



DATA STRATEGIES FOR AGRICULTURAL ORGANIZATIONS SERVING SMALLHOLDER FARMERS

Learnings from Safaricom DigiFarm, Farm to Market Alliance and the Ethiopian Agricultural Transformation Agency

Dalberg



AGRIFIN

Executive Summary

Data-driven initiatives have emerged as a powerful tool to improve the lives of smallholder farmers. Over the past two years, AgriFin has supported three organizations - DigiFarm, the Ethiopian Agricultural Transformation Agency (ATA), and Farm to Market Alliance – to enhance their impact on smallholder farmers in Africa. This document aims to inform other organizations seeking to serve as data platforms for improving the lives of smallholder farmers by sharing learnings from these three entities.

Despite being a mix of public sector, private sector, and philanthropic organizations, these entities **share overarching data strategy objectives and principles**. This case study focuses on learnings from operationalizing data strategy, including governance (e.g. compliant systems), collection (e.g. accuracy and accountability in input), cleaning and storage (e.g. for easy accessibility), analysis, and value creation (e.g. using data to better understand farmer needs and improve operations).

Key insights on data strategies include:

- **First identify the use cases and their data requirements**, then build processes and systems around them
- **Be clear with partners on what data will be shared and in what form** (aggregated, raw, anonymized) to help to avoid any potential challenges / misalignment further down the line
- **Invest in empowering farmers to utilize data** and improve yields and access to markets

Recommendations on data strategies include:

- Understand the external constraints when building your strategy (regulation)
- Build trust with key partners by developing a shared vision of how you will utilize the data
- Invest in your organization and people to ensure you have the right structures and capabilities

Limitation: This study distilled learnings only from three cases that AgriFin and Dalberg have deeply supported, and does NOT capture learnings from other organizations. The study touches on use cases but does NOT aim to provide an exhaustive list of use cases of data for agricultural value chain / services and products for smallholder farmers.

Data has the potential to unlock a wealth of opportunity for agricultural organizations and smallholder farmers

Problem

Organizations serving smallholders do not realize full potential of data

- Partners and departments collect data in silos, often manually
- Limited open APIs stifles innovation potential partners
- Lack of technical capacity, regulatory issues and lack of trust reduce data sharing, so the full synergies data can bring are yet to be achieved

Impact

This results in sub-optimal business performance and constrains services offered to farmers, **impacting productivity, income and resilience for farmers and the businesses serving them**

Opportunity

Strong collaboration between the public and private sector, integrated data systems and empowered farmers can have a significant impact

- Strengthening the quality of data
- Improving product yields and reducing risks
- Opening up new product opportunities, partnerships and markets

AgriFin and Dalberg have supported three organizations from the private, government, and donor sectors to develop data strategies



Launch

Launched in March 2017 by Safaricom PLC

Launched in 2010 as a result of a two-year diagnostic study of the agriculture sector in Ethiopia

Launched in January 2016 as a public-private initiative

Scale

> 1 Million registered farmers, and 300,000 active platform users

Serves the whole of Ethiopia with over 4 million smallholders utilizing services

Has reached >150,000 farmers across East Africa working across four countries

Offer

An integrated mobile platform that provides a range of agricultural services to smallholder farmers across Kenya

Supports partners to identify and integrate solutions to address systemic bottlenecks in agriculture

Consortium of eight agri-focused organizations that aims to transform existing agricultural practices of production, commodity handling, communication and trading

Provides low cost inputs, input loans, yield insurance, targeted learning content and market for produce

Provides identification of systemic constraints in the agriculture value chain, conducts studies to address them, and implements projects

Offers predictable markets, affordable finance, quality inputs and storage solutions

A wealth of agricultural data is collected everyday by multiple organizations, right across the value chain



KYC Data

Name, gender, age, mobile phone number, number of household members



Crop & Input Data

Seed variety data; soil conditions; weather conditions



Land Data

GPS co-ordinates, acreage, mapped data plotting land size, weather conditions



Production Data

Date of planting; intercropping; pest/disease attacks; field activities schedule



Financial Data

Access to bank account(s), credit score/history, transaction data, insurance

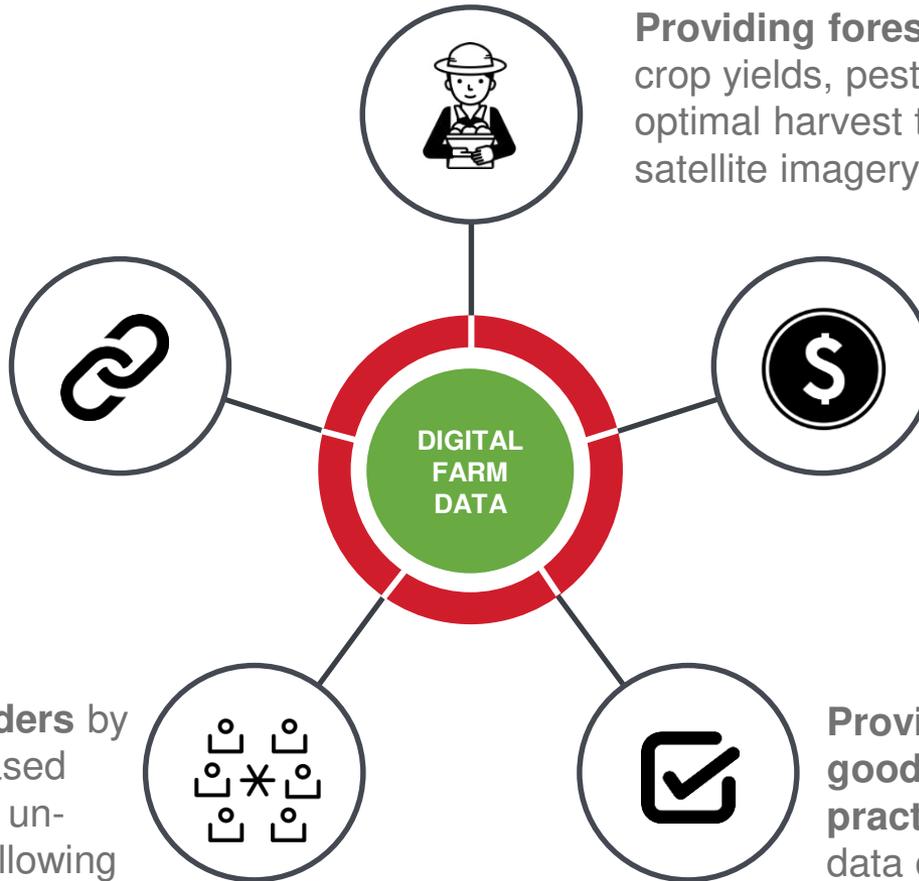


Market Data

Market prices; traders; estimated and actual harvest production

Data offers multiple opportunities to catalyze investments in and service offerings for small-holder farmers

Strengthening the value chain through real-time data that enables **informed business decisions**, by tracking crop volumes, prices, transportation, production and eventually the price for the end consumer



Providing foresight on potential crop yields, pest attacks and optimal harvest times from satellite imagery and weather data

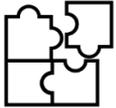
Improving access to finance using household, farm, market, psychometric, and transaction data

Integrating stakeholders by providing evidence-based findings on previously un-mapped data points allowing greater visibility on activities, and reducing duplication of efforts to achieve synergy

Providing farmers with good agricultural practices from aggregated data on inputs, field activities, and resulting outcomes

Each organisation has developed a data strategy to empower the small-holder farmers they support

Across these organizations, data is used to:



Inform organizational strategy by enabling organizations to make informed decisions, improve management capabilities and identify blockages



Unlock investment opportunities by collecting multiple data points on individuals, organisations can de-risk investment in farmers and unlock new sources of finance



Enable more economic and efficient use of natural resources by identifying the best places and times to plant crops, the most effective inputs and farming techniques



Mitigate the effects of climate change by improving resilience in farming and reduce the risk of losing yields due to weather changes especially by tracking weather and yield data over time



Improve services provided to small-holder farmers by providing specific data on inputs, crops and weather as well as markets to ensure they get the best price

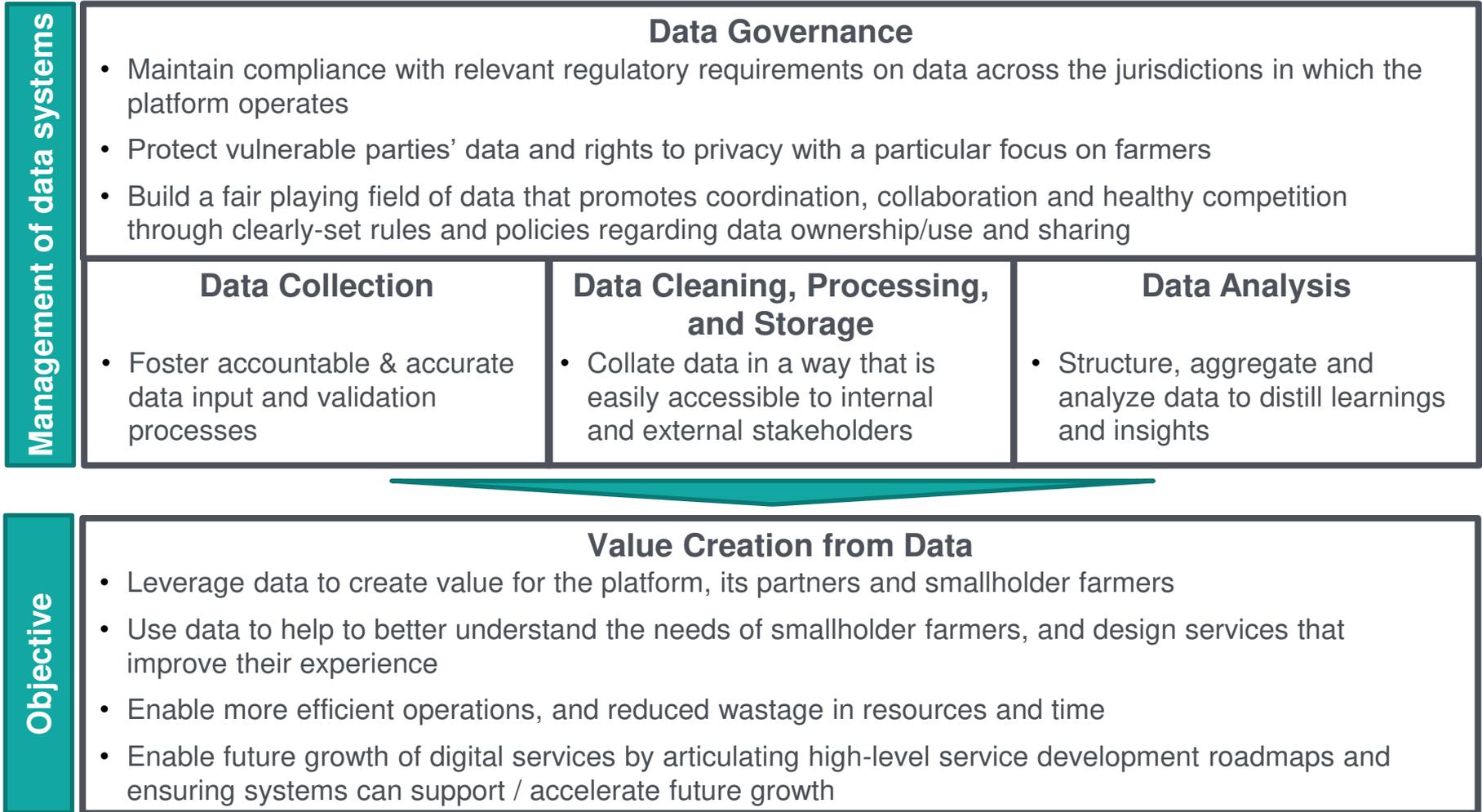


Empower small-holder farmers to make informed decisions on their agricultural practices and connect them to markets to help them get the right price



Identify partnership opportunities by increasing visibility across the value chain and identifying opportunities for new partners to bring value adding services

Data governance, collection, cleaning-processing-storage, and analysis are core operational components of data platforms



And data platform operations requires a common set of principles

Data Governance	<ul style="list-style-type: none">• Data use and handling is governed by national policy• Data is maintained solely in its primary source and is retained or disposed of in an appropriate manner• Data is only collected for valuable and legitimate uses. It will always be verified for accuracy
Data Sharing	<ul style="list-style-type: none">• Data is made readily available to inform decision making and for widespread, timely, and consistent use• All consortium partners have to give written consent before data is monetized• Partners share their unique data contributions with each other to create value and inform decision making
Data Ownership	<ul style="list-style-type: none">• Data ownership is exclusive to the collecting organization or in the case of a consortium, on an equitable basis by the members of the consortium
Data Protection	<ul style="list-style-type: none">• Stored data is anonymized to protect farmer privacy• Confidential data is protected with appropriate levels of security to minimize the risk of the unauthorized disclosure, alteration or destruction of restricted data• Organizations outline procedures to inform farmers of data rights, and gain consent before collecting their data. In addition, they outline an approach to enable farmers to access their own data

In supporting the organisations, we identified a number of insights (1 of 4)

Data Principle

Value Creation
from Data

Insights

Monetization of Data

- While data monetization has proven challenging, **focus on offering value to users by building on successful use cases** and exploring ways to scale reach to more farmers
- There is monetization potential in adopting a **blended model** that **provides some data for free and charges a fee for other data**

Performance Management

- Use data to constantly **monitor and evaluate your systems and performance**. This can help select areas, crops, types of machinery, or inputs to invest in
- **Obtaining new data sets via partnerships could add user value**. e.g., partnering with an organization specializing in soil testing or GPS mapping

Empowering Farmers

- **Invest in empowering farmers to utilize your data**. This could help them to avoid weather disruption, use the correct inputs and potentially access sources of financing

In supporting the organisations, we identified a number of insights (2 of 4)

Operational Component

Insights

Data Collection

Pre-collection

- **First identify use cases and their required data, then design your data collection processes around them**
- For example, early data collection processes often miss key demographic data (e.g., gender and age). This can mean the data loses value to users with specific target segments in mind. It can also result in additional work where extra data collection has to be carried out after the initial effort

Collection

- It is critical that data is collected accurately and consistently. With the right processes in place, **invest in data collection devices** to move away from paper for better accuracy, **and harmonize data collection** for efficiency
- For example, opportunities for the Ethiopian ATA to improve efficiency have been identified in reducing paper data collection and duplication i.e. multiple departments approaching the same farmers for different information
- **Invest in technology that enables live data collection for data sets requiring physical collection** so data sets are as up to date as possible. E.g. DigiFarm and FtMA have both invested in apps for live data collection
- Research what data is already available and assess how it can add value to your own data set

In supporting the organisations, we identified a number of insights (3 of 4)

Operational Component

Insights

**Data Cleaning,
Processing,
Storage, and
Analysis**

Cleaning, Processing, and Storage

- Prioritize data cleaning to ensure quality upon data's first entry into systems and set up **processes and tools for frequent quality control of random data samples** of various live and ongoing datasets
- Establish overall data **architecture that allows various data formats to be extracted as they are needed** for different purposes and use cases
- **Consider purpose / users of data when determining storage to facilitate easy access** e.g. members of the public face difficulty accessing ATA data centrally as different datasets are stored on multiple platforms

Analysis

- **Use assessment of the highest-value data use cases to guide areas of data analysis** and allocate resources accordingly
- **Think about who will perform analysis** (data science teams, operations, or strategy teams), considering their prerequisites and whether they are internal or external, **and use this to inform staff hiring and training**
- **Develop a feedback loop** where analysis (and identified gaps) informs future data collection

In supporting the organisations, we identified a number of insights (4 of 4)

Operational Component

Insights

Governance

Legal & Regulatory Considerations

- All data platforms must be **aligned with government regulation** to ensure legal compliance and meet minimum standards for using data responsibly
- **Clarify the definition and rights under “own”, “right to use” “right to license”, upfront** to create a shared understanding of the data sharing terms. Misunderstandings about ownership of data can slow down data strategy discussions

Third-party Involvement

- At the outset agree on policy and procedure for data usage sharing both internally and externally. **Being clear on what data will be shared and in what form** (e.g. aggregated, raw, confidential) **and what it will be used for** will help to avoid any potential challenges further down the line
- Trust between partners is essential to facilitate data sharing. Keep an open dialogue on data sharing and monetization to ensure there is transparency.
- However, when there are multiple data providers and users, relying solely on trust is unsustainable. **Set up clear guidelines early on so that future partners can join with limited effort**

Based on our learning, we have developed recommendations for building and implementing a data strategy – internal facing recommendations

- 1 When developing a data strategy, spend time to **understand the external constraints that could impact successful implementation**. In particular, if there are any national or international data regulations that must be considered and complied with
- 2 If the platform is made up of different partners, **ensure that everyone is involved in the strategy design**. Focus time on building a shared vision of how the data will be used and shared. Building trust between partners at the outset will reduce the chances of problems arising further down the line
- 3 **Develop digitally fit processes to simplify data collection, collation and analysis**. While it can be tempting to prioritize the technology, it is critical that the right processes are in place first. This will save time and money
- 4 Equally important is **ensuring teams responsible for data have the right skills and capabilities** to process the data sets and draw insights to inform decision making
- 5 With the right people and processes in place, **investing in the right technology** can amplify the impact of your strategy. Hardware should be suitable for the context. This could include offline capabilities and additional power sources for work in remote areas

Based on our learning, we have developed recommendations for building and implementing a data strategy – external facing recommendations

- 6 Support and train farmers to understand the power of data and provide them with the skills to interpret and act on it.** Data has the potential to transform the work of agricultural organisations and platforms, but more importantly, it can empower farmers to improve yields and get better prices for their crops
- 7 Explore partnerships** with others to see how you can share data. Large data sets on agricultural practices and farmer practices have significant value. The data could be further enriched by additional data sets collected by other organisations working in the same space
- 8 Develop capacity to communicate the value of your data externally.** This could include deploying data visualization skills or different reporting mechanisms that can be tailored to meet the needs of the relevant audience / purpose (e.g. donors, private sector investment into farmers / your organization, or public learnings). Organizations should also be able to **prepare an investment case for additional resources** required for data collection and management

Increased access to technology and its expanding application to agriculture will continue to bring opportunities to realize the benefits of a data strategy

To strengthen the potential benefits of data utilization in agriculture, there should be a focus on:



Building localized data systems and processes that accurately capture and reflect the needs of farmers



Empowering farmers to effectively utilize technology, strengthening the quality of data, improving product yields, and opening up new opportunities and markets



Identifying collaboration opportunities to connect the agricultural sector to technology partners and explore synergies to create more efficient, better integrated market ecosystems

Annex

AgriFin supports organizations to serve smallholder farmers



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 to more than **3 million smallholders by 2021**

Our objective is to develop sustainable services that **increase farmer income and productivity by 50%, with 50% outreach to women and youth**

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, prototype 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 2012, we have completed more than **150 engagements with over 70 partners**

Currently, **our work reaches more than 2.8 million smallholder farmers**

Dalberg brings a range of business capabilities to support AgriFin's vision of supporting farmers

24

Locations

9

Locations in Africa

8

Businesses

32+

Nationalities

60+

Languages

90+

Countries we've worked in

DALBERG GROUP

We are a **global group** working to build a **more inclusive and sustainable world** where all people, everywhere, can reach their **fullest potential**

COLLABORATION WITH AGRIFIN

Dalberg leverages a range of business capabilities to support AgriFin Accelerates vision for reaching 1 million smallholder farmers across Kenya, Tanzania and Zambia. Dalberg's role includes:

- Conducting ecosystem studies for countries
- Designing innovative products and services using human-centered design
- Piloting and assessing effectiveness of products and services
- Developing strategies for key stakeholder partners
- Deep dives on specific elements of agricultural supply chains

Thank You!