



# Mercy Corps AFA Agile Impact study for eProd

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Report completed by Busara on behalf  
of Mercy Corps AgriFin

March 2021



Busara



AGRIFIN



# About Mercy Corps AgriFin

We work with over 9 million farmers and 130 partners across Africa

Mercy Corps' AgriFin Accelerate Program (AFA) was created with the goal of supporting the expansion of digital financial services to one million farmers in Sub-Saharan Africa (SSA).

- Objective to develop services that increase **farmer income, productivity and resilience**, with 50% outreach to women.
- Work with **private & public sector scale partners** such as banks, mobile network operators, agribusinesses, technology innovators and governments.
- We help our partners develop bundles of digitally-enabled services, including **smart farming, financial services, market access and logistics** supporting data-driven partnerships.

AFA and its partners provides increased access to digital services that help address some of farmers' pressing challenges. Over the years it has become important to assess the importance of increased access to digital services

To this end, Busara and Mercy Corps AgriFin worked together to assess and quantify the impact of increased access to digital services through these partners on smallholder farmers outcomes



# Agile Impact Study Objectives

Impact assessment based on in-house data provided by partner organizations



This **Agile Impact Study** aims to unpack the impact of AFA's support to a variety of partners. More specifically, it seeks to uncover:

- Impacts of partners' products and services on farmers' farming practice, farming outcome, and resilience to shocks
- Factors that drive **adoption** and **usage**
- Farmers experience and perception of the products and services
- Outcome of capacity building and training
- With a focus on women and youth, if data is available



A featured partner, eProd is a proven, affordable and automated solution for agribusinesses to address management challenges while sourcing from large numbers of small scale suppliers. The direct users of eProd are typically food processors, aggregators and other agribusinesses who work closely with smallholder farmers.

- Given the limited shareable data of agribusinesses and timeline, this study with eProd uses farmer data from Equator Kenya, an early adopter of eProd's service, to evaluate the direct impact of Equator Kenya on smallholder farmers, as a proxy of impact of eProd on smallholder farmers.

## ■ Partners onboarded with this study:

- eProd
- ACRE
- Hello Tractor
- Ignitia
- TruTrade
- SunCulture
- aWhere



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# Executive Summary

# Executive summary

This report presents the findings of the deep data analytics conducted on Equator Kenya's administrative data to answer key learning questions on behalf of Mercy Corps AgriFin. We sought to understand Equator Kenya's influence on smallholder farmers outcomes since 2010 till date.

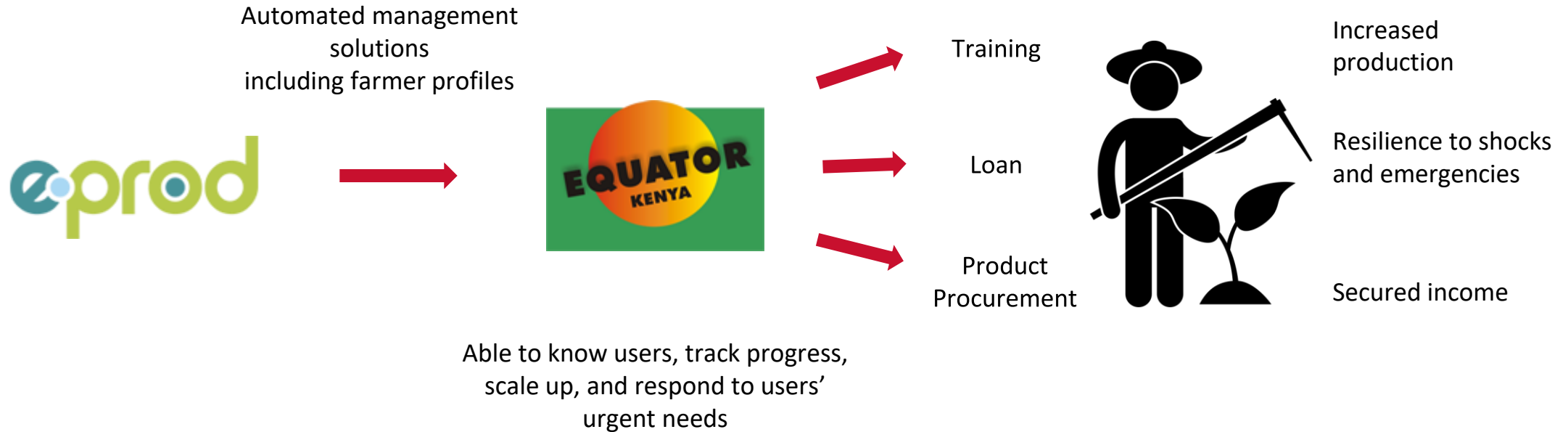
**Specifically, we sought to answer these core questions on behalf of eProd through the use of Equator Kenya as a proxy, by analyzing available administrative data on farmers' demographic features, trade volume, sales and farmers' outcomes;**

- How do different groups use Equator Kenya's service, including women and youth?
- What impact has Equator Kenya had on SHFs' farming practice, farm income, and resilience to farm-related constraints or shocks?
- What capacity building tools (e.g. the training) offered by Equator Kenya have the highest impact on SHFs willingness and ability to use digital financial services?
- What distribution channels are most effective for delivering services to SHFs?

When farmer data is available for other eProd's users (i.e. agribusinesses), similar analysis based on administrative data can be replicated for other users. Representative agribusinesses selected will together paint a bigger picture of how eProd has been influencing smallholder farmers' lives by providing efficient management solutions to agribusinesses along different parts of the agricultural value chain. To evaluate direct impact eProd has on its users, various agribusiness, another set of assessment will be required (details in the end of the report).

# Executive summary

Flow-chart of eProd's pathway of impact to smallholder farmers through Equator Kenya



# Executive summary

- Most of the counties where Equator Kenya provides services (i.e. product procurement, loan, training) are predominated by female users. The enrollment of farmers has seen two peaks in 2014 and 2018, respectively.
- Training attendance shows a trend of decreasing after 2014. The youngest farmers have attended the least number of training sessions. Data shows a positive correlation between the number of training attended and average quantity produced on farm.
- The average amount of loans taken by users has seen a drop from 2013 to 2018, then experienced a spike in 2020. The spike in 2020 is likely to relate to COVID-19.
  - The value of loans taken by female farmers is about 2.5x the value of loans taken by male farmers across all the counties.
  - There is a positive correlation between number of loans taken and average quantity of production in most years. However, larger amount of loan does not necessarily translate to higher production volume. One potential reason could be diminishing marginal effect of loans and how loans have been spent.
- By providing automated management solutions, eProd has allowed agribusinesses like Equator Kenya to manage farmers' profile efficiently and scale up, and respond to farmers' emergencies and urgent needs during difficult times including the period of Covid-19.




# Introduction

# Theory of Change


- eProd offers a fully integrated resource planning platform for agric supply chain management of agribusinesses - commodity traders, food processors, farmer cooperatives, and groups.
- eProd's services cut across field management, capacity development tracking, payment facilitation and access to credit.
- eProd has 75 clients across 18 value chains through which about 250,000 farmers are managed on eProd's platform.
- Given that **eProd does not deal with farmers directly but agribusinesses, we'll be focusing on its major partner, Equator Kenya**. Equator Kenya is a food processing company that produces African Bird's Eye chilies for export.
- **We will focus on the influence of Equator Kenya on farmers' income, productivity, sales, and resilience.**

Equator Kenya is an established private company at the Kenyan Coast with the objective to supply the market with premium quality dehydrated fruits and vegetable products. By using eProd’s solution, **Equator Kenya** has been able to efficiently manage the business and provide **services** including **delivering products, providing loans** and **training** to smallholder farmers on the coast.

In this report, the objective is to examine farmers’ usage of Equator Kenya’s services and to evaluate the influence of these services on their lives.



**Goal 1**  
To examine farmers’ usage of Equator Kenya’s services (product procurement, loan, training)



**Goal 2**  
To evaluate the impacts of Equator Kenya’s services on farmers lives (e.g. productivity, better farm practice, ect.)

The positive outcomes observed, such as increased volume of farmers benefiting from Equator Kenya’s services, would be a proxy to indicate the impacts of eProd’s on agribusinesses.

# Timeline and Process

## Alignment call

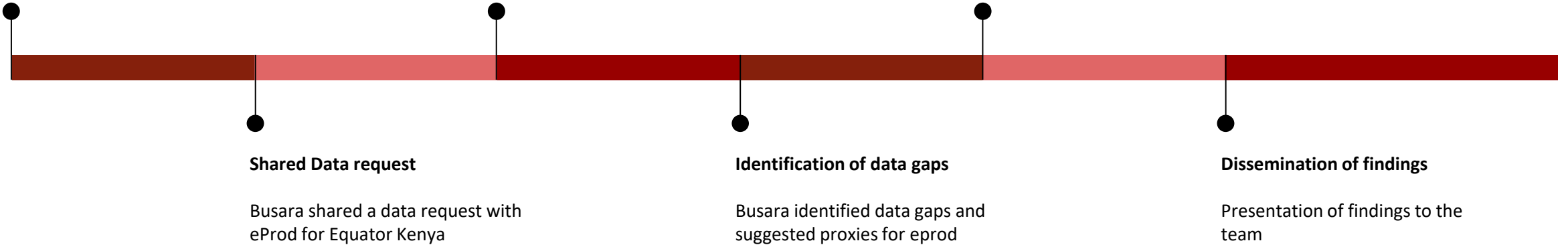
Alignment call with eProd's team to understand eProd's theory of change, proposed research questions and data availability

## Data mined and shared

eProd shared available data based on the data request

## Creation of PAP, data analysis and findings report

Busara created a pre-analysis plan, following which the data was analyzed and findings put together



# In order to achieve this, we intended to answer these research questions

## How do different groups use Equator Kenya's service, including women and youth, value most and why?

- Who are the most active farmers on Equator Kenya's platform, measured by frequency of usage made since joining?
- How many digital payments have been made via eProd/Equator Kenya by each farmer, in different means (e.g. bank, mobile money, e-wallet)?

## What impact has Equator Kenya had on SHFs' farming practice, farm income, and resilience to farm-related constraints or shocks?

- What is the volume and value of loans taken by farmers over time?
- In terms of significance of impact, what is the trajectory of KGs produced over time?

## What distribution channels are most effective for delivering services to SHFs?

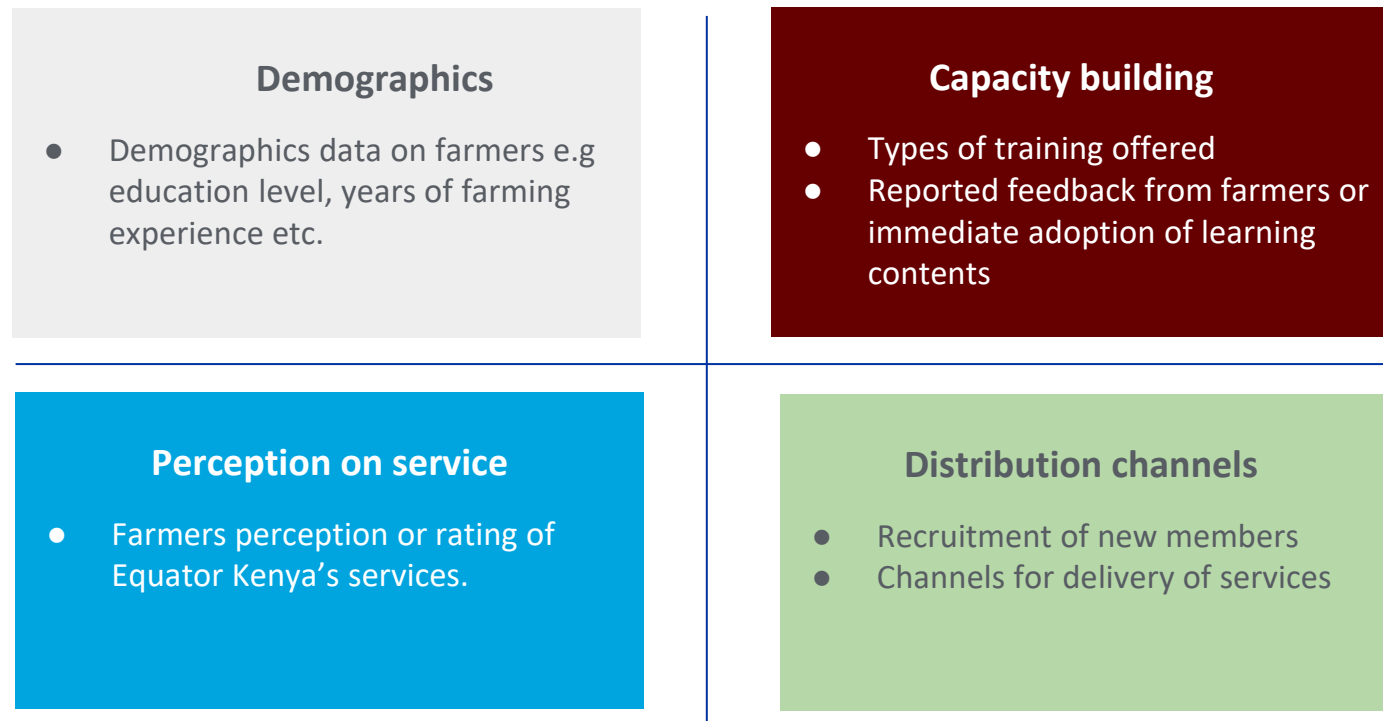
- How do users gain awareness of Equator Kenya's services (i.e. product procurement, loan, training)?
- Which channels are most effective for delivering Equator Kenya services?

## What capacity building tools (e.g. the training) offered by eProd/Equator Kenya have the highest impact on SHFs willingness and ability to use digital financial services?

- Who are those farmers participating in training offers? How many training sessions has each farmer attended?
- What is the reported feedback from farmers or immediate adoption of learning contents?

# However, due to unavailable administrative data, some questions could not be answered

The following chart indicates what additional variables are required to fully uncover the learning questions in the last slide. The data analytics in this report is based on available data shared by Equator Kenya.



# A snapshot of Equator Kenya farmers as of August 2020

## 11 counties

(Garsen, Kilifi, Kilifi North, Kwale, Lamu, Lamu West, Lunga Lunga, Magarini, Malindi, Matuga, Msambweni)



**Female**



**Male**



**310 | 69%**

farmers



**141 | 31%**

farmers

Age  
distribution

**47 years** on

average

Age  
distribution

**49 years** on

average



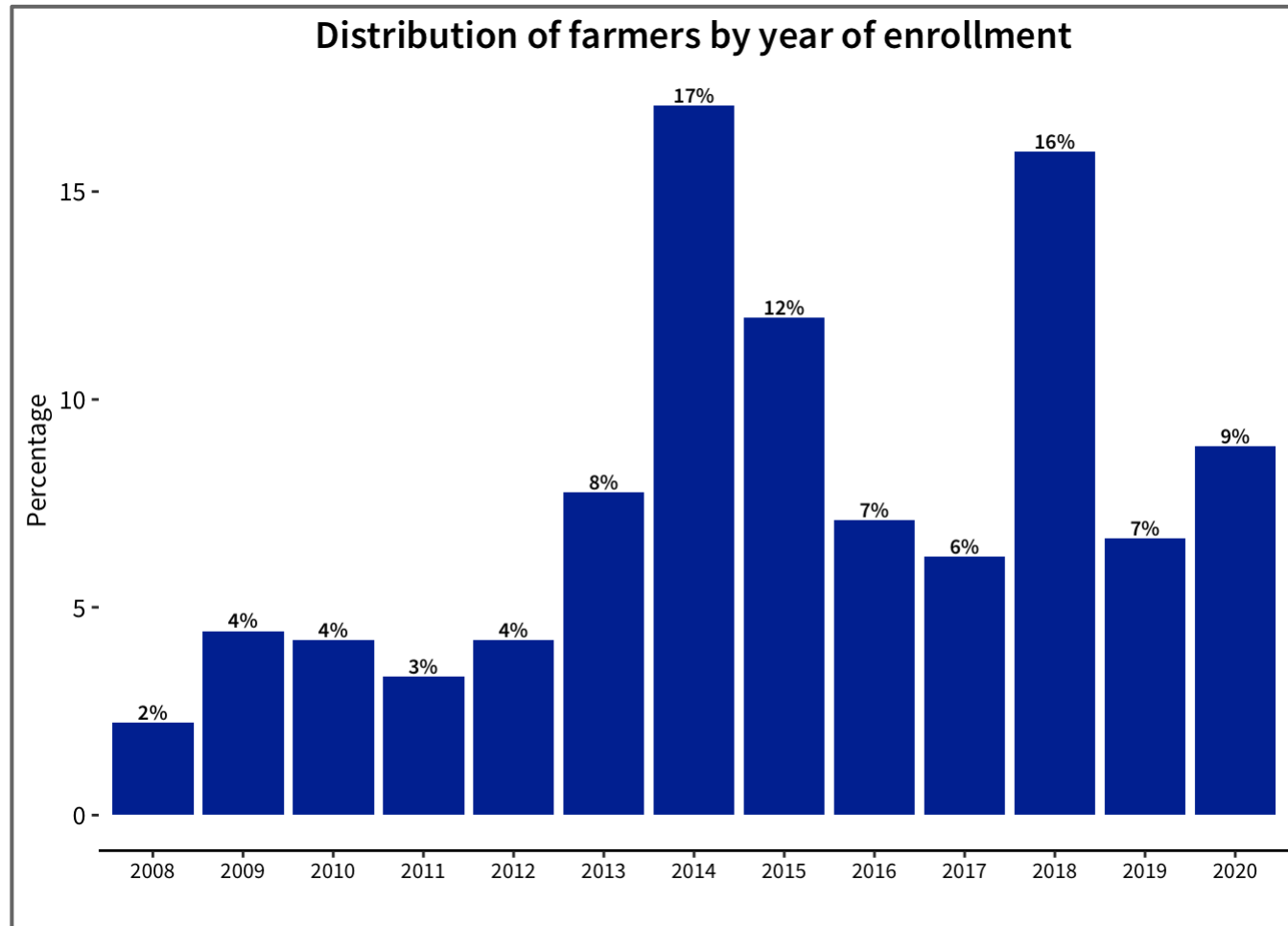
# Findings





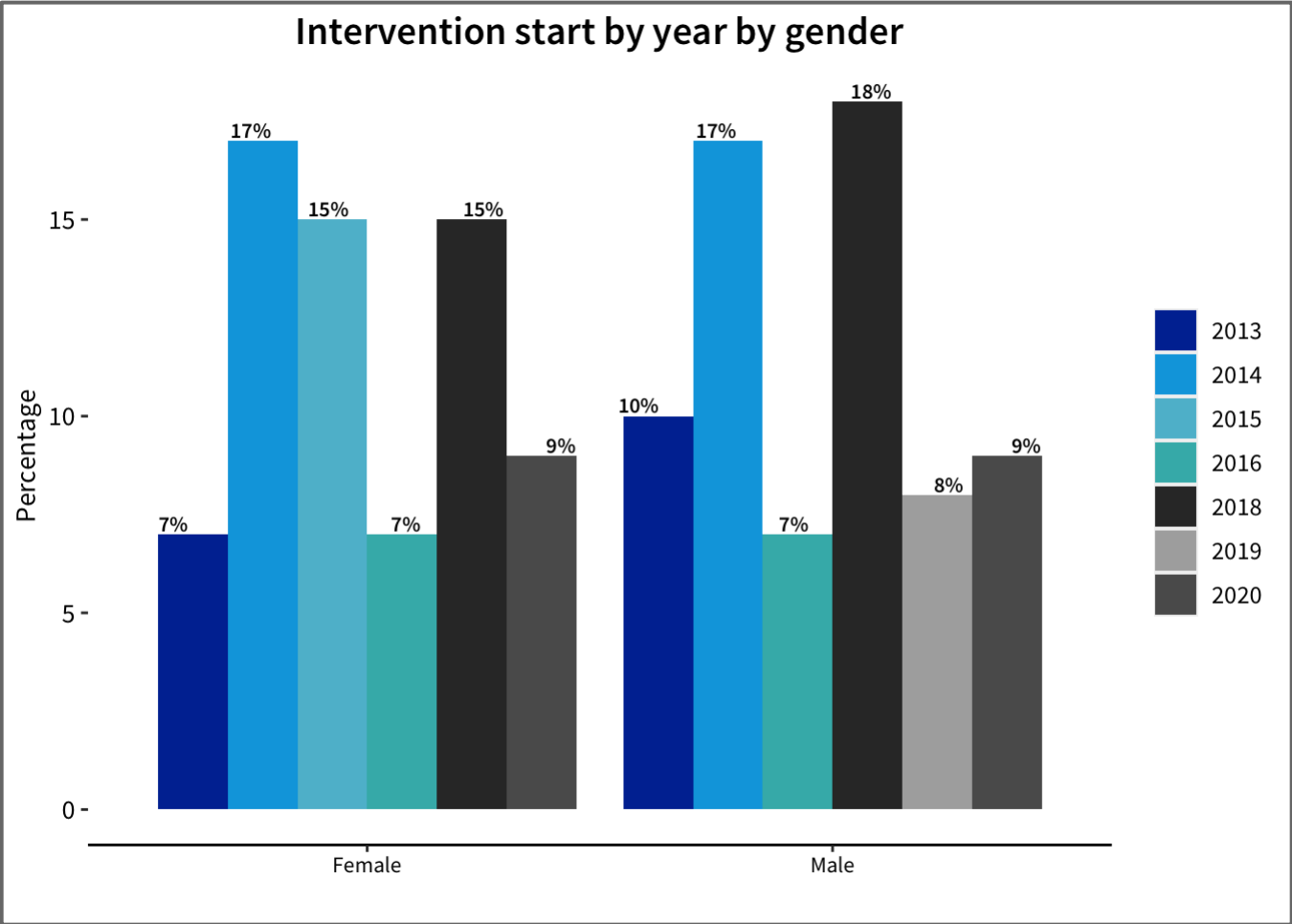
**How do different groups use  
Equator Kenya's service,  
including women and youth?**

# Almost half of the users of Equator Kenya registered over the past 5 years; 2014 and 2018 had the highest spikes in registration



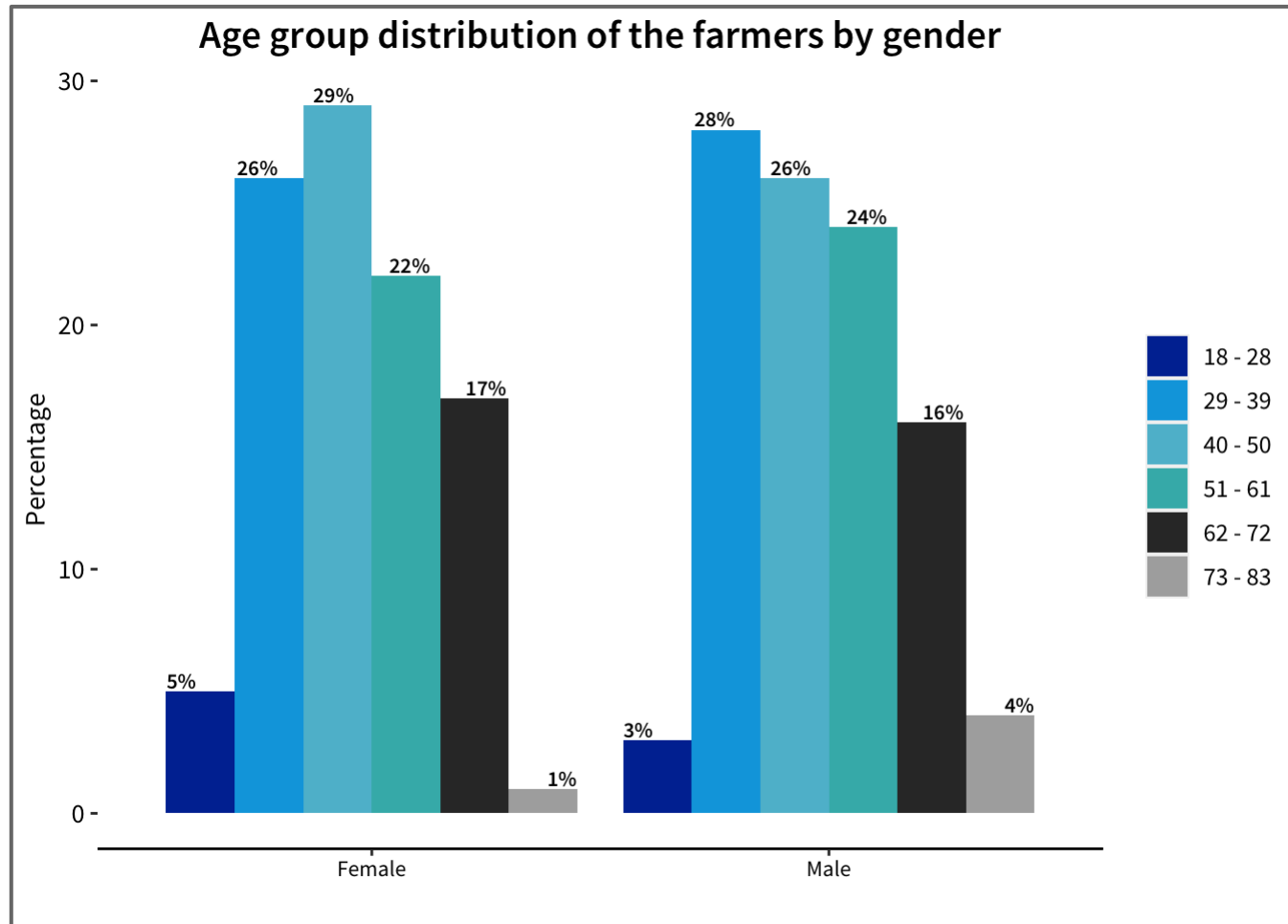
- The registered number of users over the last 5 years is noticeably higher than in the first 5 years. This could be an indicator of the growing business of Equator Kenya, possibly benefited from adopting eProd's efficient, automated management solutions.
- 45% of the users in the current customer base registered over the last 5 years (2016 -2020) relative to 18% in the first 5 years (2008 - 2012).
- 2014 and 2018 saw the highest proportion of users register with Equator Kenya.

# Female representation in enrollment has been relatively higher than male enrollment



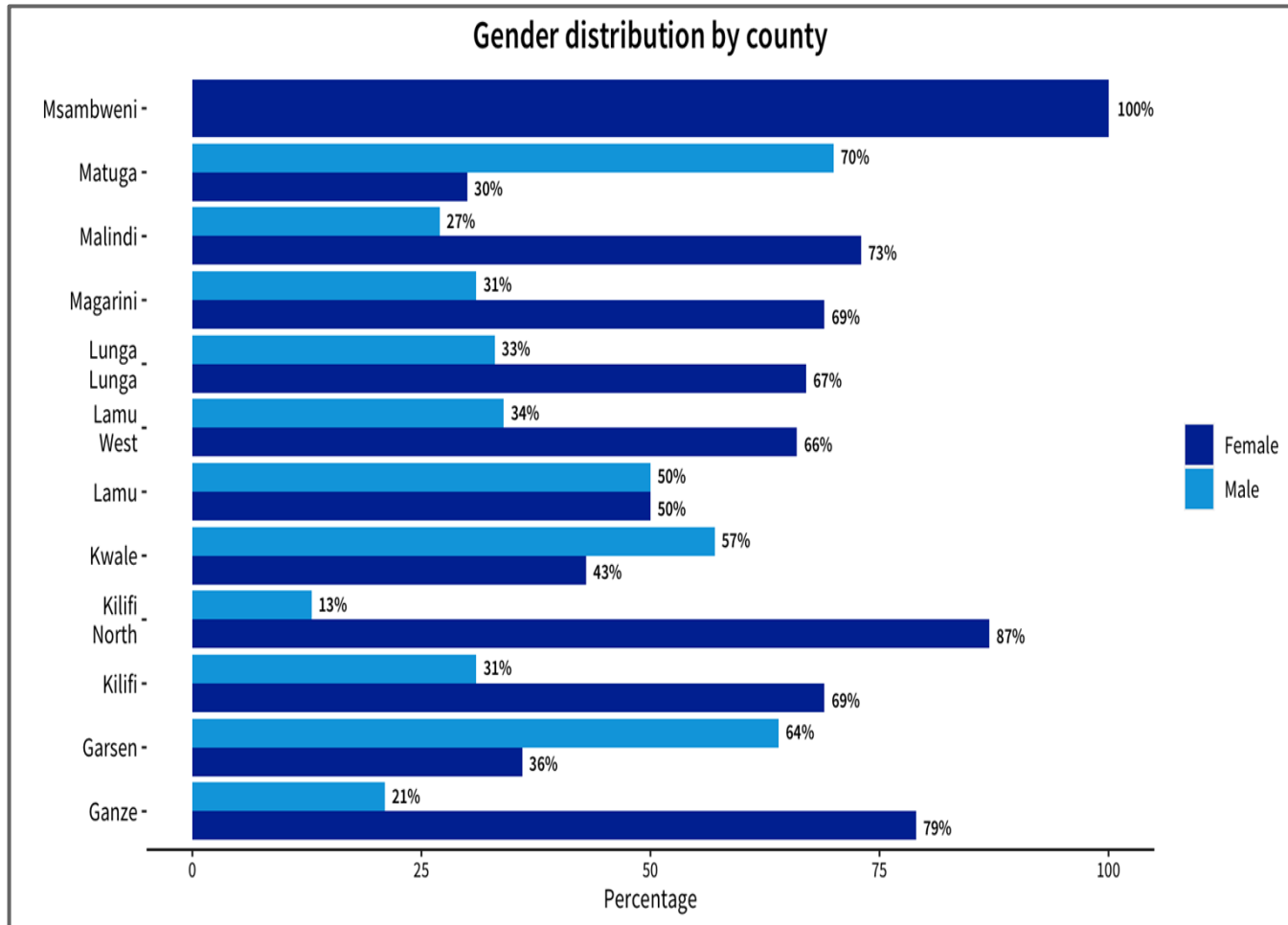
- Looking closer at the enrollment by gender, it has observed a similar fluctuation for both genders. There was a peak 2014, followed by a drop in the next 2 - 3 years, and the went up in 2018.
- As at 2020, about 69% of the total registered farmers were female.

# Majority of the users are below 50 years old



- The age distribution across both genders follows a similar trend, albeit with slightly more younger females.
- 61% of the female users are below 50 years old relative to 57% of the male users.
- Approximately 1 in 3 farmers are youths i.e people below 39 years

# The domination of the female representation is noticed across most counties



- In line with the average representation by gender, there are more female farmers across most counties
- Female representation is more in 7 of the 11 counties observed

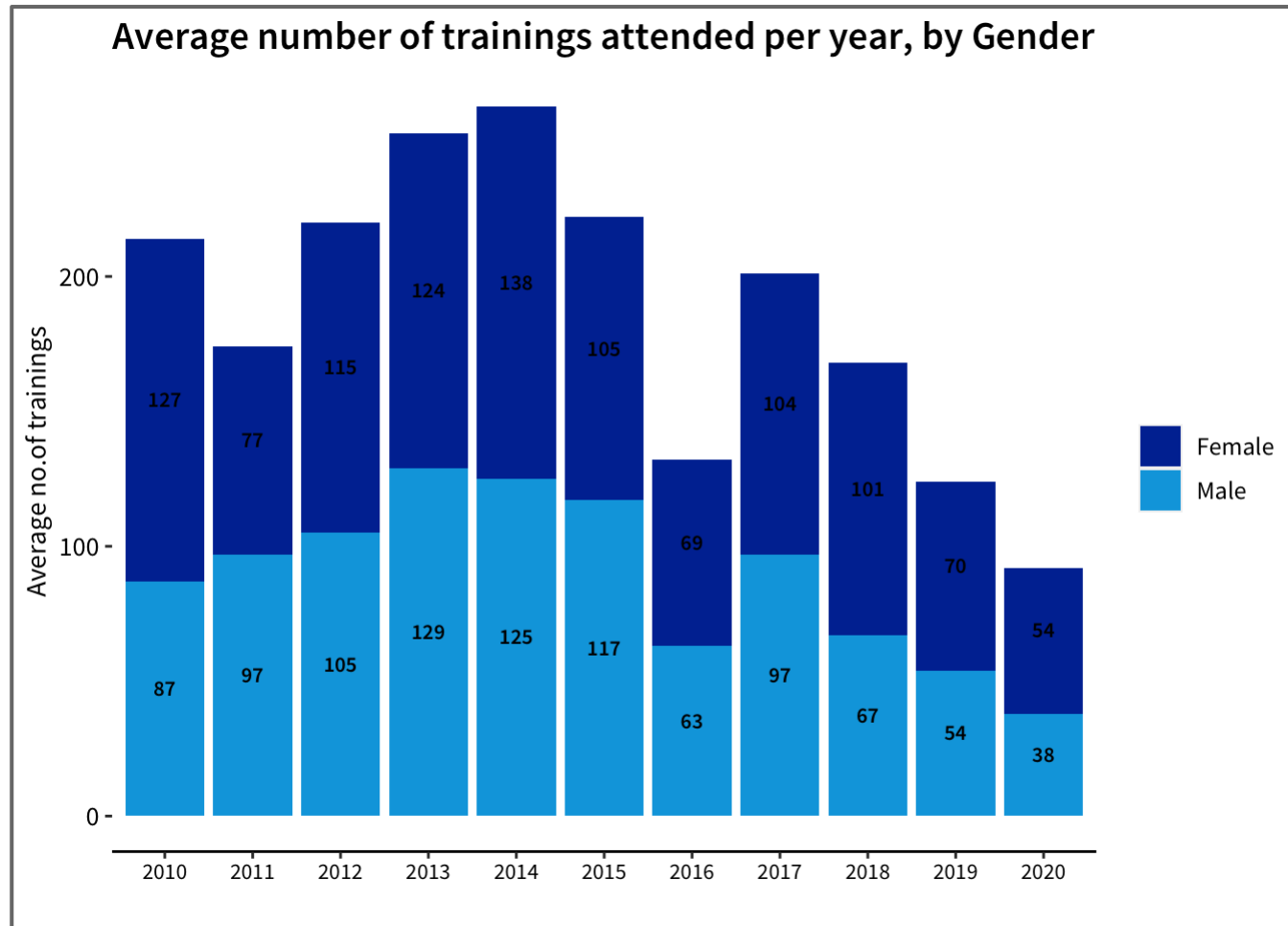
A man wearing glasses and a plaid shirt is looking down in a wooden structure, possibly a chicken coop. In the foreground, several chickens are visible, including a large white one. The entire image has a red overlay.

# Service usage among different groups

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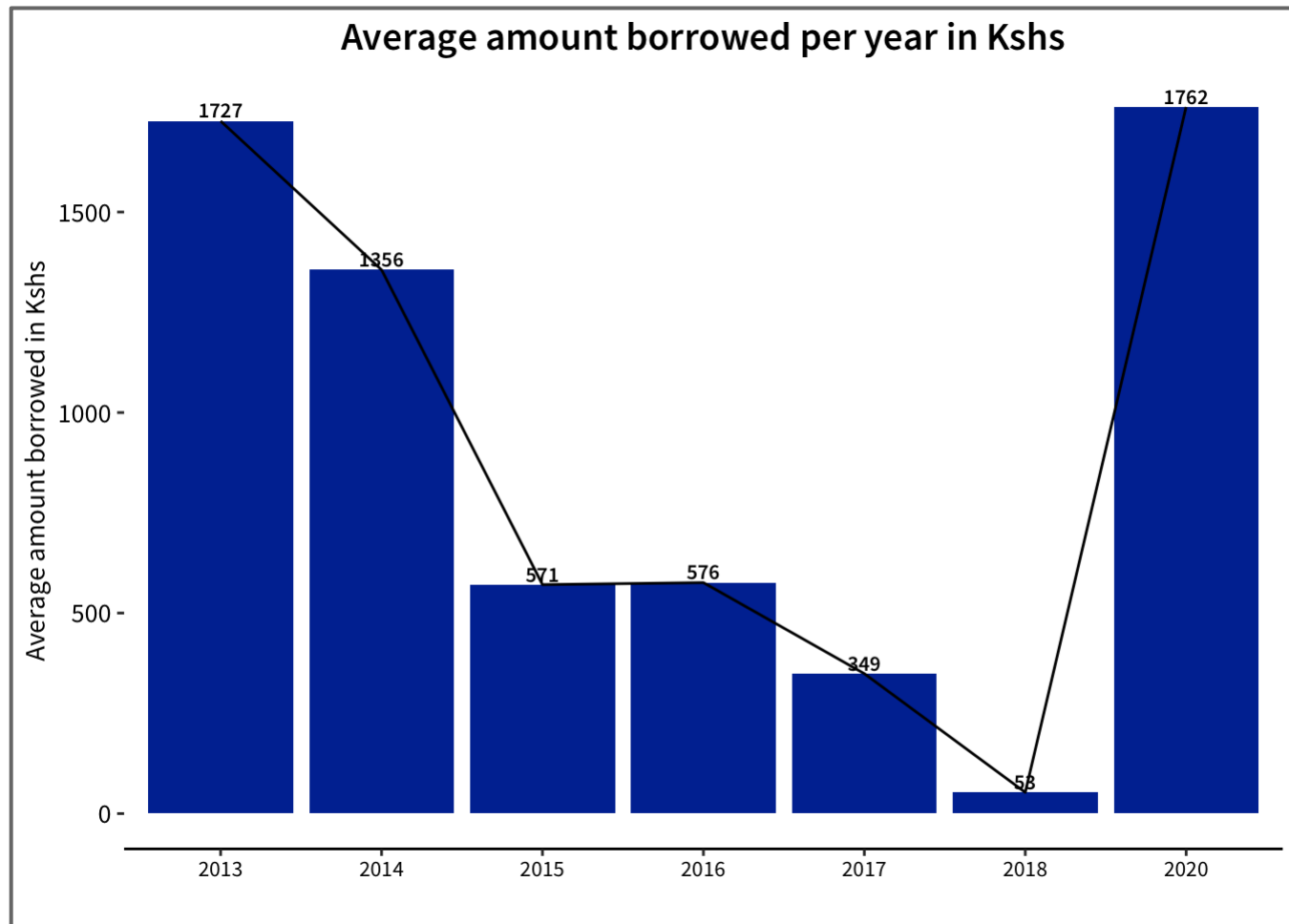
In this section, we present our findings on how farmers use Equator Kenya services (i.e. product procurement, loan, training), especially through a gender lens

# Number of trainings attended has declined steadily across both genders



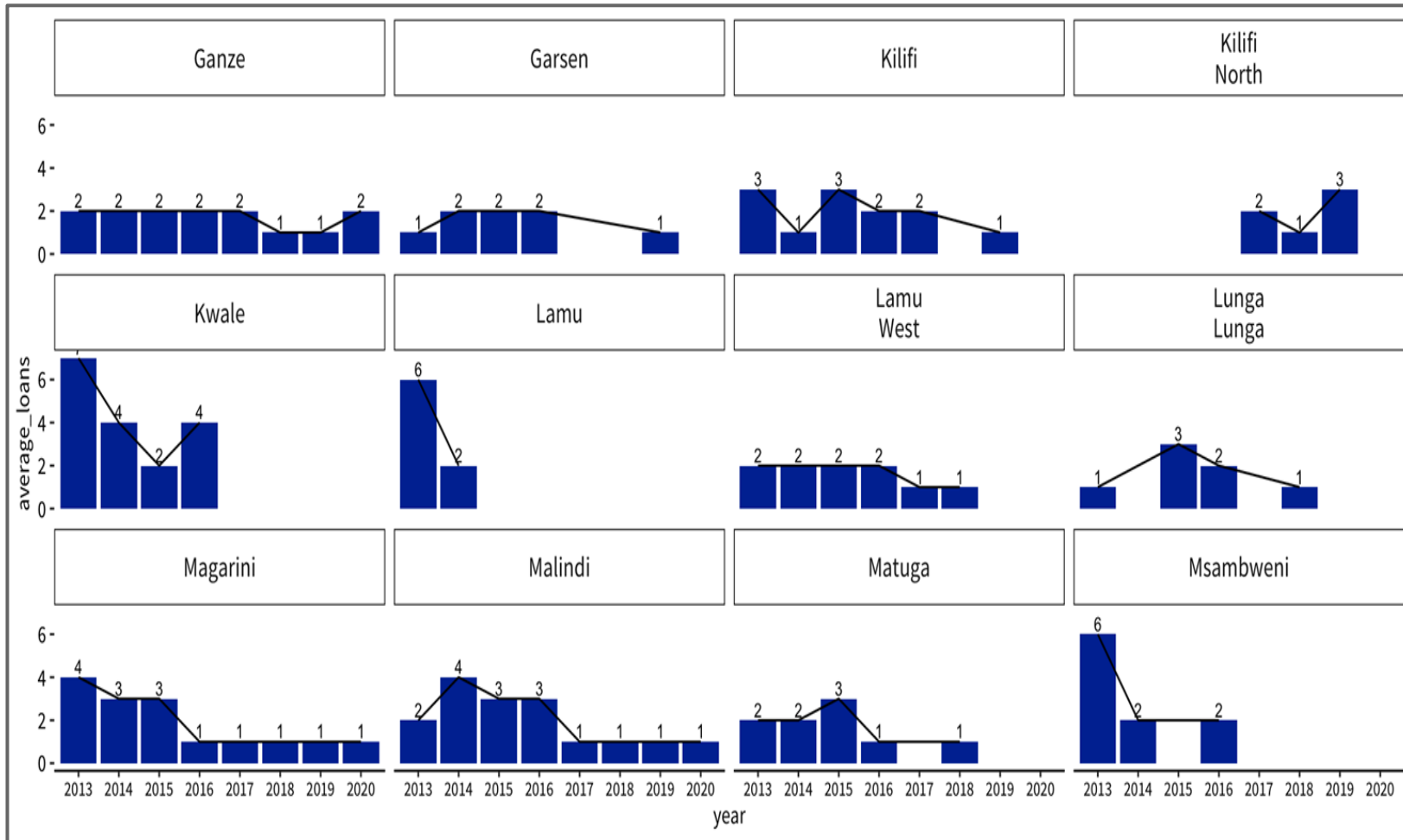
- Training attendance peaked in 2014, similar to the trend shown in enrollment with Equator Kenya.
- Female attendance at trainings is relatively higher than male, averaging 53% between 2010 and 2020.
- Female farmers' attendance reduced by an average of 3% within the period while male attendance reduced by 4%.
- It is for Kenya Equator to investigate what has led to the decrease. Is it because the training content provided does not meet farmers' most pressing needs, or because of some barriers lying in the management efficiency?

# Amount borrowed spiked in 2020, possibly related to COVID 19 related difficulties



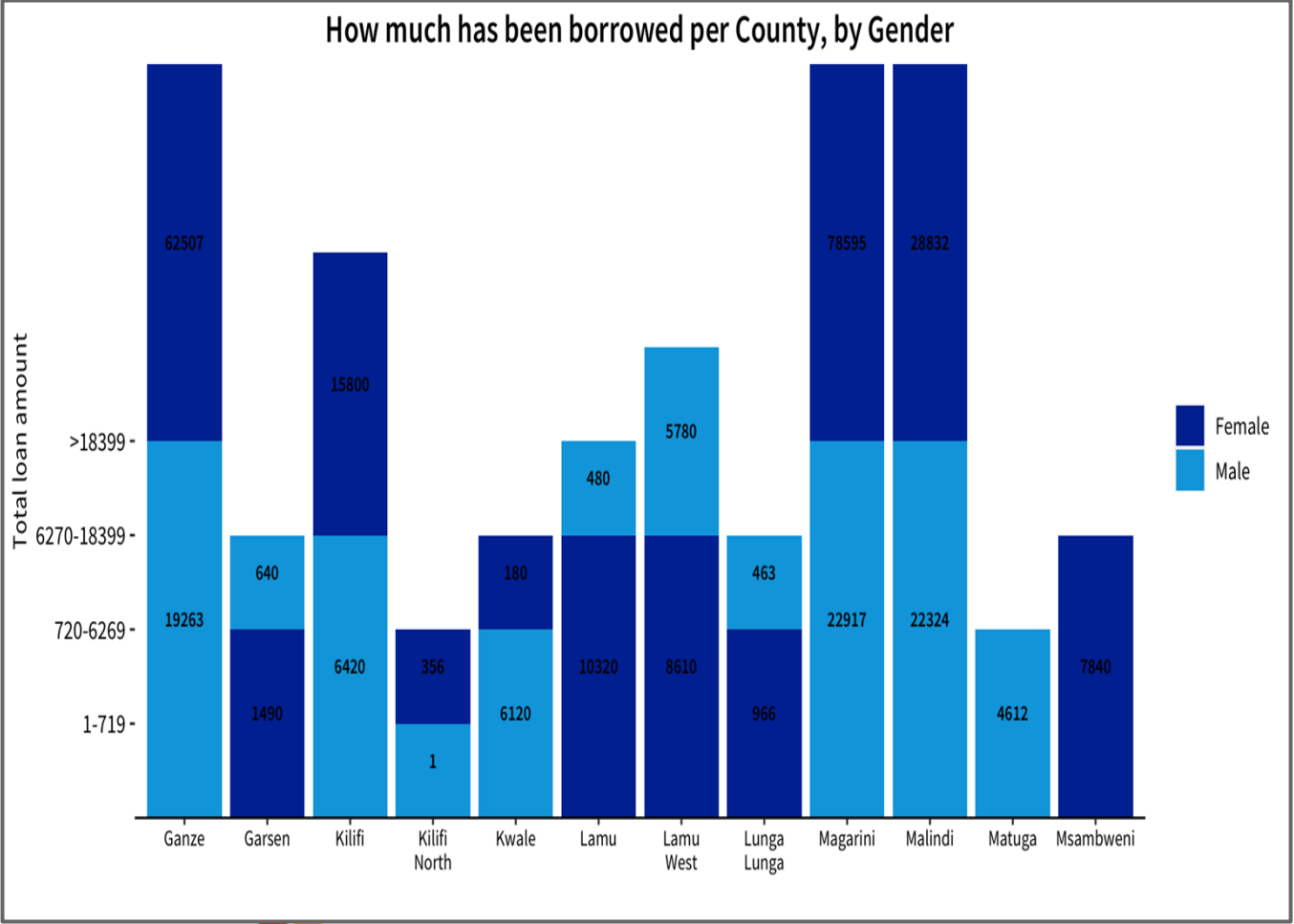
- The average amount of loans taken by users has seen a drop from 2013 to 2018, then experienced a spike in 2020.
- A potential reason for the spike in 2020 is related to challenges raised by the Covid-19 lockdowns. This increase represented a 134% above the average amount borrowed over time.
- This view is supported by this [data](#) from a 60 Decibels study which shows that 42% of Kenyan adopted “taking loans” as a coping strategy amidst the impact of Covid-19 on activities.
- This can be another case where eProd’s management solutions has enabled agribusiness like Equator Kenya to respond quickly to farmers’ emergencies<sup>24</sup> and needs.

# The highest volume of loans have been taken in counties dominated by female farmers




- The highest volume of loans have been taken from Kwale (17), Malindi (16), Magarini (15), Ganze (14) and Kilifi (12).
- The average female representation across these counties is 69%.
- To further understand how the loan service provided by Equator Kenya and how management solution provide by eProd for Equator Kenya have helped farmers in solving pressing financial needs, additional data on loan purpose, precise identification of needs through farmer profile and effects of loan will be helpful.

# Total loan amount by female is more than double the value of loans taken by male

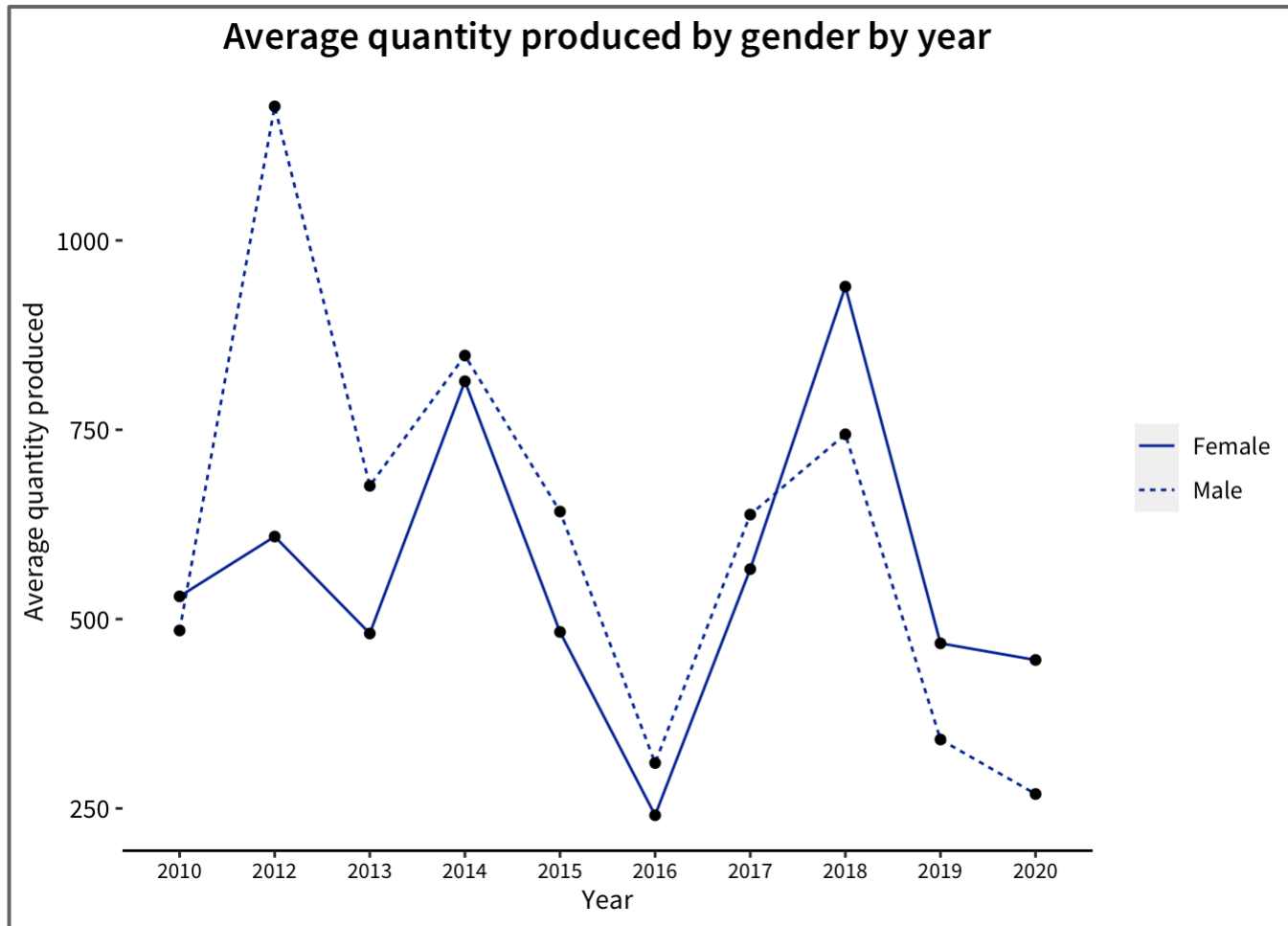


- The value of loans by female farmers is about **2.5x** the value of loans taken by male farmers across all the counties
- The highest value of loans are from Magarini, Ganze and Malindi which have an average female representation of 74%.
- Interestingly, while Kwale has the highest volume of loans taken, the value of loans is relatively small compared to other counties



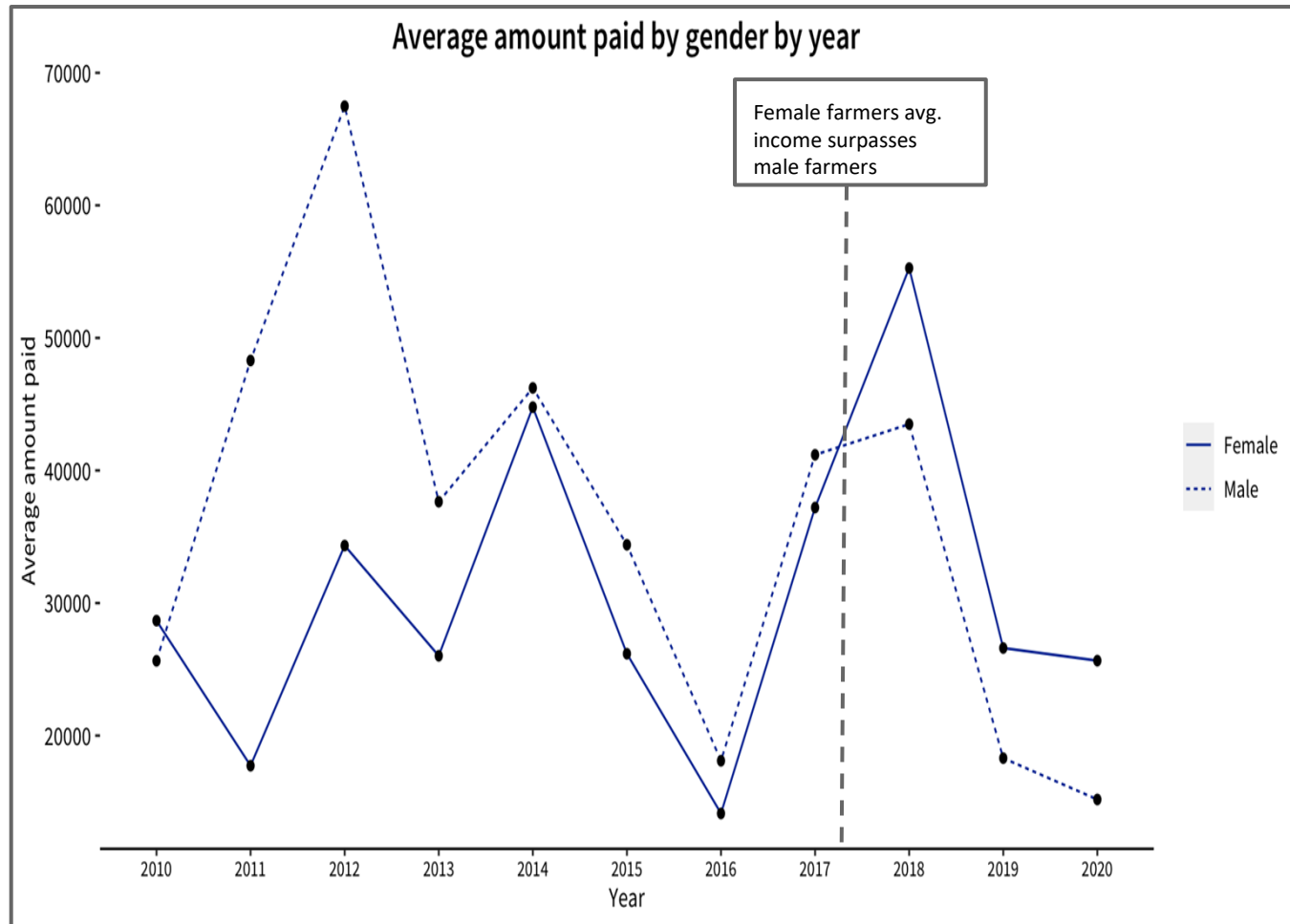
**What impact has Equator Kenya had on SHFs' farming practice, farm income, and resilience to farm-related constraints or shocks?**

# Male farmers produced more volumes on average than female farmers



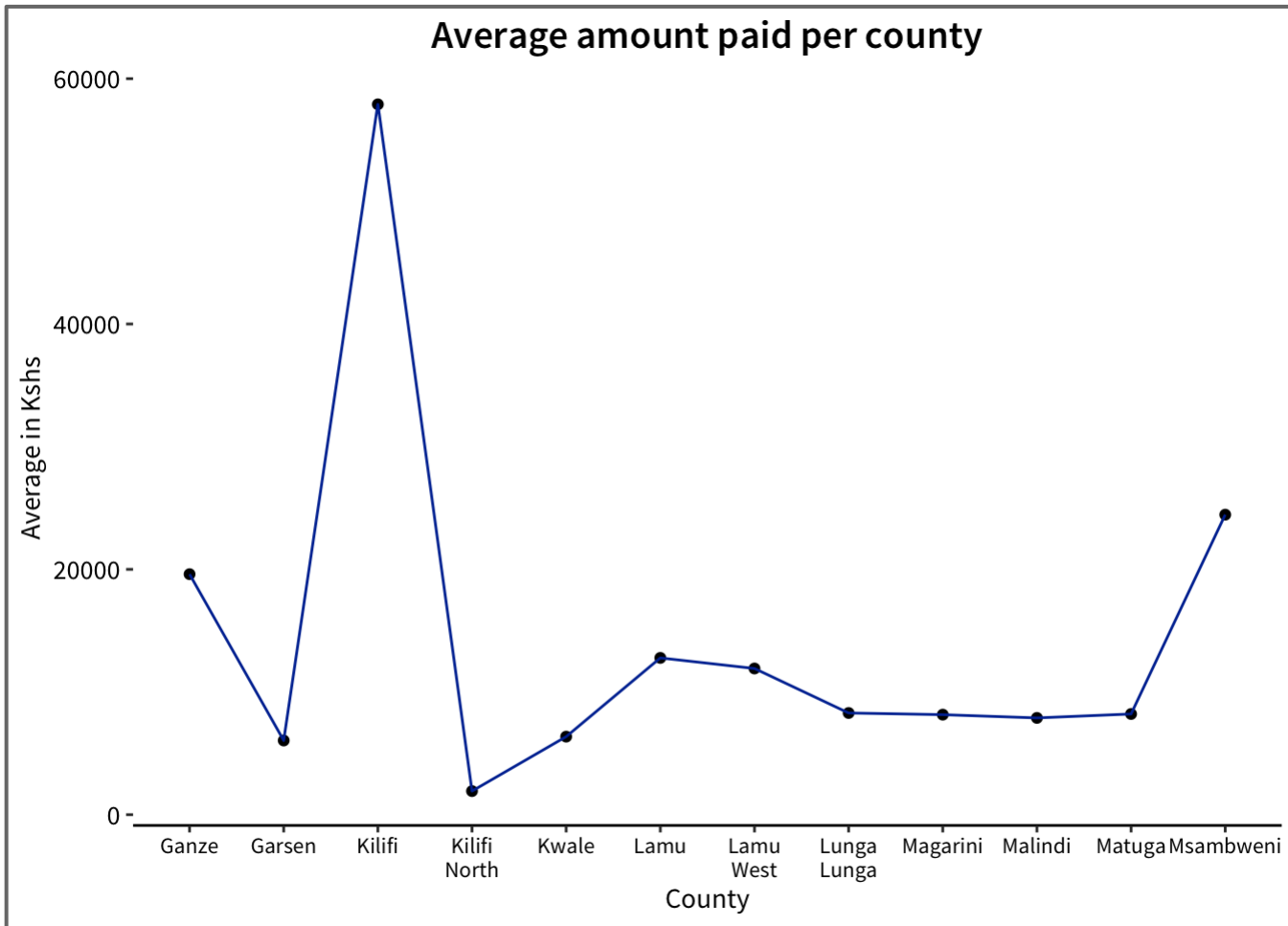
- While quantity produced by both genders followed the same pattern annually, male farmers produced more than female farmers before the trend was reversed in 2018.
- Average quantity produced by male farmers was 9% higher than quantity produced by female farmers.

# Average farmers' income earned through Equator Kenya for male farmers is marginally higher than female farmers



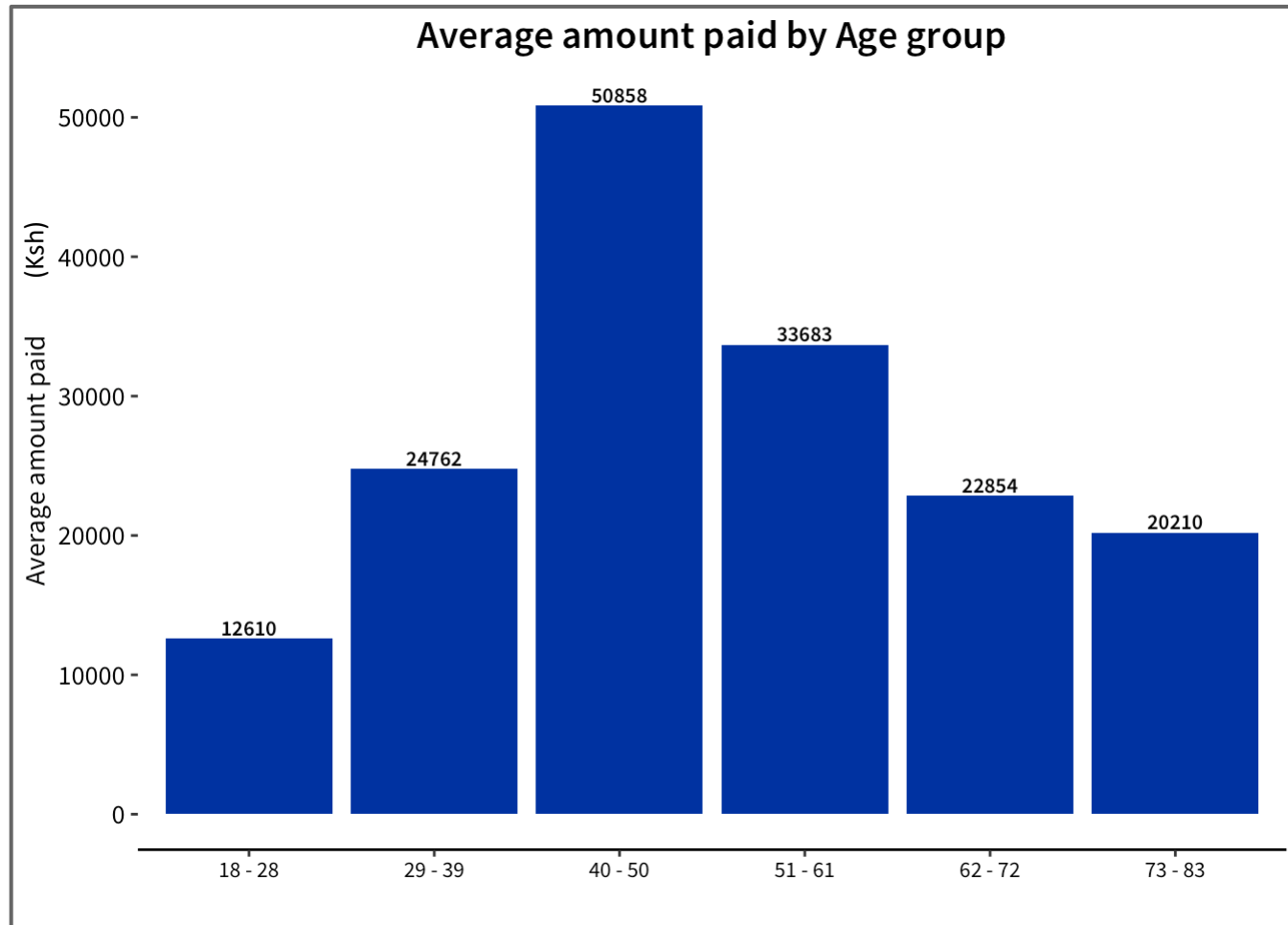
- The average amount paid to both genders has typically followed the same cycle over the years, albeit with male farmers earnings slightly higher
- The male average was higher relative to female until 2017 when the trend was reversed.
- This is similar to the trend in quantity produced which suggests that the higher amount paid was closely tied to the higher quantity produced.

# Users in Kilfi received the highest amount paid to farmers across counties.



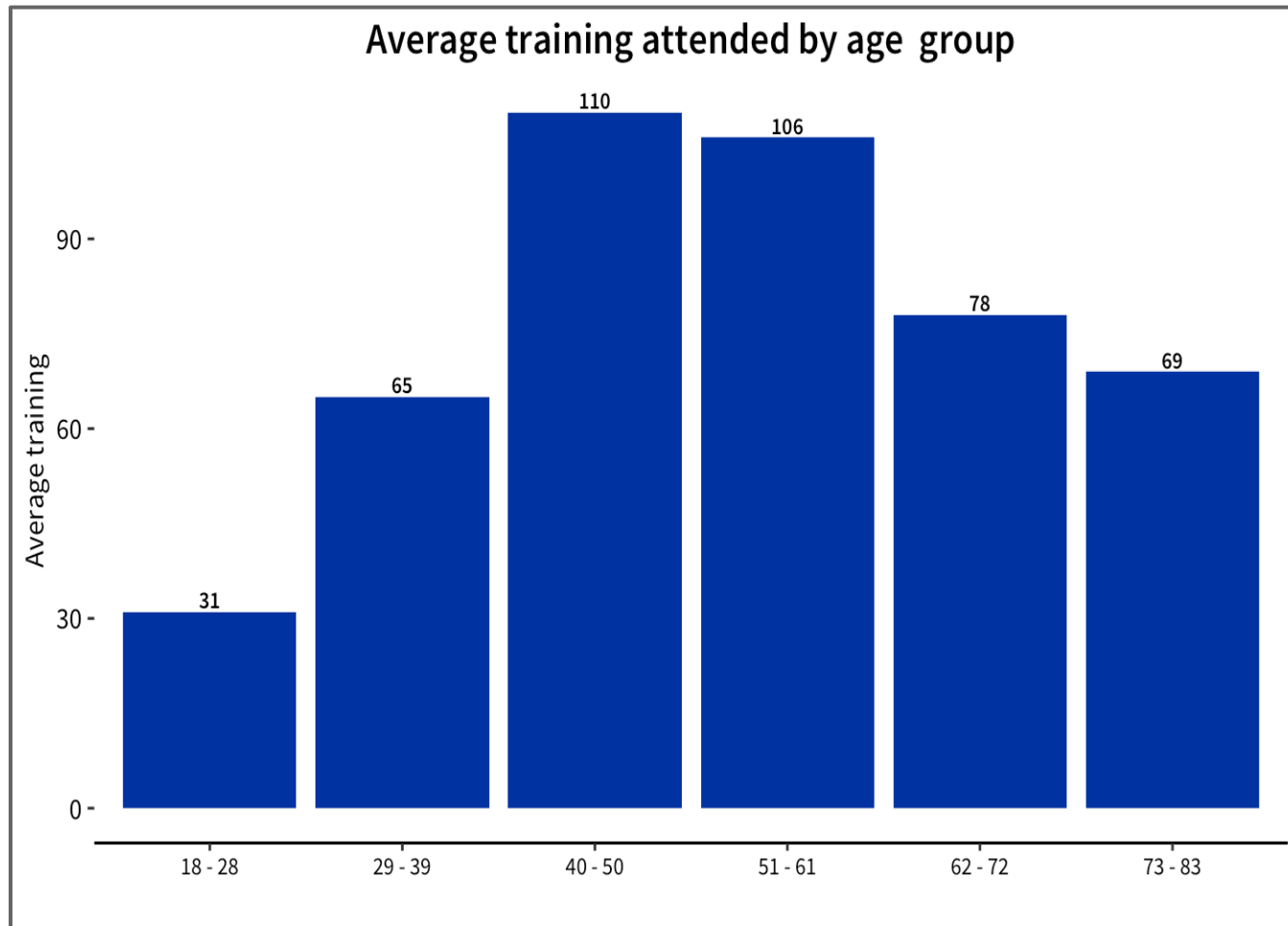
- The highest average amount paid to users was in Kilifi which is notably 69% female.
- Interestingly, Kilifi north also recorded the lowest average amount paid to farmers

# The youngest farmers earn the lowest amounts



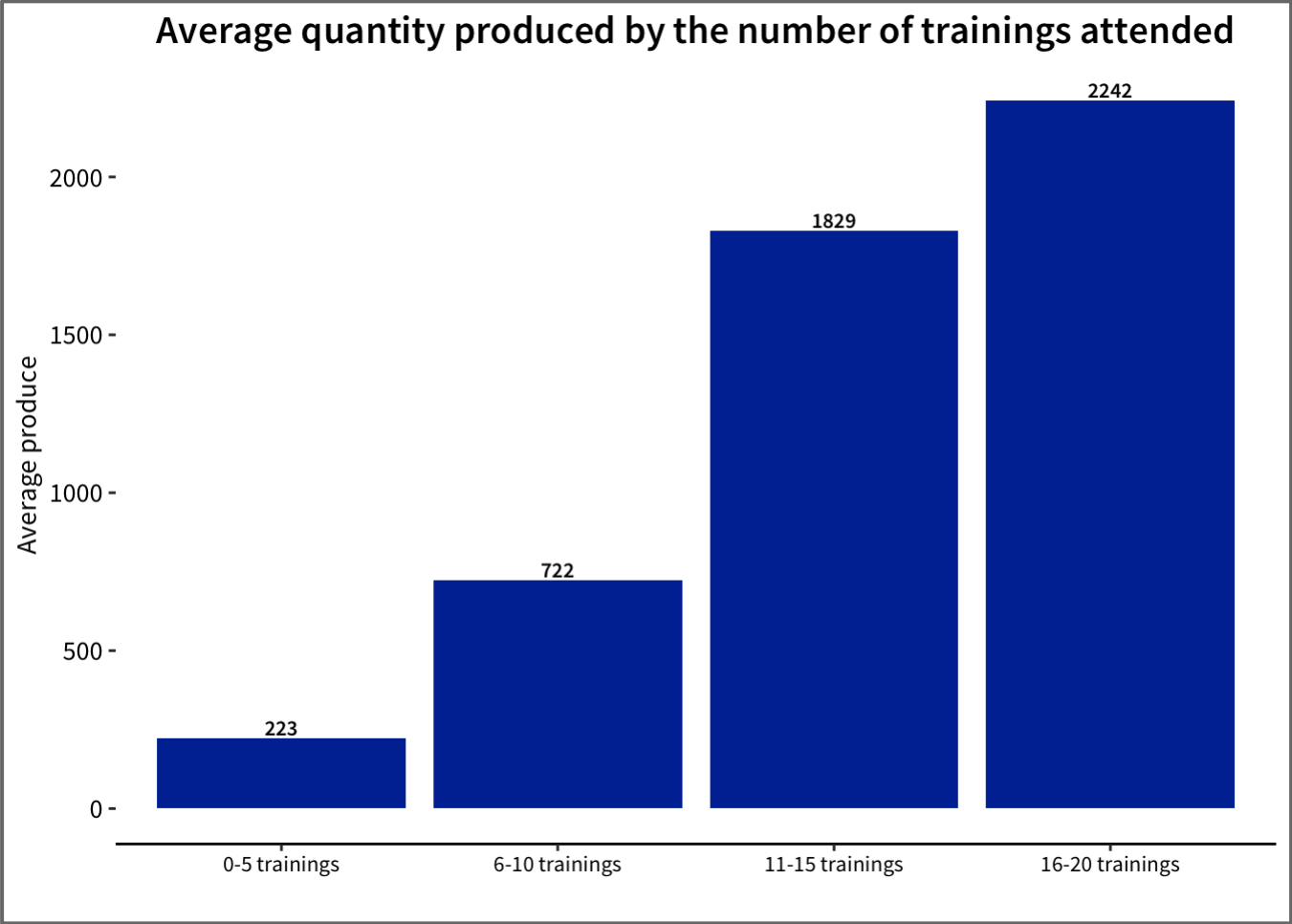
- The age group at both ends of the spectrum receive the lowest amounts through Equator Kenya.
- Farmers within age 40-50 earn the highest amount.

# The youngest farmers also attend the least number of training sessions



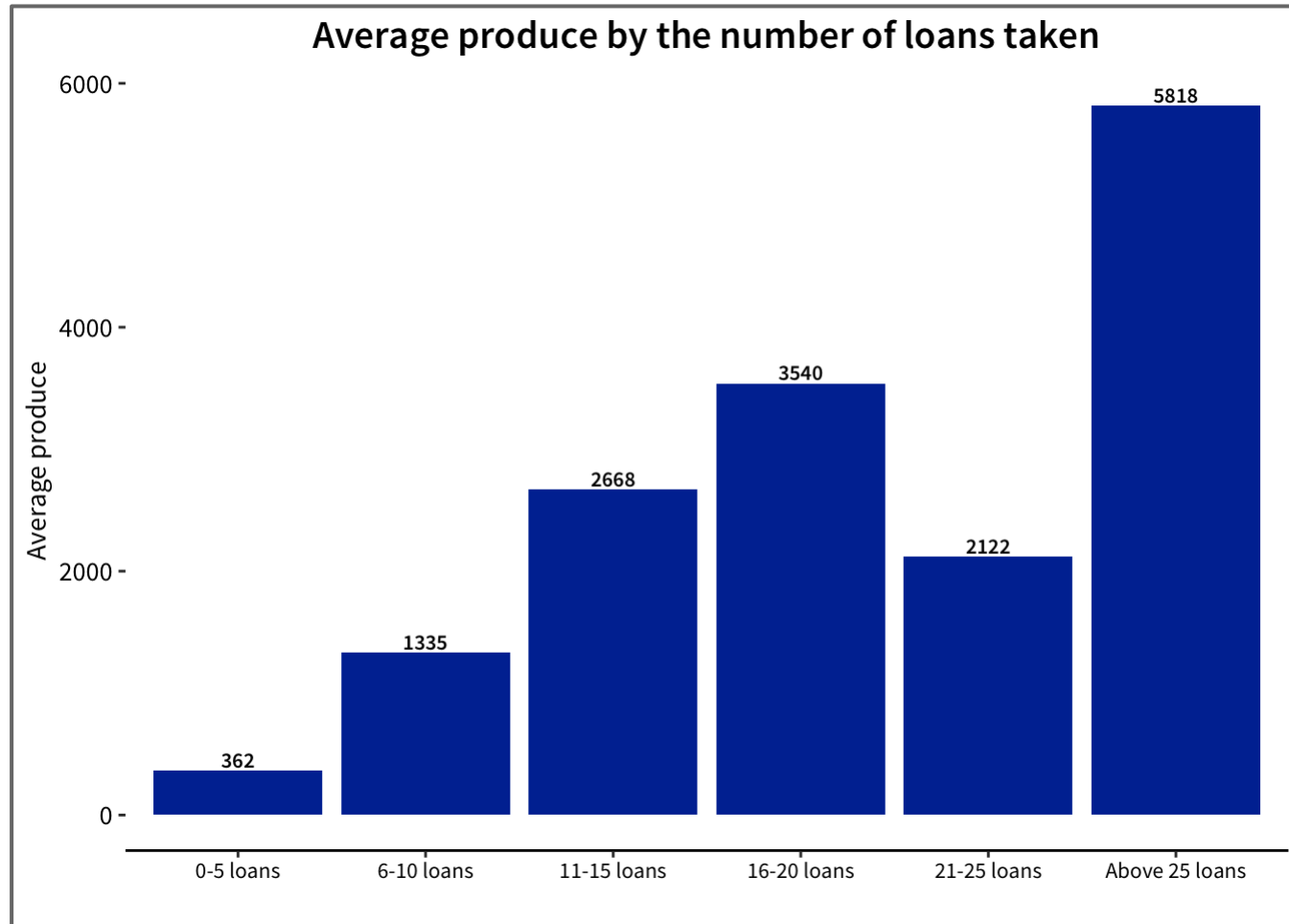
- The youngest farmers attend the least number of training sessions or capacity building sessions provided to them.
- The age groups (40-50) and (50-60) group that attends the most amount of training sessions also make the most income from Equator Kenya, on average.

# Farmers who attended a higher number of trainings recorded higher quantity produced



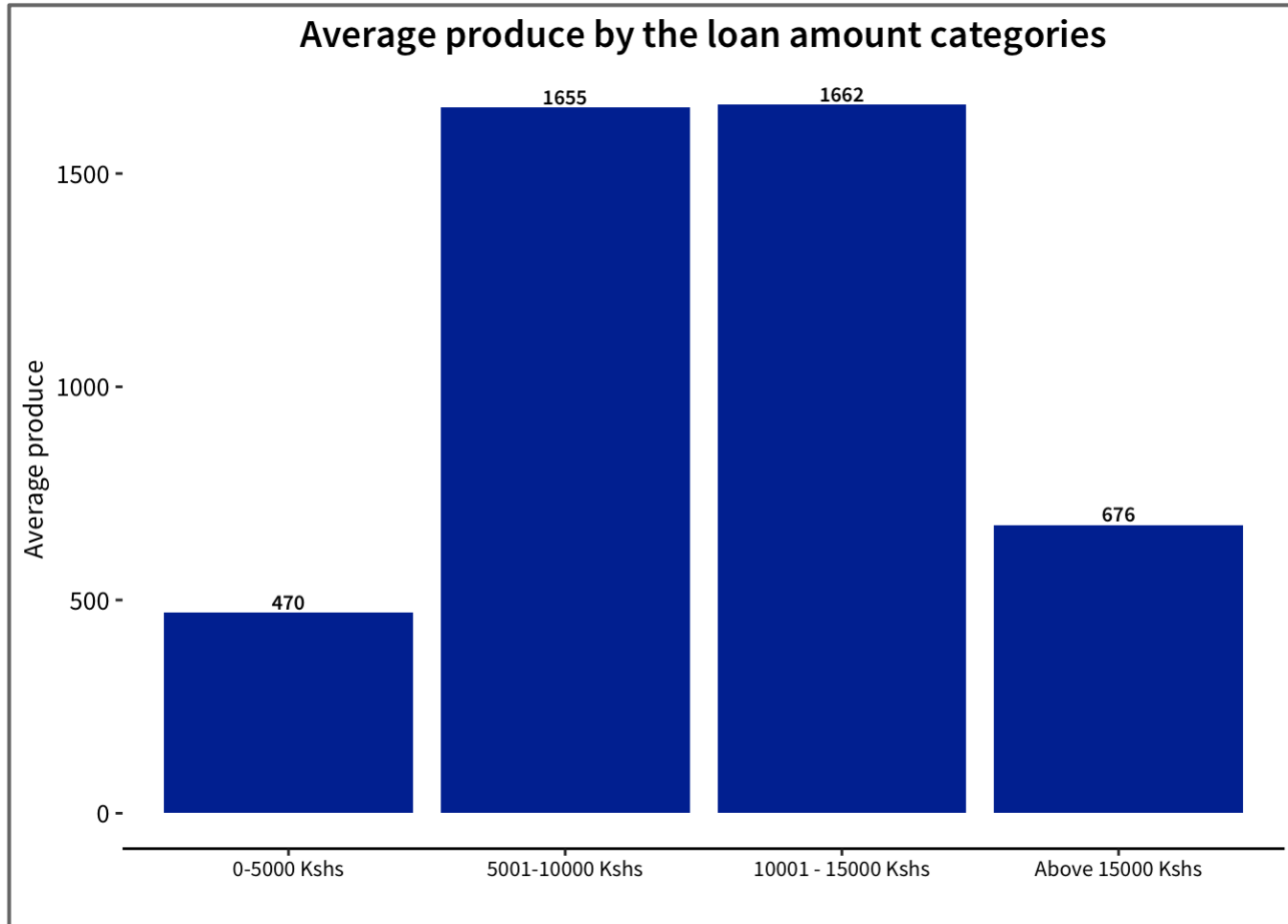
- Average quantity produced seemingly moved in tandem with the number of trainings attended.
- The highest volume produced was among farmers who had attended 15 - 20 trainings.

# Similarly, the average amount of production has increased with the number of loans taken



- Farmer's production has typically increased with the number of loans taken with those who have taken more loans showing higher average amount of production.
- The only exception lies in the category of those who have taken 21 - 25 loans.
- This suggests that access to loans could play a key role in growing farm output.

# However, a larger loan amount does not necessarily always translate to higher production volumes



- Higher loan values do not always result in higher produce.
- While farmers who took loans between the 5001 - 15000 KSH band recorded an increase in average produce, farmers that took loans higher than 15,000 KSH recorded relatively lower produce.
- A potential explanation for this phenomenon could be diminishing marginal effect of loan. Meanwhile, information of how loans taken have been used could provide in-depth insights on the impacts of loans on farming outcome.



# Key Takeaways

## What does the data tell us?

### Key Takeaways from data analysis

Females make up a larger proportion of Equator Kenya's farmer demography and tend to borrow higher loan amounts than male farmers

Training appears to be an instrumental part of Equator Kenya's offering. Farmers who attend more sessions produce more and make more income through the platform



Higher loan amounts do not always translate to increased output

Males sell an average of about 9% more output than female



**Next Steps for In-depth  
Assessment of Impact on  
Smallholder Farms**

# Data collection is key to improving service delivery which should have a resultant positive impact on the theory of change

Data Need	Justifications
Demographic information	Eprod should collect more more demographic information on farmers e.g farmers’ experience farming, estimate of farm size, education level etc. This will help eProd’s partners like Equator kenya better understand the different farmers’ segment within their user base and inform the provision of tailored services to meet their needs.
Delivery channels used	Information on the existing distribution channels could give some insight into the effectiveness of the channels. This could us help identify potential pain points for farmers with selling their chili produce to Equator Kenya
Purpose of loan	Categorization of the training provided by Equator Kenya and the purpose of loans collected will help better assess the effectiveness of these initiatives on farmers’ outcomes, which is ultimately important in assessing eProd’s theory of change



# **Future Research Plan: How to Evaluate the Direct Impact on eProd's customers**

# To measure the direct impact of eProd’s services on its customers, the following research plan can be considered:

Structure of Research Plan	Details
Scope of Research	<p>Given the diversity of eProd’s customers, the scope of research for each selected, specific customer may differ. Overall, the high-level research questions to ask include:</p> <ul style="list-style-type: none"> <li>• What types of management challenges has eProd help agribusiness tackled?</li> <li>• What solutions provided by eProd have addressed these challenges?</li> <li>• How much has eProd help the agribusiness improve the management efficiency (e.g. cost, time)?</li> <li>• What other changes have happened to the agribusiness because of the adoption of eProd’s solutions?</li> </ul>
Sampling Strategy	<p>Given the vast range of types of agribusiness eProd has served, purposive sample and quota sampling strategy can be applied to selected certain number of agribusinesses for <b>each category</b> by “type of challenges” or by “where does this agribusiness lie on the value chain”.</p>
Methodology	<p>Given the information required for this assessment, a mixed methodology combining qualitative analysis and quantitative study is highly recommended.</p> <ul style="list-style-type: none"> <li>• Qualitative: can include desk research, stakeholder mapping, and interviews (e.g. Focus Group, Expert Interviews), The sample size for “each category” can be 3 - 5.</li> <li>• Quantitative: if administrative data held by customers is not sufficient, a primary data collection is highly recommended. The sample size required for primary data collection should be larger - a rule of thumb is that, 30 is the minimum for detecting significant differences across category.</li> </ul>

For data collection in qualitative and quantitative phases, the following information and data points can be considered:



### Customer Profile

- Size of customers (e.g. number of staff, number of farmers it serves)
- History of operation
- History of adoption eProd services
- Where is it in the value chain



### User Experience

- What challenges to solve
- Why eProd over other options
- What challenges have been addressed by adopting eProd's services
- What are the pain points of using the solution
- What challenges are not yet responded



### Measure of Impact

- What was the cost of managing the specific challenge used to be
- What is the cost after adopting eProd's solutions
- Has it lead it any forms of scale-up of the business
- If so, what are they, and to which extend
- What other changes have happened



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