
- Cold chain management for food (27)
- Farm-to-fork: ensuring food security (27)
- Informal retailers (26)
- Market access for rural artisans (24)
- Farm-to-fork to increase sustainable value chains and local productions (23)
- Crowd delivery of goods (22)
- Crowd models for last mile delivery (20)
- Overcoming the lack of consistency of addressing systems (19)
- E-commerce delivery systems: safe lockers and similar (19)
- E-vehicles (19)
- Cold chain management for pharma (14)

In the end the topics covered during the 6 Co-creation Labs are as follows:

TABLE 1 - TOPICS ADDRESSED BY THE CO-CREATION LABS

| Edition | Period         | Topics  | Title   |
|---------|----------------|---|---|
| #1      | July 2022      | Overcoming the lack of consistency of addressing systems              | Solutions for African smart addressing systems                            |
| #2      | October 2022   | Warehousing digitalization / Market access for small farmers          | Digitizing last mile distribution in remote areas                         |
| #3      | February 2023  | Cold chain management for food / Farm-to-fork: ensuring food security | Cold chain solutions to reduce post-harvest losses                        |
| #4      | May 2022       | Informal retailers / Market access for small farmers                  | Matching supply and demand in informal retail supply chains               |
| #5      | June/July 2023 | Logistics around humanitarian aid: keeping track of goods             | Enhancing Last Mile Logistics in Humanitarian Aid Delivery across Africa. |
| #6      | October 2023   | E-commerce payment systems  | Improving e-commerce last mile delivery in Africa                         |

## 2.1 CO-CREATION LAB#1: TOPIC, PARTICIPANTS, RESULTS

### Topic description

The Co-creation Lab focused on addressing the critical issue of inadequate logistical infrastructure hindering the accessibility of medical professionals and supplies to every Liberian. The challenge arises from the absence of proper addresses, leading to difficulties in accessing healthcare services, particularly in emergencies. Additionally, disease surveillance and control face significant hurdles as individuals often must traverse multiple satellite villages to receive medical attention.

The primary objective was to develop a flexible system tailored to the low-resource setting of Liberia. This system aimed to facilitate the seamless delivery of healthcare services, medicines, and medical equipment to international standards. Participants in the Co-creation Lab collaborated on innovative solutions to overcome these logistical challenges and improve healthcare accessibility in Liberia.

This problem statement was presented by [Snoocode](#), a Ghanaian IT company that approached these issues by developing a code system similar to Zip codes that is able to pinpoint locations without the need for internet connection. Their system sees applications in water and sanitation health management, contact tracing, utility and infrastructure monitoring, as well as for commercial service delivery.

TABLE 2 - CO-CREATION LAB #1 PROGRAMME

| Date   | Time              | Item description | Facilitators   |
|--|-------------------|------------------|--|
| <b>1<sup>st</sup> co-creation lab</b><br><b>“Solutions for African smart addressing systems”</b> |                   |                  |  |
| 11/07/2022   | 2 – 6 pm CEST/CAT | Session 1        | <ul style="list-style-type: none"> <li>● Helena Habdija</li> <li>● Francesca Pozzar</li> <li>● Toyin Dania</li> <li>● Stephen Fox</li> <li>● Claudia Baracchini</li> <li>● Charlotte Edzard</li> </ul> |
| 13/07/2022   | 2 – 6 pm CEST/CAT | Session 2        |  |
| 19/07/2022   | 2 – 6 pm CEST/CAT | Session 3        |  |
| 21/07/2022   | 2 – 6 pm CEST/CAT | Session 4        |  |

## Participants

There were 30 applications for lab. In the end 26 people actively joined the program. Participants were divided into five teams, following the principle to have balanced mix in terms of experience and skills. All the applicants, being DIGILOGIC community members, share an interest in the logistic industry. Besides learners, the lab involved a number of innovation facilitators (5), three logistics experts acting as keynote speakers and jurors and some staff devoted to the lab management (5).

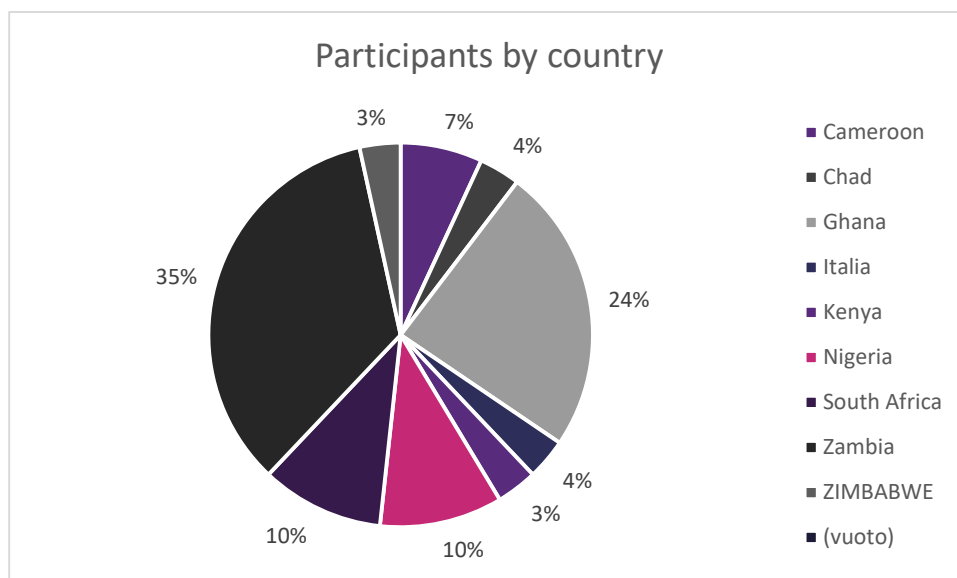


FIGURE 5 - PARTICIPANTS TO LAB#1 BY CONTRY OF ORIGIN

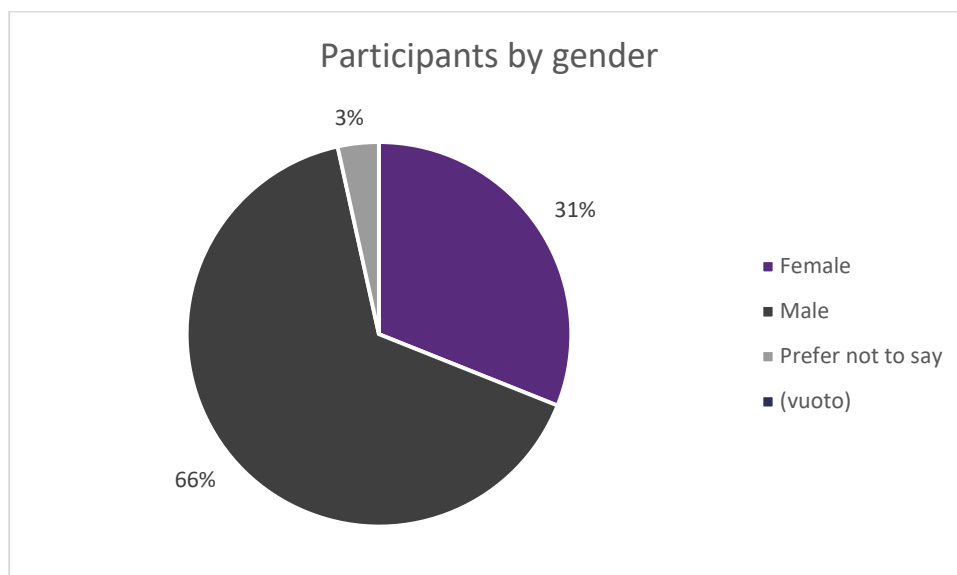


FIGURE 6 - PARTICIPANTS TO LAB#1 BY GENDER

### 2.1.1.1 Results

What follows is a synthesis of the work of the teams. The information is gathered through all the material generated by the team during the course of the Lab, and especially the team's pitch to the jury in the final session. The work is presented in three sections:

1. the team, sketching the members' professional profiles
2. Problem and market research, detailing the team's approach to the problem expressed in the problem statement and the identified market
3. Proposed solution and business model, detailing the characteristics of the identified solution, the chosen business model and indications of financial needs

In this Lab, the groups chose to elaborate on the solution proposed by Snoocode adding their perspective.

#### 2.1.1.1.1 Team A: "BLACK PANTHER"

#### **2.1.1.1.1.1 The team**

The team was composed of 4 people plus the facilitator. The team did not provide the professional profile of its members.

#### **2.1.1.1.1.2 Problem and market research**

##### **Limited Healthcare Resources:**

In the realm of healthcare, the scarcity of medical suppliers and professional health services poses significant challenges in providing comprehensive healthcare to communities. The shortage of essential resources hampers the ability to meet the diverse medical needs of the population, exacerbating health disparities.

##### **Navigation Difficulties:**

The absence of named streets and house addresses compounds the challenges in healthcare delivery. Navigational difficulties impede the timely provision of medical services, particularly in emergencies. The lack of a structured addressing system hinders the efficiency of healthcare professionals in reaching patients promptly.

##### **Inadequate Health Infrastructure:**

Insufficient health infrastructure further compounds the hurdles in delivering quality healthcare. The existing inadequacies fail to meet the demands of the community, negatively impacting the accessibility and effectiveness of healthcare services. The gap in infrastructure becomes a barrier to providing timely and effective medical interventions.

##### **Time Inefficiencies in Directions:**

The lack of proper addresses leads to significant time wastage in providing directions to medical professionals and suppliers. This inefficiency results in delays in healthcare delivery, adversely affecting patient outcomes. Addressing this issue is crucial to improving the overall efficiency of healthcare services.

##### **Low Awareness of SNOOCODE:**

Limited awareness about SNOOCODE, a location code system, among the population acts as a notable barrier to realizing its potential benefits in healthcare. The lack of awareness impedes the adoption of SNOOCODE, which could significantly enhance navigation and logistics in addressing healthcare challenges. Increasing public awareness becomes pivotal in leveraging this tool effectively.

##### **Geographical Context - Nigeria and Zambia:**

In the context of Nigeria, the 2018 Logistics and Supply Chain Industry report estimated the logistics sector at 250 billion naira (\$696 million). Despite this substantial figure, the sector faces persistent challenges. The Nigerian logistics and supply chain industry has long grappled with obstacles that hinder its full potential, impacting various sectors, including healthcare. Addressing these challenges is crucial for enhancing the efficiency and effectiveness of healthcare delivery in these regions.

#### **2.1.1.1.1.3 Proposed solution and business model**

The proposed solution is a USSD code connecting the caller to first aid providers, giving access to first aid tips, and capable to generate coordinates. By design this solution is available on any telephone network. The team intends to partner with relevant institutions (hospitals, public authorities) to have the solution running.

The proposed business model is a 1\$/month subscription fee, and the user based is expected to be 1 million in 2023, 2 million in 2024 and 10 million in 2025.

The team estimates the financial need to make the solution operational 130.000 USD of which

- 50.000 USD for software development
- 30.000 USD for marketing and market development
- 50.000 USD for awareness

### 2.1.1.1.2 Team B: “Kezani”

#### 2.1.1.1.2.1 The team

The team was composed of 4 people plus the facilitator. The team did not provide the professional profile of its members.

#### 2.1.1.1.2.2 problem and market research

The prevailing challenge involves a deficient logistical infrastructure, creating obstacles in promptly delivering medical assistance to local communities. The absence of proper addresses compounds the issue, hindering access to healthcare services, particularly during emergencies. This challenge extends to disease surveillance, requiring individuals to navigate through satellite villages to access essential healthcare.

Key Issues:

- Delayed Medical Response: Challenges in swiftly dispatching ambulances, medical professionals, and supplies to those in need.
- Digital Infrastructure Shortcomings: Inadequate logistical infrastructure, including transmitters and automated platforms, limiting the efficient movement of medical goods.
- Poor Road Network: Lack of a well-established road network contributing to transportation challenges for medical services and supplies.
- Refrigeration Issues: Inadequate refrigerated transport and storage facilities, particularly concerning vaccines, exacerbated by a lack of access to electricity.
- Communication Gaps in Rural Areas: Absence of a robust communication system and means of communication, especially in rural areas, further complicating the healthcare delivery process.

#### 2.1.1.1.2.3 Proposed solution and business model

The team’s solution is a digital healthcare application which functions as a versatile platform accessible online and offline, allowing users to download the app or register via a USSD feature. It establishes virtual addresses based on personal numbers to facilitate a distinctive identification system.

#### Key Features:

The application's primary feature is an SOS button, providing emergency services such as consultations, information about nearby pharmacies, and the option to request medicine and ambulances. Upon activation, an automated message is sent to the hospital call center, coordinating ambulance dispatch to the location linked with the registered phone number. Users can also initiate requests for medical supplies delivery.

The application employs a straightforward payment system, where end users are billed through their mobile numbers for services, insurance, or other financial transactions, streamlining the payment process for user convenience.

#### Subscription Model:

Medical facilities, including hospitals, adopting the application will utilize a subscription model, ensuring recurring revenue and aligning with the sustained benefits derived by healthcare providers.

### 2.1.1.1.3 Team C: “Eagle”

#### 2.1.1.1.3.1 The team

Active team members:

- E.A.: UI/UX designer
- M.M.: Entrepreneur
- R.L.C.: Programmer
- J.O.: Business lawyer
- E.M.A.: Business developer and entrepreneur

#### **2.1.1.1.3.2 Problem and market research**

The lack of logistical infrastructure poses a significant hindrance to making medical professionals and supplies readily available to local communities. This issue is exacerbated by the absence of proper addresses, impeding access to healthcare services, particularly in emergencies. The challenges extend to disease surveillance and control, requiring people to travel considerable distances through multiple satellite villages to access healthcare. This severe problem is not confined to rural areas; it is pervasive in urban settings across Africa, including countries like Zambia, Nigeria, and Ghana.

#### **Emergency Service Implications:**

The severity of the problem is underscored by the essential nature of emergency services. Delays in accessing healthcare services have severe consequences, emphasizing the critical need for effective logistical infrastructure.

#### **Digital Address Disparity:**

In Ghana, only approximately 2 out of every 10 houses possess a digital address, exacerbating the challenges in healthcare accessibility.

#### **Causes:**

- Low Broadband Coverage: Limited coverage of broadband width contributes to the lack of digital addresses.
- Technology Savviness: End-users often lack the required technology savviness to engage with digital addressing systems.
- Connectivity Issues: The overall lack of connectivity further compounds the problem.
- Population Growth: Increasing population, coupled with a lack of collective land development, results in an unstructured approach to infrastructure.
- Government Policy Implementation: Insufficient government policy implementation exacerbates the challenges in developing effective logistical infrastructure.

The estimated amount of people experiencing these issues (and therefore the potential market for a solution) is considerable: about 400 million people live in West Africa, which is the area in which the team identified the problem.

#### **2.1.1.1.3.3 Proposed solution and business model**

The team's solution is a software, called EagleMed, that aims to render emergency services more accessible. The software will be available both through a smartphone app and through the dialling of USSD codes. The software pinpoints the caller's location and communicates it to emergency responders.

The team also aims to issue medical debit cards to its users. The idea is that users will deposit sums of money that then get used to pay emergency services. This in turn allows the team to negotiate with emergency service providers in order to moderate prices basing on the lowered payment risk for the providers.

#### **2.1.1.1.4 Team D "Black Box"**

#### **2.1.1.1.4.1 The team**

The team was composed of 4 people plus the facilitator. The team did not provide the professional profile for each member, but reports the members having experience in:

- Transport management
- Psychology
- Accounting and financial modelling
- Community building
- Branding and communication

#### **2.1.1.1.4.2 Problem and market research**

The team approached the issue from the perspective of patients in need of rapid care and mothers. Statistics report that 54% of deaths worldwide are due to delays in the provision of medical care, and 533 mothers die in mainland Africa due to inability to access necessary medical care.

#### **2.1.1.1.4.3 Proposed solution and business model**

The team proposed “Snoocode RedBox”, a specific application of Snoocode’s technology to the healthcare sector. Essentially, people in need of immediate sanitary assistance can call a number, which puts them in contact with hospitals and healthcare facilities. The system pinpoints the location of the caller to avoid any delays due to ambiguous locations.

The advantages lie in the fact that the precise localization of the caller is possible without internet connection and is available also for non-smartphone phones.

The team aims to raise 197.000 GHS to develop their idea, of which

- 77.000 for R&D and production
- 120.000/year for operation costs

The team is also aware it must invest in the involvement of relevant stakeholders (hospitals, public authorities).

#### **2.1.1.1.5 Team E: “Triangle Africa”**

##### **2.1.1.1.5.1 The team**

- A.R.
- S.N.: Entrepreneur
- K.M.: Software developer
- N.J.
- K.Z.

##### **2.1.1.1.5.2 Problem and market research**

###### **Physical Infrastructure:**

The region faces a critical challenge due to the lack of and deteriorating physical infrastructure. This issue extends to both urban and rural areas, impacting various aspects of daily life.

###### **Digital Infrastructure:**

**Patchy Electricity and Tech Accessibility:** The digital infrastructure is hindered by patchy electricity supply, leading to inconsistent access to technology tools. Moreover, not everyone in the population possesses a smartphone, creating disparities in digital access.

### **Main Problem: Lack of Access to Medical Personnel and Supplies**

The primary issue revolves around insufficient access to medical personnel and essential supplies, contributing to a healthcare crisis in the region.

- **Informal Economy and Limited Insurance:** Over 40% of the population operates in the informal economy, lacking consistent access to medical services. Additionally, only about 10% have private medical insurance, further limiting healthcare options.
- **Deteriorating Public Healthcare:** Access to public healthcare is deteriorating, exacerbating the challenges faced by most of the population.

### **Consequences:**

The consequences of these challenges are profound and multifaceted.

- **Lack of Medical Care:** A significant portion of the population is deprived of essential medical care, leading to a compromise in overall public health.
- **Inadequate Follow-up Care:** The lack of access to medical personnel and resources results in inadequate follow-up care, hindering recovery and exacerbating health conditions.
- **Low Medical Education Levels:** The overall level of medical education in the population is low due to limited access to healthcare services, perpetuating a cycle of health-related challenges.
- **Conclusion:** Addressing the infrastructure gaps, both physical and digital, is crucial to improving healthcare access. Efforts should be directed towards enhancing both public and private healthcare resources to ensure equitable access for all segments of the population, ultimately leading to an improvement in overall health outcomes.

### **2.1.1.1.5.3 Proposed solution and business model**

The team's solution is an AI-powered IoT tool that aims to increase the availability of medical supplies and professionals: Smart Mary.

### **Key Features:**

- **Low Power Long Range Radio Signals:** Utilizes low power, long-range radio signals for efficient data transmission.
- **Universal Connectivity:** Connects to smartphones and non-smartphones, allowing users to send information to any medical facility using a USSD code generated by the device. Health providers can access critical data such as location and health status.
- **On-Demand Medical Assistance:** Offers on-demand medical assistance through drone connections and GPS, ensuring prompt responses anytime and anywhere.
- **Bluetooth Integration:** Provides Bluetooth integration for seamless connectivity.

### **How It Works:**

Smart Mary functions as a smart city technology IoT sensor device, employing radio communication techniques based on spread spectrum modulation derived from chirp spread spectrum technology.

### **Smart Device IOT: Extended Reach with Cost Efficiency:**

Utilizing Smart Device IoT enables cost-effective data transmission in low-income communities with limited infrastructure.



Overcoming data and infrastructure challenges, the solution ensures comprehensive coverage across all parts of Africa.

#### Smart Healthcare Wearables:

Implementation includes small, wearable devices functioning as health watches.

These watches facilitate seamless data exchange, incorporating features like GPS, real-time health status monitoring, and location-based services to enhance healthcare accessibility.

#### Future Developments:

Anticipating future advancements, the implementation involves the integration of small, wearable devices that function as health watches. These innovative facilitate seamless data exchange, incorporating features such as GPS for precise location tracking, real-time health status monitoring, and location-based services.

#### Business Model:

The business model revolves around subscription fees for the main service, with two additional components:

- Health Monitoring as a Service: The smart health watches introduce a subscription-based model for continuous health monitoring.
- Data-Driven Insights: The collected data provides valuable insights, fostering potential collaborations with health organizations, insurers, and healthcare providers.

## 2.2 CO-CREATION LAB#2: TOPIC, PARTICIPANTS, RESULTS

### Topic description

Informal retailers at the last mile, typically situated in rural areas or informal settlements, encounter high costs for transportation and purchases, coupled with limited management and business knowledge, and protracted procurement processes. Furthermore, access to working capital poses a challenge. These obstacles impede the smooth operation of small retailers' businesses, restrict the variety of products they can offer, and lead to higher prices for their customers."

TABLE 3 - CO-CREATION LAB #2 PROGRAMME

| 2 <sup>nd</sup> co-creation lab<br>"Digitizing last mile distribution in remote areas" |                   |                  |   |
|--|-------------------|------------------|---|
| Date   | Time              | Item description | Facilitators  |
| 18/10/2022   | 2 – 6 pm CEST/CAT | Session 1        | Helena Habdja<br>Claudia Knobloch<br>Stephen Fox<br>Rhema Andah<br>Rhoda kakoma |
| 20/10/2022   | 2 – 6 pm CEST/CAT | Session 2        |   |
| 25/10/2022   | 2 – 6 pm CEST/CAT | Session 3        |   |
| 27/10/2022   | 2 – 6 pm CEST/CAT | Session 4        |   |

### 2.2.1.1 Participants

Lab#2 collected 50 applications. 30 were accepted of which 10 females. In the end, 29 people actively joined the program. Participants were divided into four teams, following the principle to have balanced mix in terms of experience and skills. Besides learners, the Lab involved several innovation facilitators (4), two successful logistic entrepreneurs acting as keynote speakers and jurors, two experienced business facilitators as jurors, some staff devoted to the lab management (4) and three observers.

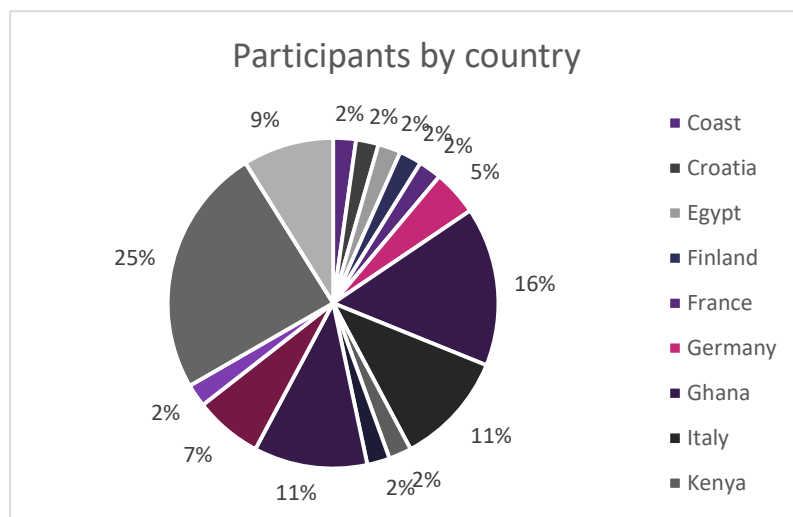


FIGURE 7 - PARTICIPANTS TO LAB #2 BY COUNTRY OF ORIGIN

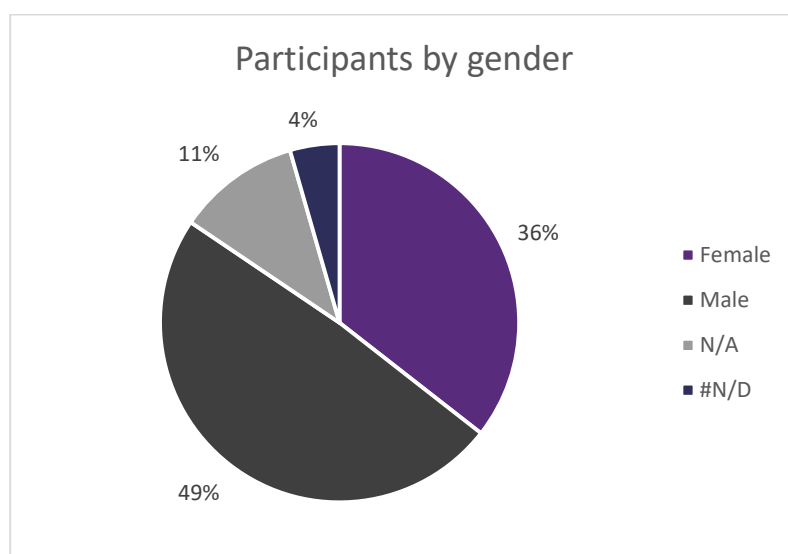


FIGURE 8 - PARTICIPANTS TO LAB #2 BY GENDER

### 2.2.1.2 Results

What follows is a synthesis of the work of the teams. The information is gathered through all the material generated by the team during the course of the Lab, and especially the team's pitch to the jury in the final session. The work is presented in three sections:

1. the team, sketching the members' professional profiles
2. Problem and market research, detailing the team's approach to the problem expressed in the problem statement and the identified market

3. Proposed solution and business model, detailing the characteristics of the identified solution, the chosen business model and indications of financial needs

#### **2.2.1.2.1 Team A : Smart Mind**

##### **2.2.1.2.1.1 The team**

Active team members:

- E. O. Supply Chain manager
- B.L. entrepreneur
- C.M brand strategist
- EM retail expert
- C.T. analyst

##### **2.2.1.2.1.2 Problem and market research**

The collaborative "Smart Mind" team analysis has illuminated critical challenges within the business landscape. Notably, issues persist in the current long-distance transportation system, resulting in high costs and time inefficiencies that necessitate optimization. Furthermore, a deficiency in proper business education has led to an incomplete understanding of innovative options, impacting procurement processes and hindering overall business growth. Moreover, businesses grapple with constraints stemming from limited access to working capital, hampering their capacity to invest in essential operations and expansion.

A significant focus has been placed on the specific challenges faced by Nigerian vegetable oil retailers. These retailers lack access to vital information related to marketing, finance, and pertinent knowledge on inventory management, hindering their potential for business growth. The team recognizes that addressing these challenges is not only essential for fostering innovation but also for ensuring sustained growth in the dynamic business environment.

##### ***Proposed solution and business model***

"Smart Mind" collectively developed a web application as their solution during the Co-Creation Lab. This application aimed to address challenges faced by edible oil retailers, enhancing their productivity through the centralized access to relevant information. Their comprehensive market analysis indicated that a significant 78% of edible oil retailers struggled with the identified issues. In the Nigerian context, the edible oil market, valued at US\$1.54 billion, exhibited an annual growth rate of 17.19% (CAGR 2022-2027). The team's proposed business model centred around a subscription-based access to the web application, ensuring a sustainable revenue stream while consistently delivering value to users. Throughout their participation in the Co-Creation Lab, the team's focus on developing a tailored solution underscored their commitment to addressing industry-specific challenges and fostering innovation within the edible oil retail sector.

#### **2.2.1.2.2 Team B: XMILE**

##### **2.2.1.2.2.1 The team**

Active team members:

- Y.L. in the team as Chief Executive Officer
- M.D. in the team as Chief Marketing Officer
- J.M. in the team as Chief Communications Officer
- M.L. in the team as Chief Technology Officer

#### **2.2.1.2.2.2 Problem and market research**

From the team's analysis process, a prominent issue was identified - the high cost of consumer goods in remote areas due to slow and unreliable buying processes. In response, the team proposed an innovative solution: the development of an affordable social e-commerce platform. This platform aimed to empower women in rural areas, providing them with accessible goods and services for their well-being.

The proposed solution was centred around the creation of a user-friendly platform, emphasizing affordability and convenience in the purchasing process.

The team's market opportunity analysis revealed a significant potential among women aged 15-64, constituting 61% of the population. Within this demographic, 60% of women possessed mobile phones, indicating a substantial user base for the proposed e-commerce platform. Despite challenges, 25% of women in the target demographic used the internet, offering a foundation for digital connectivity.

This market opportunity extended across Egypt and Ghana, encompassing approximately 150 million women. The team's thorough analysis not only identified a prevalent problem but also proposed a solution aligned with the identified market opportunity. By addressing the high cost and inefficiencies in remote areas through an affordable social e-commerce platform, the team aimed to empower a significant portion of the female population, fostering well-being and economic inclusivity.

#### **2.2.1.2.2.3 Proposed solution and business model**

The business model is built upon a dual revenue stream approach, combining subscription fees with transaction-based revenue. In this model, users are charged a subscription fee for access to premium features or enhanced services on the platform. Simultaneously, the platform generates revenue through transaction fees, where a percentage is levied on each completed transaction facilitated through the service. This hybrid model aims to create a sustainable income stream, with subscription fees providing a steady and predictable source of revenue, while transaction fees capitalize on the growth and activity of the platform. The combination of both models allows for flexibility and adaptability to varying user needs and market dynamics, providing a balanced and potentially lucrative business model.

#### **2.2.1.2.3 Team C FLYING FOXES**

##### **2.2.1.2.3.1 The team**

Active team members (roles in the team):

- I.K.: Business developer
- M.S.: UI designer
- M.L.: Entrepreneur
- G.M.: Team member
- M.M. Research
- N.A.S.: Business developer
- M.M. Research
- P.M.: Entrepreneur

##### **2.2.1.2.3.2 Problem and market research**

The team undertook a comprehensive problem analysis within the retail and transport sectors, focusing on delineating the challenges faced by retailers and small-scale transporters in Zambia. The aim was to identify significant obstacles, including high costs, management gaps, and access barriers. The retail sector grappled with inflated transport and purchase costs, a deficiency in business acumen, and prolonged procurement processes,

impeding access to working capital. Concurrently, small-scale transporters faced challenges such as limited fleet sizes, poor capacity utilization, and cash flow issues amid the dominance of larger fleet providers.

#### **2.2.1.2.3.3 Proposed solution and business model**

The team devised a solution that manifests as a reliable freight management service, seamlessly connecting and coordinating the demand for and supply of freight solutions throughout Zambia and the sub-Saharan region. This solution envisions a future where efficient logistics operations alleviate the challenges faced by retailers and small-scale transporters, fostering a more integrated and streamlined freight ecosystem.

In the 3-week Co-Creation Lab (CCLAB), the team developed the WEDRIVE mobile app, an integrated platform tailored to tackle diverse challenges in the logistics sector. The app serves as a comprehensive tool for rural retailers, offering features reminiscent of QuickBooks. This empowers retailers to efficiently manage stock, monitor inventory, track sales, and streamline procurement processes.

For transport providers, WEDRIVE facilitates seamless order management. Real-time updates and optimized routes enhance transport efficiency, addressing challenges faced by small-scale transporters. Additionally, the app acts as a dynamic platform, like Amazon, showcasing competitive rates to retailers. This fosters informed decision-making, promotes fair competition, and enhances cost efficiency in the marketplace.

The revenue model is based on a subscription model, with rural retailers, transporters, and wholesalers paying a monthly subscription for utilizing our user-friendly one-stop solution. This approach ensures a sustainable and scalable business model, providing ongoing support and value to our diverse user base. The WEDRIVE mobile app emerges as a transformative solution not only in addressing the complexities of the retail and transport landscape but also in establishing a viable and revenue-generating platform for sustained growth.

#### **2.2.1.2.4 Team D (MEGATRON)**

##### ***The team***

Active team members:

- K.P-B: marketing and sales specialist
- E.T.A: Business management specialist
- I.R.: Teaching, Agribusiness and Rural Development
- S.W.D: CEO Togo Cargo Ltd/Tech Logistics
- S.P: FMCG Supply Chain and Logistics, Import & Export Coordinator
- R.O.J: Web App Developer

#### **2.2.1.2.4.1 Problem and market research**

In examining the market dynamics in the northern part of Ghana, the team identified several challenges. The markets in this region are notably fragmented, characterized by linguistic diversity and varying customer behaviours. This diversity complicates brand positioning and the implementation of strategies on a large scale.

The rural nature of the market, influenced by a distinct rural DNA, adds another layer of complexity. Products must not only be affordable but also align with the social constructs prevalent in these rural communities. Moreover, there is a limited diversity in available products, shaping the market landscape.

Another critical challenge is the underdeveloped roads and infrastructure in the region. Poor road networks, the remoteness of localities, and the lack of supportive infrastructure, including network connectivity and technology, pose significant obstacles. These challenges impact the distribution and accessibility of products in the market.

In essence, the team's research illuminated the intricate nature of dealing with fragmented markets, understanding the rural DNA influencing consumer choices, and addressing the obstacles posed by underdeveloped roads and infrastructure. This in-depth analysis laid the groundwork for the team's strategic approach to finding innovative solutions tailored to the specific needs of the northern part of Ghana.

#### 2.2.1.2.4.2 Proposed solution and business model

The proposed solution centers around a platform named Utopia. Fast-Moving Consumer Goods (FMCG) firms utilize this platform to receive consolidated orders efficiently. The transportation phase involves FMCG firms transporting orders to silos or holding areas. These silos or holding points are managed by local agents in rural areas, responsible for tasks such as registration, inventory management, and dissemination.

The logistics in rural areas involve various modes of transportation, including motorcars, tricycles, and motorbikes. Rural retailers, integral to the process, utilize the platform for ordering and receiving goods. They also manage inventory and have access to credit facilities, creating a comprehensive ecosystem that streamlines the flow of goods from FMCG firms to rural retailers.

In the collaborative endeavor, the distinct expertise of each team member played a crucial role in shaping the solution named Utopia. Their backgrounds were leveraged to ensure the platform aligned seamlessly with industry needs.

The Megatron Business Model, sculpted by the retail strategists, became the sustainable backbone, offering retailers a 20% markup and fostering long-term engagement. The supply chain was optimized through local partnerships by logistics experts, while the digital prowess of Utopia was ensured by tech-savvy members. In retrospect, the group work manifested as a convergence of talents—resulting in Utopia, a solution adept at navigating the complexities of rural FMCG markets. The Megatron Business Model stands as a testament to collective creativity, embodying a successful synergy of diverse skills and experiences.

## 2.3 CO-CREATION LAB#3: TOPIC, PARTICIPANTS, RESULTS

### 2.3.1.1 Topic description

One of the main challenges for small scale producers and traders is how to ensure quality of the product after harvest and when delivering products to the market. Problem at point of sales is also how to ensure products quality and longer sales period. Hence, lack of cooling after harvesting with increasing temperatures, bacteria are developing fast, already affecting food products quality and shelf life on their way to local collection points and the local market.

Without effective, long-lasting, and affordable cold chain solutions, farmers/aquaculture have limited choices for timing and location of sales and may be forced to sell at low prices or to throw away their products instead of having longer sales period fair prices for products. Moreover, a lack of hygienic handling lowers the product quality affecting sales, margins and putting the consumer's health at risk, and causing untrust to the point of sales. Post-harvest losses amount to up to 50% (aquaculture) due to poor infrastructure, lack of skills, and market access.

There is huge lack of knowledge concerning cold chain and lack of cooling technology. Old ways to do things are dominating and it cannot be changed without small scale farmer, logistics providers and retailers training.

TABLE 4 - CO-CREATION LAB #3 PROGRAMME

| Date   | Time         | Item description | Facilitators     |
|--|--------------|------------------|------------------|
| 3 <sup>rd</sup> co-creation lab                      |              |                  |                  |
| “Cold chain solutions to reduce post-harvest losses” |              |                  |                  |
| 21/02/2023   | 1 – 5 pm GMT | Session 1        | ● Helena Habdija |

|            |              |           |  |
|------------|--------------|-----------|--|
| 23/02/2023 | 1 – 5 pm GMT | Session 2 | <ul style="list-style-type: none"> <li>● Francesca Pozzar</li> <li>● Claudia Baracchini</li> </ul> |
| 28/02/2023 | 1 – 5 pm GMT | Session 3 | <ul style="list-style-type: none"> <li>● Charlotte Edzard</li> <li>● Claudia Knobloch</li> </ul>   |
| 02/03/2023 | 1 – 5 pm GMT | Session 4 | <ul style="list-style-type: none"> <li>● Maumo Mubila</li> <li>● Giovanni Barbetta</li> </ul>      |

### 2.3.1.2 Participants

Lab#3 collected 33 applications and all of them were accepted. A new staff member from ENDEVA joined the Co-Creation Lab as well as a participant. 7 applicants never joined the sessions or informed the staff about their drop out. In the end 27 people actively joined the program, of which 22 completed the journey and received a participation certificate.

Participants were divided into four teams, following the principle of having a balanced mix in terms of experience, skills and geography. Besides learners, the Lab involved several innovation facilitators and three logistics experts acting as keynote speakers and jurors. Overall, more than 30 people joined each session (S1:32, S2:28, S3:30, S4:31) of which 15 were females, thus ensuring a good gender balance.

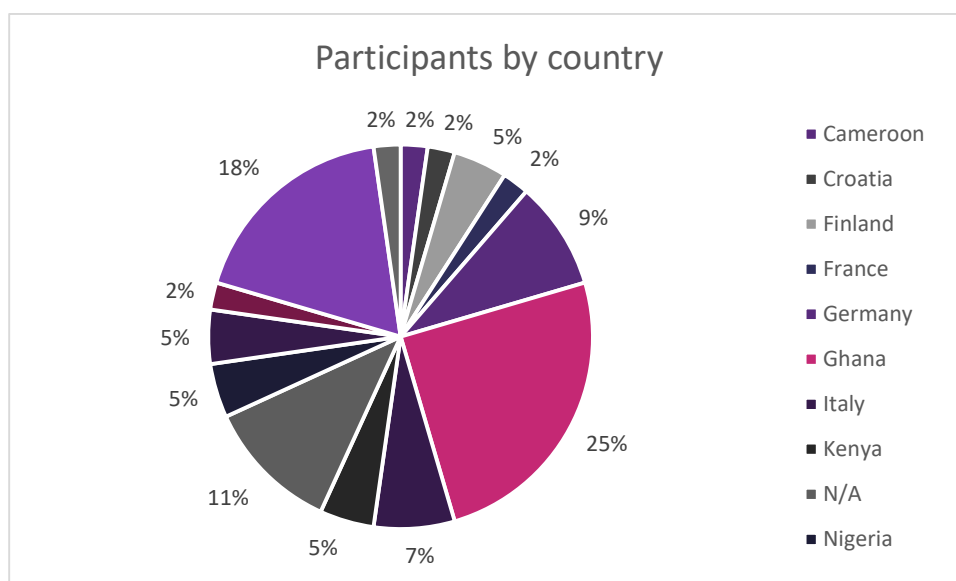


FIGURE 9 - PARTICIPANTS TO LAB #3 BY COUNTRY OF ORIGIN

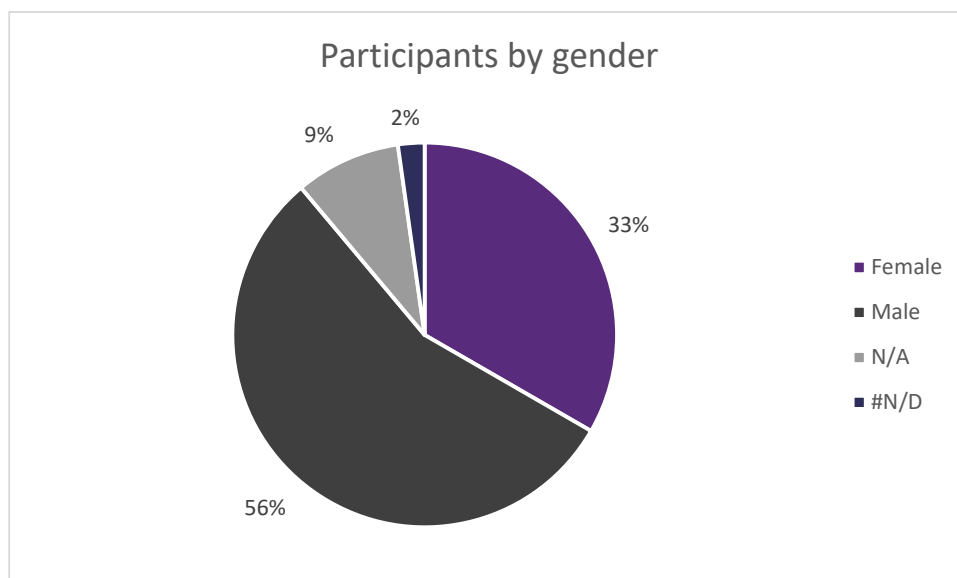


FIGURE 10 - PARTICIPANTS TO LAB #3 BY GENDER

### 2.3.1.3 Results

What follows is a synthesis of the work of the teams. The information is gathered through all the material generated by the team during the Lab, and especially the team's pitch to the jury in the final session. The work is presented in three sections:

1. the team, sketching the members' professional profiles
2. Problem and market research, detailing the team's approach to the problem expressed in the problem statement and the identified market
3. Proposed solution and business model, detailing the characteristics of the identified solution, the chosen business model and indications of financial needs

#### 2.3.1.3.1 Team A "Agri-Novate"

##### 2.3.1.3.1.1 The team

Active team members:

- **F.T.:** Greenhouse Expert & Research Assistant
- **F.P.A.:** UI/UX Designer & Web Developer
- **S.M.:** IT Management & Web Developer
- **S.O.B.:** Petroleum Engineer & Co-founder of BES Veggie
- **G.C.:** Marketing & Commodity Trader
- **C.G.:** Data Analytics Specialist
- **C. S.:** Computer Network Admin

##### 2.3.1.3.1.2 Problem and market research

The problem that Agri-novate decided to focus on is the following.



The value chain for fresh produce from small scale farmers in Ghana experiences post-harvest losses which impact the whole chain, from the farmers themselves to small business owners to customers.

Ghana has a population of 25.37 million inhabitants, with a per annum growth rate of 2.19 %, and a mean population density of 77 persons/km<sup>2</sup>. According to the Ministry of Food and Agriculture, smallholder farmers in Ghana make up approximately 70% of the estimated five million farming household population. Majority of these farmers live in rural areas where there is limited access to formal financial services. 39-52% of their produce is lost due to pests, diseases, inadequate handling and lack of linkages. Reduced SHF income.

#### **2.3.1.3.1.3 Proposed solution and business model**

The solution developed by this team consists of a solar powered clay cold storage solution and processing of vegetables.

Clay was chosen as a natural material for thermic insulation, and the choice of solar power is since most of rural Ghana is off the electricity grid. The size of the storage unit itself can vary depending on the seasonal production capacity of each farm.

The business model consists of refrigerated transport, cold storage, processing and packing **as a service**.

More specifically, the subscription fee for farmers will include:

- Building of the cold storage solution on site
- Transport of produce from the farm to the company's central storage facility
- Processing of excess produce into jams, sauces, dried vegetables etc.

The company will also provide training for farmers to allow them to manage the equipment.

In the future, the plan is to partner with cooperatives and farmers to provide solar powered storage solution while linking them to a broader client network.

#### **2.3.1.3.2 TEAM B "SOL COOL"**

##### **2.3.1.3.2.1 The team**

- **J.M.:** 3 years working experience in sustainable agriculture and extension services, with project planning & management profession
- **S.B.:** Focus on smart logistics and clean energy. 5 years of experience in climate policy and mitigation with an emphasis on underserved communities.
- **K.P.:** (B.A Development Studies with Demography) Mining Entrepreneur with 1 years' experience in Logistics and 3 years' experience in mineral trading
- **L.W.:** (BEng chemical engineering) Green energy entrepreneur with 8 years' experience in oil marketing, industrial chemicals and renewable technologies
- **M.M.:** Education and membership officer for the Zambia Chartered Institute of Logistics and Transport.

##### **2.3.1.3.2.2 Problem and market research**

The problem that Sol Cool decided to focus on is the following.

Small holder farmers in Africa face huge loss due to poor handling of produce and lack of standard storage systems to preserve the farm produce before going to the market.

On average, 1.000 small farmers lose over \$200,000 per year and this adversely affect their income and livelihood. More than 80% of the small farmers face 45%+ post-harvest loss, due to lack of standard storage and reliable market.

About 50% of off-takers don't get satisfactory products to feed demand of other markets since farmers do not produce enough for the fear of the losses.

Local food vendors are faced with a tremendous challenge of food loss, about 60% of food products in market areas ends up in dumpsters, due to short shelf life.

Millions on families in Africa don't have a balanced diet/ decent food due to higher price of food products facilitated by short supply.

#### **2.3.1.3.2.3 Proposed solution and business model**

The solution developed by this team is a cooled storage as a service, coupled with an app to rent cooling unit storage space and schedule pickup of produce. The produce is also marketed large-scale consumer including hotels and restaurants.

#### **2.3.1.3.3 Team C – Team Eagle**

##### ***The team***

- **F.M.:** Finance and Accounting specialist
- **L.M.:** IT Start-up founder/Industrial Engineer
- **E.M.:** Marketing management Digital marketer, Business analyst
- **A.M.:** Multi-skilled in ICT, poultry, General Agriculture/Irrigation technology

##### **2.3.1.3.3.1 Problem and market research**

Post-Harvest Losses of perishable food

There are 100+ retailers who have Lusaka as their point of sale, each of which has a demand of 4 to 5 crates of tomatoes.

##### **2.3.1.3.3.2 Proposed solution and business model**

Providing Solar-powered cold storage containers and transport to the farmers in rural set-ups. Farmers will be able to access these facilities through a USSD Code. The idea will raise revenue through the offer of cooling and transport as a service and through the sale of cold storage containers.

#### **Team D – The Achievers**

##### **2.3.1.3.3.3 The team**

- **O.M:** MSc in International Business Management, Intern Financial Controller
- **T.H.:** Managing Director @Prim-U
- **C.P.D.:** Supply chain specialist @ColdHubs LTD
- **M.L.:** Founder @ Milutech Solutions
- **S.A.:** Software Developer
- **T.P.:** Digital Marketing

##### **2.3.1.3.3.4 Problem and market research**

Lack of cooling systems after capture/harvest and at the point of sale reduces revenue for Nigerian fishermen/farmers through post-capture/post-harvest losses and poorer product quality, which in turn can cause sanitary issues and reflects poorly on the reputation of local products.

Nigeria has a population of 213 million people. There are approximately 10 million fishermen and 10 million farmers affected by the issue.

### 2.3.1.3.3.5 Proposed solution and business model

Cooling as a service through aggregation centres: fishermen and farmers deposit their produce at strategically placed cooling facilities (cooling boxes) at which their produce is weighed and labelled. The produce is then sold, and a percentage of the sale price is given back to the fisherman/farmer in the form of cash, upfront payment, or bank transfer.

## 2.4 CO-CREATION LAB#4: TOPIC, PARTICIPANTS, RESULTS

### 2.4.1.1 Topic description

Sub-Saharan Africa alone has over 40 million micro or small businesses in the informal market. Those offer jobs and the promise of a livelihood and are responsible for an estimated 80% of jobs across the continent.

One big problem currently is that informal sector producers, retailers and logistical vendors don't match well. This is causing retailers loss of opportunities to increase sales volume and product portfolio (and serve better their customers) and producers having challenges to find markets for their products (preferable nearby). Indirectly this causing also less jobs for small scale logistical providers and other service providers.

TABLE 5 - CO-CREATION LAB #4 PROGRAMME

| Date  | Time         | Item description | Facilitators  |
|---|--------------|------------------|---|
| 4 <sup>th</sup> CO-CREATION LAB                               |              |                  |   |
| "Matching supply and demand in informal retail supply chains" |              |                  |   |
| 09/05/2023  | 1 – 5 pm GMT | Session 1        | <ul style="list-style-type: none"> <li>● Rhoda Fletcher</li> <li>● Samantha Beekman</li> <li>● Claudia Baracchini</li> <li>● Carmen Antuna Rozado</li> <li>● Dorus Silwizya</li> <li>● Giovanni Barbetta</li> <li>● Helena Habdija</li> </ul> |
| 11/05/2023  | 1 – 5 pm GMT | Session 2        |   |
| 16/05/2023  | 1 – 5 pm GMT | Session 3        |   |
| 19/05/2023  | 1 – 5 pm GMT | Session 4        |   |

### 2.4.1.2 Participants

Lab#4 collected 27 applications and all of them were accepted. Of these, 23 people were present for at least one session and 7 qualified for the final participation certificate. It should be noted that the lab was characterized by particularly pronounced internet connection issues on the side of participants, which rendered participation somewhat challenging.

Participants were divided into four teams, following the principle of having balanced mix in terms of experience, skills and geography. Besides learners, the Lab involved several innovation facilitators and three logistics experts acting as keynote speakers and jurors. Overall, the lab saw the participation of predominantly Ghanaian and male participants.

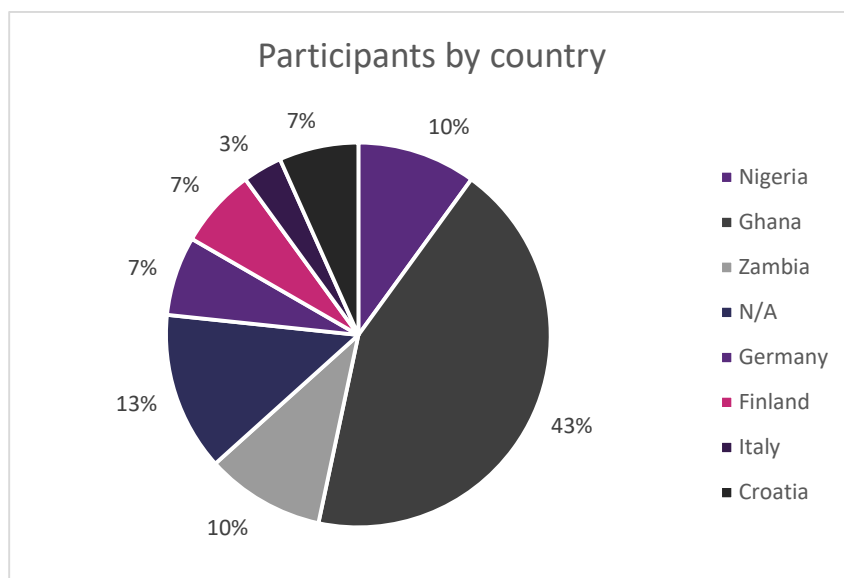


FIGURE 11 - PARTICIPANTS TO LAB #4 BY COUNTRY OF ORIGIN

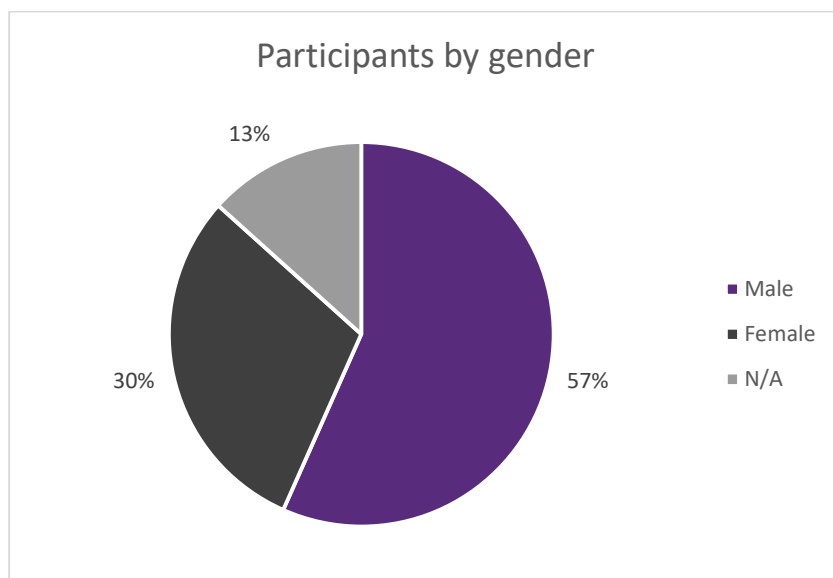


FIGURE 12 - PARTICIPANTS TO LAB #4 BY GENDER

### 2.4.1.3 Results

What follows is a synthesis of the work of the teams. The information is gathered through all the material generated by the team during the course of the Lab, and especially the team's pitch to the jury in the final session. The work is presented in three sections:

1. the team, sketching the members' professional profiles
2. Problem and market research, detailing the team's approach to the problem expressed in the problem statement and the identified market
3. Proposed solution and business model, detailing the characteristics of the identified solution, the chosen business model and indications of financial needs

#### 2.4.1.3.1 Team A – Team Excellence

##### 2.4.1.3.1.1 The team

- **J.B.:** Finance Manager at Swoove Tech
- **A.S.:** master's student at KNUST
- **M.L.:** Founder @ Milutech Solutions
- **M.D.L.:** Team member

#### **2.4.1.3.1.2 Problem and market research**

In Ghana, farmers struggle to sell their products (Ghana: 700.000.000\$/year in post-harvest losses; Africa: 4billion \$)

The main problem is the unreadiness of the market, and particularly the fact that customers struggle to reach farmers and vice versa due to:

- Poor road networks
- Language differences/varying competencies: not all farmers can speak and write English
- Low tech knowledge of farmers

#### **2.4.1.3.1.3 Proposed solution and business model**

An AI-powered, user-friendly mobile App for farmers, customers and transporters.

The proposed solution is specifically aimed at solving the issues of low tech and language barriers.

The platform connects producers and consumers through logistics partners, following these steps:

- Step 1: Easy sign in for the customer
- Step 2: Customer is taken to the page showing the available produce
- Step 3: Customer clicks on the selected produce, e.g., millet
- Step 4: Customer is taken directly to the farmer offering that product with whom the customer can discuss via chat box (with both text and audio options); a language translator is available in case customer and farmer speak different dialects
- Step 5: Once the order is placed, the farmer contacts the delivery truck
- Step 6: The delivery truck collects the produce from the farmer and delivers it to the customer at the indicated location
- Step 7: Customer can make the payment and provide feedback

The solution is unique in that both customers and producers can use the platform via an AI-powered chatbot trained on local languages and dialects, both through a smartphone/PC application and through SMS. The chatbot's AI is interfaced with the platform's database, and therefore it can populate the database (inserting orders, modifying information and so on) following instructions given by users using natural language.

This particularly benefits low tech-savvy farmers: through the AI chatbot they can access the full functionality of the platform, thereby

- Listing their available products on the platform
- Receiving and managing orders

All while using their everyday language and without needing to own a smartphone.

A further development would be to implement an AI customer service call center, thus making it possible to use the platform's functionality via telephone calls with an AI assistant.

The business model consists of:

- Subscription fees
- Transaction commissions
- Delivery fees

#### **2.4.1.3.2 Team B - Agrilogix**

##### **2.4.1.3.2.1 The team**

- **J.O.:** IT expert with experience on building and scaling IT products
- **D.A.R.:** CEO and Founder for DeeTek. He is skilled in business development and sales
- **D.M.:** Team member

##### **2.4.1.3.2.2 Problem and market research**

The team decided to restrict the geographic scope of the issue at hand to Ghana, a country with which team members have substantial familiarity. The disconnect between producers, logistics providers and retailers leads to loss of product value, shortages on the retailer's side, and increased post-harvest losses on the producer's side. In particular:

- Farmers face increased post-harvest losses and therefore increased production costs. In Ghana 30% of the population faces food shortages; meanwhile however, almost 50% of the country's agricultural products go to waste due to post-harvest losses.
- Inefficient logistics leads to significant increase in transportation costs (up to 100% increase)
- Retailers in turn face shortages and increase prices due to untimely stocking (up to 50% price inflation due to shortages)

##### **2.4.1.3.2.3 Proposed solution and business model**

Digital logistics platform connecting producers to retailers. It's conceptualized as the B2B equivalent of Uber Eats, connecting producers and retailers through logistics providers. The platform bypasses storage middle man in favor of logistics transporter - storing products with producers, but delivering directly to retailers as needed.

In practice, the platform will function as follows:

- Retailers browse through nearby producers and their available products
- Retailers place an order
- Producers confirm their product's availability for delivery
- Logistics providers confirm their availability to deliver the order

This idea produces value for all involved stakeholders, in particular:

- Producers have easier access to the market, thus increasing sales
- Logistics providers can achieve better operational efficiency with positive economic and environmental impact
- Retailers have access to market information concerning available producers and products

The proposed business model is composed of:

- Producers: 15% commission on transactions
- Logistics providers: 10% commission fulfilments

- Retailers: flat fee (5 Ghc) on each transaction

#### **Why are you the best team to develop this idea?**

- Team members are on-the-ground in the problem's geographic area ( Ghana ), with lots of knowledge about the market there.
- Product development experience and supporting tech solutions
- Sales experience

### **2.4.1.3.3 Team C – The Achievers**

#### **2.4.1.3.3.1 The team**

- **N.O.:** Software Engineering student
- **R.A.:** Digital Marketer and warehouse supervisor
- **A.M.:** Agricultural entrepreneur

#### **2.4.1.3.3.2 Problem and market research**

The main problem is the mismatch between informal sector producers, retailers, and logistical vendors, which limits the growth and potential of informal retailers and producers and results in lost job opportunities for small-scale logistical providers and other service providers.

According to a report by the World Bank, improving the coordination between stakeholders in the informal sector can increase productivity, income, and jobs. The report recommends the establishment of a local network to facilitate communication between the stakeholders, the provision of support services to small-scale businesses, and the improvement of market information systems. Additionally, the report suggests the improvement of physical infrastructure, such as roads and electricity, to enhance access to markets and logistical support.

A study by the International Labour Organization (ILO) found that improving access to markets is crucial for the growth and sustainability of the informal sector. The study suggested that interventions aimed at improving market access, such as improving communication and coordination between stakeholders, could lead to significant benefits for informal sector businesses. Another study by the United Nations Development Programme (UNDP) found that supporting informal sector businesses to improve their marketing and logistics capabilities could lead to increased sales and profitability.

In conclusion, the lack of matching between informal sector producers, retailers, and logistical vendors is a significant problem in rural areas and informal settlements. To address this problem, it is essential to improve communication and coordination between stakeholders and provide support and training to informal sector businesses. By doing so, we can help ensure the sustainability and growth of the informal sector, which is vital for creating jobs and promoting economic development in Sub-Saharan Africa.

#### **2.4.1.3.3.3 Proposed solution and business model**

USSD platform allowing retailers to browse through available producers and products, place orders and schedule delivery.

The platform works as follows:

- The retailer dials a designated USSD code on her mobile phone to access the platform.
- She is prompted to input her location, the type of products she wants to order, and the quantity.
- The platform matches the retailer's order with available producers and distributors within her vicinity.
- The producers and distributors receive a notification of the retailer's order, and they confirm the availability of the requested products and negotiate the price.
- The retailer receives a notification of the available products, prices, and delivery options.

- If The retailer accepts the offer, the platform arranges for the products' delivery to her shop through a logistics provider.
- The logistics provider receives a notification of the delivery request, and they arrange for the products' transportation from the producer or distributor to the retailer's shop.
- The retailer receives the products, confirms their quality, and pays the agreed price through the USSD platform.
- The platform collects data on the transactions, including the products ordered, prices, and delivery time, to inform producers and distributors' future product planning and pricing.
- Through the USSD platform, the retailer can access a wider range of products at competitive prices and reduce her logistics challenges. The platform also enables producers and distributors to reach more retailers within their vicinity, increasing their market penetration and revenue.

#### Value Proposition:

- Convenience: The USSD platform provides a simple and accessible way for retailers like Fatima to access a wide range of products.
- Efficient Matching: The platform matches retailers with nearby producers and distributors, ensuring timely availability of products.
- Competitive Pricing: By allowing producers and distributors to negotiate prices, the platform enables retailers to obtain competitive offers.
- Logistics Support: The platform coordinates product delivery through logistics providers, reducing the burden on retailers.

#### Customer Segments:

- Retailers: Small and medium-sized retailers who are looking for a convenient way to source products and improve their logistics operations.
- Producers and Distributors: Businesses that want to expand their market reach by connecting with a larger number of retailers within their vicinity.

#### Key Activities:

- Platform Development: Build and maintain the USSD platform, including user interface design, order management, and integration with logistics providers.
- Onboarding and Verification: Validate and onboard producers, distributors, and retailers onto the platform, ensuring their credibility and legitimacy.
- Matching and Notifications: Develop algorithms to match orders with suitable producers and distributors and send timely notifications to all parties involved.
- Logistics Coordination: Collaborate with logistics providers to facilitate smooth and efficient product transportation and delivery.

#### Key Resources:

- Technology Infrastructure: Servers, databases, and software systems required to operate the USSD platform securely and reliably.
- Partnerships: Establish partnerships with producers, distributors, and logistics providers to ensure a wide range of products, efficient delivery, and competitive pricing.

#### Revenue Streams:

- Commission: Charge a commission fee on each transaction conducted through the platform, based on the total value of the order.



- Subscription: Offer premium subscription plans to retailers, providing additional benefits such as priority access to products or discounted commission rates.

#### Cost Structure:

- Technology Development and Maintenance: Invest in the development, enhancement, and maintenance of the USSD platform.
- Operations and Support: Allocate resources for customer support, order management, and logistics coordination.
- Marketing and Partnerships: Promote the platform through marketing campaigns and establish partnerships with producers, distributors, and logistics providers.

#### Channels:

- Mobile Network Operators: Collaborate with mobile network operators to make the USSD platform accessible to a wide range of mobile phone users.
- Retailer Outreach: Engage with retailers through targeted marketing efforts, highlighting the benefits and convenience of the platform.
- Industry Partnerships: Forge partnerships with industry associations or trade organizations to gain credibility and reach a larger audience of producers and distributors.

#### Key Partnerships:

- Producers and Distributors: Collaborate with a variety of producers and distributors to ensure a diverse range of products available on the platform.
- Logistics Providers: Partner with reliable logistics providers to handle product transportation and delivery efficiently.
- Mobile Network Operators: Work closely with mobile network operators to leverage their network infrastructure and reach a broader user base.

This business model enables the USSD platform to generate revenue through transaction-based commissions while providing value to retailers, producers, and distributors. By facilitating efficient product sourcing, competitive pricing, and streamlined logistics, the platform creates a mutually beneficial ecosystem for all stakeholders involved.

### 2.4.1.3.4 Team D – Logic Titans

#### 2.4.1.3.4.1 The team

- **A.M.G.:** University Student
- **A.B.:** University graduate
- **A.A.:** University Student
- **M.K.:** Entrepreneur and founder
- **N.A.B.:** Administrative specialist
- **E.A.:** business development executive

#### 2.4.1.3.4.2 Problem and market research

Smallholder farmers in Zambia suffer from mismatch between them, retailers and logistical vendors. They lack access to:

- Reliable and efficient logistical services
- Market information

- Financial services
- Storage facilities

As a result, they usually cannot avoid significant post-harvest losses that stump profits and therefore opportunity for growth: post-harvest losses in certain crops in Zambia range from 20% to 40%, resulting in significant economic losses for farmers. Furthermore, the limited access to markets is often presided by middlemen who appropriate large portions of profits, thus hindering fair income generation.

These issues on the suppliers' side translate into lack of access to diverse and high-quality products for retailers. In Zambia in particular:

- Retailers experience stockouts and reduced product availability due to an unreliable and inefficient supply chain.
- Logistical vendors struggle to find profitable routes, particularly in remote or underdeveloped areas.
- Inefficient transportation and supply chain systems increase costs and reduce profit margins for agricultural stakeholders.

#### **2.4.1.3.4.3 Proposed solution and business model**

Digital platform that connects informal sector producers with retailers and logistical vendors, providing producers with a marketplace to sell their products and retailers with access to a diverse range of products from informal sector producers. The logistical vendors will be able to connect with producers and retailers, facilitating the transportation of products across the supply chain.

In essence, the platform functions as an e-commerce application, through which:

- Retailers can visualize nearby producers and available products
- Retailers place an order for produce
- Producers can see and respond to orders by dispatching produce through logistical vendors

The solution is tailored to the needs of informal sector producers and provides them with a platform to sell their products directly to retailers, bypassing the middlemen who often take a large portion of their profits. This creates more income for producers and provides retailers with access to a wider range of products.

The value is twofold: first, the platform provides a market for informal sector producers, enabling them to sell their products and earn a fair income. Second, retailers gain access to a diverse range of products, enabling them to stock their stores with unique and high-quality products.

The team is convinced that the solution is feasible and timely, considering

- recent advances in technology and digital connectivity in Zambia
- a growing demand for efficient logistical services

In terms of **business model**, the team expects their revenue to come from:

- Service fees: 5% of transactions
- Commissions from logistics vendors: 20% commission
- Premium features: subscription fees for additional features and services
- Advertisement and sponsorships
- Data insights and analytics: data reports available to subscribers

## 2.5 CO-CREATION LAB#5: TOPIC, PARTICIPANTS, RESULTS

### 2.5.1.1 Topic description

Humanitarian Aid is usually short-term help until the long-term help by the government and other institutions replaces it. Among the people in need are the homeless, refugees, and victims of natural disasters, wars, and famines. Humanitarian relief efforts are provided for humanitarian purposes and include natural disasters and human-made disasters. The primary objective of humanitarian aid is to save lives, alleviate suffering, and maintain human dignity. Last mile logistics in humanitarian aid refers to the transportation and delivery of goods and services from distribution centers to the destination, often in remote or challenging environments.

Humanitarian aid delivery in Africa is a critical issue that needs to be addressed due to several reasons:

- **Humanitarian Impact:** Delays, inefficiencies, or failures in last mile logistics directly affect the timely provision of life-saving resources such as food, medicine, and shelter, impacting the well-being and survival of beneficiaries.
- **Vulnerable Populations:** Timely and effective aid delivery is crucial for vulnerable populations, including refugees, internally displaced persons, and communities affected by conflict, natural disasters, or poverty, as they rely on assistance to meet their basic needs and restore their livelihoods.
- **Resource Optimization:** Optimizing last mile logistics allows humanitarian organizations to make the most efficient use of limited resources, stretching them further to reach more beneficiaries and provide aid to a larger number of communities in need.
- **Accountability and Transparency:** Solving the last mile logistics problem enhances accountability and transparency by implementing efficient tracking systems and documentation, ensuring that aid reaches the intended beneficiaries and reducing the risk of mismanagement or diversion.
- **Scalability and Preparedness:** Addressing last mile logistics challenges improves the scalability and preparedness of humanitarian operations, enabling organizations to respond rapidly and efficiently to emerging crises or increased needs, ensuring timely assistance to affected communities.
- **Local Capacity Building:** Solving the last mile problem involves involving and training local staff, volunteers, and organizations in logistics operations, empowering communities to take an active role in their own development, enhancing resilience, and reducing dependency on external aid.

Solving the last mile logistics problem in humanitarian aid delivery in Africa is important to save lives, meet urgent needs, optimize resource utilization, ensure accountability and transparency, enhance preparedness and scalability, and empower local communities. By addressing this problem, humanitarian organizations can improve the overall effectiveness and success of their interventions, ultimately making a positive impact on the lives of those in need.

TABLE 6 - CO-CREATION LAB #5 PROGRAMME

| Date   | Time         | Item description | Facilitators   |
|--|--------------|------------------|--|
| <b>5<sup>th</sup> CO-CREATION LAB</b>  |              |                  |  |
| <b>“Enhancing Last Mile Logistics in Humanitarian Aid Delivery across Africa.”</b> |              |                  |  |
| 27/06/2023   | 1 – 5 pm GMT | Session 1        | <ul style="list-style-type: none"> <li>● Helena Habdija</li> <li>● Claudia Baracchini</li> <li>● Samantha Beekman</li> </ul> |
| 29/06/2023   | 1 – 5 pm GMT | Session 2        |  |
| 04/07/2023   | 1 – 5 pm GMT | Session 3        |  |

|            |              |           |   |
|------------|--------------|-----------|---|
| 06/07/2023 | 1 – 5 pm GMT | Session 4 | <ul style="list-style-type: none"> <li>Charlotte Edzard</li> <li>Giovanni Barbetta</li> </ul> |
|------------|--------------|-----------|---|

### 2.5.1.2 Participants

Lab #5 collected 48 applications, of which 32 were accepted. Of these, 22 people were present and 11 qualified for the certificate of participation.

The lab saw the predominance of Ghanaian and male participants.

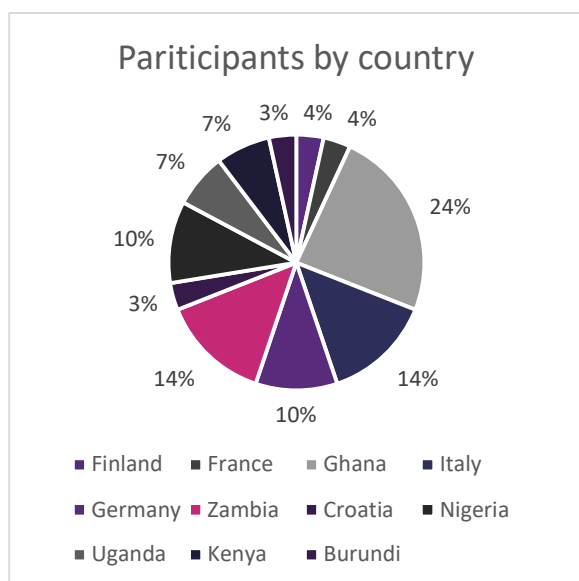


FIGURE 13 - PARTICIPANTS TO LAB #5 BY COUNTRY OF ORIGIN

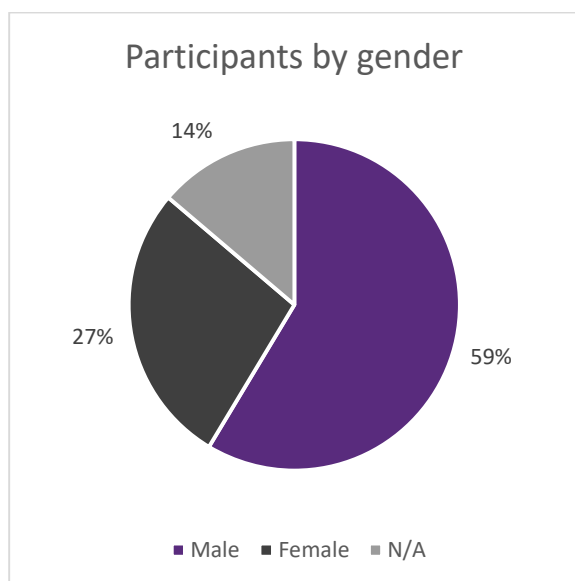


FIGURE 14 - PARTICIPANTS TO LAB #5 BY GENDER

### 2.5.1.3 Results

What follows is a synthesis of the work of the teams. The information is gathered through all the material generated by the team during the course of the Lab, and especially the team's pitch to the jury in the final session. The work is presented in three sections:

1. the team, sketching the members' professional profiles
2. Problem and market research, detailing the team's approach to the problem expressed in the problem statement and the identified market
3. Proposed solution and business model, detailing the characteristics of the identified solution, the chosen business model and indications of financial needs

Participants were initially divided into four work groups; at the end of the second session, though, participants to group B were redistributed among the other groups in order to favour the constitution of larger groups.

#### **2.5.1.3.1 Team A - EarlyBird**

##### **2.5.1.3.1.1 The team**

- **P.A.:** sw development engineer
- **A.A.:** HR management student
- **L.M.:** supply chain and logistics student

##### **2.5.1.3.1.2 Problem and market research**

The team decided to use a case study in order to develop their solution, namely the collapse of the Lwera bridge in Uganda as a consequence of the flooding of river Katonga. This disrupted last-mile logistics and vital transportation in and out of Uganda and the capital. An alternative route to Masaka via Mpigi-Ssembabule was created; however, this route was very time-consuming and an inefficient alternative. The collapse cut off access to several refugee camp areas in western Uganda, the DRC, Tanzania, Rwanda and Burundi.

Cause: The Lwera bridge was destroyed cutting off the Masaka highway hence forcing the use of other alternative inefficient roads. It is important to tame behavior because it has an increasingly ignored impact on climate change. In 2020, a famous university Professor at Makerere University warned of the catastrophic consequences as a result of socially indisciplined practices that could endanger the environment.

The Masaka-Mbarara highway is a famous gateway to Tanzania, Burundi, Rwanda and DRC giving access to refugees and cargo in and out of Uganda. International trade is a big influence along this corridor which negatively impacts humanitarian logistics aid.

Consequences:

Unwanted alternative routes that are inefficient and ineffective lead to extra unwanted costs incurred in the inevitable.

Shortage of goods due to long delivery timelines which leads to high costs of goods in the short run.

A high likeliness of cargo theft during based on using alternative longer routes. The Mpigi-Ssembabule route is estimated double the Kampala-Masaka highway on a 93.7:184 km ratio.

Destruction of the only already poor accessible roads (the Mpigi-Ssembabule road)

Businesses depending on this last-mile delivery suffer continuity

International trade is disrupted

Transportation fares increased excessively eg for kampala to masaka transport fare increased from 20,000ugx to 70,000ugx and for logistics trucks transport was increased by 500usd per truck

Increased costs due to delivery mileage

No access to basic needs due to scarcity and yet prices are high

Access to schools by some children to and from school, teachers' accessibility to schools to offer services in the western region. This was school time. Some of these children depend on aid. Education is a need that no one should be forced to go without.

#### **2.5.1.3.1.3 Proposed solution and business model**

The solution developed by the team consists of a delivery service exploiting a fleet of drones to deliver high-priority, low-mass items (e.g., medications) to refugee camps impacted by the disruption of the road network due to the collapse of the Lwera bridge. The team aims to position itself as a deliver/logistics partner for NGOs involved in servicing the refugee camps in the area.

The proposed business model is based on delivery fees, the amount of which depends on:

- Weight and dimensions of the parcel
- mode of transport (required drone size)
- Value of goods
- Distance to destination
- Delivery area (warzone, presence of other dangers)

The costs are instead projected to be:

- Buy and service a fleet of drones
- Hiring of specialist engineers to operate drones (AI, software, hardware)
- Hiring of staff to handle dispatch orders

#### **Team B – Winn Africa!**

Team members reassigned to other groups (see above).

#### **2.5.1.3.2 Team C – RapidRoutes**

##### **2.5.1.3.2.1 The team**

- **B.K.:** software developer
- **D.C.:** mathematics instructor @ Copperbelt university
- **P.M.C.:** professional in regulation and compliance for transport
- **E.O.:** entrepreneur
- **E.E.:** international business expert
- **N.K.:** Legal transcriber and data analyst

##### **2.5.1.3.2.2 Problem and market research**

The team decided to focus on the issue of water scarcity in South Sudan, and specifically for the country's nomadic communities.

Number of people who do not have access to safe water in South Sudan: 41% of the population, or approximately 4.6 million people (UNICEF, 2022).

According to the World Bank, 6.6% of South Sudanese adults are employed in nomadic work. This means that about 383,000 people in South Sudan are nomads. The majority of South Sudanese nomads are from the Dinka, Nuer, and Murle ethnic groups. These groups are found in the country's north and east, where there are large areas of open grassland and savanna. Nomads in South Sudan typically live in small, portable settlements called kraals. These kraals are made up of a few huts and are often surrounded by a fence or thornbush barrier.

#### **2.5.1.3.2.3 Proposed solution and business model**

Value proposition:

- Empowering Nomadic communities with access to clean water and improved livelihoods via partnerships with humanitarian aid delivery organizations.
- Real-time data tracking and prediction of migratory routes using UAVs which can be contracted to aid organizations for water delivery.
- Tracking climate predictions such as weather and flood forecasts to determine the safest and most feasible migration routes for the upcoming season

Customer segments:

- NGOs and humanitarian organizations working on water scarcity solutions.
- Government agencies responsible for water management and distribution.
- Local communities and nomadic populations in South Sudan.

Revenue streams:

- Subscription-based access to the data tracking and analytics web platform
- Grants and funding opportunities.
- Tailored service contracts for custom development and integration. SaaS
- Contracting UAVs to humanitarian organizations for direct aid delivery.
- New revenue streams as R&D continues.

Cost structure:

Research and development costs. - Infrastructure and technology maintenance. - Operational costs. - Marketing and outreach expenses. - Human resources and talent acquisition

#### **2.5.1.3.3 Team D – Young Inspirers**

##### **2.5.1.3.3.1 The team**

- **H.H.:** Team member
- **N.P.:** Pharmacist and farmer
- **L.M.:** Data analyst and entrepreneur
- **M.M.K.:** PhD student

##### **2.5.1.3.3.2 Problem and market research**

The issue of early childhood marriage is a complex societal challenge characterized by a set of contributing factors and far-reaching implications. An objective examination of this problem sheds light on the underlying dynamics.

Underlying Causes:

Poverty is identified as a significant driver, as families perceive early marriage as a strategy to alleviate financial strain. Paradoxically, it is also viewed as a protective measure for daughters against violence. Limited financial support from humanitarian agencies, entrenched cultural influences, restricted educational opportunities leading to girls dropping out after grade 6, and technological gaps, such as the absence of reliable telecommunication networks and internet access, collectively contribute to the prevalence of early childhood marriage.

#### Consequences:

The outcomes of early childhood marriage are multifaceted and impact various aspects of individuals' lives. Disruption of education is a common consequence, hindering academic progress. Additionally, the risk of HIV infection rises, and instances of human rights violations are reported. Refusal to comply with early marriage norms may lead to incidents of violence.

#### Key Statistical Insights:

Statistical data underscores the severity of the issue, revealing that girls under the age of 18, and in some cases even under 15, are compelled into early marriages. Notably, 41% of girls on the African continent are affected, with financial disparities playing a central role, particularly in financially unstable rural areas.

#### Contextual Challenges:

A contextual examination uncovers challenges that impede effective intervention. These challenges include a lack of security, limited knowledge about the local environment, resource constraints, inadequate government interventions, and insufficient infrastructure, limiting access to potential solutions.

#### 2.5.1.3.3.3 *Proposed solution and business model*

Addressing the complex challenge of early childhood marriage requires innovative solutions that integrate technology, partnerships, and sustainable funding models. The following proposal outlines a comprehensive approach:

##### GIS Integration:

Leverage Geographic Information System (GIS) technology to visualize the dimensions of early childhood marriage. This entails creating a platform for reporting incidents while integrating with existing channels and technologies in last-mile logistics. GIS serves as a powerful tool for risk assessment and strategic intervention.

##### Collaboration with Existing Initiatives:

Forge partnerships with existing initiatives and non-governmental organizations (NGOs) actively engaged in combating early childhood marriage. Seek financial support from these partners, fostering a collaborative ecosystem to amplify the impact of intervention efforts.

##### Diversification of Revenue Models:

Ensure the sustainability of the proposed solution by diversifying revenue streams through the following strategies:

##### NGO Partnerships:

Collaborate with NGOs operating in crisis areas, sharing logistics resources such as trucks to optimize intervention efforts.

Integrate with established routes, leveraging partnerships with organizations like UNICEF to maximize reach.

##### Sponsoring Partnerships:



Engage sponsoring partners, including brands, to support the initiative. This can involve branding on the website, trucks, and other promotional materials to generate financial backing.

Training Workshops for NGOs:

Conduct workshops to train workers from other NGOs on the intricacies of early childhood marriage.

Implement a "train-the-trainer" format, where participants pay a fee for the valuable training sessions.

Regular Reports and Subscription Model:

Publish regular reports on the developments of early childhood marriage, offering restricted access.

Generate revenue by selling these reports through subscription or a fee-based model.

Grant Applications:

Pursue grant opportunities on government levels and from NGOs to secure additional funding for sustained operations.

## 2.6 CO-CREATION LAB#6: TOPIC, PARTICIPANTS, RESULTS

### 2.6.1.1 Topic description

E-commerce in Africa's last-mile logistics services encounters critical challenges that hamper its growth and economic impact:

1. **Limited Access to Financial Services:** lack of formal banking and reliable digital payment systems hinder online transactions and cash-on-delivery processes. Retailers also struggle to access credit at scale. Whilst many retailers are provided such by related or tested Distributors or Wholesalers, institutions (banks etc) are yet to find a way to offer such services es on a mass scale, with or without collateral.
2. **Inadequate Infrastructure and Connectivity:** poor road networks and limited internet access in rural areas disrupt the movement of goods and communication with customers resulting in cost fluctuations and geographic pricing disparities.
3. **Diverse Geographical and Demographic Landscape:** Africa's varied terrain demands tailored last-mile delivery solutions for urban, rural, and semi-urban areas emphasizing the importance of local warehousing for large-scale deliveries.
4. **Inefficient Supply Chain and Logistics:** Supply chain inefficiencies, including weak inventory management and real-time tracking, lead to delays and higher operational costs. Achieving economies of scale is critical in mitigating logistics costs per unit.
5. **Security and Trust Concerns:** Package theft, fraud, and customer apprehension regarding online privacy undermine confidence in e-commerce and logistics services. Addressing these challenges requires the incorporation of risk and loss acceptance principles, as well as the development of insurance mechanisms.

In an ideal e-commerce last-mile logistics scenario in Africa, the process should be seamless, efficient, and customer-centric, featuring the following key elements:

1. **Smooth Online Shopping Experience:** User-friendly platforms with a wide range of products and clear descriptions and images, including stock on hand and expected duration of delivery.
2. **Reliable and Secure Payment Systems:** Various digital payment options with trustworthy gateways and encryption provide alternatives to traditional Cash on Delivery or Consignment-based transactions. Penalties and procedures are established for cases where items are delivered but are no longer needed or cannot be paid for.

3. Real-time Tracking and Notifications: Regular updates on order status and delivery time through multiple channels & GPS tracking.
4. Efficient Order Fulfilment: Prompt picking, packing, and dispatching of orders to minimize delays. Optimized storage facilities ensure prompt delivery.
5. Optimal Warehousing and Inventory Distribution: Strategically located facilities for faster and cost-effective delivery. Approximately 10 locations could suffice for more than 80% effectiveness. PIN activated lockers at strategic locations for access to smaller towns should be looked at (system exists in Poland, where DHL uses certain kiosks and Post Offices to locate their lockers).
6. Route Optimization: Advanced algorithms to minimize transit time and fuel consumption.
7. Diverse Delivery Options: Standard, express, and convenient time slots for customers to choose from. Focus should be on optimum delivery and an express (premium) service.
8. Local Partnerships: Collaborations with local delivery services for improved reach in remote areas. Local specialists have the best reach and lowest time to client.
9. Excellent Customer Service: Responsive and helpful support throughout the shopping and delivery process.
10. Customer Feedback and Improvement: Actively seeking feedback for continuous service enhancement.
11. Transparent Return and Refund Policies: Clear and trust-inspiring return and refund procedures.
12. Aggregation of product supply: Manufacturers have traditionally focussed on supplying their own products and using this as a unique strength of their business. The introduction of non-competitive aggregators has enabled basket sizes to increase and hence deliver to become more efficient and affordable.

By implementing these practices, e-commerce in last-mile logistics in Africa could become a reliable, efficient, and customer-focused system, fostering growth and development in the region.

The problem context of last-mile logistics in e-commerce in Africa is shaped by several interconnected factors:

1. E-commerce Growth: The rapid growth of e-commerce in Africa has led to an increased demand for last-mile delivery services. As more businesses and customers engage in online transactions, the volume of packages requiring delivery has surged.
2. Digital Transformation: The digital transformation of businesses and the rise of online shopping have changed consumer behaviour, leading to a preference for the convenience of e-commerce. However, this shift has also posed new challenges for logistics providers in meeting customer expectations. Trust has also been established in such transactions which was not there previously.
3. Infrastructure Limitations: Many regions in Africa face infrastructure limitations, including poor road networks and limited internet connectivity. These factors contribute to delays, longer delivery times, and difficulties in reaching remote areas.
4. Payment and Financial Inclusion: Limited access to formal banking and digital payment systems in certain regions of Africa has hindered the adoption of secure and efficient payment methods, leading to reliance on cash-on-delivery and complicating the payment process for both customers and logistics providers. Service rejection at the point of delivery is up to 30% and needs to be overcome to allow more efficient service.
5. Geographical Diversity: Africa's vast geographical diversity, encompassing urban, rural, and semi-urban areas, presents a complex landscape for last-mile logistics. Each area requires tailored delivery solutions to address specific challenges.
6. Supply Chain Inefficiencies: Inefficient supply chain management, including inadequate inventory systems and tracking capabilities, contributes to delays, increased costs, and customer dissatisfaction.
7. Security and Trust Issues: E-commerce faces security and trust challenges, such as package theft, fraud, and customer concerns about sharing personal information online. These issues impact customer confidence in the reliability of online shopping and logistics services.
8. Environmental Impact: Traditional delivery methods, such as conventional fuel-powered vehicles, contribute to carbon emissions and environmental degradation. The lack of eco-friendly delivery alternatives adds to the environmental impact of last-mile logistics.

9. Inefficient Government Transportation Services: Trains that are being developed have not been able to add significant value, especially due to thieves and gangs holding them up and limiting access to required final destinations.

Overall, the confluence of these factors has led to challenges in providing efficient, reliable, and customer-centric last-mile logistics services in Africa's e-commerce

The problems in last-mile logistics in e-commerce in Africa have multiple sources, both technical and human:

#### Technical Causes:

1. Limited Infrastructure: Insufficient Road networks, inadequate transportation facilities, and poor internet connectivity hinder the smooth movement of goods and effective communication, leading to delivery delays and operational challenges.
2. Outdated Technology: Inefficient use of technology, outdated logistics systems, and lack of integration between various platforms can lead to suboptimal delivery routes, inventory management, and real-time tracking.
3. Payment System Gaps: Limited access to formal banking services and secure digital payment platforms can result in reliance on cash-on-delivery, leading to payment delays and potential fraud risks.
4. Data Management Issues: Inadequate data analytics and tracking mechanisms may hinder efficient route optimization, inventory planning, and demand forecasting.
5. Environmental Impact: Reliance on conventional fuel-powered vehicles for deliveries contributes to carbon emissions and environmental degradation, impacting sustainability.

#### Human Causes:

1. Lack of Training and Skill: Insufficiently trained staff can lead to errors in order fulfillment, poor customer service, and inadequate handling of logistics challenges.
2. Inadequate Customer Support: A lack of responsive and customer-centric support can result in miscommunication, dissatisfaction, and diminished customer trust.
3. Security and Theft: Human factors, such as improper handling of packages or inadequate security measures, can contribute to package theft and pilferage during transit.
4. Resistance to Change: Some logistics providers may be hesitant to adopt new technologies or optimize operations, hindering process improvements and innovation.
5. Insufficient Collaboration: Lack of collaboration between logistics companies, e-commerce platforms, and local stakeholders may hamper efforts to address infrastructural challenges and enhance last-mile delivery capabilities.

Addressing these technical and human causes requires a comprehensive approach that involves investing in technology and training, fostering a customer-centric mindset, promoting sustainable practices, and establishing effective partnerships within the e-commerce ecosystem.

The problem of last-mile logistics inefficiencies in Africa's e-commerce sector affects various stakeholders directly or indirectly, including customers, e-commerce companies, logistics providers, local retailers, local communities, government bodies, employment, and the environment. Addressing these challenges can lead to improved customer satisfaction, reduced operational costs, enhanced economic development, and positive environmental impacts in the region.

The last-mile logistics inefficiencies in Africa's e-commerce sector have significant implications across various dimensions. Structurally, it limits market reach and contributes to urban congestion. Economically, it leads to increased operational costs, reduced competitiveness, and lost sales opportunities. Socially, it causes customer dissatisfaction and restricts access to goods and services for remote communities. Environmentally, it results in increased carbon emissions. Additionally, there are financial costs, including direct financial losses, reputational damage, and the need for infrastructure investment to address these challenges. Solving these inefficiencies is crucial for fostering growth, competitiveness, and sustainability in the African e-commerce ecosystem.

TABLE 7 - CO-CREATION LAB #6 PROGRAMME

| Date  | Time         | Item description | Facilitators   |
|---|--------------|------------------|--|
| <b>6<sup>th</sup> CO-CREATION LAB</b><br><b>“Improving e-commerce last mile delivery in Africa”</b> |              |                  |  |
| 03/10/2023  | 1 – 5 pm GMT | Session 1        | <ul style="list-style-type: none"> <li>● Helena Habdija</li> <li>● Claudia Baracchini</li> <li>● Marian-Rhoda Akondor</li> <li>● Carmen Antuna Rozado</li> <li>● Misozi Chisenga</li> <li>● Giovanni Barbetta</li> </ul> |
| 05/10/2023  | 1 – 5 pm GMT | Session 2        |  |
| 10/10/2023  | 1 – 5 pm GMT | Session 3        |  |
| 12/10/2023  | 1 – 5 pm GMT | Session 4        |  |

### 2.6.1.2 Participants

Lab #6 collected 59 applications, of which 45 were accepted. Of these, 38 people were present and 14 qualified for the certificate of participation.

The lab saw the predominance of Zambian and male participants.

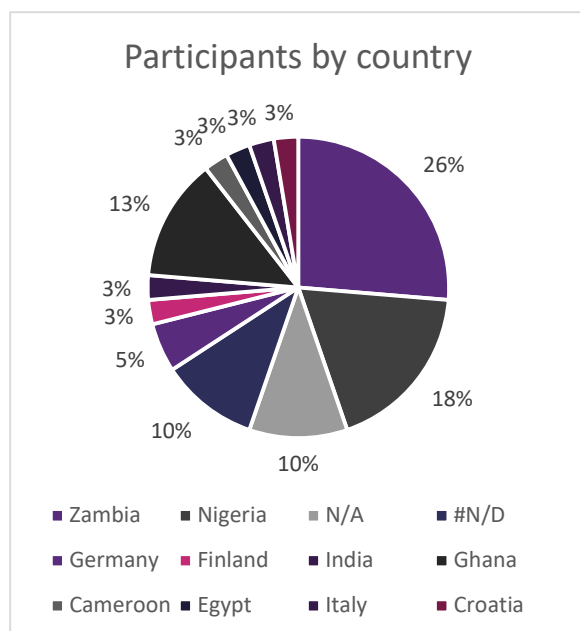


FIGURE 15 - PARTICIPANTS TO LAB #6 BY COUNTRY OF ORIGIN

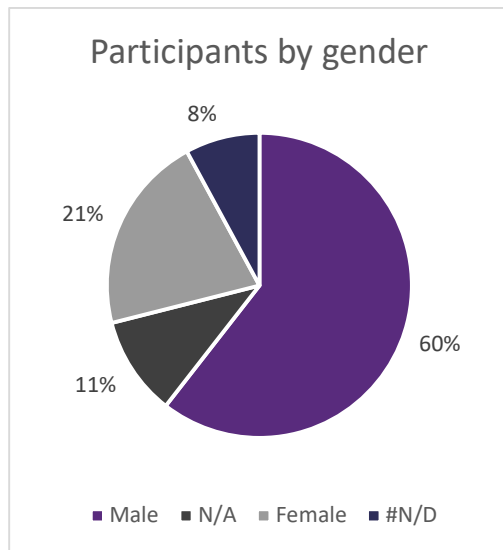


FIGURE 16 - PARTICIPANTS TO LAB #6 BY GENDER

### 2.6.1.3 Results

What follows is a synthesis of the work of the teams. The information is gathered through all the material generated by the team during the course of the Lab, and especially the team's pitch to the jury in the final session. The work is presented in three sections:

1. the team, sketching the members' professional profiles
2. Problem and market research, detailing the team's approach to the problem expressed in the problem statement and the identified market
3. Proposed solution and business model, detailing the characteristics of the identified solution, the chosen business model and indications of financial needs

#### 2.6.1.3.1 Team A – Meat Deal

##### 2.6.1.3.1.1 The team

- **G.A.:** Android developer and mentor
- **D.G.:** Project manager and analyst
- **S.L.:** Product manager
- **A.M.M.:** Economist and independent consultant
- **G.N.:** UX Designer
- **C.M.:** Combustion and energy expert
- **A.:** Materials engineer and Entrepreneur

##### 2.6.1.3.1.2 Problem and market research

Many e-commerce sellers in Ghana struggle with expensive and unreliable delivery services, and there's a significant issue with scammers on popular social media platforms.

The team chose Ghana as their market of reference. According to the team's research, more than 3,4 million Ghanaians participate in the sale of items online each year, but delivery of these goods is often hectic and sometimes more expensive than the item itself.

### 2.6.1.3.1.3 *Proposed solution and business model*

The team's idea is to use trotros (small public transport vans which follow specific routes within cities and nearby towns) to deliver goods. Trotros are widely used, as more than 70% of Ghanaians use trotros in their daily lives. The team has found that 22.4 million Ghanaians use trotros daily. Of these, 10.1 million use Meta products (Facebook, Whatsapp, Instagram). Of these, 3.7 million are active in the sale and purchase of items through e-commerce platforms.

One of the team members is the founder of a startup which operates a fleet of trotros and has digitalized the process of planning and reserving seats on trotros and taxis in Ghana. The team aims to further implement the service by having the trotros also act as delivery vehicles, whereby customers can retrieve their packages directly at trotro stations throughout Ghana (and particularly Accra).

The team also aims to develop an e-commerce app to integrate all stages of the deal, from purchase to payment to delivery.

The team's solution provides several benefits, the most prominent of which are

- Affordable delivery
- E-commerce integration
- Reliable pickup stations
- Escrow payment system
- Access to information concerning the delivery

The team has identified 4 competitors: SkyNet Express, Bolt, Uber and TroFare. SkyNet Express is not identified as a strong competitor because of its very limited market penetration in Ghana; Bolt and Uber offer delivery services but are significantly more expensive since they rely on small private vehicles; TroFare is another app which digitalizes the trotro business but does not seem to be active in the delivery business yet.

The business model will rely primarily on

- delivery fees (projected to be 7GHS/0.56 EUR, of which 3 go to the driver, 3 to the Station master and 1 to Meat Deal)
- variable component of pricing varying based on product price, weight and travelled distance
- Subscription fee for vendors
- Subscription fee for premium customers

The team has developed an initial 3-year plan which requires 950,000 GHS (76,450 EUR) needed to develop and promote the e-commerce platform and purchase an initial stock of 4 smart locks to be placed in trotro stations.

### 2.6.1.3.2 *Team B - Last Mile*

#### 2.6.1.3.2.1 *The team*

- **P.K.D.:** Software developer and founder
- **L.M.:** IT specialist
- **J.A.:** Logistics operations expert
- **D.C.:** Entrepreneurial problem solver

#### 2.6.1.3.2.2 *Problem and market research*

The team decided to tackle the issue of logistical inefficiencies in agriculture; more specifically, they want to approach the challenges concerning the transportation of harvested goods from the fields to storage facilities and from there to consumers.

Transportation services in this context suffer from specific challenges:

- High cost due to unoptimized route usage by transporters
- Producer consumer gap
- No product tracking or inventory
- Damage to farm produce on arrival

The team decided to focus on small maize, avocado and cocoa farmers in Zambia and Ghana as their first market of reference. Through desk research they concluded that there are 1.5 million such farmers in Zambia ( Maize / Avocado) and 800,000 in Ghana (Cocoa )

#### **2.6.1.3.2.3 Proposed solution and business model**

The team aims to develop a series of services delivered through a platform having its user base in farmers, logistical providers and consumers.

The solution will support farmers through:

- Price listing of produce
- Inventory management
- Customer interaction
- Produce Tracking and Trucking

It will also provide value for transporters in the form of:

- AI aided route optimization
- Efficient packaging
- Produce protection

The business model for the solution revolves around three main components:

- Subscription fees
- Transaction fees
- Advertisement in the app

The team seeks the top price of USD 15,000. The team is also in search of mentorship and connections with regulators in the space. The plan is to allocate the funding as follows:

- Technology Development (40% - \$6,000):
  - Software Development
  - AI Integration
  - Mobile App Development
- Hardware and Equipment (20% - \$3,000):
  - GPS Devices
  - Onboard Monitoring Equipment
  - Cameras for Photo Verification

- Operational Expenses (15% - \$2,250):
  - Office Space (if applicable)
  - Utilities
- Marketing and Customer Acquisition (10% - \$1,500):
  - Website Development
  - Marketing Materials
  - Online Advertising
- Personnel (10% - \$1,500):
  - Wages or compensation for team members
- Customer Support and Help Center (5% - \$750):
  - Customer Support Software
  - Help Center Infrastructure

### 2.6.1.3.3 Team C - Green Glider

#### 2.6.1.3.3.1 The team

- **K.S.:** Blockchain, fullstack developer, IOT expert
- **A.A.:** Customer service specialist
- **E.A.:** CMS and business development expert
- **F.M.:** Digital marketer, AI chatbot consultant developer
- **B.R.:** Logistics entrepreneur
- **D.M.:** Logistics entrepreneur
- **L.K.:** Fullstack developer
- **D.O.:** entrepreneur, business developer, frontend developer

#### 2.6.1.3.3.2 Problem and market research

In the Nigerian market, characterized by its status as the largest economy in Africa, the team's operational focus is set to commence. The population's active interest in technology, skill acquisition, self-improvement, and fashion create a promising environment for e-commerce. However, challenges within the system persist in the form of

1. Customer dissatisfaction. Some customers are willing to pay a premium for faster delivery, but others are not willing or cannot afford it.
2. Damages to packages are a concern.
3. Insurance coverage is also an issue.
4. Landmark and real time position also constitute a problem.
5. Poor address verification
6. Bad Driver behaviour

The team conducted field research by interviewing 15 interested parties, among which vendors, e-commerce professionals, logistics providers, and customers. The interviews revealed a common theme: the primary problems in last-mile logistics services are rooted in trust and efficiency. The team identified that vendors and e-commerce entities grapple with inventory management, technology optimization, and seamless payment gateways. Logistics providers face infrastructure issues, governmental absence, stringent regulations, and a lack



of relevant training. Customers express concerns about damaged packages, delivery address accuracy, and data privacy through payment gateways.

These problems, in turn, lead to significant consequences for last-mile logistics services. Economic ramifications include a lack of infrastructure contributing to lost revenue and hindered development. Socially, concerns about scams, damaged items, and trust issues prevail. Politically, unemployment and a dearth of job opportunities become apparent. The overall lack of a well-managed last-mile logistics system, utilizing outdated technology and depreciated capital, exacerbates revenue loss, economic stagnation, and unemployment.

The identified causes of these issues span various domains. Economic growth is stunted due to insufficient road infrastructure and inadequate technology investment. Businesses suffer revenue losses and hindered growth, primarily resulting from poor inventory management. Logistics providers lack training for both management and employees, further complicating the situation. Resistance to adopting current last-mile logistics technology exacerbates market losses, revenue decline, and unemployment. Customers, in response, may turn to competitors, return damaged packages, and demand refunds, citing concerns about information and data privacy.

The consequences of these challenges were evident in the research findings from a sample of 15 individuals involved in last-mile logistics:

- 50% reported stunted businesses, low revenues, and poor inventory management due to a lack of road infrastructure.
- 20% attributed issues to the absence of advanced technology and financial inclusion.
- 10% experienced damage package returns and refund requests
- 5% complained about mismatched products.
- 15% expressed concerns about data management and security.

The interconnected nature of these problems underscores the urgency for comprehensive solutions to enhance trust, efficiency, and overall effectiveness in the Nigerian e-commerce landscape.

#### **2.6.1.3.3.3 Proposed solution and business model**

The team devised the Green Glider Assistant (GGA) as a comprehensive solution to address logistical challenges within the Nigerian market.

The proposed solution comprises the development of an online platform, accessible through both web and mobile interfaces. This platform serves a dual purpose: a) providing vendors with a dedicated storefront, and b) offering distribution opportunities for logistics agents by pooling together a network of low-cost deliverers. A back-end system is envisioned to facilitate seamless inventory management for vendors.

In addressing the delivery aspect of the problem, the proposed Green Glider web and mobile app aim to connect package senders, predominantly e-commerce sellers, with a certified pool of independent delivery operators in close proximity. This approach aims to address issues of safety, delays, and high costs, incorporating RFID package tagging and Geo-mapping functionalities for real-time location updates.

While the delivery part of the solution is well-defined, the storefront component is still under consideration, awaiting further development.

The idea presented involves an assistant capable of performing various tasks, including customer support and product recommendations. The Green Glider Assistant operates 24/7, providing personalized feedback based on user preferences.

To empower buyers, the proposal suggests giving them influence over delivery pricing. A suggested minimum price could serve as a basis for deliverers to bid competitively, allowing buyers to play a role in determining the final cost. Additionally, buyers could choose their preferred mode of transportation.

Users will have the ability to file complaints and address queries related to delivery delays, providing valuable insights for improving company services. The Green Glider Assistant is envisioned as a solution that actively involves users in shaping and enhancing the overall service experience.

The proposed business model entails three main revenue streams:

1. **Transactional Model (10% Shipment Fee):** The first revenue stream involves charging a 10% fee for each shipment transaction.
2. **Subscription Model (Privacy, Terms & Conditions, Customization):** Targeted mainly at vendors, the subscription model offers enhanced privacy, agreement to terms and conditions, and customization options. Subscribers benefit from discounts on delivery services. However, some vendors prefer a pay-as-you-go approach to avoid exposure to competitors. Hidden service charges from both vendors and the delivery end should also be considered.
3. **Ad-Based Model:** The third revenue model incorporates an ad-based approach, adding diversity to the income sources within the business model.

#### 2.6.1.3.4 Team D - Astute

##### 2.6.1.3.4.1 The team

- **A.F.:** Logistics expert
- **J.A.:** Business developer
- **F.I.:** Fintech expert
- **L.N.:** Software engineer
- **A.V.A.:** Entrepreneur

##### 2.6.1.3.4.2 Problem and market research

The team interviewed a few Nigerian e-commerce vendors to ascertain their pain points connected to logistics. The results point to the fact that e-commerce vendors in Nigeria face loss of revenue due to unfulfilled orders while still incurring costs of logistics. This challenge has several causes, among which:

Technical challenges:

- Chaotic order and mix up from multiple sales channels: e-commerce vendors in Nigeria use a wide variety of sales channels, from Whatsapp to Facebook Marketplace. Keeping track with all these channels can be challenging
- Excess orders processed: the unreliability of the Nigerian network produces a multitude of duplicate orders due to multiple clicks by customers who cannot ascertain whether the purchasing procedure had success or not
- Inability to reach customers via calls or texts: once again, the unreliable network represents a challenge both for vendors and for logistics providers in reaching the customer.

Delivery Delays:

- Difficulties in locating the customer address: many addresses in Nigeria are not listed correctly in GPS systems, which in turn provides a challenge in the delivery of parcels
- Incorrect address provided by the customer
- Default by Logistics companies: it is not uncommon for logistics companies in Nigeria to default leaving orders unfulfilled

Customer Commitment:

By interviewing e-commerce vendors, the phenomenon of customers changing their mind about their purchase, also last minute, was perceived as quite common.

Despite these challenges, e-commerce is rapidly growing in Nigeria: the value of the e-commerce market in the country is valued at approximately 8.8 billion USD with a 14.6% annual growth rate.

#### **2.6.1.3.4.3 Proposed solution and business model**

As a solution for these challenges, the team aims to offer a personalized e-commerce catalogue platform, linked to the vendor's social media and sales channels, with integrated access to logistics service providers featuring upfront delivery fee payment.

The vendor will be able to rely on:

- Customer driven order processing and fulfilment
- Single sales management interface: integration of all the vendor's sale channels into a single dashboard
- Ease of logistics and order fulfilment
- Assured customer commitment through the upfront payment of the delivery fee

while the customer will get the value in the form of:

- Access to entire vendor inventory for easy shopping
- Delivery fee refund policy

The logistical vendors who will enter a partnership with the platform will instead get access to a reliable customer base.

The business model will be B2B SaaS, with the main revenue streams represented by 10% commission fees from vendors and logistics providers, premium subscription for vendors (2000 Naira/2.39 EUR), and advertising.

## 3 CO-CREATION IMPACT LABS EVALUATION

### 3.1 PARTICIPANTS REACH

The six Co-creation Impact Labs saw the participation of 231 people in total. Of these, 192 were unique participants, as there were 39 instances of participants to previous Labs participating again in following Labs.

The most represented countries in terms of number of participants were Ghana (21% of total participants), Zambia (20%) and Nigeria (9%). Overall, 64% of participants declared an African country as their country of origin, while 22% were European. 14% of participants did not disclose their country of origin.

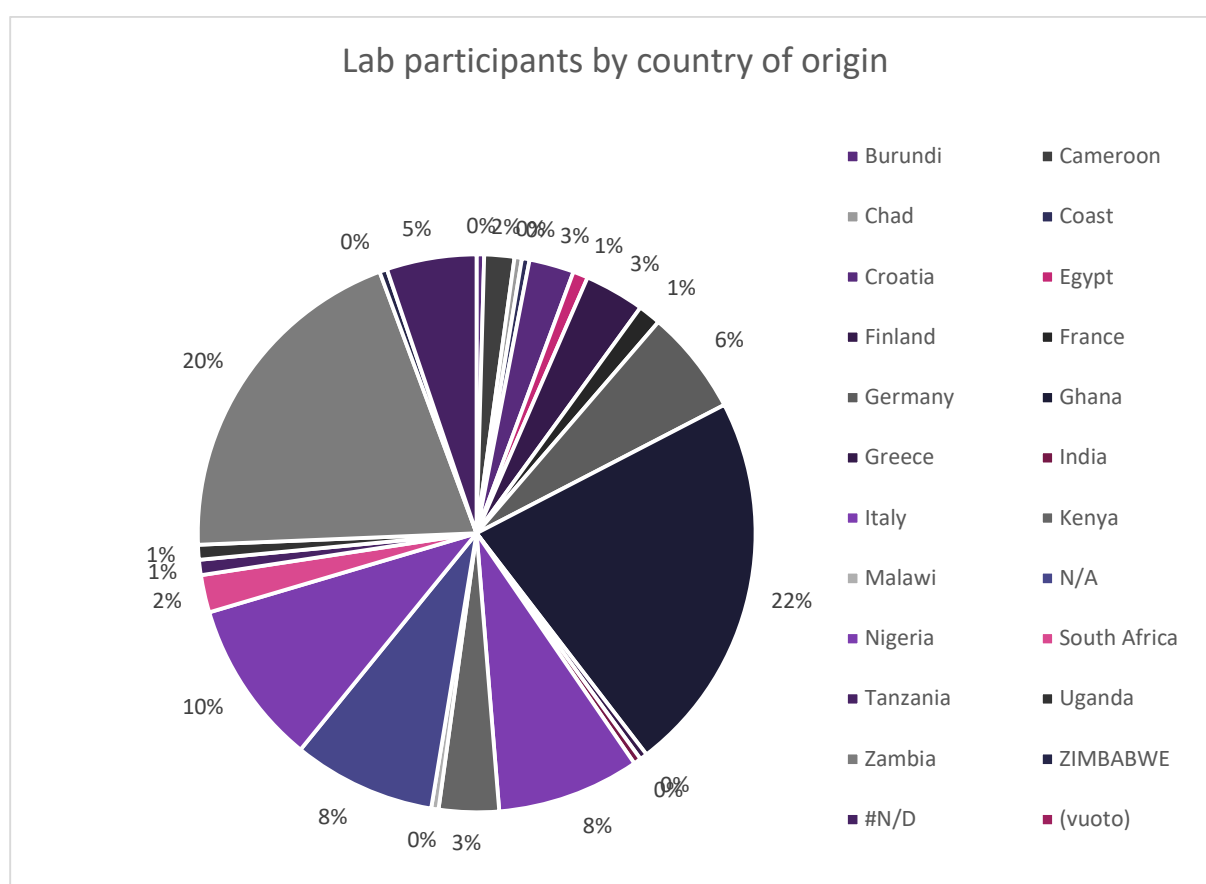


FIGURE 17 - LAB PARTICIPANTS BY COUNTRY OF ORIGIN

The most represented participant category was “SME/Startup founder or employee” (26% of total participants), “Would-be entrepreneur developing my own business idea” (14%) and “University student with significant interest in logistics, entrepreneurship, innovation” (14%)

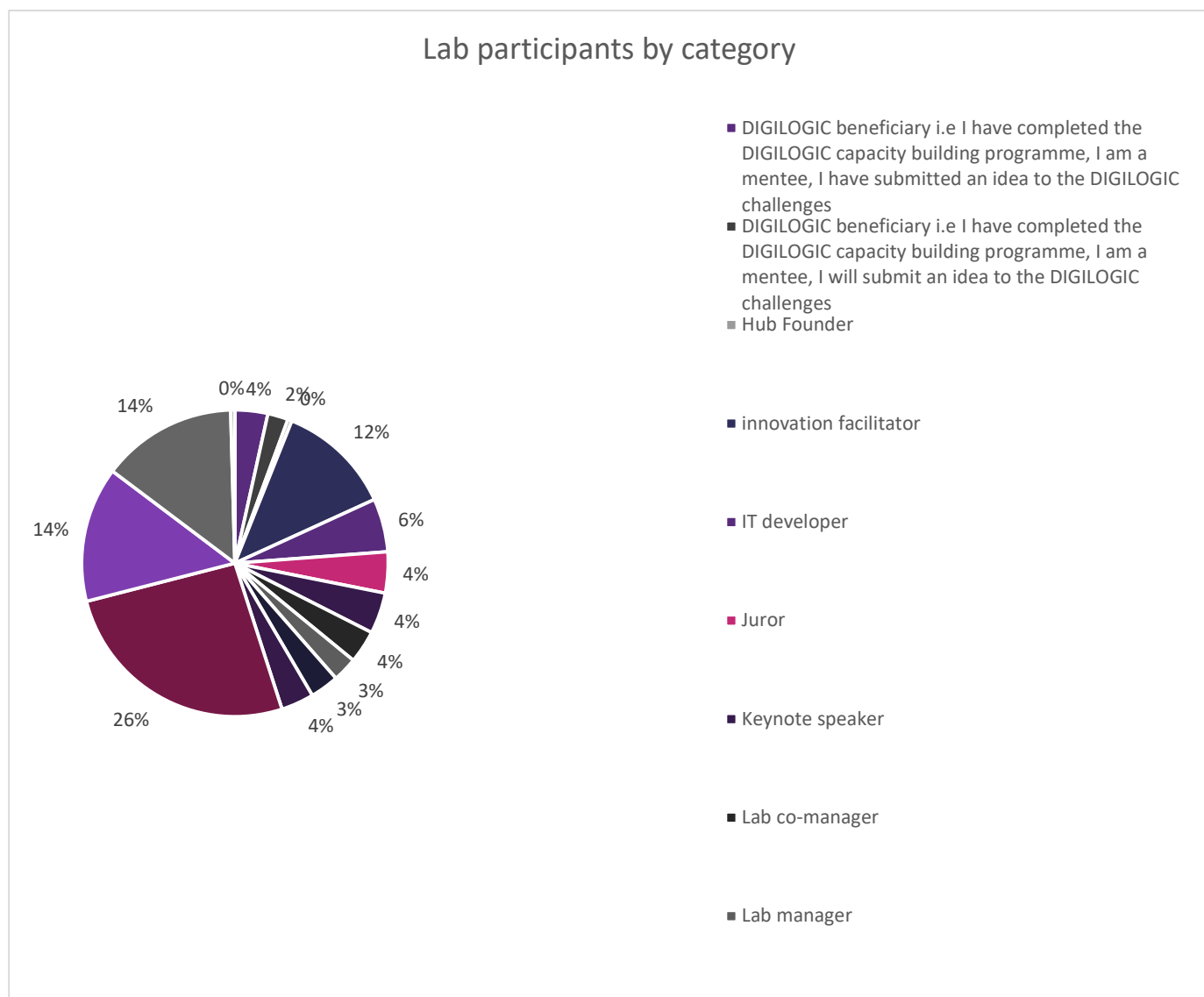


FIGURE 18 - LAB PARTICIPANTS BY CATEGORY

Gender distribution among participants was skewed towards males (55%) with respect to females (32%), with 13% of participants not declaring their gender.

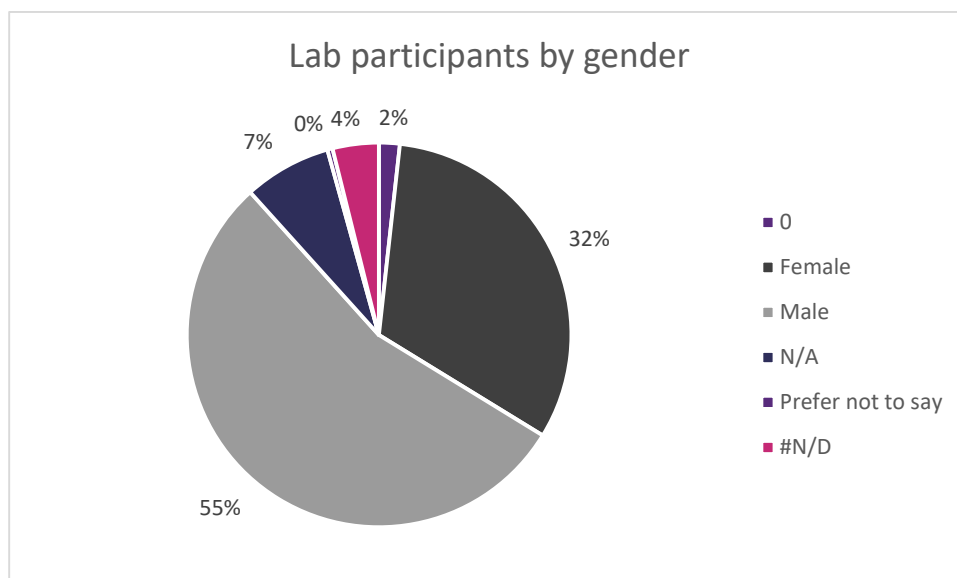


FIGURE 19 - LAB PARTICIPANTS BY GENDER

Participation was essentially evenly distributed between the Labs.

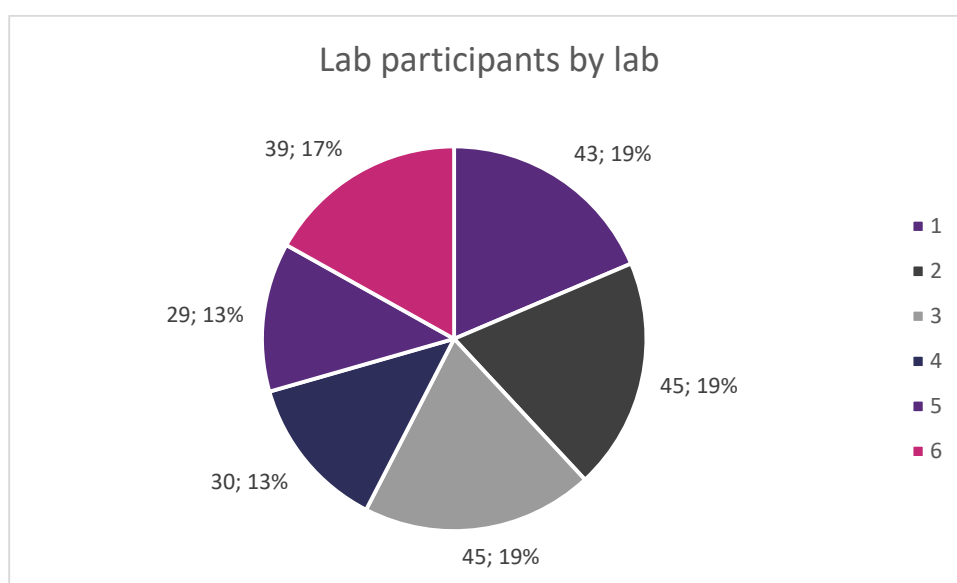


FIGURE 20 - LAB PARTICIPANTS BY LAB

## 3.2 RESULTS

The analysis in this section builds on 17 guided interviews the evaluators took with lab participants as well as facilitators from the consortium partners. It also takes into account the results of a survey that the project did after each lab.

**Overall satisfaction with the co-creation IMPACT lab was high** within the group of our interview partners. Most respondents expressed that they were satisfied or very satisfied. Only 6 out of a total of 87 respondents said that they were neither satisfied nor dissatisfied. Differences between the labs are rather small and not significant. Figure 10: Overall satisfaction with the co-creation IMPACT labs (data from the labs survey)

**Synergies arising from the collaboration of the consortium partners** could be witnessed both on the level of participants and on the level of project implementation. A few interview partners reported that besides the lab, they also had **other touch points with DIGILOGIC**. For instance, one interview partner took part in the mentoring (see section 2.2.4) offered by Fraunhofer Dortmund and was able to get a nuanced feedback and inspirations for his business. Another interview partner took part in the virtual job fair. For project implementation, synergies could be created by taking cases for the labs from board members and by involving staff from the consortium partners as facilitators.

The **major challenge** that almost all interview partners as well as facilitators mentioned in the interviews were **issues of connection and accessibility**. Some participants experienced bad network connection. Others reported that they could not attend due to other job obligations. Considering that this challenge was mentioned repeatedly, it is all the more astonishing that the overall summary of the participants in our sample was so positive.

### 3.2.1 Results of Co-creation Impact Labs feedback survey

What follows is the analysis specifically of the participants' responses to the feedback surveys that were sent at the end of each CCL.

Overall, 87 participants responded to the survey. You can see the number of responders per lab in Figure 21.

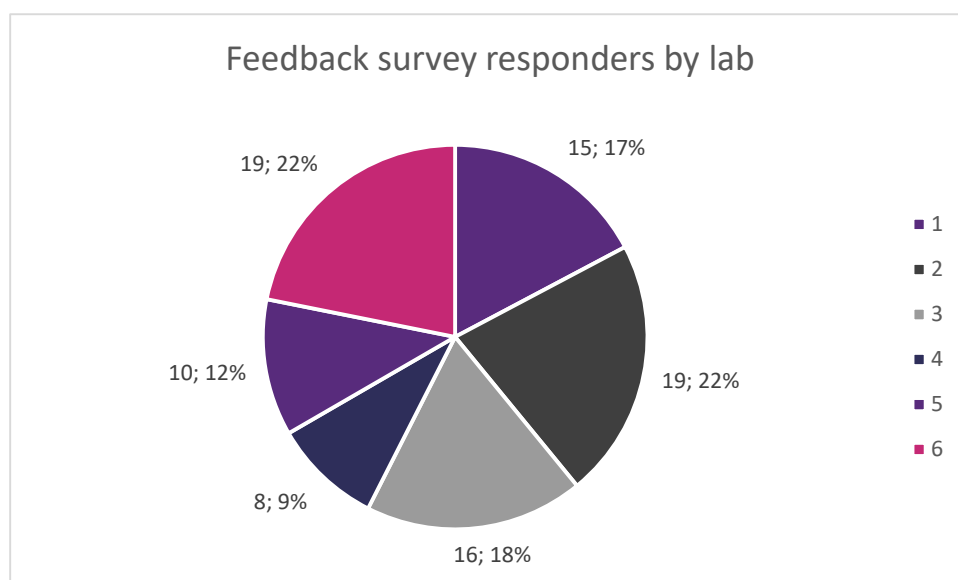


FIGURE 21 - FEEDBACK SURVEY RESPONDERS BY LAB

Of these, 43 (corresponding to 49% of the total) declared to be entrepreneurs, 15 (17%) ICT professionals, 12 (14%) students and DIGILOGIC beneficiaries each, and 5 (6%) did not fit in the groups. 70% of responders were male, 29% female and 1% preferred not to declare their gender. Responders therefore seem to overrepresent entrepreneurs and males with respect to the distribution of the data in the total of participants.

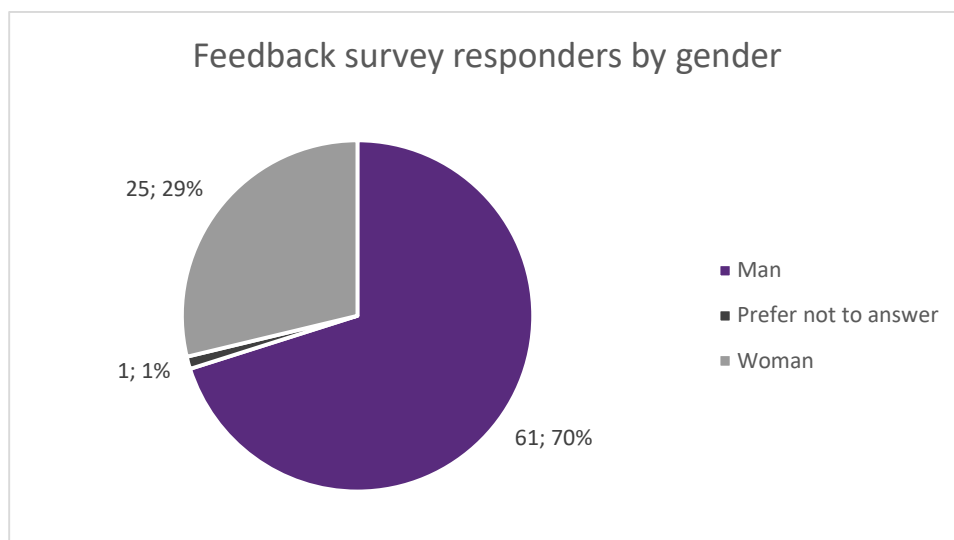


FIGURE 22 - FEEDBACK SURVEY RESPONDERS BY GENDER

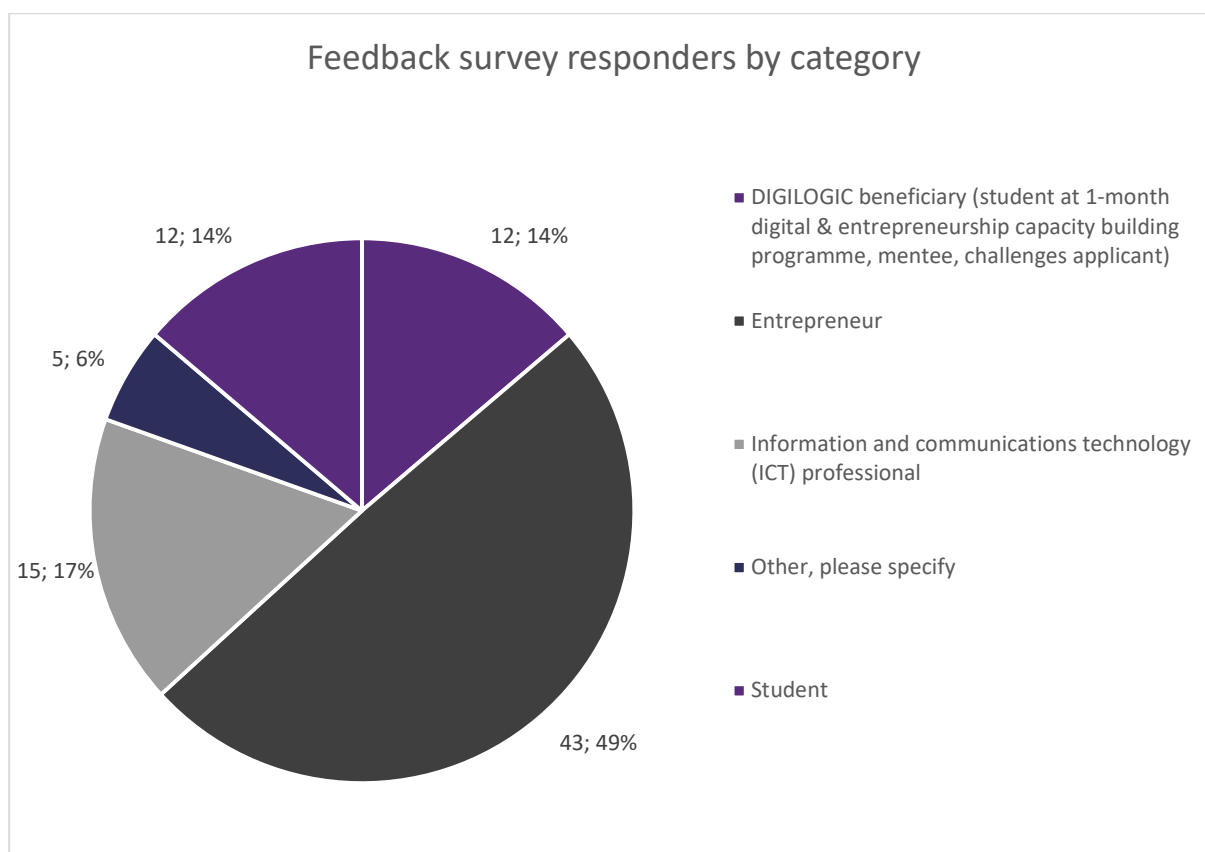


FIGURE 23 - FEEDBACK SURVEY RESPONDERS BY CATEGORY

Overall satisfaction with the labs was high, as seen in the responses to the question “Overall, how satisfied or dissatisfied are you with your participation in the Co-creation lab?”; the answers were integer numbers comprised between 1 and 5. As you can see in Figure 24, two thirds of the participants were very satisfied with their experience (responding 5/5 to the question), 26% were satisfied (4/5) while 7% felt neutral towards the Labs (3/5). No responders answered with 1/5 or 2/5.



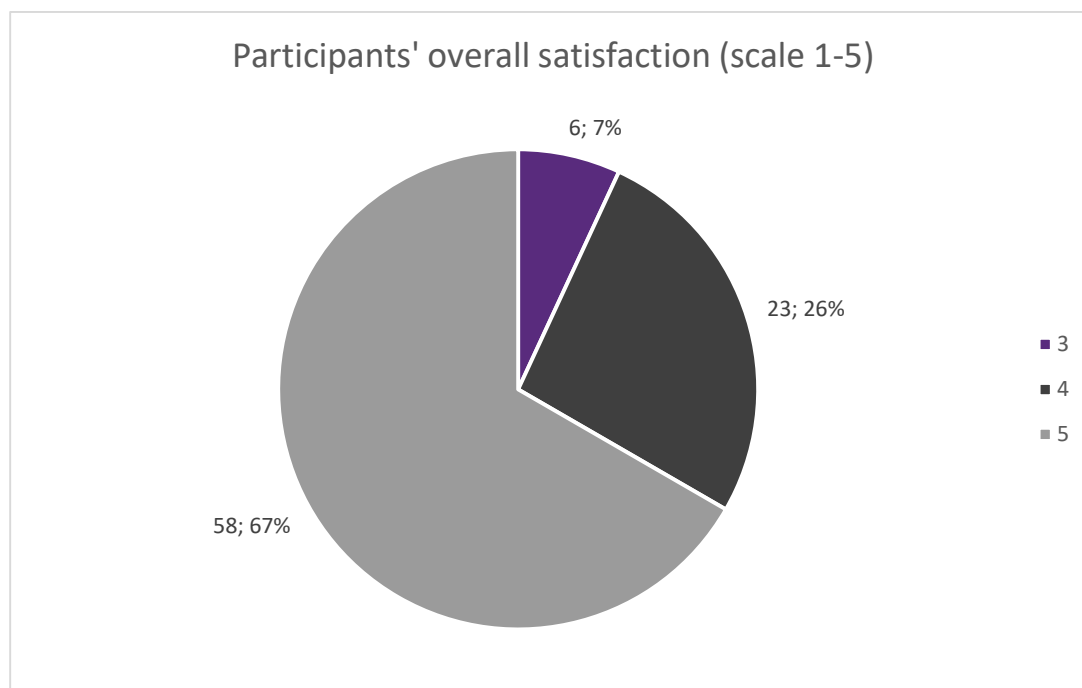


FIGURE 24 - PARTICIPANTS' OVERALL SATISFACTION

Both the structure and the answers to the surveys are available in Annex A.

### 3.3 OUTCOMES ON EXISTING AFRICAN BUSINESSES

Participants gained diverse skills and knowledge, including problem identification, idea pitching, and smart design. They applied these skills effectively in their professional roles, showcasing the practical impact of the labs. Notably, some participants integrated collaboration tools like Padlet and Miro into their workflows, while others pursued business ideas in smart logistics. In addition, the inclusion of real African business case studies during the CCLabs keynotes presented a unique and tangible benefit for participating businesses. By incorporating these authentic case studies, the labs provided participants with a practical understanding of challenges and solutions within the African business landscape. Networking opportunities emerged as a significant positive outcome for participants, with an overwhelming majority expressing contentment. Remarkably, interviewees maintained connections with facilitators and lab team members, utilizing these networks for ongoing exchange and collaboration. Although some participants reported losing touch with peers, the prevailing trend is continued engagement beyond the labs. It is noteworthy that, while the DIGILOGIC platform received positive feedback, participants opted for other channels such as WhatsApp for post-lab communication. Despite this, the essence of networking and the collaborative spirit fostered in the labs endured, showcasing the sustained impact of the program. Winners of labs 3, 4, 5, and 6 received valuable consultancy support from DHM to develop their smart logistics solutions. This recognition underscores the practical backing provided to outstanding solutions from the Co-creation Labs. Efficiently organized company consultations, conducted via Zoom, involved collaboration between company representatives and DIGILOGIC experts. Each session, lasting 2-3 hours, contributed to the overall success of the initiative within a two-week timeframe.

Additionally, the opinions expressed in the answers to the feedback surveys strongly support the thesis that the labs were valuable for entrepreneurs and professionals in the development of skills directly applicable to their business. In fact, when asked to associate a number between 1 and 5 to express their agreement with the statement "I have experienced the Co-creation lab as an effective business innovation tool", most of the 43 responding entrepreneurs strongly agreed (5/5, 60% of total responses) or agreed (4/5, 33%), while only 7% was neutral or did not agree.

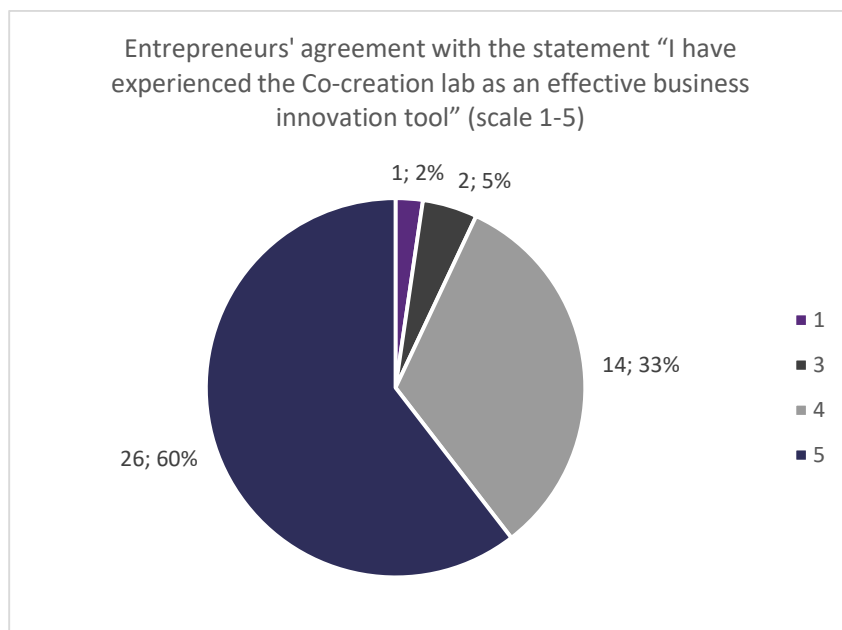


FIGURE 25 - ENTREPRENEURS' AGREEMENT WITH THE STATEMENT "I HAVE EXPERIENCED THE CO-CREATION LAB AS AN EFFECTIVE BUSINESS INNOVATION TOOL" (SCALE 1-5)

The same trend is visible with respect to the statements "In the Co-creation lab, I could approach my business obstacles from a new perspective" and "I consider the digital solutions developed in the Co-creation lab as valuable for my business".

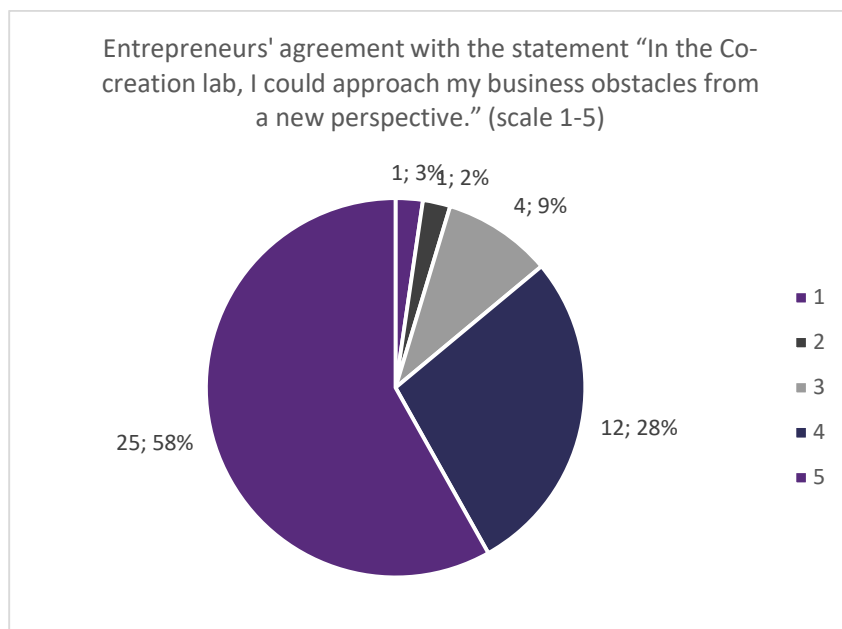


FIGURE 26 - ENTREPRENEURS' AGREEMENT WITH THE STATEMENT: "IN THE CO-CREATION LAB, I COULD APPROACH MY BUSINESS OBSTACLES FROM A NEW PERSPECTIVE."

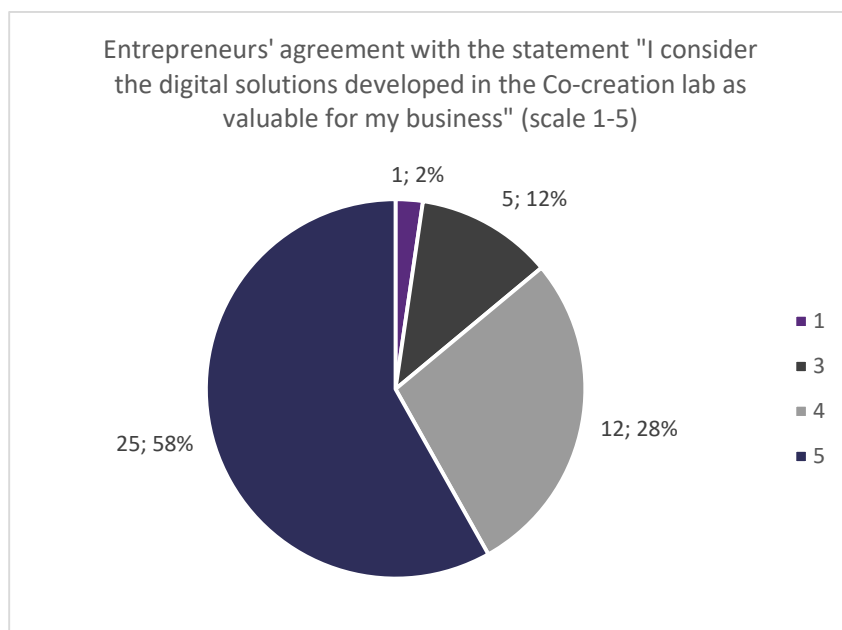


FIGURE 27 - ENTREPRENEURS' AGREEMENT WITH THE STATEMENT "I CONSIDER THE DIGITAL SOLUTIONS DEVELOPED IN THE CO-CREATION LAB AS VALUABLE FOR MY BUSINESS"

Furthermore, most of the entrepreneurs expressed interest in continuing the development of the ideas generated during the lab in their own business (expressed as agreement to the statement "I will further elaborate on the digital solutions for my business.")

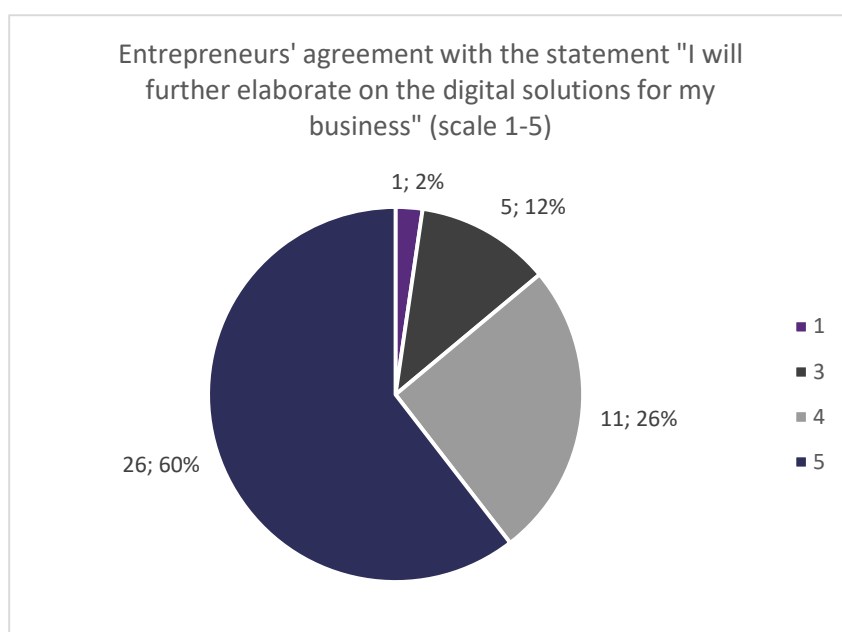


FIGURE 28 - ENTREPRENEURS' AGREEMENT WITH THE STATEMENT "I WILL FURTHER ELABORATE ON THE DIGITAL SOLUTIONS FOR MY BUSINESS" (SCALE 1-5)

The interviews reinforce these trends: Our interview partners, without exception, **expressed content about the networking opportunities** they received through the labs. Most of them remembered the names of their facilitators and lab team members. About two third of the lab participants, we spoke to are still in touch with their team members or at least could get back to them for further exchange. They reported that they could benefit from the exchange with their facilitators and team members because they got insights into other fields of work and other countries as well as access to new networks. Less than one third of our interview partners said that they had lost touch with their peers.

When asked about **new knowledge that they obtained (“upskilling”)**, our interview partners remembered different things. Some mentioned techniques like problem identification, pitching ideas, using smart design in prototyping solutions, working on solutions in a team, and using tools like storyboarding and Padlet. Specific information on the case studies used in the labs such as post-harvest losses in agriculture and water scarcity also seem to have stuck with some of the participants.

It is worth mentioning that several interview partners were able to **apply new skills and tools** they learned about in the labs **in their own work**. To mention some examples, one participant was preparing to pitch for a grant with a company, applying presentation techniques from the lab. Other participants reported they kept using collaboration tools such as Padlet and Miro after the lab in their companies. And at least three participants decided to further work on business ideas in the field of smart logistics that were generated in the lab context.

## 3.4 LESSONS LEARNT

This chapter delves into the insightful reflections and considerations provided by Digilogic partners during a dedicated workshop held within the Study Visit in Zambia (Lusaka), regarding the Co-Creation Labs (CCLabs). The focus is on the process, potential improvements, and strategies for sustainability and exploitation.

### **Agile Ideation and Solutioning with CCLabs Approach**

MEST emphasized the versatility of the Co-Creation Labs approach in facilitating rapid ideation and solutioning. This observation suggests that the CCLabs framework can efficiently address challenges in a quick and agile manner, presenting a valuable strategy for future initiatives.

### **Reviewing Findings for Informed Future Programs**

The findings from the Co-Creation Labs (CC-Labs) were deemed by several partners crucial for shaping future programs. The chapter highlights the significance of a thorough review process, utilizing the insights gained to refine and improve the design and execution of subsequent initiatives.

### **Inspiring Future Programs and Workshops**

ENDEVA contributed a valuable perspective, suggesting that the formats developed within the Co-Creation Labs could serve as inspiration for future programs and workshops. This insight highlights the potential for cross-pollination of effective formats, ensuring continued innovation and relevance in upcoming initiatives.

### **Nurturing Continuity and Community Engagement**

BHIVE expressed a forward-thinking approach by considering collaboration with past participants. This strategic move involves actively engaging with previous participants to motivate and inspire new entrants, fostering continuity and a sense of community within the programs.

This chapter encapsulates the reflective process undertaken by our partners, emphasizing the importance of adapting successful approaches, exploring potential improvements, and ensuring the sustainability and meaningful exploitation of our initiatives.

## 4 CONCLUSIONS

Concluding our Co-creation Labs (CCLabs) initiative prompts a reflection on the decisions made by participant groups and the unveiling of our next steps. The program's success is evident in the remarkable reach we've attained, boasting a total participation count of 192 individuals, which includes learners, facilitators, entrepreneur testimonials/experts, jurors, researchers, and more. The achieved diversity among participants, a key element for effective co-creation, stands out as a notable accomplishment.

Analyzing the composition of participants, we observe a substantial impact on real businesses, with 26% representing SMEs, startup founders or employees, and 14% identifying as potential entrepreneurs. Additionally, 14% of participants belong to the student category, encompassing the first two participant categories. This diversity in backgrounds contributes to the richness of perspectives brought to the co-creation process.

Examining gender participation, despite being slight skewed towards males (55%), the significant representation of females at 32% highlights the noteworthy inclusion of the initiative. This gender diversity adds depth to the collaborative environment fostered by the CCLabs.

The comparison between the number of applications received and actual participation provides valuable insights into the effectiveness of the recruitment strategy. The alignment between individuals expressing initial interest and those who actively engage in the labs doesn't consistently demonstrate a positive conversion rate, indicating the necessity for further analysis and refinement in the approach. This observation informs future actions, guiding adjustments to enhance the alignment between expressed interest and active participation for subsequent initiatives.

In navigating the virtual/online landscape and addressing communication challenges, particularly the difficulties faced by African participants in connecting to the Zoom platform due to energy shortages or tool limitations, the significance of our success lies in the strategic integration of communication technologies and engagement tools. This seamless fusion played a pivotal role in fostering smooth interaction and collaboration among participants, harnessing the potential of digital platforms for optimal outcomes. Within this virtual setting, a diverse array of online platforms, such as Meets and WhatsApp, served as instrumental communication tools. Additionally, the implementation of a content-sharing tool, Padlet, further enhanced collaborative content sharing among participants.

The engagement of experts and testimonials enriched the problem statement presentations, offering valuable insights into the challenges of last-mile logistics. During Demo Day, where teams showcased their prototypes and solutions, the jurors, including entrepreneurs and topic experts, played a crucial role in the evaluation process. Their feedback served as a valuable resource for the teams, providing industry-specific insights and constructive criticism to enhance the quality and effectiveness of the solutions developed during the Co-Creation Lab. The jurors' active participation underscored their commitment to fostering innovation and ensuring the success of the participating teams.