DIGITAL AGRICULTURE PLATFORMS
BLUEPRINTS EXECUTIVE SUMMARY: JANUARY 2021
Agriculture is key to sub-Saharan Africa’s economy, contributing to 15% GDP and employing over 50% of the population

Executive Summary

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

Key: GDP contribution

- 0% – 24%
- 25% - 49%
- 50%+
- 2019 data not available

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.

<table>
<thead>
<tr>
<th>Market</th>
<th>Land</th>
<th>Skills &amp; Knowledge</th>
<th>Capital &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lack of access to quality and affordable inputs (e.g. fertilizers, seeds, herbicides)</td>
<td>- Reduced arable land due to urbanisation</td>
<td>- Reliance on outdated, low productivity agricultural practices</td>
<td>- Limited access to finance</td>
</tr>
<tr>
<td>- Limited linkages to off-takers and end-consumers</td>
<td>- Reduced yields due to overgrazing, over-farming, extreme weather events</td>
<td>- Limited information sharing on good agricultural practices</td>
<td>- Fragmented distribution and supply chain infrastructure and traceability</td>
</tr>
<tr>
<td>- Price volatility driven by seasonality and middlemen</td>
<td>- Inhibitive property rights and land customs</td>
<td>- Limited entrepreneurial support</td>
<td>- Lack of access to new technologies to boost productivity</td>
</tr>
</tbody>
</table>

**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

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

### Executive Summary

Market access innovations

- **Software-as-a-Service market information** on prices, supply quantities, access routes – e.g., Viazi Soko
- **Digital marketplaces** to connect SHF to potential buyers – e.g., Digisoko
- **Online markets** with real-time, digitized stock control systems – e.g. Twiga, Jumia

Land related innovations

- **Climate smart technologies** such as soil testing and solar water pumps help farmers to become more resilient to the impacts of climate change
- **Regenerative agriculture** and sustainable agriculture practices supported through digital networks
- **Satellite mapping** of weather and soil to inform planting decisions and land allocation

Skills development innovations

- **eLearning platforms** to deliver training on improved agronomic practices and increase farmers’ efficiency through SMS, chatbots and/or online channels – e.g. Arifu
- **Advisory platforms** to support entrepreneurial and business management – e.g. book-keeping services
- **Women-targeted content** to engage women and close the gender gap

Capital and infrastructure innovations

- **Financial services** such as input loans, crowd-sourced investments, mobile money payments, savings products, payment wallets to provide working and growth capital
- **Digital tracing** technology – e.g. GPS/geo-tagging, QR codes and contactless delivery signing
- **Digitized mechanization services** such as fleet management or equipment rental to increase access to quality machinery
- **eLogistics platforms** to transport goods among value chain players and consumers

Source: Dalberg Analysis 2020
Executive Summary

However, digital innovators face several constraints to scale their solutions and reach SHFs

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

- **CUSTOMER ACQUISITION**: New innovators face high costs of customer acquisition in establishing new field networks and building farmer outreach.

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

- **ACCESS TO FINANCE**: New innovators face challenges in accessing investment capital alongside cashflow constraints as they scale.

Source: Dalberg Analysis 2020
Executive Summary

Digital Agriculture Platforms can help bring together partners across the agriculture ecosystem to maximise the impact of digital innovations

- Provide data-driven feedback to adjust policies on agriculture markets and ecosystem
- Provide opportunities to fund high impact and large-scale initiatives in agriculture
- Provide access to a large market to scale up, and donors to secure funding when needed
- Provide access to low-cost digital products that help improve productivity and incomes

**Policy makers**

**Donors**

**Private sector partners & tech innovators**

**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
### Executive Summary

Today, 4 types of DAPs are most developed in SSA – platform ownership determines the initial product offering, business model and target market

<table>
<thead>
<tr>
<th>Type of platform</th>
<th>Main driver for launching platform</th>
<th>Key asset(s)</th>
<th>Initial Product offering</th>
<th>Source of revenue (Business model)</th>
<th>Lead platform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telco operator led</td>
<td>• Launch a new source of revenue generation</td>
<td>• Large customer base</td>
<td>• Advisory &amp; information services</td>
<td>• Direct revenue-driving products from revenue share with partners</td>
<td><a href="#">DigiFarm</a></td>
</tr>
<tr>
<td></td>
<td>• Build brand and move into digital space</td>
<td>• Voice and data n/w is a low / no-cost backbone to communicate with farmers</td>
<td>• Market linkages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agribusiness led</td>
<td>• Secure production from current supply chain</td>
<td>• Ready to sell products and services</td>
<td>• Market linkages</td>
<td>• Profit-enhancing existing core business</td>
<td><a href="#">FMN</a></td>
</tr>
<tr>
<td></td>
<td>• Enhance revenue from existing customers</td>
<td>• Brand recognition</td>
<td>• Supply chain management</td>
<td></td>
<td><a href="#">Twiga</a></td>
</tr>
<tr>
<td>Bank led</td>
<td>• Expand customer base and revenue stream from loan products</td>
<td>• Ready suite of finance products and services</td>
<td>• Financial access^2 – tied to market linkages</td>
<td>• Direct revenue-driving products</td>
<td><a href="#">Sterling</a></td>
</tr>
<tr>
<td></td>
<td>• Cross-sell other products</td>
<td>• Brand recognition</td>
<td>• Profit-enhancing existing financial products</td>
<td></td>
<td><a href="#">Eubise</a></td>
</tr>
<tr>
<td>Government Institution led</td>
<td>• Provide open data</td>
<td>• Wealth of agricultural research</td>
<td>• Advisory &amp; information services</td>
<td>• Publicly (government and donor) funded</td>
<td><a href="#">KALRO</a></td>
</tr>
<tr>
<td></td>
<td>• Promote collaboration among ecosystem actors</td>
<td>• Trusted relationships and established reputation</td>
<td>• Macro agricultural intelligence^4</td>
<td></td>
<td><a href="#">ATA</a></td>
</tr>
<tr>
<td></td>
<td>• Improve farmer livelihoods &amp; food security</td>
<td>• Field and county networks</td>
<td>• Field and county networks</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: 1) digitisation making existing business more efficient and scalable; 2) bank-led models reviewed here start with loans and savings products. However, variations could emerge in other bank offerings; 3) government-led platform take diverse forms (Kenya’s KALRO versus Ethiopia’s ATA); 4) KALRO’s platform offers innovators and government collated data from users of the platform into packaged products including data analytics; 5) we have not seen government-led model that charge fees on farmers or data users. However, some cost-sharing or fee-based model could emerge in the future; 6) market linkages was specific to the Digifarm case, but other telcos could also move into this space

Source: Dalberg Analysis 2020
We evaluated 4 leading DAPs in SSA on 8 key elements to provide a blueprint of how the platform works and the impact that it can deliver.

Executive Summary

We evaluated 4 leading DAPs in SSA on 8 key elements to provide a blueprint of how the platform works and the impact that it can deliver.

Lead platform

Overview
Why did the organisation set up the platform?

Value Proposition
What is the value proposition and what are the products?

Operational Model
What is the operating model and what are the key assets?

Partnerships & Collaboration
Who are the platform partners and how do they work together?

Sustainability & Enabling Environment
What are the main costs and revenues, and key risks? How does the enabling environment influence the platform?

Smallholder Farmers
What is the platform’s reach to smallholder farmers, and how does it improve SHF livelihoods?

Tech Innovators
How could innovators benefit from working with the platform?

Agriculture Ecosystem
How could the platform improve the wider agriculture ecosystem?

Limitations and lessons learned
What are challenges faced by platform leaders and learnings applicable to similar platform archetypes?

Source: Dalberg interviews and analysis, 2020
The blueprinting of the 4 leading platforms highlighted common themes in customers, products, capabilities, business model, partnerships & environment.

1. **PRODUCTS**
   The initial motivation and the key assets determine the platform’s product offerings and sequencing. Platforms initially offer a small set of products and services linked to their existing assets. There is a convergence in product roadmap across DAPs to support SHFs from inputs to market access.

2. **CUSTOMERS**
   Platforms tend to target ‘smallholder farmers’; yet farmers are diverse, and a more detailed analysis can be useful to better understand potential customers. Taking a customer-centric approach will enable platforms to target specific segments that are aligned with their vision and profitability requirements.

3. **BUSINESS MODEL**
   Developing a robust business model enables platforms to plan a structured product roadmap that clearly outlines future costs and potential sources of revenue. DAPs tend to follow direct revenue-driving, profit enhancing, or publicly funded business models.

4. **CAPABILITIES**
   Platform execution requires a core set of capabilities such as leadership, operations and a data/technology team, regardless of product roadmap or partner expertise. A digital platform is not a replacement for a field force, which remains core.

5. **PARTNERSHIPS**
   Platform partnerships tend to take two forms: implementing partners that support the delivery mechanism to farmers, and product partnerships that expand the platform’s offering. Partners can accelerate growth through new channels and products but cannot replace core capabilities.

6. **ENABLING ENVIRONMENT**
   Government regulations can enable or restrict platform growth, whilst a strong digital infrastructure alongside access to finance, digital skills and the density of innovators can spur platform adoption. Platforms can scale faster in more mature agriculture markets with multiple potential partners and a more educated consumer base.

Source: Dalberg interviews and analysis, 2020; 1: e.g., bank led DAP initially offer loans, an agri-led DAP initially offers inputs products; soil testing innovations are growing.
The blueprinting of the 4 leading platforms highlighted common themes in customers, products, capabilities, business model, partnerships & environment.

1. CUSTOMERS
Platforms tend to target ‘smallholder farmers’; yet farmers are diverse, and a more detailed analysis can be useful to better understand potential customers. Taking a customer-centric approach will enable platforms to target specific segments that are aligned with their vision and profitability requirements.

2. PRODUCTS
The initial motivation and the key assets determine the platform’s product offerings and sequencing. Platforms initially offer a small set of products and services linked to their existing assets. There is a convergence in product roadmap across DAPs to support SHFs from inputs to market access.

3. BUSINESS MODEL
Developing a robust business model enables platforms to plan a structured product roadmap that clearly outlines future costs and potential sources of revenue. DAPs tend to follow direct revenue-driving, profit enhancing, or publicly funded business models.

4. CAPABILITIES
Platform execution requires a core set of capabilities such as leadership, operations and a data/technology team, regardless of product roadmap or partner expertise. A digital platform is not a replacement for a field force, which remains core.

5. PARTNERSHIPS
Platform partnerships tend to take two forms: implementing partners that support the delivery mechanism to farmers, and product partnerships that expand the platform’s offering. Partners can accelerate growth through new channels and products but cannot replace core capabilities.

6. ENABLING ENVIRONMENT
Government regulations can enable or restrict platform growth, whilst a strong digital infrastructure alongside access to finance, digital skills and the density of innovators can spur platform adoption. Platforms can scale faster in more mature agriculture markets with multiple potential partners and a more educated consumer base.

Source: Dalberg interviews and analysis, 2020; 1: e.g., bank led DAP initially offer loans, an agri-led DAP initially offers inputs products; soil testing innovations are growing.
Based on the blueprinting we identified principles for Platforms across 6 areas

Executive Summary

KEY SUCCESS FACTORS

1. Build vision & product roadmap
   - Establish vision and product roadmap to guide technology development and partner engagement
   - Agree on a minimum viable product
   - Build a full suite of product offerings over time
   - Gather usage data to inform product decisions

2. Engage end-users
   - Segment target customers to identify needs and outreach plans
   - Engage users in product design to ensure alignment with user needs

3. Create a business plan
   - Develop a business plan to reflect the vision, scale, timelines and return ambition
   - Consider customer lifetime value in business plan development
   - Balance and cover costs for non-revenue generating products through cross-subsidisation or alternative revenue models

4. Establish core processes
   - Identify strengths and weaknesses to optimise unique advantages and identify gaps
   - Invest in quality talent; don’t rely on technology to solve every potential barrier
   - Set clear processes with realistic targets and build them into KPIs of directors
   - Protect and provide space for innovation and incubation

5. Engage & maintain target partners
   - Align vision and objectives with partners; define ownership and roles and responsibilities
   - Invest in partnerships that expand product offerings and build channels to customers
   - Set a policy to manage data sharing and licensing, branding, and revenue sharing upfront
   - Start with small engagements before expanding to full implementation

6. Consider enabling factors
   - When entering a new market, identify key enabling factors and potential barriers
   - Build relationships with key decision makers, particularly government
   - Participate in data-sharing initiatives that expand agriculture knowledge

Enabling environment

Partnerships

Business Model
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
  - KALRO builds non-financial, data sharing partnerships that follow bilateral agreements
  - DigiFarm builds data-sharing partnerships with content providers

**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
Executive Summary

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
- Misaligned goals and expectations on product sequencing and expansion
- Unclear/stringent data sharing terms
- Duplicative efforts with the platform leader

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

<table>
<thead>
<tr>
<th>Before partnership</th>
<th>In exploration</th>
<th>In discussion</th>
<th>As you work together</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Build a start-up vision with a product roadmap</td>
<td>3. Partner with platforms that share your vision and execution priorities</td>
<td>5. Be patient and invest time building rapport; large platforms may not act swiftly</td>
<td>8. Clearly define roles and responsibilities</td>
</tr>
<tr>
<td>2. Find finance partners and secure funding sources</td>
<td>4. Identify and develop relationships with key decision makers</td>
<td>6. Build solid financial analysis to back up remuneration and revenue share proposals</td>
<td>9. Set open communication and establish integrated ways of working</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Agree on data ownership, sharing, use and licensing</td>
<td></td>
</tr>
</tbody>
</table>
Platforms are well positioned to promote environmental sustainability through enabling access to climate-smart agriculture and data-driven insights

### Executive Summary

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

### Need for Action

- Platforms link value chain actors to promote the uptake of Climate Smart Agriculture (CSA) practices, technology and finance, including providing advisory services to farmers through precision agriculture products.
- Platforms help to collate information on agriculture activities on the environment, inputting to scenarios of current and future climate emissions and impacts to inform resource allocation and enhance data-driven decision making.

### Platform Opportunities

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

### Implementation challenges

- Consider climate across the business model of the organisation and in each product to avoid perpetuating unsustainable climate practices for farmers.
- Consider climate finance partners when raising capital.
- Develop clear MEL structures that incorporate climate into KPIs.
- Partner with expert organizations who incorporate environmental considerations in implementation.

### Principles for Platforms and Digital Innovators

**In design**
- Consider climate across the business model of the organisation and in each product to avoid perpetuating unsustainable climate practices for farmers.
- Consider climate finance partners when raising capital.
- Develop clear MEL structures that incorporate climate into KPIs.
- Partner with expert organizations who incorporate environmental considerations in implementation.

**In implementation**
- Gather and share environmental data such as soil quality and water use.
- Link CSA technologies to credit products through the platform.
- Use the platform’s field force to deliver training on sustainable farming practices.
Platforms can help to overcome cultural and structural barriers in agriculture when they are intentional in the design, outreach and engagement of women

### Executive Summary

- Women face cultural and structural barriers in agriculture, including lower access to technology, access to finance, and unequal power dynamics.
- 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.

### Need for Action

- Platforms help women to leapfrog inequities and to become more engaged in agricultural development through providing direct access to finance, agronomic knowledge and market connections.
- Gathering gender-disaggregated data helps to fill knowledge gaps on women's engagement, inform future product design, and build a case for investment planning.

### Platform Opportunities

- 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.
- 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.
- 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.

### Implementation challenges

- In design
  - Incorporate gender targets into product design and MEL plans, including recruiting women into product design teams.
  - Pursue partners that bring gender expertise to broaden the platform’s understanding.

- In implementation
  - Gather data to better understand and analyse gender challenges for farmers, and the potential impact of platform interventions.
  - Ensure female representation at all levels, from internal management to field agents.
  - Embed gender goals into execution incentives – e.g. higher commissions for onboarding women.

### Principles for platforms and digital innovators
About the sponsors

Mercy Corps’ AgriFin’s objective is to develop sustainable services that increase farmer income and productivity by 50%. Since 2012, AgriFin has completed more than 150 engagements with over 70 partners and reaching 14 million SHF.

GIZ is a service provider in the field of international cooperation for sustainable development, promoting the D4Ag Programme as bridge between Tech Startup Promotion and Agricultural Transformation in Africa.

Dalberg’s mission is to bring the best of private sector strategy to address global development challenges. Offer an innovative mix of advisory, investment, research and design services.

Objectives & Approach

GIZ engaged Mercy Corps to understand how young technology 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), 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 (this file)
- The Blueprints Deep-dive
- 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 analysed work from **30+ previous engagements** with DAPs and tech innovators
- We conducted **virtual interviews with 40+ companies**, including:

![Logos of various organizations]
CONTACT

Leesa Shrader
Program Director
Mercy Corps AgriFin
lshrader@mercy corps.org

Naoko Koyama
Regional Director for Africa
Dalberg Advisors
naoko.koyama@dalberg.com

Connect

www.mercycorpsagrifin.org
www.linkedin.com/company/mercy-corps-agrifin
@mercy corps safa
@mercy corps agrifin