Agenda

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- I. DigiFarm
- II. FMN
- III. Banks
- IV. KALRO
ABOUT GIZ

• As a service provider in the field of international cooperation for sustainable development and international education work, we are dedicated to shaping a future worth living around the world.

• We have over 50 years of experience in a wide variety of areas, including economic development and employment promotion, energy and the environment, and peace and security.

• MakeIT in Africa is a pilot project forming part of the Digital Africa and MakeIT initiatives launched by the German Federal Ministry for Economic Cooperation and Development (BMZ). Working with the private sector, associations and social enterprises, MakeIT aims to utilise tech entrepreneurs’ growth and employment potential in partner countries engaged in development cooperation with Germany.

• We are promoting the D4Ag Programme as part of the MakeIT in Africa project, to build a bridge between Tech Startup Promotion and Agricultural Transformation in Africa.

• D4Ag Objectives include:
  1. Expand market opportunities
  2. Build capacities
  3. Facilitate cooperations
Mercy Corps’ AgriFin programming (MCAF) represents USD 35 million in innovation funding from the Mastercard Foundation, Bill and Melinda Gates Foundation and the Swiss Development Corporation to support development, testing and scale of digitally-enabled services for smallholder farmers.

● Our objective is to develop sustainable services that increase farmer income and productivity by 50%, with 50% outreach to women
● MCAF works as an innovation partner with private sector scale partners and such as banks, mobile network operators, agribusinesses, as well as technology innovators and governments committed to serving smallholders at scale
● We help our partners develop, test and scale bundles of digitally-enabled financial and non-financial services supporting partnership development between market actors that leverage their strengths
● We combine MCAF team expertise with strategic subsidy to jointly implement iterative, fail-fast engagements with partners on a cost-share basis, sharing public learnings to drive market ecosystem growth
● Since 2015, we have completed more than 200 engagements with over 120 partners across Africa
● With the onset of the Desert Locust in East Africa, the Skoll Foundation funded AgriFin’s first emergency response work leveraging digital tools
● With this support, AgriFin now reaches more than 14 million smallholders

ABOUT AGRIFIN
ABOUT DALBERG

OUR MISSION
Our mission is to bring the best of private sector strategy to address global development challenges

WHO WE ARE
We are entrepreneurs and innovators, designers and creative problem solvers, thinkers and doers, idealists and pragmatists from everywhere, at home anywhere

WHAT WE DO
• Offer an innovative mix of advisory, investment, research and design services
• Offer an approach that combines rigorous analytical capabilities with deep knowledge and networks across emerging and frontier markets

WHY WE DO IT
Our shared mission is a positive and optimistic one; we work to uncover, build fuel and sustain the potential in people everywhere
Introduction

About this report | This blueprint was created by Mercy Corps AgriFin and Dalberg and in consultation with GIZ

Context

The agriculture sector in Africa has been facing systemic challenges over the past decades including issues around markets, infrastructure and exclusion. These challenges affect most smallholder farmers (SHFs) who account for 80% of food producers in the continent.

Digital solutions have a huge potential to revolutionise the sector’s modus operandi opening new markets that can be scaled quickly and offering “end to end” services at a cost-effective way, leading to improvement in the welfare of smallholder farmers.

Objectives & Approach

GIZ engaged Mercy Corps to understand how young technology (“tech”) innovators can be supported in scale and operational viability by engaging with emerging models of digital platforms.

To achieve this, GIZ initiated a Digital Platforms for Agriculture (DAP) programme, a six-month initiative to work with jointly identified platform partners in Kenya and Nigeria to explore and gain insights into the key operational dynamics of emerging digital platforms for agriculture and present related learning to public audiences to drive ecosystem change.

Documents ensuing from this work include:

• An Executive Summary
• The Blueprints Deep-dive (this file)
• The White Paper Report

Research Overview

Over two months, GIZ, Mercy Corps AgriFin and Dalberg used a combination of research methods

• We conducted desk-based research
• We analyzed work from 30+ previous engagements with DAPs and tech innovators

• We conducted virtual interviews with 40+ companies, including:
Agriculture is key to sub-Saharan Africa’s economy, contributing to 15% GDP and employing over 50% of the population.

Agriculture's contribution to GDP in sub-Saharan Africa (2019)\(^1\), %

- **AGRICULTURE IS CENTRAL TO SSA ECONOMY – SHFS ARE KEY**
  - Contributes 15% of GDP
  - Employs >50% of the population
    - c. 80% of the agriculture output is contributed by c. 33m of Small Holder Farmers (SHF)
    - 40-50% of SHF are women
  - Forms the bedrock of food security and nutrition
    - Production of diverse and nutrient dense foods increases resilience against malnutrition and improves health outcomes

Source: World Bank Data Indicator on Agriculture and Employment; FAO; African Postharvest Losses Information System (APHLIS); World Bank, ‘Arable land (hectares per person) - Sub-Saharan Africa’, 2017
Systemic issues impact SHF livelihoods across market, land, skills and capital, with cross-cutting gender equity and climate challenges

Systemic challenges impact SHF livelihoods and holds the sector back from achieving long-term sustainability goals and social inclusion

### Context

**Market**
- Lack of access to quality and affordable inputs (e.g. fertilisers, seeds, herbicides)
- Limited linkages to off-takers and end-consumers
- Price volatility driven by seasonality and middlemen

**Land**
- Reduced arable land due to urbanisation
- Reduced yields due to overgrazing, over-farming, extreme weather events
- Inhibitive property rights and land customs

**Skills & Knowledge**
- Reliance on outdated, low productivity agricultural practices
- Limited information sharing on good agricultural practices
- Limited entrepreneurial support

**Capital & Infrastructure**
- Limited access to finance
- Fragmented distribution and supply chain infrastructure and traceability
- Lack of access to new technologies to boost productivity

### Gender
- Lower asset ownership due to cultural and legal reasons
- Unequal access to enabling technology and services
- Lower engagement of women innovators

### Climate
- Deforestation, monocropping, poor soil management, over-extraction of water
- Pollution due to synthetic chemicals and poor waste management

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**Source:** World Bank Data Indicator on Agriculture and Employment; FAO; African Postharvest Losses Information System (APHLIS); World Bank, ‘Arable land (hectares per person) - Sub-Saharan Africa’, 2017
Emerging digital innovations can help to tackle the SHF livelihood, gender equity and climate change challenges

<table>
<thead>
<tr>
<th>Market access innovations</th>
<th>Land related innovations</th>
<th>Skills development innovations</th>
<th>Capital and Infrastructure innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Software-as-a-Service market information on prices, supply quantities, access routes – e.g., Viazi Soko</td>
<td>• Climate smart technologies such as soil testing and solar water pumps help farmers to become more resilient to the impacts of climate change</td>
<td>• eLearning platforms to deliver training on improved agronomic practices and increase farmers' efficiency through SMS, chatbots and/or online channels – e.g. Arifu</td>
<td>• Financial services such as input loans, crowd-sourced investments, mobile money payments, savings products, payment wallets to provide working and growth capital</td>
</tr>
<tr>
<td>• Digital marketplaces to connect SHF to potential buyers – e.g., Digisoko</td>
<td>• Regenerative agriculture and sustainable agriculture practices supported through digital networks</td>
<td>• Advisory platforms to support entrepreneurial and business management – e.g. book-keeping services</td>
<td>• Digital tracing technology – e.g. GPS/geo-tagging, QR codes and contactless delivery signing</td>
</tr>
<tr>
<td>• Online markets with real-time, digitised stock control systems – e.g. Twiga, Jumia</td>
<td>• Satellite mapping of weather and soil to inform planting decisions and land allocation</td>
<td>• Women-targeted content to engage women and close the gender gap</td>
<td>• Digitised mechanisation services such as fleet management or equipment rental to increase access to quality machinery</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• eLogistics platforms to transport goods among value chain players and consumers</td>
</tr>
</tbody>
</table>

Source: Dalberg Analysis 2020
However, digital innovators face several constraints to scale their solutions and reach SHFs

New innovators lack information and data from the field to inform their decision making and product development.

New innovators face high costs of customer acquisition in establishing new field networks and building farmer outreach.

New innovators lack the established networks and relationships to build outreach to potential partners and policy makers.

New innovators face challenges in accessing investment capital alongside cashflow constraints as they scale.

Source: Dalberg Analysis 2020
Context

Digital Agriculture Platforms help to solve the issue of access to digital innovations by bringing together SHF, partners, donors and policy makers

Policy makers

Provide data-driven feedback to adjust policies on agriculture markets and ecosystem

Donors

Provide opportunities to fund high impact and large-scale initiatives in agriculture

Private sector partners & tech innovators¹

Provide access to a large market to scale up, and donors to secure funding when needed

SHF

Provide access to low-cost digital products that help improve productivity and incomes

Digital Agriculture Platform (DAP)

Note: ¹Technology innovators develop digital solutions that surpass traditional approaches to the production, sale and distribution of agricultural products and services. These include ‘fintech’ and ag-tech companies whose breakthrough technologies drive transformation in agricultural markets and impact for smallholder farmers.

Source: Dalberg Analysis 2020
DAPs led by telcos, government institutions, agribusinesses, and banks are some of the most developed in the market, each with unique drivers.

**Blueprints Summary**

**Platform Drivers**

- **Telco**
  - Widen the **customer base**
  - Establish presence as a **digital company**
  - Enhance **customer value proposition and loyalty**

- **Agribusiness**
  - Expand and **strengthen the existing agribusiness**
  - Improve **farmer access to inputs and quality of produce** for offtake
  - Secure their **supply chain**

- **Bank**
  - Expand their **rural client base**
  - **De-risk** agribusiness lending by meeting financial needs throughout the value chain
  - Lead **financial innovation**

- **Govt institution**
  - Build and share **open information and knowledge**
  - Lead **digitisation of agricultural data and research** in line with government priorities
  - Facilitate **evidence-based decisions** in agriculture sector

Source: Dalberg interviews and analysis, 2020
Each platform has different strengths and gaps, driven by platform leaders' assets

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>GAPS</th>
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<tbody>
<tr>
<td>• Strong technical expertise and data storage capabilities</td>
<td>• Limited on ground support in the form of field agents</td>
</tr>
<tr>
<td>• Strong in-house agronomic expertise</td>
<td>• Limited technical expertise and data capabilities</td>
</tr>
<tr>
<td>• Strong commercial planning and marketing expertise</td>
<td>• Limited agronomic expertise</td>
</tr>
<tr>
<td>• Strong operational capabilities and processes</td>
<td>• Limited on the ground networks in the form of field agents</td>
</tr>
<tr>
<td>• Strong agronomic expertise and established links on the ground through existing networks of field agents</td>
<td>• Limited internal capacity for technology and partnership development</td>
</tr>
</tbody>
</table>

Source: Dalberg interviews and analysis, 2020
The enabling environment in different markets can enable or restrict platform growth by influencing farmer buying habits and stakeholder behaviour.

1. Regulatory framework
   - Governments dictate the parameters in which platforms can operate.
   - New legislation can restrict or benefit platforms – e.g., taxes, concessions, regulations on mobile money.
   - As platforms evolve, governments are developing appropriate policies, including in data protection.
   - Government backing can be highly influential.

2. Access to finance
   - Platforms tend to be funded by the lead organisation; many seek donor support to subsidise development or establish infrastructure.
   - Both start-up investment and working capital to finance operations is needed to sustain and scale.

3. Human capital
   - The availability of skilled labour is essential to support business growth.
   - High levels of digital skills can provide a market base for tech innovation and user engagement.
   - In markets with low user digital literacy, platforms need to innovate to engage customers through a platform.

4. Infrastructure
   - Includes strong connectivity, mobile penetration, availability of servers and storage technology, and mobile money.
   - Infrastructure provides a strong base for platform development and channels to consumers.

5. Ecosystem density
   - The presence of multiple digital innovators in the market expand DAPs’ potential tech partners.
   - High interactions among innovators promotes the development of new technologies that can be adapted to agriculture.
   - Infrastructure provides a strong base for platform development and channels to consumers.

6. Market maturity
   - Structured value chains, formal businesses and interaction amongst actors are indicators of agriculture sector maturity.
   - DAPs can create linkages among supply chain actors in unstructured value chains and ag markets.
   - DAPs can scale faster in a mature sector with multiple potential partners and a more mature customer base of commercial farmers.

Source: World Bank, Scaling up Disruptive Agriculture Technologies in Africa, 2020; Dalberg interviews and analysis, 2020
**We captured key learnings from four ‘Blueprint’ case studies based on Digifarm, KALRO, FMN and four different banks**

**Why are we focusing on them?**

New models and platform leaders continue to emerge in the market. These four blueprints have been chosen due to:

1. Higher levels of development and deployment
2. Varied interactions with digital innovators
3. Historical relationship with GIZ, AgriFin and Dalberg

<table>
<thead>
<tr>
<th>Type of Platform</th>
<th>Lead Platform(s)</th>
<th>Company description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Telco led</strong></td>
<td><img src="image" alt="DigiFarm" /></td>
<td><strong>Safaricom</strong> is the leading provider of converged communication solutions in Kenya, and leads the DigiFarm platform</td>
</tr>
<tr>
<td><strong>Agribusiness led</strong></td>
<td><img src="image" alt="FMN" /></td>
<td><strong>Flour Mills Nigeria (FMN)</strong> is one of Nigeria’s leading food and agricultural businesses. <strong>Twiga</strong> is a Kenyan agribusiness that sources produce from farmers in rural areas</td>
</tr>
<tr>
<td><strong>Bank led</strong></td>
<td><img src="image" alt="Sterling" /></td>
<td>4 commercial banks based in different countries: <strong>Sterling Bank - Nigeria</strong></td>
</tr>
<tr>
<td><strong>Govt Institution led</strong></td>
<td><img src="image" alt="KALRO" /></td>
<td><strong>Kenya Agricultural and Livestock Research Organisation (KALRO)</strong> is a parastatal created in 2013 to oversee agricultural research in Kenya. <strong>ATA</strong> is a govt. agency in Ethiopia; <strong>NPCK</strong> is Kenyan PPP with focus on potato value chain</td>
</tr>
</tbody>
</table>

Notes: ATA - Ethiopian Agricultural Transformation Agency; NPCK - National Potato Council of Kenya

Source: Dalberg interviews and analysis, 2020
We evaluated 4 leading types of DAP on 8 key elements to provide a detailed understanding of how the platform works and the impact it has delivered.

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<tr>
<th>Understanding the Platform</th>
<th>Overview</th>
<th>Value Proposition</th>
<th>Operational Model</th>
<th>Partnerships &amp; Collaboration</th>
<th>Sustainability &amp; Enabling environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Background</td>
<td>Product offering</td>
<td>Technology</td>
<td>Current &amp; potential partners, including tech innovators</td>
<td>Financial model (R&amp;C)</td>
</tr>
<tr>
<td>2</td>
<td>Current status</td>
<td>Value for SHF and other stakeholders – government, agrodealers, off-takers, donors, etc.</td>
<td>People</td>
<td>Modality</td>
<td>Risks &amp; challenges</td>
</tr>
<tr>
<td>3</td>
<td>Main drivers</td>
<td>Farmer acquisition</td>
<td>Onboarding</td>
<td>Decision drivers</td>
<td>Enabling environment</td>
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<tr>
<td>4</td>
<td></td>
<td>Digital data</td>
<td>Logistics and distribution</td>
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</table>

<table>
<thead>
<tr>
<th>Assessing the impact</th>
<th>Smallholder Farmers</th>
<th>Tech Innovators</th>
<th>Agriculture Ecosystem</th>
<th>Limitations and lessons learned</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>Subscribers and active users (by gender)</td>
<td>Actual or potential impact on partners</td>
<td>Actual or potential impact platforms can drive in systems-based transformation</td>
<td>Challenges faced by platform leaders</td>
</tr>
<tr>
<td>7</td>
<td>Actual or potential impact on income and productivity</td>
<td>Drivers of partnership success</td>
<td>View across customers, competitors, government, donors, other partners (beyond tech innovators) and climate planning</td>
<td>Learnings applicable to similar platform archetypes</td>
</tr>
<tr>
<td>8</td>
<td>Impact on systemic challenges for SHFs</td>
<td>Barriers to partnership</td>
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</table>

Source: Dalberg interviews and analysis, 2020
**Telco-led platforms** can leverage their large customer base and low-cost data access to rapidly scale

### Overview
- Telco-led platforms develop bundled agricultural products and services for SHFs
- They aim to expand into digital services, develop new revenue streams, and build brand awareness

### Value Proposition
- Farmers benefit from financial access, precision agriculture services, quality inputs and access to markets
- Agrodealers gain access to farmer networks; govt gains efficiency in subsidy allocation

### Operational Model
- Access to telcos’ internal tech specialists
- Services are usually USSD-enabled; field agents support SHFs on the ground
- Telco services enable the platform to push info out to farmers at low cost

### Partnerships & Collaboration
- Implementing partners manage the field force
- Partner with tech innovators to expand product offering
- Prefer revenue sharing models, as opposed to paying for products upfront

### Sustainability & Enabling Environment
- Income from revenue sharing; costs are farmer engagement related
- Telco-led platforms are well placed to succeed in mature digital ecosystems, which enhance telcos’ digital assets

### Assessing the impact

#### Smallholder Farmers
- Farmers can increase their income and productivity by 100% when they use the services provided by the platform such as market linkages, irrigation and precision agriculture

#### Tech Innovators
- Tech innovators onboarded to the platform can access to technical support and improve their farmer reach – e.g. iProcure has reached 1,200 agrodealers by partnering with DigiFarm and aims to reach 4x as many agrodealers by 2023
- Barriers to building a partnership include a mismatch of business models, difference in price points and data sharing

#### Agriculture Ecosystem
- Increase transparency across the agriculture sector by offering price visibility
- Enhance food security by increasing productivity of SHFs and the total food production
- Support donors to increase digitalisation and accelerate agricultural transformation

### Limitations and lessons learned
- Lack of agricultural background and partnerships’ business model alignment
- An upfront product roadmap helps to strategically position the platform for growth through partnerships

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Note: 1 In revenue sharing models, the income is coming from transactions
Source: Dalberg interviews and analysis, 2020
**Agribusiness-led platforms** can leverage established relationships with farmers and agriculture stakeholders but lack tech and data capabilities.

### Blueprints Summary

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<tr>
<td><strong>Overview</strong></td>
<td>Farmers improve productivity based on an assessment, learning content, agronomist advice &amp; access to inputs. Agrodealers benefit from inventory management and gain access to farmer networks.</td>
<td>Platforms have existing agronomist networks to reach the field and provide customised solutions. Established relationships with farmers from years of field operations in input provision enables quick onboarding of farmers.</td>
<td>Product partners expand platform’s capabilities by providing content &amp; precision ag. products. Implementation partners boost channels to local network organisations and new farmers.</td>
<td>No direct revenue – it enhances the profit of the lead organisation; cost drivers are tech &amp; HR. Agribusiness-led platforms likely thrive in mature ag. markets which offer partners and networks.</td>
</tr>
<tr>
<td><strong>Smallholder Farmers</strong></td>
<td>Farmers gain through customised productivity reports, agronomist advice and learning content, and access to inputs. They can help to improve farmers productivity and incomes, and the platform could also link farmers to a guaranteed buyer.</td>
<td>For tech innovators such as precision agriculture services providers, agri-business led platforms provide direct inroads to their target market and exposure from working with a large player in the sector. Agribusinesses have relationships with other actors that can help innovators to expand their work, providing funding and support.</td>
<td>Help implementing partners without tech skills to become more tech-savvy and digitally enabled. Have the potential to work with the government to inform agriculture data about production volumes and yields by location, and strengthen resource allocation towards local food production, value chain promotion, and food security.</td>
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<tr>
<td><strong>Agriculture Ecosystem</strong></td>
<td>Lack of tech background and ability to tailor technology design for customers. Platforms built on the existing analog network and need to take a flexible approach to mix digital technologies with existing agronomist and other networks.</td>
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</table>

Source: Dalberg interviews and analysis, 2020
Bank-led platforms are uniquely positioned to drive SHF financial inclusion but rely on partners for agronomic expertise and in-the-field networks.

### Understanding the Platform

#### Overview
- Bank led platforms provide credit and savings products layered with additional features – e.g. market access.
- Banks aim to tap into unbanked segments, new revenue streams, and lead financial innovation.

#### Value Proposition
1. **Value Proposition**
   - Farmers can use financial products to invest in high quality products and services that increase their productivity and incomes.
   - Banks’ risk aversion means they prefer to build and run their platforms.
   - Banks’ relationships and financial resources help stakeholders to scale.

#### Operational Model
2. **Operational Model**
   - Banks aim to tap into unbanked segments, new revenue streams, and lead financial innovation.
   - Banks need implementing partners for field ops.
   - Banks’ risk aversion means they prefer to build and run their platforms.
   - Banks’ relationships and data on ecosystem actors’ financial needs inform partnerships and products.

#### Partnerships & Collaboration
3. **Partnerships & Collaboration**
   - Product partners (e.g. tech innovators) provide agronomic expertise and additional products.
   - Enabling partners (e.g. govts and donors) provide funding.
   - Exploring revenue models.

#### Sustainability & Enabling environment
4. **Sustainability & Enabling environment**
   - Main income from financial products; costs are mainly set-up capital and operational expenses.
   - Light-touch regulations and multiple agriculture players help nurture bank-led platforms.

### Assessing the Impact

#### Smallholder Farmers
- Unbanked SHF can use credit and savings products to invest in improving yields and safeguarding their earnings.
- Underserved SHF can improve their productivity and incomes through value-add products and services – e.g. input provision, learning, and market access.

#### Tech Innovators
- Tech innovators gain from wider customer reach, competitive financing, and positive brand association with banks.
- Barriers include duplicative efforts, misaligned expectations on speed of expansion, and banks’ stringent procedures.

#### Agriculture Ecosystem
- Supply chain financing could increase competition in the agriculture sector.
- Involvement in agriculture could signal additional investment into the sector.
- Can aggregate data to improve governments’ and donors’ resource allocation and decision making.

### Limitations and lessons learned
- Banks’ risk averse nature and limited agricultural background could lead to slow product development.
- Banks can look to foster innovation and build new capabilities by housing platforms in teams outside the bank’s conventional departments.

Source: Dalberg interviews and analysis, 2020
**Blueprints Summary**

**Government-led** platforms bring together actors and resources to drive ecosystem-wide impact but often struggle with internal capacity

<table>
<thead>
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<tr>
<td><strong>Overview</strong></td>
<td>• Government-led platforms typically convene ecosystem actors and/or resources to promote knowledge building and collaboration • Aim to digitise agriculture information and facilitate data-based decisions</td>
<td>• Improved farmer-facing products and services increase SHFs productivity and incomes – e.g. weather information; market access • More likely to reach bottom of the pyramid SHFs benefit due to freely accessible agronomic support</td>
<td>• Tech innovators gain valuable data for product improvement and stronger ecosystem networks to build legitimacy • Barriers include low capacity to execute projects and engage partners, and competition from commercial products</td>
<td>• Low internal capacity compromises timely execution; lack of commercial drive weakens ability to compete against similar products • Government-led platforms can enhance their strengths (sectoral influence and agronomic expertise) by building internal capacity and engaging end-users to ensure product fit</td>
</tr>
</tbody>
</table>

| Value Proposition          | • Farmers can use free digital tools to improve their income and productivity • Stakeholders can use the data to improve their products and services to farmers | • Some design and run their platforms using in-house teams, tech and resources; others design projects and rely on external implementation • Key assets include their strong reputation and ecosystem relationships | • Partnerships are open and non-exclusive. Partners provide data inputs. Some provide field support and farmer channels • Partners also benefit from open access to data and digital products |  

| Operational Model          | 2 |
| Partnerships & Collaboration | 4 |
| Sustainability & Enabling environment | 5 |

**Source:** Dalberg interviews and analysis, 2020
Platforms can offer a predictable and accelerated path for digital innovators to scale and achieve financial viability

Platforms can help digital innovators to scale by overcoming their typical constraints

**INFORMATION**
DAP can provide easy access to relevant market and customer information

**CUSTOMER ACQUISITION**
DAP can simplify customer acquisition by connecting digital innovators with SHFs

**RELATIONSHIPS**
DAP can act as a 'matchmaker', building relationships between innovators, policy makers and donors

**INVESTMENT FUNDING**
DAP can co-pitch with digital innovators for investment, and facilitate further capital raise

Common ways of working with DAPs

1. **REVENUE SHARING**
   - Partners give DAP a percentage of the revenue made through the platform
   - DigiFarm prefers to build revenue sharing partnerships to have revenue coming from transactions and is moving field partners towards it

2. **DATA & CONTENT SHARING**
   - Partners offer interesting content that encourages frequent SHF engagement
   - DigiFarm builds data-sharing partnerships with content providers
   - KALRO builds non-financial, data sharing partnerships that follow bilateral agreements

3. **PURCHASE AGREEMENTS**
   - DAPs purchase the services and products from partners upfront
   - Other banks are open to exploring purchase agreements for some services – e.g. soil testing
However, alignment between innovators and platforms is key to ensure innovators can make the most of their growth opportunities.

**Common challenges innovators face while engaging with platforms**

- Mismatched business models and difficulty ascertaining a fair price point
- Long/unclear partnership processes create uncertainty
- Limited partner engagement in decision making
- Unclear/stringent data sharing terms
- Misaligned goals and expectations on product sequencing and expansion
- Duplicative efforts with the platform leader

**9 key principles for digital innovators to get the best out of platforms**

**Before partnership**
1. Build a start-up vision with a product roadmap
2. Find finance partners and secure funding sources

**In exploration**
3. Partner with platforms that share your vision and execution priorities

**In discussion**
4. Identify and develop relationships with key decision makers
5. Be patient and invest time building rapport; large platforms may not act swiftly
6. Build solid financial analysis to back up remuneration and revenue share proposals
7. Agree on data ownership, sharing, use and licensing

**As you work together**
8. Clearly define roles and responsibilities
9. Set open communication and establish integrated ways of working
Platforms are well positioned to promote environmental sustainability through enabling access to climate-smart agriculture and data-driven insights

<table>
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<tr>
<th>Need for Action</th>
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<tbody>
<tr>
<td>• SHFs in SSA are at the forefront of the climate crisis, they face challenges of</td>
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<tr>
<td>soil erosion and degradation, whilst changing rainfall patterns and the increase</td>
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<td>in extreme weather events affect crop suitability and yields</td>
<td></td>
</tr>
<tr>
<td>• It is possible to increase agriculture yields and protect the environment</td>
<td></td>
</tr>
<tr>
<td>through restoring forests, adopting CSA practices, employing green technology,</td>
<td></td>
</tr>
<tr>
<td>and implementing better livestock and waste management practices</td>
<td></td>
</tr>
<tr>
<td>• Farmers rely directly on the climate and environment for their livelihoods;</td>
<td></td>
</tr>
<tr>
<td>there is a compelling case for engaging farmers and championing their action</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform Opportunities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Platforms can link value chain actors to promote the uptake of Climate Smart</td>
<td></td>
</tr>
<tr>
<td>Agriculture (CSA) practices, technology and finance, including providing</td>
<td></td>
</tr>
<tr>
<td>advisory services to farmers through precision agriculture products</td>
<td></td>
</tr>
<tr>
<td>• Platforms can help to collate information on agriculture activities on the</td>
<td></td>
</tr>
<tr>
<td>environment, inputting to scenarios of current and future climate emissions</td>
<td></td>
</tr>
<tr>
<td>and impacts to inform resource allocation and enhance data-driven decision</td>
<td></td>
</tr>
<tr>
<td>making</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation challenges</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• CSA technologies can be more expensive than alternatives – for example, a</td>
<td></td>
</tr>
<tr>
<td>solar water pump is more expensive upfront than a diesel pump, although the</td>
<td></td>
</tr>
<tr>
<td>running cost of diesel makes it more expensive in the long run</td>
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<tr>
<td>• Behavioural norms around damaging farming practices persist, making it</td>
<td></td>
</tr>
<tr>
<td>difficult to train farmers and sustain change</td>
<td></td>
</tr>
<tr>
<td>• There are low commercial incentives for platforms to integrate climate</td>
<td></td>
</tr>
<tr>
<td>considerations, at least in the short run, so climate products and data</td>
<td></td>
</tr>
<tr>
<td>analysis is often deprioritised</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Principles for Platforms and Digital Innovators</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In design</strong></td>
<td></td>
</tr>
<tr>
<td>• Consider climate across the business model of the organisation and in each</td>
<td></td>
</tr>
<tr>
<td>product to avoid perpetuating unsustainable climate practices for farmers</td>
<td></td>
</tr>
<tr>
<td>• Consider climate finance partners when raising capital</td>
<td></td>
</tr>
<tr>
<td>• Develop clear MEL structures that incorporate climate into KPIs</td>
<td></td>
</tr>
<tr>
<td>• Partner with expert organizations who incorporate environmental considerations in implementation</td>
<td></td>
</tr>
<tr>
<td><strong>In implementation</strong></td>
<td></td>
</tr>
<tr>
<td>• Gather and share environmental data such as soil quality and water use</td>
<td></td>
</tr>
<tr>
<td>• Link CSA technologies to credit products through the platform</td>
<td></td>
</tr>
<tr>
<td>• Use the platform’s field force to deliver training on sustainable farming</td>
<td></td>
</tr>
<tr>
<td>practices</td>
<td></td>
</tr>
</tbody>
</table>
Platforms can help to overcome cultural and structural barriers in agriculture when they are intentional in the design, outreach and engagement of women

<table>
<thead>
<tr>
<th>Need for Action</th>
<th>Women face cultural and structural barriers in agriculture, including lower access to technology, access to finance, and unequal power dynamics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gender gaps in agricultural productivity in sub-Saharan Africa range from 8% in Kenya, 11% in Ethiopia, and 28% in Malawi to 30% in Nigeria</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Platform Opportunities</th>
<th>Platforms can help women to leapfrog inequities and to become more engaged in agricultural development through providing direct access to finance, agronomic knowledge and market connections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gathering gender-disaggregated data can help to fill knowledge gaps on women’s engagement, inform future product design, and build a case for investment planning</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation challenges</th>
<th>Women’s unequal access to productive assets such as land, mobile phones, agricultural inputs reduces their ability to take advantage of DAP gains, whilst lower digital skills limits women’s ability to engage with platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gendered norms and practices, reflecting unequal divisions of labour, mean that women may have less time to engage on platforms and benefit from platform offerings</td>
</tr>
<tr>
<td></td>
<td>For platforms to progress gender equity, they must be intentional about integrating women and a gender perspective into the design and roll-out of their innovations – gender imbalances will not be overcome without effort</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Principles for platforms and digital innovators</th>
<th>In design</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incorporate gender targets into product design and MEL plans, including recruiting women into product design teams</td>
</tr>
<tr>
<td></td>
<td>Pursue partners that bring gender expertise to broaden the platform’s understanding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>In implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gather data to better understand and analyse gender challenges for farmers, and the potential impact of platform interventions</td>
</tr>
<tr>
<td></td>
<td>Ensure female representation at all levels, from internal management to field agents</td>
</tr>
<tr>
<td></td>
<td>Embed gender goals into execution incentives – e.g. higher commissions for onboarding women</td>
</tr>
</tbody>
</table>
Digifarm is more established than other platforms, and our detailed insights are drawn from multiple engagements since the platform’s inception.
Overview | DigiFarm is an integrated mobile-based platform that provides services to support SHFs in partnership with different organisations in Kenya

**Main drivers** to create the platform:
- Establish presence as a digital company beyond telephony
- Enhance customer value proposition and loyalty
- Widen customer base

**Implementing Partners** support DigiFarm on the ground, providing:
- Onboarding
- Farmer activation
- DigiFarm Village Agents management
- Extension services

DigiFarm has capitalised on Kenya’s high mobile penetration and digital skills, plus the widespread use of mobile money

**Product & services providers** channel their offerings on DigiFarm, providing:
- Inputs
- Credit
- Insurance
- Learning content & information
- Aggregation & delivery
- Access to market

**Safaricom** - the leading provider of converged communications solutions in Kenya

**Farmers** - More than 1.4m farmers are subscribed to the platform; 340,000 are active users

Source: Dalberg interviews and analysis, 2020
**VP | DigiFarm**

DigiFarm is a marketplace with more than 300k SHFs active on the platform, which allows them to source, transact, learn, and grow.

**Value Proposition:** bundled services for SHFs offering services & products through service providers and implementing partners on the field

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Value Proposition</th>
<th>Products</th>
</tr>
</thead>
</table>
| Agro-dealers | • Access to customers within the DigiFarm network  
• Produce and inventory tracking | Inputs  
• Customised package based on soil testing, value chain & potential yield  
• Link between farmers to local distributors |
| Government   | • Access to farmers  
• Efficiency gains in subsidies allocation | E-subsidy  
• Access to subsidies provided by the Ministry of Agriculture through the platform |
| Farmers      | • Access to products and services\(^1\) that help to raise productivity and boost incomes  
Farmers can source for inputs, transact, learn, and grow their farms from a ‘one-stop-shop’ platform | Credit  
• Pre-planting loans for inputs and farm labour costs  
• Cash loans for harvest and transportation of produce |
| Enterprises\(^2\) | • Access to products and services that help to raise their farmers’ productivity and incomes | Learning & information  
• Digital learning content & call centre with agriculture experts  
• In-person extension services to help maximise yields |
| Oftakers     | • Access to customers within the DigiFarm network  
• Improve quality of produce for offtake | Insurance  
• Agri-insurance coverage on full yield for farmers  
• Minimises weather-related risks |

**Note:**
\(^1\) via implementing partners AIS and KLPA (AIS - Africa Instore Solutions; KLPA - Kenya Livestock Producers Association)
\(^2\) organisations on the field that have direct contact with farmers

**Source:** Dalberg interviews and analysis, 2020
**Operations** | DigiFarm is resourced with a team of dedicated specialists, and leverages the world-class technology and corporate support teams within Safaricom.

---

### Organisational chart

- **DigiFarm Kenya Ltd staff**
  - Commercial planning & operations
  - Sales and marketing
  - Distribution and production
  - Farmer engagement/agronomy
  - Partnerships' development

- **Safaricom Plc Staff**
  - Tech Product Development
  - Finance, legal & admin.

### Staffing

<table>
<thead>
<tr>
<th>DigiFarm Kenya Ltd staff</th>
<th>Safaricom Plc Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commercial planning &amp; operations</strong></td>
<td><strong>Tech Product Development</strong></td>
</tr>
<tr>
<td>• Business professionals</td>
<td>• Safaricom’s inhouse tech and software development team</td>
</tr>
<tr>
<td>• Experienced sales specialist</td>
<td>• Safaricom’s inhouse corporate support and back-office teams</td>
</tr>
<tr>
<td>• Marketing specialists</td>
<td></td>
</tr>
<tr>
<td>• Trading, transport, &amp; logistics experts</td>
<td></td>
</tr>
<tr>
<td>• Agronomists</td>
<td></td>
</tr>
<tr>
<td>• Experienced farmer organisers</td>
<td></td>
</tr>
<tr>
<td><strong>Sales and marketing</strong></td>
<td><strong>Finance, legal &amp; admin.</strong></td>
</tr>
<tr>
<td>• Demand fulfilment</td>
<td>• Finance &amp; administration</td>
</tr>
<tr>
<td>• Buyer relationships</td>
<td>• Legal support</td>
</tr>
<tr>
<td>• Extension services</td>
<td></td>
</tr>
<tr>
<td>• Aggregation</td>
<td></td>
</tr>
<tr>
<td>• Compliance/quality control</td>
<td></td>
</tr>
<tr>
<td>• Partners’ evaluation</td>
<td></td>
</tr>
<tr>
<td>• Development &amp; consolidation</td>
<td></td>
</tr>
<tr>
<td>• Follow up</td>
<td></td>
</tr>
<tr>
<td>• Agile product development</td>
<td></td>
</tr>
<tr>
<td>• Platform maintenance</td>
<td></td>
</tr>
<tr>
<td>• Technical support</td>
<td></td>
</tr>
</tbody>
</table>

### Roles and Responsibilities

<table>
<thead>
<tr>
<th>DigiFarm Kenya Ltd staff</th>
<th>Safaricom Plc Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distribution and production</strong></td>
<td><strong>Finance, legal &amp; admin.</strong></td>
</tr>
<tr>
<td>• Sales strategies &amp; marketing campaigns</td>
<td>• Finance &amp; administration</td>
</tr>
<tr>
<td>• Customer insight &amp; data</td>
<td>• Legal support</td>
</tr>
<tr>
<td>• Reporting &amp; budgeting</td>
<td></td>
</tr>
<tr>
<td>• Operations DigiFarm</td>
<td></td>
</tr>
</tbody>
</table>

---

DigiFarm is incorporated as a **for-profit social enterprise**, which is **owned by Safaricom Plc**, but has an independent governance structure. Back office and tech support is given by Safaricom, whereas the rest of the roles are taken by DigiFarm.

Source: Dalberg interviews and analysis, 2020; AgriFin, “DigiFarm Pitch”, 2020
**Operations** | DigiFarm works across the value chain through mobile and field agents managed by implementing partners

<table>
<thead>
<tr>
<th>Roles &amp; Responsibilities</th>
<th>Technology &amp; Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product offering for farmers</strong></td>
<td><strong>1</strong> Targeting &amp; Onboarding</td>
</tr>
<tr>
<td>DigiFarm Village Advisors (DVAs)</td>
<td>DigiFarm’s services use <strong>USSD functionality</strong> available for 2G phones; a forthcoming Whatsapp for Business service is being prototyped to virtually connect farmers to agricultural experts, rich media agricultural learning resources, and peer learning</td>
</tr>
<tr>
<td>+1,500 DVAs to support farmers’ digital journey</td>
<td>DigiFarm holds different <strong>data about SHFs</strong> including personal data, farm characteristics and others and different types of <strong>users benefit</strong> from it¹</td>
</tr>
<tr>
<td>Partners</td>
<td><strong>2</strong> Pre-harvest</td>
</tr>
<tr>
<td>+10 Partners to deliver products and services</td>
<td><strong>1</strong> Set a strategic vision, define key missions, resources and organisation</td>
</tr>
<tr>
<td>• Farmers registration</td>
<td>• Agronomic advice</td>
</tr>
<tr>
<td>• Onboarding</td>
<td>• Agriculture tools and knowledge</td>
</tr>
<tr>
<td>• Access inputs &amp; collection</td>
<td>• Precision agriculture tools and knowledge</td>
</tr>
<tr>
<td>• Insurance products</td>
<td>• Collection support</td>
</tr>
<tr>
<td>• Loan defaulters follow up</td>
<td>• Crop quality assurance activities</td>
</tr>
<tr>
<td>• Input loans</td>
<td>• Delivery process support</td>
</tr>
<tr>
<td>• Insurance</td>
<td>• Input loans</td>
</tr>
<tr>
<td>• Transport to farmer</td>
<td>• Safety and support</td>
</tr>
<tr>
<td>• Agronomic advice</td>
<td>• Transport to the collection centre</td>
</tr>
</tbody>
</table>

**Note** ¹Safaricom, financial service providers, buyers, and SHFs
Source: Dalberg Interviews and analysis, 2020; “DVA app design and DigiSoko UX evaluation”, 2019
Partnerships | Since its inception, Digifarm has pursued partnerships that complement internal capabilities to offer value to farmers

**Partnership Approach**

- Digifarm pursues **bilateral and non-exclusive arrangements** and takes a **decision making role** in partnership direction and user engagement.
- The **product roadmap** that Digifarm developed from the start was a key advantage for building successful partnerships.
- Digifarm prefers a **transaction fee model** whereby partners give Digifarm a percentage of the revenue made through the platform. The platform is moving field partners towards this model – e.g., Iprocure.
- Partners that offer interesting content that encourages frequent SHF engagement can use a **data/content sharing model** – e.g., Arifu.
- Digifarm rarely needs to prioritise across multiple partners, but they have previously used consultants to carry out analysis – e.g., Iprocure.

**Partnership Status**

- Digifarm build different partnerships to complement its capabilities and lack of agricultural background:
  - Implementing **channel providers** to engage directly with farmers.
  - **Product and service providers** to deliver SHFs a diverse bundled offer.
  - **Donors and technical experts** to gain access to funding and technical support such as business model design.
  - National ministries, county governments and parastatals to **align with government objectives** and to gain support from policy makers.

---

**Key Takeaways**

- **Field partners** - onboarding, farmer activation, DVA management and extension services.
- **Input partners** - high quality input provision.
- **Finance partners** - input loans leveraging credit scoring algorithms.
- **Skills development partners** - learning content on platform and call centre service.
- **Market access partners** - assured buyers from the start of the season.
- **Insurance partners** - provide crop insurance.

Digifarm continues to build new partnerships, for example in agricultural machinery rental and solar irrigation.

Source: Dalberg interviews and analysis, 2020;
**DigiFarm**

**Sustainability** | Learning content drives customer acquisition; more profitable products such as quality inputs and market linkages come later

---

DigiFarm has 1.43 registered users but only 24% of them are active on the platform. 95% of active users are engaged on learning content offered on the platform – although many use multiple products; only 23% consume high profit services (market linkages & inputs).

---

### Financial Impact

**Cost**
- $80
- $135.5
- $134
- $134
- $335
- $335
- $80
- $80

**Revenue**
- $80
- $134
- $134
- $335
- $335
- $80
- $80

---

### Revenue for farmers

- **# users**
  - HIGH
  - MID
  - LOW
  - MID
  - MID
  - MID

- **SHFs increase in income & production**
  - 20 - 40%
  - 10 - 30%
  - 20%
  - 50%
  - 100% increase to 50% decrease
  - 20 - 25%
  - 70%
  - 14% decrease in SHFs poverty
  - 50 - 100%
  - 20 – 50%

- **$ increase p.a per SHF**
  - $135.5
  - $134
  - $134
  - $335
  - $335
  - $80
  - $80

---

Source: Dalberg interviews and analysis, 2020; AgriFin, “DigiFarm Pitch”, 2020
Sustainability | From its initial focus on building traffic, DigiFarm increasingly looks to cross-sell and up-sell farmers onto revenue generating products

Current Products and services benefits – DigiFarm revenue, farmers income & traffic

DigiFarm has a portfolio of products that drive

- **Traffic** – Learning content has more than 300k active users
- **Revenue for DigiFarm** – Input credit and market linkages are the most profitable products but have less than 80k users
- **Revenue for farmers** – The use of irrigation solutions and market linkages could increase the production and income of SHFs by up to 100%
- DigiFarm is increasingly focusing on cross-selling and up-selling farmers to revenue generating products across the customer journey

Revenue for DigiFarm

- **Input credit**
- **Market linkages**
- **Crop insurance**
- **Quality inputs**
- **eLearning**
- **Precision Ag.**
- **Savings**
- **Post-harvest loss solutions**
- **Irrigation solutions**

Revenue for Farmers

- **< than 10% of the farmer income gain**
- **> than 10% of the farmer income gain**

Current Products and services benefits – DigiFarm revenue, farmers income & traffic

- **Input credit** – more than 300k active users
- **Revenue for DigiFarm** – Input credit and market linkages are the most profitable products but have less than 80k users
- **Revenue for farmers** – The use of irrigation solutions and market linkages could increase the production and income of SHFs by up to 100%
- DigiFarm is increasingly focusing on cross-selling and up-selling farmers to revenue generating products across the customer journey

*Income gain: % of the farmers income increase explained by the adoption of the service
Source: Dalberg interviews and analysis, 2020; AgriFin; “DigiFarm Pitch”, 2020
**Sustainability** | Main revenue streams are market facilitation fees and input sales transaction fees; costs are almost 50% farmer engagement related

<table>
<thead>
<tr>
<th>Revenue drivers</th>
<th>Cost drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DigiFarm revenue projections (2020-2021) – USD, M (millions)</strong></td>
<td><strong>DigiFarm cost projections (2020-2021) – USD, M (millions)</strong></td>
</tr>
<tr>
<td>1.7</td>
<td>12.3</td>
</tr>
<tr>
<td>44% Market facilitation fees</td>
<td>48% Farmer engagement/extension</td>
</tr>
<tr>
<td>42% Inputs</td>
<td>34% Operating expenses</td>
</tr>
<tr>
<td>14% Others/(credit, insurance, extension services)</td>
<td>10% Capex</td>
</tr>
<tr>
<td>FY 2020-21</td>
<td>8% Direct costs</td>
</tr>
<tr>
<td>8%</td>
<td></td>
</tr>
</tbody>
</table>

**Key risks and mitigation factors**

1. **Market price volatility** leads to some off-takers defaulting on their commitment to purchase from Digifarm when market prices fall. Safaricom assumes all the risk by buying input from the farmers at contracted prices, even though Digifarm can no longer on-sell to off-takers.

2. **COVID-19** has reduced contact between DVAs and farmers making it difficult to gather farmer’s information. Geo-tagging technology installed last year has helped DVAs to get information without having to go into the field.

3. **Safaricom is a large organisation**, making it hard for a start-up to align on innovation initiatives that may not have an immediate return on investment. Digifarm’s transition to a social enterprise may enable more flexibility.

4. **Logistics** around aggregation, transportation, and post harvest activities requires high investment to co-ordinate transport, ensure quality checks and optimise supply chain management.

Source: Dalberg interviews and analysis, 2020; Dalberg, “DigiFarm Financial Sustainability”, 2019; AgriFin, “DigiFarm Pitch”, 2020
Sustainability | DigiFarm’s gross margin is not yet positive and they are targeting 2023 for break-even

Net income projections (2020-2025) - USD, M (millions)

- DigiFarm has 1.43 m registered users
- Only 24% are active on the platform
- Less than 23% of active users use revenue driver services

To achieve break-even, DigiFarm needs to increase the amount of active users 6 times, not only by increasing the registration but also by engaging registered users to make them active. This means that they need to increase the value of traded produce by 35 times and the increase value of issued loans by 23 times.

Notes: 1 Less than 80,000 farmers use the input credits and access to market services
Source: Dalberg interviews and analysis, 2020; Dalberg, “DigiFarm Financial Sustainability”, 2019; AgriFin, “DigiFarm Pitch”, 2020
Enabling Environment | Telco-led platforms are well placed to succeed in digital ecosystems where their network and mobile money assets can expand reach

1. Regulatory framework
   - Telco-led platforms thrive in regulatory environments that promote the use of mobile money, allowing them to build their market share and develop a strong base for a digital platform

2. Access to finance
   - Telco-led platforms often have internal resources to fund platform growth, and can receive technical assistance financed by donors

3. Human capital
   - Telcos need to build agronomic expertise to support platform growth
   - User digital literacy amplifies telco channels to reach farmers

4. Infrastructure
   - Telcos can take advantage of high mobile penetration and infrastructure to create digital products and push them to farmers on a cost basis

5. Ecosystem density
   - Telco-led platforms are well positioned to succeed in mature digital ecosystems – digital assets enable them to build relationships and foster collaboration between players
   - Mature agricultural sectors allow telco-led platforms to build partnerships filling in the gap of their capabilities as a non ag-specialist
   - In markets with few agri-tech solutions, telcos may be forced to be the ‘first-mover’

6. Market maturity

DigiFarm has capitalised on Kenya’s high mobile penetration and mobile money. They take advantage of services held by Safaricom to market digital products and push information out to farmers, making it cheaper to reach users

Light regulation on mobile money by the Kenyan government at the onset of MPESA allowed it to rapidly scale, giving DigiFarm a solid launchpad for success

Safaricom started Digifarm from scratch rather than following their typical acquisition strategy. Yet the increasing maturity of the agriculture sector has provided DigiFarm with partners such as Iprocure, Arifu and Bidco for products & expertise.

Note: ¹MPESA is a mobile money solution created in 2007 in Kenya by Safaricom
Source: Dalberg interviews and analysis, 2020
IMPACT OF THE PLATFORM
DigiFarm has 1.43 million registered SHFs, presence in over 12 counties in Kenya, and more than 67,000 processed loans.

**Reach**
- 1.43 million smallholder farmers subscribed to the platform
- 36% women
- 12% youth
- 42,122 SHFs accessing end-to-end services

**Footprint**
- 12-14 counties in Kenya
- 5 value chains: maize, sorghum, sunflower, soya, green grams

**Scalable Services**
- $3.8M credit value
- 67,514 loans processed
- $1M value of marketed produce
- 2,346 MT volume produced

**Farmers Income**
- % Farmers income impact (% of the farmers income increase explained by the adoption of the service)
  - Market Linkages: 22
  - Irrigation: 22
  - Precision Agriculture: 16
  - Post-harvest loss solutions: 11
  - eLearning: 9
  - Quality inputs: 7
  - Crop insurance: 6
  - Input credit: 4
  - Savings: 3

DigiFarm is transitioning from a focus on customer acquisition to an emphasis on upselling and cross-selling services to drive revenue as they enter a new stage of growth. By supporting farmers to engage with market linkages products, DigiFarm will not only increase their revenues, but also help to improve farmers income.

Note: 1 Digifarm's original approach was to be demand led, so they would pick value chains based on the offtaker agreements they negotiated. However, this is now changing as they look to engage new farmers such as youth, so they are starting to focus on high value crops.

Source: Dalberg interviews and analysis, 2020; AgriFin, "DigiFarm Impact Study", 2019
SHF Impact | DigiFarm creates a market channel to increase productivity and address systemic challenges for SHFs

**Markets**
- Improved market access creates a *competitive market for SHFs to trade* as commodity sellers
- However, the platform *negotiates on behalf of farmers* and offer a certain price through the platform, limiting farmer interactions with services providers

**Capital and infrastructure**
- DigiFarm issues loans to farmers that enable them to *invest in their farms and increase their incomes*
- DigiFarm *incentivises additional investment in the agriculture sector* from partners and other players across the value chain

**Gender**
- DigiFarm has the potential to empower female farmers, especially with a *continued deliberate measures to target them*
- DigiFarm has 36% female subscribers
- *More women than men use the market access product***
- DigiFarm has hired female brand *ambassadors* with the aim of onboarding more female farmers

**Skills**
- DigiFarm provides *learning content for farmers* via USSD, on platform and call centre support
- Learning content improves farmer productivity and quality of produce

**Land**
- Limited application to date in addressing land issues, but with the *potential to address quality of land and mismatch in land access*, e.g.,
  - Partnerships with soil testing companies
  - Encouraging youth farmers to use their family land through digital content

**Climate Smart Agriculture**
- Partnerships with climate smart technology providers such as SunCulture could *widen access to farmers and improve resilience*

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*Note: *More men than women use the learning content product, and the total loan amount was 7% higher for men than for women

Source: Dalberg interviews and analysis, 2020; Busara Centre for Behavioural Economics, 2019; AgrIfin, “DigiFarm Impact Study”, 2019
## Benefits of partnering with DigiFarm

1. **Reach & economies of scale**
   - Over 1.43 million SHF registered – 340,000 are active users whilst 42,122 actively access multiple products across the platform
   - Relationships with farmers and other product providers
   - Lower cost of customer acquisition

2. **Access to improved quality of service**
   - Growing network of DigiFarm Village Agents with direct contact with SHFs on the field to support the implementation of partner services
   - With productivity increases and agronomic advice, farmer quality of production increases, with knock-on effects for partners and buyers

3. **Network effects**
   - Improved consolidation of service as the network grows

- **Iprocure**: has reached 1,200 agrodealers and deployed ~145 iPOS systems; it aims to reach 4x as many agrodealers by 2023
- **Arifu**: provides USSD learning content for farmers to access on DigiFarm, with more than 2m interactions

## Barriers to partnership

1. **Mismatch of business models** – DigiFarm only enters revenue sharing agreements and tends not to pay upfront
2. **Difference in price points** – DigiFarm always seeks the lowest possible price points for their farmers
3. **Decision-making** – DigiFarm prefers to retain control over operational decisions within a partnership
4. **Data sharing** – Data sharing policies and preferences are not always aligned
5. **Priorities’ misalignment** – How DigiFarm prioritises potential partnerships is sometimes not aligned with the partner’s expectations

- **FarmDrive**: manages loan books, including application, credit scoring, and repayment. Partnership negotiations discontinued due to a lack of financing
- **AgroCares**: provides soil testing. Partnership negotiations halted due to a mismatch of business models (revenue sharing vs. product buying model)

Source: Dalberg interviews and analysis, 2020; Dalberg, “DigiFarm Partnership Learnings”, 2020; “DigiFarm Case Study”, 2020
**Ecosystem Impact** | DigiFarm platform is contributing to increased transparency across the agriculture sector and enhanced food security

**Competitors**
- DigiFarm is contributing to increased transparency and competitive prices of services & products across the agriculture sector
- However, the platform could be detrimental for competition due to their leading and controlling position as the “one-stop-shop” platform for farmers in Kenya

**Customers**
- Through DigiFarm, customers have access to better quality products
- Enhanced food security

**Climate Planning**
- The platform has the potential to build datasets on land use and environmental impact at the smallholder farmer level that could inform climate decision making
- DigiFarm is improving precision agriculture services based on weather information with different partners such as Arifu and Cropln
- However, specific climate use of this data is not planned

**Government**
- DigiFarm’s platform could work with the government to provide agriculture information for data-driven policy decisions
- DigiFarm is partnering with the Ministry of Agriculture to provide “e-subsidies” to farmers through the platform

**Donors**
- The platform helps donors to increase digitalisation and accelerate agricultural transformation in Kenya
- DigiFarm has been receiving technical assistance from donor initiatives over the past 5 years

**Other partners**
- Implementing partners such as AIS and KLPA become more tech savvy & digitally enabled by partnering with DigiFarm
- Additionally, they benefit from DigiFarm’s brand awareness and farmers’ trust

Source: Dalberg interviews and analysis, 2020;
SUMMARY
DigiFarm is a trusted platform that creates income for SHFs, challenges include the limits of farmers price control and the lack of agriculture background

Drivers
- To draw new customers onto the Safaricom network and widen the customer base in order to increase profits
- To increase brand awareness, particularly in rural areas
- To build in-house content and establish a presence as a digital content provider set apart from international competition – With agriculture as a primer and under tapped market to operate in

Key Assets
- Digital and telco services held by Safaricom that enable them to create digital products and push information out to farmers, making it cheaper to reach users – They don’t have to pay a margin to SMS farmers
- Safaricom already holds data on existing farmer customers, and has built a strong brand presence and trust

Current Status
- The platform has generated traffic and amassed interest and uptake from farmers with 1.4 million registered and 340,000 active users
- Digifarm is transitioning from a focus on customer acquisition to now an emphasis on upselling and cross-selling products to drive revenue as they enter a new stage of growth
- Digifarm’s gross margin is not yet positive and it is one of the key deliverables for this year. They are targeting 2023 for achieving break-even

Success Factors
- Digifarm has capitalised on Kenya’s high mobile penetration and digital skills, plus the widespread use of mobile money
- Internally, high level buy-in and commitment to success have accelerated development and ensured strategic focus. Donor and technical support since inception has accorded a patient approach to product development
- Digifarm has pursued partnerships that complement internal capabilities, and bring access to technical and donor support

Challenges
- Digifarm’s lack of agriculture background and team experience can limit the extent to which products are tailored to end-user needs, incorporate issues of land access, or gear towards high value crops
- Negotiation with services providers on behalf of farmers limits their possibility to negotiate a better price with service providers
- Digifarm has less financial control over the access to finance products given they are not ultimately a bank

Lessons Learnt
- Build expertise in areas such as commodities trading to understand agricultural market pricing
- Building on the brand and value of a host organisation carries reputational benefits to a platform
- Build partnerships early on in product channels with partners who know the agriculture landscape
- Design the product rollout plan and minimum viable product according to end-user needs based on feedback from farmers – they could increase the amount of feedback gathered and the use of customer lens int the design process

Source: Dalberg interviews and analysis, 2020;
Contents

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- Context
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  - I. DigiFarm
  - II. FMN
  - III. Banks
  - IV. KALRO
UNDERSTANDING THE PLATFORM

FMN’s platform is still in the design phase, and our insights touch on some features that have not yet been fully determined.
**Overview** | FMN’s platform is being developed by its subsidiary GAIL (Golden Allied Industries Limited) who provide inputs to farmers

**Flour Mills of Nigeria (FMN)** - one of Nigeria’s leading food and agro-allied companies operating in agriculture, livestock feed, and pasta manufacturing

**Main drivers** to create the platform:
- Expanding and strengthening the existing agribusiness of providing input
- Improving quality of produce for offtake

**Implementing Partners support FMN on the ground, providing**
- Farmer onboarding
- Field agent management
- Extension services

**FMN’s platform** is being developed by its subsidiary GAIL
- Initially FMN’s agronomist will interact with the platform
- By the end of 2021 GAIL is going to onboard farmers directly on the platform

**Product & services providers** channel their offerings on FMN, providing:
- Input loans
- Weather information
- Additional services not yet defined

**Farmers** - The target is to reach more than 150k farmers by the end of 2021

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*Note: 1 Extension services include agronomic services and farm management
Source: Dalberg interviews and analysis, 2020*
The platform will help farmers to improve their productivity with agronomist support and access to inputs from GAIL

Value Proposition: Support to SHFs to increase productivity and quality produce by providing agronomist advice alongside a “one-stop-shop” platform for farmers to buy inputs, seeds, and fertilisers at a competitive price

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Value Proposition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Farmers</td>
<td>• Improve productivity based on an assessment and agronomist advice</td>
</tr>
<tr>
<td>2 Agrodealers</td>
<td>• Access to farmers within the FMN network</td>
</tr>
<tr>
<td></td>
<td>• Inventory management and supply availability of FMN (GAIL) products in each location</td>
</tr>
<tr>
<td>3 FMN</td>
<td>• Manage its supply and manage SHF market channels</td>
</tr>
<tr>
<td></td>
<td>• Improve quality of produce for off-take</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Products</th>
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</thead>
<tbody>
<tr>
<td><strong>Products in development</strong></td>
</tr>
<tr>
<td>Customised productivity report</td>
</tr>
<tr>
<td>Matching service to Agronomist</td>
</tr>
<tr>
<td>Connection with Agrodealer</td>
</tr>
</tbody>
</table>

| **Products under consideration** |
| Learning content | Information, learning content and agronomic advice pushed to farmers to help improve productivity |
| Mapping farmers produce | The platform will map production in different farm locations to track produce inflows to FMN |
| Market access | FMN could buy farmers’ produce through the platform |

| **Potential future products** |
| Credit | FMN could offer inputs on credit |

Note: A key driver to build the platform is internal, therefore FMN included as a key stakeholder
Source: Dalberg interviews and analysis, 2020
Operations | Initially FMN’s agronomist will interact with the platform; long-term channel strategy and operational considerations are yet to be defined

Organisational chart

Roles and Responsibilities

Internal Management

- The platform is incorporated as part of business operations, FMN has not spun out a separate business – this is similar to other agribusiness platforms such as Twiga, that have an in-house platform for managing farmer offtake
- GAIL current management team is leading on platform design and implementation, in consultation with the central FMN tech team
- GAIL is building capacity by recruiting new agronomists and training aggregation and sales teams on the platform

Field Operations

- Initially, the platform onboards farmers through FMN’s field agronomists
- GAIL targets existing inputs customers as primary targets. They also aim to bring its partner organisations’ customers onto the platform
- In time, GAIL plans to engage farmers directly, but the medium to long-term communications strategy is yet to be decided among USSD, call centres, and online assistance
- Future field operations requirements are yet to be fully defined

Infrastructure and technology

- The platform uses FMN’s existing technology platform Microsoft Azure, in part to streamline with the IT systems used in the rest of the organisation
- FMN’s technology team is overseeing the customisation of certain aspects of the platform in order to meet GAIL’s design needs and vision for the platform
- FMN will have full access to the platform’s data, that will be owned by the farmers

Since the platform is in the design stage, product roadmap, medium to long-term channel strategy and operational considerations are yet to be defined

Source: Dalberg interviews and analysis, 2020
Partnerships | FMN is in the early stages of platform partnerships; they are looking for a variety of providers but face lengthy procurement processes.

**Partnership approach**

- FMN has a **product roadmap** that determines the **priority of potential partners**
- FMN’s current and potential partners include new **partners** suited to serve on digital platform as “digital partners”, and **partners** with working relationship with FMN that move onto digital platform as “field partners”
- **Partnership selection and onboarding** follows the general process FMN applies to all business partners, which is **lengthy**
- **Partnerships approach** and preferred revenue model are not yet defined

**Partnership status**

- FMN is partnering with **AgroMall** to support on the ground engagement with farmers and **Ignitia**, who provide weather info
- FMN has existing offtake and **implementation partnerships with farmer organisations in local areas**, which could be brought onto the platform
- The platform is still in early stage. **FMN plans to identify and bring other partners** – some are in discussion, and others are yet to be identified

Source: Dalberg interviews and analysis, 2020
**Sustainability** | The platform is integrated into core business of GAIL & FMN, and contributes to greater input sales, efficient operations, and in greater sourcing

<table>
<thead>
<tr>
<th>Revenue drivers &amp; Financing</th>
<th>Cost drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The platform resides within FMN’s subsidiary of GAIL. The platform’s cost is part of GAIL’s P/L, and the platform does not have its standalone P/L.</td>
<td>1. Technology development and management – cost associated to hardware and network</td>
</tr>
<tr>
<td>2. GAIL’s core revenues come from input sales to farmers; the platform should result in higher sales and more efficient operations. Thus, the platform is financed internally with no direct revenues (at least initially); the same is true for Twiga’s platform</td>
<td>2. Hiring expertise – such as agronomic experts and associated overhead costs</td>
</tr>
<tr>
<td>3. In the future, the platform could incorporate other revenue generating activities such as weather services, and access to market via FMN’s core business activities of produce offtake, processing and sale</td>
<td>3. Training costs – for agronomists, the aggregation team and the sales team</td>
</tr>
</tbody>
</table>

Since the platform is in the design stage, these costs are not yet quantified

### Key risks

| 1. Lack of customisation | the digital solution sits on an existing platform with limited flexibility to customise the platform. Therefore they might have limited ability to tailor technology design for customer |
| 2. Lack of end user engagement | initially, the platform is agronomist-facing and has limited consultation with farmers to incorporate their needs into design |
| 3. Lack of digital literacy | within co-operatives, farmers, and more traditional organisations such as input distributors might limit the scalability of the platform |
| 4. FMN’s large size | makes it hard to streamline communication and ensure every relevant department is adequately informed and engaged. This could result in missed opportunities due to lack of coordination |
Enabling Environment | Agribusiness-led platforms are likely to thrive in mature agriculture markets which offer partners and networks that enable growth

1. Regulatory framework
   - Governments that promote agriculture as a core sector can incentivize the development of agribusiness-led platforms through tax incentives and concessions
   - Agribusiness platforms are well placed to succeed in countries with strict mobile money regulations, as other platform types will struggle to scale

2. Access to finance
   - Large, established agribusinesses can benefit from access to finance at low interest rates to fund growth due to their size and established presence

3. Human capital
   - Availability of skilled labour (e.g. agronomists) is needed to enable agribusiness to build capabilities for platform product development

4. Infrastructure
   - Agribusinesses looking to leverage existing technologies are limited by the available digital infrastructure capabilities, as they are less likely to develop their own

5. Ecosystem density
   - A developed digital sector has multiple tech solutions that can be adapted to meet agribusinesses’ needs, presenting multiple potential partners

6. Market maturity
   - Agribusiness-led platforms thrive in mature agriculture markets which offer product partners and strong farmer networks
   - Agribusiness platforms can leverage their ties to other value chain actors to digitise the supply chain and enhance sector-wide productivity

East African Breweries benefit from tax rebates if they can prove their sorghum is 100% locally sourced, which has incentivised them to use a digital platform to track their offtake purchases

FMN uses existing technology platform Microsoft Azure to host its platform

Fragmented producers and buyer dynamics has enabled the growth of Twiga’s digital platform and logistics network, which links SHF produce to urban retailers and consumers

Source: Dalberg interviews and analysis, 2020
IMPACT OF THE PLATFORM
## SHF Impact

FMN is planning to have 150k farmers onboarded in the platform, who will benefit from improved access to productive inputs.

### Reach

- **0 farmers** to date - the platform is in design phase

### Footprint

**Presence in Nigeria**

- **Maize** is the pilot value chain – with expansion planned

### SHF productivity impact

| Markets | • Multiplier effect from improved incomes and connections to market for rural communities in Nigeria |
| Skills | • Potential to improve farmers understanding of productivity interventions on their farm by access to customised productivity reports and agronomist advice |
| Land | • Potential to address mismatch in land access by leasing land and creating job opportunities in agriculture to farmers who are not landowners, through the AgroMall partnership |
| Capital and infrastructure | • Credit is not currently offered but could be provided in future |
| Climate Smart Agriculture (CSA) | • Potential for improved access to climate practices and technologies • No specific initiatives or direct impact planned |
| Gender | • Potential to empower female farmers in partnership with AgroMall by improving access to land for women and overcoming cultural/religious barriers • The pilot aims to work with 50% women farmers, which will drive the platform to engage with more female farmers |

**FMN**

Source: Dalberg interviews and analysis, 2020; AgriFin, “DgiFarm Impact Study”, 2019
## FMN

**Innovators Impact** | Innovators gain from FMN’s scale, reputation & diversified resources; barriers include unclear platform design and long negotiation timelines

<table>
<thead>
<tr>
<th>Benefits of partnering with FMN</th>
<th>Barriers to partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Scale &amp; reach</strong> - FMN provides innovators with direct inroads to their target market and a wide network of farmers</td>
<td>1. <strong>Unclear platform design</strong> - FMN is still designing key aspects of the platform, making it difficult to align on a clear vision with innovators</td>
</tr>
<tr>
<td>2. <strong>Reputation and credibility</strong> - working with FMN signals to the market that innovators have a strong proof of concept and are competitively positioned to operate at scale</td>
<td>2. <strong>Long procurement processes and extended trial period</strong> - negotiations across multiple FMN entities can delay partnerships. FMN have also requested extended trial periods&lt;sup&gt;1&lt;/sup&gt; on products and services which can be challenging for young tech innovators</td>
</tr>
<tr>
<td>3. <strong>Robust agricultural supply chain</strong> - FMN has developed strong relationships with ecosystem actors and can support innovators to engage with other actors in the field to expand their work</td>
<td>3. <strong>FMN resets their partner selection process every season</strong> - making partnership a heavy investment for a short duration</td>
</tr>
<tr>
<td>4. <strong>Platform’s decision process to select partners is not yet defined</strong> – however, it is expected to follow FMNs processes</td>
<td>4. <strong>Platform’s decision process to select partners is not yet defined</strong> – however, it is expected to follow FMNs processes</td>
</tr>
</tbody>
</table>

### Current Partners say …

**Ignitia**

- Ignitia stands to gain exposure from working with such a large player in the sector
- This partnership would widen Ignitia’s reach whilst establishing themselves as a key player in the precision agriculture space

**AgroMall**

- AgroMall believes that FMNs brand could help to unlock credit to SHFs

**Current Partners say …**

**Ignitia**

- Discussions to set up Ignitia’s pilot program took one year before being finalised

**thrive**

- Extension services providers and aggregation partners need to have liquidity, so that they can fund inputs and support farmers

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<sup>1</sup> Note: 1 trial periods could take approximately one year

Source: Dalberg interviews and analysis, 2020
**Ecosystem Impact** | The platform is likely to improve outcomes for partners and consumers, but potential impact for government and climate is unexplored

**Competitors**
- FMNs platform could be detrimental for competition due to the consolidation of FMN as the leading food and agro-allied company in Nigeria. This could have a negative impact on the farmer if pricing is controlled by FMN

**End Consumers**
- Through FMN, customers will have access to better quality products
- Enhanced food security

**Climate Planning**
- The platform has the potential to provide quality data on land use and inputs use for environmental modelling. This data could improve data-driven decisions on climate policy and refine climate resilience programmes
- However, no specific initiatives are planned

**Government**
- FMN’s platform could work with the government to inform agriculture data about production volumes and yields by location, informing resource allocation towards local food production, value chain promotion, and food security
- However, no specific initiatives are planned

**Donors**
- The platform could help donors to receive ground data and allocate funding to accelerate in the regions and value chains most needing support
- FMN receives technical assistance from some donor initiatives

**Other Partners**
- Implementing partners without tech skills could become more tech savvy & digitally enabled by partnering with FMN
- FMN is planning to build partnerships with field organisations to increase farmer reach

Source: Dalberg interviews and analysis, 2020
SUMMARY
**FMN** aims to launch a platform that strengths the existing agribusiness, to do so they will need to build a corporate vision with a product roadmap from the very beginning.

| Drivers | • Expanding and **strengthening the existing agribusiness** of providing input  
• Improving **quality of produce for offtake** |
| --- | --- |
| Current Status | • The platform is **still in development**, its potential is untested - the platform’s channels and set of services provided are **still unclear**  
• The platform **uses FMN’s existing technology**, in part to streamline with the IT systems used in the rest of the organisation  
• Conversations with **potential partners are in the early stages**  
• FMN target is to reach **150,000 farmers by the end of 2021** |
| Key Assets | • **Significant market buying power** and **brand recognition** among farmers stemming from FMN’s scale of operations  
• **End to end value chain activities** and multiple services to farmers provide foundational knowledge to inform product design  
• **Established relationships with farmers** from years of field operations in input provision enables quick onboarding of farmers  
• **Existing agronomist networks to reach the field** and provide customised solutions for farmers |
| Success Factors | • **Building on the existing analog network** and taking a flexible approach to **mix digital technologies with existing agronomist networks**  
• Staying **flexible to the emerging learnings during the development phase** enables GAIL to continually iterate and build on their initial platform concept |
| Challenges | • **Coordination across multiple departments and the integration of the platform across FMN’s different entities** is still unclear, posing a risk to the effectiveness of the platform in improving internal management systems  
• **Lack of customisation** – The limited farmer engagement could lead to a lack of user-lens in product development |
| Recommendations | • **Build corporate vision with product roadmap** that play to organisational strengths such as market buying power & brand recognition  
• **Coordinate for effective execution** that leverage large organisation’s asset  
• Reviewing partnership approach to bring **partners with aligned vision and fit with the roadmap**  
• Bring **more farmer lens in product development** |

Source: Dalberg interviews and analysis, 2020;
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UNDERSTANDING THE PLATFORM
Overview | Bank-led platforms provide financial products, bundled with other products and services to improve farmer productivity and income (1/2)

Banks bring financial resources, well established relationships with ecosystem actors, and credibility to agricultural platforms.

Typical drivers are to:
- Expand their rural client base
- De-risk agribusiness lending by meeting financial needs throughout the value chain
- Lead financial innovation

Enabling partners (e.g. donors and governments) offer:
- Early stage capital to develop platforms
- Farmer distribution channels
- Data inputs – e.g. farmer profiles

Bank-led platforms look to digitise and increase provision of formal financial services across rural agriculture markets.

Product and implementing partners (e.g. field organisations and tech innovators) provide:
- Inputs
- Learning content
- Aggregation & delivery
- Insurance
- Access to market

Farmers – Platforms target rural and unbanked smallholder farmers.

Bank-led platforms have varied structures and drivers. This section compiles high-level learnings from four bank-led platforms at different stages.

Source: Dalberg interviews and analysis, 2020
Overview | Bank-led platforms provide financial products, bundled with other products and services to improve farmer productivity and income (2/2)

**Platform drivers**

**Platform offerings**

**Uganda**

OneFarm*

- Expand reach to unbanked SHF
- Link agriculture players (e.g. input suppliers, off-takers) through a digital network

OneFarm will provide:

- Credit via input loans
- Insurance and savings
- Market access
- Agronomic services

**Nigeria**

SABEX 1*; SABEX 2*

- Increase financial service provision to farmers and other agriculture players
- Cut out middlemen and en-sure SHFs get maximum returns
- Reduce post-harvest loss

SABEX 1 supports agro-dealers with:

- **Input provision** delivered to the agro-dealership
- Credit to stock inputs

SABEX 2 supports farmers with:

- Credit for loans against harvest
- Market access
- Warehousing to store produce

**Rwanda**

Smart Nkunganire System (SNS)*

- Increase farmers’ access to finance
- Digitise the government’s national agricultural subsidy program

**Banks**

Source: Dalberg interviews and analysis, 2020

*Note: OneFarm is testing its lending feature while designing the remaining 3; SABEX 1 and 2 are in pilot phases; SNS is fully operational, with additional features anticipated in 2021*
Banks offer financial solutions linked to improving farmer productivity and incomes which enhance loan repayment and customer life-time return.

**Value Proposition:** Banks offer loans to farmers, so they can invest in quality products and services to raise their farm productivity and income. For example, loans against harvest to encourage farmers to store their harvest and wait for better market prices to achieve higher returns.

### Stakeholder

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Value Proposition</th>
</tr>
</thead>
</table>
| 1 Farmers   | • Financial products to invest in farming activities  
               • Bundled value-add services to increase productivity and incomes |
| 2 Agrodealers* | • Financial products to procure stock  
                       • Supply chain management solutions |

### Products

<table>
<thead>
<tr>
<th>Products</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td>Tailored loan products based on their needs and platform usage to invest in quality products and services</td>
</tr>
<tr>
<td>Savings</td>
<td>Savings accounts and support for farmers to earn interest and save for the future</td>
</tr>
<tr>
<td>Input provision</td>
<td>High quality inputs distributed to farmers and local resellers to increase farmers’ productivity and yield</td>
</tr>
<tr>
<td>Learning and information</td>
<td>Digital content to upskill farmers with good agronomic practices, often supplemented by field agents</td>
</tr>
<tr>
<td>Market access</td>
<td>Market linkages between farmers and end consumers or off-takers, removing intermediaries and increasing farmer income</td>
</tr>
<tr>
<td>Logistics and warehousing</td>
<td>Transports inputs/harvests from producers to markets, and/or stores goods so farmers can get better prices at later dates</td>
</tr>
<tr>
<td>Insurance</td>
<td>Subsidised agri-insurance, sometimes in partnership with insurers or tech innovators, to protect farmers from harvest loss</td>
</tr>
</tbody>
</table>

### Implementing banks

- Sterling
- Stanbic Bank
- Tecousa

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*Agrodealers are not relevant stakeholders for all products – most commonly they are involved with input provision, but can also use credit products in some cases*

**Source:** Dalberg interviews and analysis, 2020
**Operations** | Banks often use dedicated internal teams to build platforms, supplementing their capabilities through partners for field operations

---

**Sample organisation structure**

- **Non-field partners e.g. tech innovator/government**
  - Customer reach and scale
  - Complementary capabilities

- **Banks**
  - Digital products and services

- **Farmer channels**

- **Field partners e.g. cooperative**

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**Roles and Responsibilities**

<table>
<thead>
<tr>
<th>Internal management</th>
<th>Field operations</th>
<th>Infrastructure and technology</th>
</tr>
</thead>
</table>
| • Banks often use dedicated units or distinct innovation arms, leaving room to experiment whilst benefiting from the bank’s financial and reputational assets  
  • BK Techouse runs as a separate entity under the BK Group. Sterling manages SABEX within its agriculture department.  
  • Banks’ internal capabilities include data analytics, partner outreach/management, and technology development  
  • Banks aim to recruit agronomists to support product design in future | • Banks lack agronomic field expertise and rely on partners and third-parties for agriculture specific field capabilities  
  • SABEX 2 uses AFEX’s warehouse and storage facilities to collect and aggregate produce. SNS relies on an external logistics provider to distribute inputs  
  • Some banks combine their rural agent networks with partners’ field forces to run farmer onboarding and support | • Banks prefer to develop their own platforms in order to retain control and minimise external liability risks  
  • Most platforms are designing low-tech platforms to reach rural farmers. SNS runs on USSD, but SABEX 2’s web-based tech currently excludes feature phone users. However, they are now adapting the platform to improve low-tech functionality  
  • Personal data ownership and regulation varies by market |

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**Banks aim to keep the bulk of their operations in-house to maintain oversight and minimise risks.** However, they work with external partners to fill their knowledge gaps and provide new capabilities – e.g. agronomic expertise and field services

Source: Dalberg interviews and analysis, 2020
Partnerships | Product partners expand the banks’ ability to innovate and build agriculture expertise; however they approach partnerships cautiously

**Example bank partnerships**

- **Funding partners**
  - A number of donor organisations and development institutions have funded bank-led platforms
  - They provide early stage capital to design, pilot and scale bank-led platforms

- **Governments**
  - Can influence farmer adoption – e.g. RAB’s* partnership with BK TecHouse has created an exclusive channel to farmers, registering ~1.3 million SHF users in 3 years
  - Provide data to enrich farmer support services, – e.g. national ID and land registry data

- **Product partners**
  - Field organisations
    - Act as powerful communication and distribution channels to end users – e.g. co-operatives
    - Provide agriculture expertise – e.g. Sterling Bank works with a field partner to manage warehouse operations and storage for farmers

- **Agritech innovators**
  - Provide agronomic expertise, tested products and services (E.g. soil-testing services, weather information)
  - In some cases innovators provide distribution channels to farmers (e.g. through their field force)

**Partnership approach and status**

- **Partnership approach**
  - Banks pursue partnerships to expand their capabilities, mostly in agronomic expertise and field presence. E.g. AFEX provide commodities trading and warehousing on Sterling’s SABEX 2
  - Banks approach partnerships cautiously to minimise risk. E.g. Stanbic aims to partner with multiple input providers to diversify risk
  - Banks are exploring various revenue models¹ – e.g. revenue sharing and purchase agreements
  - Banks often seek close relationships with government due to industry regulations
  - Some banks seek partnerships to secure funding

- **Partnership status**
  - Except for BK TecHouse, most banks are at early stages of partnership development, and focus on core capabilities first
  - Engagement with tech innovators varies – e.g. AFEX provides Sterling trading and storage services to enrich SABEX 2, whereas BK TecHouse does not engage tech innovators for SNS

Banks seek partnerships to complement capabilities, starting with agronomic expertise and field presence. Core platform functions such as technology infrastructure development and financial services remain in-house.

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*Note: RAB - Rwanda Agricultural Board | ¹ Stanbic will test a commissions-based revenue sharing agreement; Sterling does not split AFEX’s revenues from warehouse and storage services

Source: Dalberg interviews and analysis, 2020
### Revenue drivers

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Interest and principal repayments</strong> on loans products (e.g. input loans, or income smoothening credit products) sold through the platform</td>
</tr>
<tr>
<td>2</td>
<td><strong>Savings deposits</strong> from users’ money stored on the platform’s virtual wallet</td>
</tr>
<tr>
<td>3</td>
<td><strong>Transaction fees</strong> on purchases made on the platform, or facilitating payments made on the platform</td>
</tr>
</tbody>
</table>

### Cost drivers

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Technology costs</strong> for platform development, technology maintenance, data analytics, and integration of new services into the core system</td>
</tr>
<tr>
<td>2</td>
<td><strong>Field operation costs</strong> such as agent commissions and associated field visit costs</td>
</tr>
<tr>
<td>3</td>
<td><strong>Marketing costs</strong> to drive customer acquisition and retention</td>
</tr>
<tr>
<td>4</td>
<td><strong>Loan processing costs</strong> such as assessment and loan servicing</td>
</tr>
</tbody>
</table>

### Key risks

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Risk aversion may stall development</strong> – banks’ hesitancy to adapt their ways of working combined with risk aversion means that banks are evolving slower than other platforms and taking time to evolve the full bundle of products. Acute risk-aversion could also cause bank decision-makers to divest in platform development early if returns are not made</td>
</tr>
<tr>
<td>2</td>
<td><strong>Typical credit risks</strong> could lead to default. These risks include the misapplication of cash loans compromising farmers’ repayments, or poor/inaccurate data leading to misinformed loan disbursements</td>
</tr>
<tr>
<td>3</td>
<td><strong>Over-reliance on channel partners</strong> to build/support farmer relationships could lower banks’ ability to control their customer relationships; disengagements with field partners could weaken touchpoints to end users</td>
</tr>
<tr>
<td>4</td>
<td><strong>Low digital adoption and literacy</strong> – for co-operatives, farmers, and more traditional organisations – could hinder uptake depending on the markets of operation</td>
</tr>
</tbody>
</table>

Source: Dalberg interviews and analysis, 2020
Enabling Environment | Bank-led platforms are well placed to succeed in ecosystems with light-touch regulations and numerous agriculture players

1. Regulatory framework
   - Banks could face limitations that competitor platforms do not have, given regulations that govern bank activity
   - Highly influential governments can play a catalytic role in platform adoption

2. Access to finance
   - Banks often finance their own expansion into platform offerings, but some look for donor support
   - Availability of finance is tied to the risk appetite of the potential investor

3. Human capital
   - Skilled labour is key to enhancing banks’ expertise areas and filling capability gaps from field operations to technical expertise

4. Infrastructure
   - Banks are well-placed to succeed in markets with strong payments infrastructure and high digital literacy
   - Telco mobile money infrastructure could compete with bank financial products

5. Ecosystem density
   - Multiple players using advanced tech innovations in the market (e.g. blockchain technology) can help to enhance platforms’ digital solutions
   - Multiple ag players help banks expand their offering with farmer facing products
   - Markets with a strong agriculture sector expand partner options to reduce banks’ risk of over-reliance on single suppliers

6. Market maturity

BK Techouse’s partnership with RAB has enabled nationwide adoption of their e-subsidy product in Rwanda

SABEX 2 leverages blockchain technology to facilitate loans and trades of produce in under 10 minutes, providing swift, reliable and transparent services to farmers

SABEX 2 leverages AFEX’s digital commodities exchange services and their on-the-ground warehouse and storage services

Source: Dalberg interviews and analysis, 2020
IMPACT OF THE PLATFORM
SHF Impact | Bank-led platforms are nascent but hold promising potential to transform livelihoods through financial services offered to farmers

<table>
<thead>
<tr>
<th>Bank</th>
<th>Phase</th>
<th>Current reach</th>
<th>Target reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stanbic Bank</td>
<td>Feature testing</td>
<td>700 SHF</td>
<td>1 million SHF in 3 years</td>
</tr>
<tr>
<td>Sterling</td>
<td>Pilot</td>
<td>N/A</td>
<td>800,000 SHF in 1 year</td>
</tr>
<tr>
<td>TECHouse</td>
<td>Roll out</td>
<td>1.3 million SHF</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Note: Platforms have varied targets; reach cannot be compared against each other because they are at different development stages

SHF productivity impact

**Markets**
- Access to storage can help farmers to get more favorable prices as they can choose when to sell produce

**Skills**
- Improved financial literacy skills
- Learning content can help to improve productivity

**Land**
- Banks tend not to tackle land issues as they work with farmers who own land or have access to land

**Capital and infrastructure**
- Access to credit to invest in inputs, technology and labour
- Access to storage facilities to reduce post harvest losses

**Climate Smart Agriculture (CSA)**
- Loans can be used to buy CSA technologies such as solar water pumps to improve yields and increase climate resilience
- There are no CSA specific-loans offered at present

**Gender**
- Women are more likely to invest in income generation and are more likely to repay loans – but bank outreach to women needs to be intentional to recruit and support women

Banks are well positioned to improve financial access whilst increasing productivity outcomes at scale by providing ways for farmers to invest in improving yields and income

Source: Dalberg interviews and analysis, 2020
Innovator Impact | Banks provide reach, competitive financing, and positive brand association; barriers include duplicative efforts and misaligned objectives

<table>
<thead>
<tr>
<th>Benefits of partnering with Bank-led platforms</th>
<th>Barriers to partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Scale</strong> through access to more potential customers</td>
<td>1. <strong>Duplicative efforts</strong> would make partner roles redundant (e.g. Sterling and Binkabi below)</td>
</tr>
<tr>
<td>2. <strong>Increased uptake by tying innovators’ products to loans</strong> Bundling products with credit expands innovators’ potential customer base, e.g. through payment plans</td>
<td>2. <strong>Misaligned goals and expectations about the speed of expansion</strong> create divergent approaches towards growing the platform. Banks’ calculated risk-aversion and tech innovators’ fast-paced agility could lead to a mismatch in ways of working</td>
</tr>
<tr>
<td>3. <strong>Reduced exposure to high-risk customers</strong> by leaning on banks’ strict due-diligence when evaluating potential customers</td>
<td>3. <strong>Stringent regulatory requirements</strong> could make banks less attractive to potential innovator partners</td>
</tr>
<tr>
<td>4. <strong>Brand association with reputable institutions</strong> brokers trust between customers and new or relatively unknown innovators</td>
<td></td>
</tr>
<tr>
<td>5. <strong>Potential investment</strong> by banks in innovators’ enterprises would help them to scale and signal to other investors to follow suit</td>
<td></td>
</tr>
</tbody>
</table>

**Banks say…**

BK TecHouse noted that agri-tech innovators often have niche markets but could benefit from banks’ reach to target more customers and increase their impact

Banks and innovators have divergent attitudes towards risk and organisational culture. This could balance calculated risk-taking with agile testing and development, or lead to partnership breakdowns

Source: Dalberg interviews and analysis, 2020
Ecosystem Impact | Banks can leverage their role as financial actors to spark investment across the sector; platform data can help to improve decision-making

**Competition**
- Drive informal lenders to improve their rates and adhere to regulations
- Drive traditional banks to develop more farmer centric finance offers

**Consumers**
- Enjoy more choice from increased quantities of produce as well as lower market prices
- Improved nutrition from higher quality produce

**Climate planning**
- Data from platforms could help to inform environmental modelling on inputs and land use, and the uptake of CSA technologies
- However, no platforms consider this at present

**Government**
- Potential to improve resource allocation by identifying and targeting financial support towards the underserved segments
- Currently, SNS offers the Rwandan Agricultural Board dynamic data on the input subsidy disbursements at local and national levels

**Donors**
- Potential to improve technical support programs by targeting finance products to low-income farmers
- Currently donors are mainly engaged as funding partners, not beneficiaries of platform data

**Other partners**
- Potential to spark public and private investment by sending signals on market readiness
- Potential to increase capital flows through supply chain financing along the value chain to agro-dealers, input suppliers, off-takers, wholesalers and retailers

Source: Dalberg interviews and analysis, 2020
SUMMARY
**Banks**

**Bank experiences demonstrate their risk averse nature, and highlight the need to build products that address user needs**

**Drivers**
- To expand the bank’s customer base by catering to unbanked demographics – e.g. underserved rural farmers
- To de-risk agri-business lending by providing financial products across the agriculture supply chain to expand income generating activities – e.g. providing working capital
- To lead the market in financial innovation, rather than be left behind in new developments – e.g. mPesa

**Current Status**
- Banks anchor their platforms on credit (mostly input loans) and supplement them with other services as they evolve e.g. learning content, market access
- Being risk-averse, banks are typically at an earlier stage of development than others pursuing agriculture as part of their core mission
- Banks have a preference for keeping activities in-house, only engaging with external partners when there is clear capability gap

**Key Assets**
- Core mission to provide financial services to customers through savings and loan products
- Considerable financial resources to invest in key strategic initiatives
- Well established relationships with agriculture ecosystem actors, and often existing data on their financial needs – e.g. Stanbic Bank has focused on commercial agriculture enterprises

**Success Factors**
- Clear leadership, vision, and a mandate to innovate from the highest level – e.g. Agriculture is 1 of 5 strategic focus sectors for Sterling
- Partnerships with innovative organisations and/or dedicated innovation departments to build agriculture capabilities, build field operations and execute on their mandate
- Incentives and donor support to encourage entry into the sector and de-risk agriculture portfolios

**Challenges**
- Limited experience in agriculture, especially dealing with farmers and gathering the required data to inform agricultural advice. This could hinder their ability to design products that meet farmer needs
- Risk-averse nature leads to slow moving developments which risk losing market share and/or the scaling back of investment in the platform

**Lessons Learnt**
- Use multiple partners, often providing the same product (e.g. inputs) to help reduce the reliance on just one player and mitigate risk
- House platforms in teams outside the banks ‘business as usual’ departments to foster innovation and develop new capabilities
- Invest in developing products that address end-user needs to increase likelihood of success and achieve high rates of repayment
UNDERSTANDING THE PLATFORM
Overview | KALRO’s data hub will receive and aggregate data, centralising research and sharing information across Kenya’s agricultural ecosystem

The Kenya Agricultural and Livestock Research Organisation (KALRO) - is a quasi-public organisation created to oversee agricultural research in Kenya.

**Ecosystem actors** provide models and receive field data. These include:
- Donors
- Satellite companies

**Financial service providers** provide scoring methods and receive aggregated data. These include:
- Banks
- Insurance companies

**Data Hub**
KALRO’s data hub aims to centralise agricultural research and coordinate information sharing in the ecosystem.

**Farmers** - KALRO’s field force reaches thousands of farmers. Partner channels will amplify the datahub’s reach.

**Main drivers** to create the platform:
- Build and share open information and knowledge
- Lead digitisation of agricultural data and research in line with government priorities
- Facilitate evidence-based decisions in agriculture sector

**Government actors** provide field data and receive analytics to inform policy making. This includes:
- Ministry of Agriculture

**Field organisations** provide field data and share the hub’s digital products with farmers. These include:
- Tech innovators*
- Research organisations

**Note:** (1) The platform is still in development and not all products have been rolled out yet. (2) *The majority of tech innovators are field organisations, but some FSPs and satellite companies could also be tech innovators (3) Government-led platforms can take varied forms (e.g. Ethiopia’s Agricultural Transformation Agency focuses on direct product delivery as opposed to data partnerships). This blueprint focuses on KALRO’s specific model.

Source: Dalberg interviews and analysis, 2020
KALRO offers data products to multiple users that inform decision making and planning, whilst offering agronomic learning content to farmers.

**Value Proposition:** Open digital products that present data on food security, agronomy, environmental modelling, and financial services. Insights are packaged to make information more digestible for users' needs, including specific farmer-focused products to help improve productivity and practices.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Value Proposition</th>
<th>Products</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecosystem actors</strong> (e.g.</td>
<td>Accurate field data to inform national planning, program development, and help</td>
<td><strong>Food balance sheet (FBS)</strong></td>
<td>Developed</td>
</tr>
<tr>
<td>policy makers, donors,</td>
<td>improve the range of insights from existing models</td>
<td>Tracks Kenya’s <strong>food supply and demand</strong>,</td>
<td></td>
</tr>
<tr>
<td>satellite companies)</td>
<td></td>
<td>incorporating yield estimates for planning</td>
<td></td>
</tr>
<tr>
<td><strong>Field and farm</strong> (e.g.</td>
<td>Actionable agronomic information for farmers - and field organisations to share</td>
<td><strong>Livestock/crop suitability mapping</strong></td>
<td>In progress</td>
</tr>
<tr>
<td>tech innovators*, research</td>
<td>with farmers - to increase productivity and improve incomes</td>
<td>Maps areas that are suited to specific crops</td>
<td></td>
</tr>
<tr>
<td>organisations, farmers)</td>
<td></td>
<td>and livestock</td>
<td></td>
</tr>
<tr>
<td><strong>Financial service providers</strong></td>
<td>Data on farmers and farming activity to inform loan decisions</td>
<td><strong>Modelling environmental changes</strong></td>
<td>In progress</td>
</tr>
<tr>
<td>(e.g. banks, insurance companies)</td>
<td></td>
<td>Models <strong>climate change</strong> effects on agricultural ecosystems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Early warning alert</strong></td>
<td>In progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Signals impending disasters, food market</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>interruptions, and their expected scale</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Weather/crop monitoring</strong></td>
<td>Due for release</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provides weather forecasts and agronomic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>advice to farmers based on crop and location</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Livestock/crop selector</strong></td>
<td>Developed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advises farmers on crop and livestock</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>breeds based on map suitability</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Agri-coach</strong></td>
<td>In progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advises farmers on the whole value chain,</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>building on inputs from other digital products</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Credit scoring</strong></td>
<td>In progress</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assigns credit scores to farmers to access</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>credit, leveraging agri-coach metrics</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The majority of tech innovators are field organisations, but some FSPs and satellite companies could also be tech innovators

**Source:** Dalberg interviews and analysis, 2020

The big data platform and by extension the data hub was commissioned late 2019.
Operations | KALRO’s IT team leads the data hub, which uses in-house infrastructure; field operations through KALRO and partners are not yet clear

KALRO’s model anchors on input and collaboration across multiple partners to build and distribute products. An in-house team leads design, set up and management of the datahub.

Source: Dalberg interviews and analysis, 2020
Partnerships | KALRO uses data inputs from multiple partners, layering information from multiple sources to build digital products

KALRO’s partnerships provide data inputs and technical support

**Government actors and policy makers**
- Financial contribution and strategic oversight support
- Food production, market prices, and land mapping data

**Satellite companies**
- Geospatial data (e.g. geolocation data, weather data, and yield monitoring)

**Donors**
- Mainly provide finance and technical support
- Consumption data, simulation models, and resource data

**Banks**
- Credit scoring methodologies and standards

**Field organisations**
- Field data on farmers and agricultural outputs

**Partnership approach and status**

**Partnership approach**
- KALRO’s engages multiple potential partners in discussions through a non-exclusive, wide-net’ approach
- KALRO builds non-financial, data sharing partnerships that follow bilateral agreements, formalised via MoUs
- KALRO engages multiple potential partners in discussions, taking a ‘wide-net’ approach to pursuing opportunities
- Some partners serve a dual role, providing data inputs and acting as a product channel to farmers
- Partnership modalities differ among government-led platforms. KALRO relies heavily on field partnerships whereas ATA works with contracted service providers

**Partnership status**
- KALRO reports to the Ministry of Agriculture and works closely with government county offices
- KALRO is part of data sharing groups such as CODATA* and the World Bank’s DAT* group of tech innovators
- KALRO is working with tech innovators such as Atlas AI, aWhere and Arifu through bilateral agreements, with more in the pipeline

KALRO does not market existing partner products through their channels, but instead layers partner data inputs into their consolidated product offering, and offers partners free use of those products through their channels

*Note: MoALF – Ministry of Agriculture, Livestock, and Fisheries; *CODATA – Committee on data for science and technology; DAT - World Bank’s Digital Agriculture Technology

Source: Dalberg interviews and analysis, 2020
Sustainability | The datahub relies on financial support from donors and the government; key risks include low capacity, communication, and data policy

<table>
<thead>
<tr>
<th>Revenue drivers and financing</th>
<th>Cost drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> The datahub is financed by external actors. The World Bank allocated $10m for developing an integrated weather and market information system under the Kenya Climate Smart Agriculture Program. Other financiers include Mercy Corps AgriFin, and the Kenyan government</td>
<td><strong>1.</strong> Internal team – The datahub requires specialised skillsets from management professionals, agronomists, data analytics and technology experts including infrastructure and software engineers</td>
</tr>
<tr>
<td><strong>2.</strong> KALRO also receives in-kind support – e.g. Atlas AI offered staff on secondment</td>
<td><strong>2.</strong> Technology infrastructure and maintenance – Physical IT equipment, storage space, electricity and cooling and technical upkeep</td>
</tr>
<tr>
<td><strong>3.</strong> Currently, KALRO does not intend to generate revenues from the datahub, which will be an open-source, public good</td>
<td><strong>3.</strong> Field operations – Farmer outreach can be expensive. Public org. have a clear mandate with seamless flow of information to Counties</td>
</tr>
<tr>
<td><strong>4.</strong> Data Sources – Some organizations charge for access to their datasets, but KALRO will provide most datasets for free with only a requirement for prepare attribution of the source</td>
<td></td>
</tr>
</tbody>
</table>

Key risks

1. **Internal capacity** – Scaling is constrained by limited internal resources, and an insufficient disposable budget to attract new talent. An internal evaluation determined that KALRO would need to increase its agricultural researcher numbers by 40 percent to fulfil its research potential. Despite this, and the recent hiring of some interns on one-year contracts, KALRO’s researcher capacity is slowly declining and will continue to do so based on the departure and retirement of senior researchers and the ongoing long-term hiring freeze

2. **High-quality research skills** – Given that a significant number of senior researchers in the government and higher education sectors are nearing retirement age, it is crucial to avoid losing research capacity and maintain high-quality research skills

3. **Limited funding** – Given declining government funding and the government’s reallocation of commodity-levy funding to non research related activities, KALRO was forced to use reserve funding during 2015–2017 to meet its expenses

Source: Dalberg interviews and analysis, 2020; ASTI, “Agricultural R&D Indicators Factsheet”, 2018
**Enabling Environment** | Government-led platforms grow in markets with strong government involvement in agriculture, where they can address systemic challenges

1. **Regulatory framework**
   - Markets with strong government involvement in agriculture are likely to see government-led platforms as first-movers
   - Regulations can enhance legitimacy and credibility

2. **Access to finance**
   - Donor and govt support often subsidises platform development – but may depend on available funds and any donor limitations in specific markets
   - In-kind support can contribute to capacity building

3. **Human capital**
   - Resource constraints may limit the ability of government-led platforms to hire skilled labour

4. **Infrastructure**
   - Digital and telco infrastructure in some markets is dominated by government entities, putting government-led platforms in a strong position

5. **Ecosystem density**
   - In mature digital sectors with multiple innovators, government-led platforms may struggle to compete with commercial platforms due to capacity constraints

6. **Market maturity**
   - Government-led platforms can facilitate collaboration and data sharing among ecosystem actors
   - In markets with low private sector engagement, government-led platforms can directly address systemic challenges

---

**Ethiopia’s digital sector** is marked by a dominant telco, limited digital connectivity companies, and high prices which stifle private sector-led innovation.

**Kenya’s robust digital environment** has given rise to commercial innovations that compete with some of KALRO’s digital products.

---

**The Agricultural Transformation Agency (ATA)** was Ethiopia’s first agriculture hotline, supporting SHFs with real-time agronomic information and best practices.

**KALRO’s datahub** aims to centralise agricultural research across actors, whereas ATA Ethiopia runs digital projects to directly offer extension services and investment mapping.

**Source:** Dalberg interviews and analysis, 2020
IMPACT OF THE PLATFORM
### KALRO

**SHF Impact** | KALRO has a footprint Kenya through government networks, but target reach is undefined and impact is unproven until the products are full developed

<table>
<thead>
<tr>
<th>Reach</th>
<th>Footprint</th>
<th>SHF productivity impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>KALRO’s direct channels currently reach <strong>80,000</strong> smallholder farmers</td>
<td><strong>47 counties in Kenya through government offices</strong></td>
<td>Markets&lt;br&gt;• Income security and more stable commodity markets from better coordinated government policies on food production</td>
</tr>
<tr>
<td>Target impact numbers are undefined, but are likely to reach <strong>national scale</strong> with partners channels</td>
<td>The FBS launched with <strong>Maize</strong></td>
<td>Skills&lt;br&gt;• Personalised advice on good agricultural practices through agri-coach could encourage efficient farming and improve yields</td>
</tr>
<tr>
<td></td>
<td>Other priority value chains include <strong>rice, green grams, potatoes, wheat, beef and milk</strong></td>
<td>Land&lt;br&gt;• Potentially improve land use by cultivating suitable crops/livestock&lt;br&gt;• Early warning information could improve shock resilience</td>
</tr>
</tbody>
</table>

**Climate smart agriculture**<br>• Potential to increase adoption of climate smart practices through the agri-coach<br>• Early warning alerts could better enable farmers to prepare for impending disasters, including weather-related such as floods

**Gender**<br>• No specific measures to reach women have been incorporated<br>• Impact may be limited without deliberate intention

**Capital and infrastructure**<br>• Increased access to finance through the forthcoming credit scoring product

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KALRO’s product suite has promising impact potential for farmers, however in some cases there is a **limited user engagement in product design** due to time constraints\(^1\). This raises uncertainties in how effectively products will meet end user needs.

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Note: \(^1\)For example, in the partnership with aWhere to provide weather services, they were unable to test and improve different aspects of the messages (e.g. language) due to time constrains. As a result, they are providing the service only in English and not in Swahili.

Source: Dalberg interviews and analysis, 2020; AgriFin.
**Innovators Impact |** Partner gains include rich data inputs and network building; challenges include low capacity and lack of clear partnership processes

<table>
<thead>
<tr>
<th>Benefits of partnering with KALRO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access to rich data sets and insights</strong> to create and improve product offering</td>
</tr>
<tr>
<td><strong>Satellite companies can cross-check yield estimates from abstract satellite models with the field datasets from counties and other field organisations</strong></td>
</tr>
<tr>
<td><strong>Innovators can access data to test products, bypassing high market costs and restrictive data networks</strong></td>
</tr>
<tr>
<td><strong>Reputation and credibility from working with government-player</strong> legitimises the value that innovators bring to the agriculture ecosystem</td>
</tr>
<tr>
<td><strong>Strengthened networks in the agriculture ecosystem.</strong> Data sharing through KALRO lays the foundation for tech innovators to deepen their relationships with other ecosystem actors such as governments, donors and field organisations</td>
</tr>
<tr>
<td><strong>Expanded farmer offering at low cost.</strong> Promoting complementary KALRO products can enable innovators to provide their farmer networks more value at low cost to the innovator organisation</td>
</tr>
<tr>
<td><strong>Digital Green are interested in weather/crop monitoring as an additional offering to their video-enabled extension services for farmers in their networks</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Barriers to partnership</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limited of capacity to engage partners.</strong> Limited team resources and bureaucratic procedures prolong negotiations. The Government freeze “policy on hiring” is the greatest limitation to address this challenge</td>
</tr>
<tr>
<td><strong>Unclear principles and processes for forging partnership</strong>, including uncoordinated partnership strategy and lack of clear data sharing/purchase policy</td>
</tr>
<tr>
<td><strong>Some duplicative products.</strong> Some DAT innovators are developing similar offerings to weather monitoring and agri-coach, which could lead to conflict</td>
</tr>
<tr>
<td><strong>Burdensome data sharing regulations.</strong> Multiple external approvals in order to comply with Kenya data laws can extend partnership discussions</td>
</tr>
</tbody>
</table>

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KALRO’s datahub has the potential to help innovators scale by providing valuable information and strengthening their networks

Source: Dalberg interviews and analysis, 2020
**Ecosystem Impact** | The data hub can help to strengthen government policy and improve the competitive landscape for other partners and consumers

**Competitors**
- Potential to **create a more competitive sector** by providing robust data for market players
- Potential to **lower barriers to entry** for small-scale organisations who can leverage KALRO products

**End Consumers**
- End consumers could potentially benefit from higher quality produce, stable market prices, and more predictable food supply
- KALRO tracks consumer prices as part of the Food Balance Sheet

**Climate modelling**
- Potential to improve data-driven climate planning and adaptation by informing policy on land use change, coordinating resource allocation, and refining technical support programs to improve climate resilience
- The environmental modelling product has not yet been developed

**Government**
- Potential to **support data-driven policy-making and improve resource allocation** towards local food production, shock resilience and value chain promotion
- The food balance sheet offers the government more **visibility on food security** to inform agriculture policies

**Donors**
- Potential to receive reliable ground data to **inform programming and improve resource allocation**, e.g. food aid distribution volumes and location
- Channel for funding to catalyse impact across the sector

**Other Partners**
- Potential to **increase lending and insurance provision** through improved credit and weather information to profile farmers and inform pay-outs
- Potential to **improve data sharing among** researchers, policy actors, private investment, and development initiatives

Source: Dalberg interviews and analysis, 2020
SUMMARY
KALRO is well positioned to deliver the datahub and foster collaboration through open data-sharing; challenges include limited capacity and low user engagement

### Drivers
- To build and share open information and knowledge and to foster innovation
- To fulfil KALRO’s mandate to co-ordinate and lead the digitisation of agricultural data and research in line with government priorities
- To facilitate evidence-based decisions in agriculture sector

### Current status
- The platform has so far only developed three incomplete products, with a pipeline of products in progress
- KALRO is a member of several data-sharing bodies and is in bilateral discussions with partners for product dissemination

### Key Assets
- KALRO’s wealth of agricultural research information, historical body of field work and agronomy expertise
- Trusted relationships and established reputation with partners, including as key implementing body for MoALF
- Deep knowledge of the local context, including field networks and a database of thousands of farmers across Kenya
- Dedicated IT team and established infrastructure making them a natural home for agriculture research platforms

### Success Factors
- KALRO has aligned with strategic government priorities such as with the Food Balance Sheet, and holds an unrivalled position as the primary player the government looks to for agriculture research
- Strong vision and leadership from IT head has been key to bring in support from donors and establish KALRO’s infrastructure
- Open data strategy encourages information sharing and transparency from county governments and prospective partners

### Challenges
- Internal capacity is limited and the IT team tends to operate in a silo, having limited engagement with agronomic specialists
- Lack of clear principles and processes for data partnerships risks delaying product rollout
- By nature, KALRO is reliant on government and donor support to finance its activities
- Lack of user engagement in product design overlooks critical opportunities to validate SHF needs and assess product fit

### Lessons Learnt
- Build internal team such as software engineers and data analysts to see the vision through to execution
- Build internal partnership capabilities and use ‘matchmakers’ to streamline the partnership process and align priorities
- Leverage existing assets and play to organisation strengths of (i) government position and (ii) agronomy expertise
- Engage end users in product design to ensure best fit to their needs

Source: Dalberg interviews and analysis, 2020
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