DIGITAL FIELD FORCE FOR AGRICULTURE

AgriFin Digital Farmer Program Case Study

October 2019

Nairobi, Kenya

Executive Summary

The **AgriFin Digital Farmer Program** (ADF) is a Mercy Corps AgriFin program funded by the Bill and Melinda Gates Foundation to expand digitally-enabled services to **one million smallholder farmers across Kenya, Tanzania, Ethiopia and Nigeria**.

Case Study: Digital Field Force Development
Over the past year, several AgriFin partners have developed digital platforms to encompass complex bundles of services, including financial services, access to inputs, markets, new services and learning. With this complexity, the need for digitally-enabled field force has become a clear need to drive active use and impact of these new services among smallholder farmers at scale.

Across more than 10 engagements and partners, ADF has explored the needs, business model and challenges around building effective and impactful digital field force. Key lessons include:

- **Market access** appears to be the key service which requires dedicated field force to support farmers through the full journey to grow, harvest and bring produce to market
- **Significant costs** are involved in developing digital field force involving change management, staff selection, training, building farmer trust and meeting needs of buyers, lenders and other partners
- Ideal field agents are **digitally literate and experienced entrepreneurial farmers**, **aged between 30-45** with **basic digital knowledge** and **capacity** to pursue revenue generating opportunities
- **Women make strong field agents** and help bridge the gender gap amongst smallholder
- **Commission-based remuneration** linked to a broad range of tasks must be **managed on digital tools**
- **Strong, ongoing investment in training** and management are critical to success
- Digital systems **can mitigate risks and create new risks**, which must be managed. **Clear communication** and **reporting structures** across all involved partners is necessary.

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Case Approach

AgriFin worked with Dalberg Advisors to complete a survey ten organizations with digitally-enabled field force (DFF) in Kenya to understand:

Focus areas	Key questions	Analysis conducted
Selection process	• What are the ideal characteristics of a DFF? • What should be the process of selecting and on-boarding DFFs?	• Stakeholder interviews • ADF working session • Internal document review
Roles and responsibilities	• What are the roles and responsibilities of the DFFs and field force partner? • What performance indicators should be used to manage and evaluate DFFs?	• ADF working sessions • Interview with relevant stakeholders • Internal document reviews of field force needs
Managing DFFs and field force partners	• How should DFFs be managed? • How should organizations manage partners? • What digital tools might DFFs and field force partners require? • What features do their digital tools need?	• Stakeholder interviews • Desk research on similar organizations • ADF partner interviews
Remuneration structure	• What is the optimal compensation structure? (e.g., monthly stipend, commission-based fees) • How much should DFFs be paid on average? • How should partners compensate field force partners? • How much should partners pay field force partners?	• Stakeholder interviews to understand models used • Desk research of field agents remuneration structures
Potential partnerships	• What criteria should partners use in selecting field force partners? • Which field force management partners could be a fit for partners?	• Stakeholder interviews with prioritized potential partners • Desk review of potential partners • Interviews with partners partners to understand needs
Resource requirement	• How much will it cost partners in the next five years to deploy field force?	• Benchmark the cost of recruiting and training rural field force in similar organizations • Updated the partners model to include new assumptions/costs

Surveys were complemented by user experience testing with DFF by Dalberg Design

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Roles and Responsibilities

Digital field force can and must complete a wide range of tasks to add value and drive revenues needed to cover substantial related costs. Services can include:

- **Register and on-board** farmers

- Educate farmers on the **right inputs to purchase** and link to inputs

- Educate farmers on **financial services** and prompt repayment

- Conduct **field research** supporting crop insurance, precision ag, etc.

- Raise awareness and **link farmers to market access platform**s

- •Educate farmers on **how to utilize the mobile learning solution**s

- Conduct **soil testing & monitoring**

- Encourage **good agricultural practices**

- Identify and monitor **demo farms**

- •Support **aggregation of produce** during harvest season

- **Raise awareness and market** other products & services

- Provide **on-the-ground customer support** where possible on the use of other products

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Field Force Profiles

Ideal characteristics for DVAs

Core attributes

- **Active commercial farmer** – currently growing crops or keeping livestock with experience or aspirations of selling produce in the market
- **Digifarm super-user** – uses Digifarm frequently either to purchase inputs, secure loan or access learning content, and is excited about the platform
- **Local resident** – lives in the community and has permanent, local ties
- **Community leader** – trusted as a voice of authority in the community

Supplemental attributes

- **Digitally literate** – has basic understanding of how to use smart phones
- **Entrepreneurial** – has tested new farming techniques, based on their own research
- **Mobile** – able to easily move around the community (e.g. owns motorbike / bicycle)
- **Age** – minimum age of 28
- **Gender** – aim for a significant proportion of female DVAs

Where it is not possible to recruit candidates with <u>all</u> of these characteristics, a wide range of farmers with <u>some</u> of these characteristics should be recruited, to enable a 'test and learn' approach

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Field Force Profiles: Persons (1)

1. Community Leader

Mrs. Rono - *Coop Farmer*

AGE	50
OCCUPATION	Dairy Farmer
FAMILY	Married, Mother of 4
LOCATION	Cheringani, Kenya

"Hay is expensive to buy so I prefer growing my feeds because this saves me lots of cost"

Technology Usage

Radio
low |— — — — — — — — — —| high

TV
low |— — — — —| high

Internet
low |— — — — — — — — —| high

Mobile Money Access
low |— — — — — — — —| high

Smart Phone
low |— — — — — —| high

Basic Phone
low |— — — — — — —| high

Resources

3 lactating cows, a casual laborer, water tank, 4 acres of land, a motorbike, hay she grows on her land, advice from her coop agrovet

Needs

Access to loans for dry seasons, expanding farming activities (buy more cows, fix the stables), information on investing

About Mrs. Rono

Mrs. Rono is a retired teacher. She has been depending on her dairy farm for 10 years to support her children's eduction and house-hold needs, and she is very loyal to her coop. Her community considers her very successful.

2. The Entrepreneur

Patrick - *Coop Farmer and Transporter*

AGE	32
OCCUPATION	Coop Farmer & Transporter
FAMILY	Married, Father of 2
LOCATION	Ndaragua, Kenya

"I need to save in order to buy inputs in bulk such as hay to prepare for dry seasons. I never want to be stranded at one point about hay"

Technology Usage

Radio
low |— — — — — — — — — —| high

TV
low |— — — — —| high

Internet
low |— — — — — — — — — —| high

Mobile Money Access
low |— — — — — — — —| high

Smart Phone
low |— — — — — — — — — —| high

Basic Phone
low |— — — — — — —| high

Resources

¼ acre land, 1 lactating cow, motorbike, 2 donkeys, a donkey cart, information from coop agrovet, model farms, and other farmers

Needs

School Fees, feeds for his cow, casual laborers he can trust, expand his transportation business, system to manage his collection route

About Patrick

Patrick practices zero grazing with his cow. He has been hired to transport milk to the coop from other smallholder farm-ers. He spends a lot of time tending to his cows, and often hires a casual laborer to help with milk pick-up.

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Field Force Profiles: Personas (2)

3. Tried and True

Isaac – *Large-Plot Independent Farmer*

AGE	60
OCCUPATION	Dairy/Coffee Farmer
FAMILY	Married, Father of 7
LOCATION	Githunguri, Kenya

"I prefer the package with longer repayment period since my production is lower during certain seasons"

Technology Usage

Radio — high

TV — low

Internet — low

Mobile Money Access — high

Smart Phone — low

Basic Phone — high

Resources

3 acres of land, access to brokers, 4 lactating cows, horticulture crops grows his own feeds which he sells to his neighbors

Needs

Labor to tend to his farm, larger home for his family, a truck for transporting milk

About Isaac

Isaac sells his milk to a broker and cannot fulfill the order. He saves some of his daily sales for feeds and home use - he uses a bank. He frequently meets fellow farmers to discuss good practices.
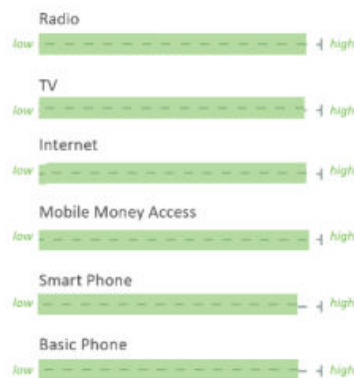
4. The Young Dreamer

Mishak – *Small-Plot Independent Farmer*

AGE	21
OCCUPATION	Crop/dairy farmer, student
FAMILY	Single
LOCATION	Bomet, Kenya

"Anything that's a quick fix is good. Getting assistance is a saving grace"

Technology Usage

Radio — high

TV — high

Internet — high

Mobile Money Access — high

Smart Phone — high

Basic Phone — high

Resources

½ acre of land, 1 cow, parents farm, university education, internet

Needs

Finding buyers, convenient transactions, dairy and agricultural extension services

About Mishak

Mishak is a university student studying economics and statistics. In 2016, he purchased a ½ acre plot near town and one dairy cow. He takes small loans from Branch or KCB M-PESA to smoothen cash flow.

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DVAs Reasons to Take the Role

Safaricom's DigiFarm platform for smallholder farmers now reaches more than 1 million smallholders and has built a DigiFarm Village Advisor (DVA) network initially of 1500 staff, reducing down to 300 over time through field learnings on motivations, performance, relevant activities and technology.

DVA, Marakwet	DVA, Makueni	DVA, Makueni	DVA, Marakwet

"I wanted to be a DVA to volunteer to see my community grow economically and learn how to be a good farmer."

"I became a DVA because I see it as an opportunity to uplift the farmers in my community through farming."

"I became a DVA so that he can improve my farming practice through DigiSoko training and also improve financially through DigiSoko compensation."

"I became DVA so that I can help other farmers to improve their yields and also find market for their produce."

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Hiring: Insights & Recommendations

DFF rarely have professional experience relevant to the services they are delivering. For example, most DFFs haven't given scientifically robust agronomic advice before. Therefore an eagerness and ability to learn is significant if they are to be successful in the role. DFF applicants should be evaluated on their success in undertaking recent learning activities (e.g. completing courses) and on giving convincing reasons for why developing skills is desirable to them. The ability to proactively identify and solve problems would be helpful.

⚠️ **Recruit DVAs who are eager and able to learn and teach. Evaluate applicants based on their track record, intentions and ability to problem solve.**

"I would have definitely liked more training about how to grow sunflower, including planting, spacing, weeding, fertiliser application, pest control, and conditions for harvest."

DVA, Makueni

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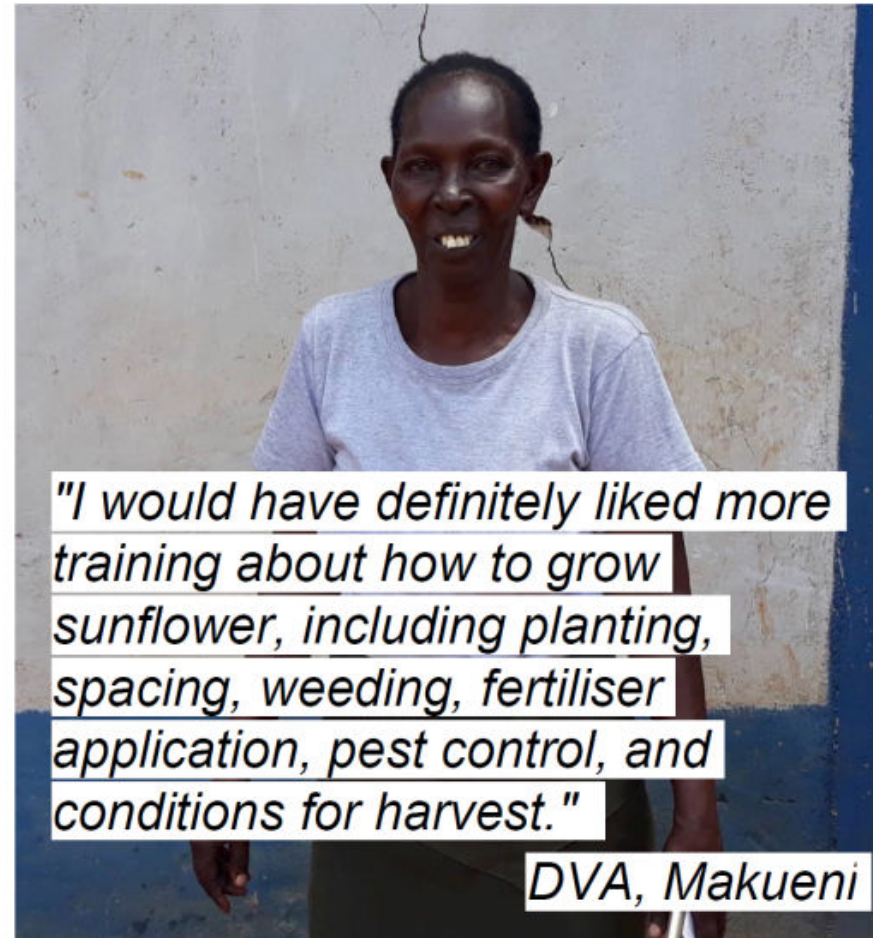
Hiring: Insights & Recommendations

DFFs need significant training to perform well. They lack professional experience relevant to their role so is unrealistic to expect them to perform with immersive training followed by in-job support and reviews. Trainers must have relevant experience and their teaching style should balance skills building and relationship building with DFFs. Digital content can be a key way to train disbursed DFFs; ensuring that they receive consistent and accurate information, but must fit their learning style and align with incentives and should be supplemented with in person sessions.

> (!) **Invest in designing and delivering DFF-centred training that is based on theory and practice and aligned to DFF learning competencies and interests.**

"You can't teach people about colour without showing them the colours. We are different people and we learn differently."

DVA, Marakwet

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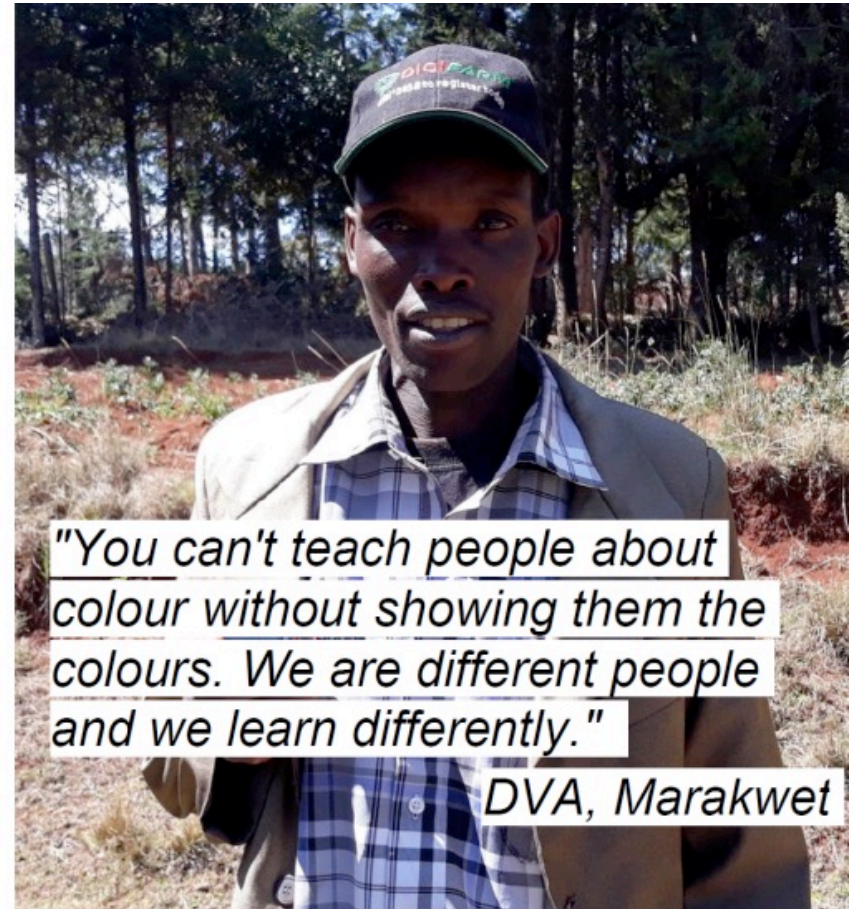
Digital Tools

Smart phone

- DFFs can co-invest in a smart phone that can be used to record basic data and for training new functionality
- It is useful to have DFFs co-invest in the phone for sustainability and maintenance – e.g., repayment over first 6 months until they own it (Technoserve model)

Tablet

- Regional managers to receive tablets from Digifarm for recording data and to monitor DFF activity
- It is not ideal to give tablets to DFFs given concerns on proper use and durability

Agent management platform

- Field force management platform useful for supervising field agents and tracking performance of all partners
- Intensive monitoring could be reduced over time as partners build relationship with DFFs and field force partnesr

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Impact of Technology

Monitoring & evaluation	• Digital collection of data enables real time tracking (and geolocating) of performance at the DFF level, manager level and partner level • This improves ability to identify performers and non-performers & remove laggards
Data management	• Data collected, stored and retrieved digitally increases speed of operations • Most organizations still use paper based data management, given lack of digital literacy of agents, which slows processes
Information sharing	• Real-time communication allows for rapid response to farmers/DFF needs on the ground • Ability to train DFFs via digital tools without convening them saves on cost and time • Mixed views on Whatsapp – farmers are familiar but there are benefits of a all comms on a single platform

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Field Force Technology: Apps

Where can Apps add value for field force?

Mobile apps can help improve field force performance in the following ways:

- Provide field staff, supervisors and companies with better visibility of targets and progress toward achieving them
- Make field report submissions faster and more convenient, in turn supporting compensation decisions
- Provide greater clarity on which farmers each field staff member is responsible for
- Allow field force to rapidly and accurately access key information on farmers they are serving
- Support field force to plan their work and schedule farmer meetings, then allow supervisors to monitoring this
- Provide field force with basic information on where and when to support smallholders
- Provide field force with ag advisory tools, such as crop calendars, alerts and precision agriculture tools
- Enable field force to communicate rapidly with farmers, other DFF and supervisors as well as raise agronomic alerts with trained agronomists, sharing pictures and videos as helpful

DFF apps are unlikely to:

- Provide the primary channel for training DFFs to perform complex tasks and responsibilities
- Enable delivery of highly technical services, including soil testing, insurance and input sales
- Provide all support for highly complex aggregation cycles, ensure inputs are delivered on time, changes in pricing, etc.

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Remuneration

Organizations use a mix of remuneration models, with salaries reserved for managerial staff

Remuneration model	Roles remunerated using model				
	Heifer	**FIPS-Africa**	**TruTrade**	**LivingGoods**	**KLPA**
Salary	Dairy Farm Assistants (first three months)	District coordinators	Sourcing coordinators		Regional DVA manager
Commission		Village-based advisors	Sales agents	Community Health Workers	
Fees	• Dairy Farm Assistants (after first three months) • Heifer Community Agrovets Entrepreneurs	Village-based advisors		Community Health Workers	
Stipend					DVAs
Freebies		Community facilitators			

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Remuneration

Of many approaches to paying field force, commissions and fees are most ideal

Remuneration	Description	Agencies using model
Salary	• Monthly fixed salary not tied to performance mostly paid to regional managers • Also used to retain top performers or at the beginning of contract for a limited time	• Heifer Dairy Farm Assistants (first three months only) • TruTrade Sourcing Coordinators • FIPS-Africa District Coordinators
Commission	• DFFs earn share of the revenue earned for a given transaction e.g., input sales, produce aggregation, insurance and other products sales • Revenue generating activities should be available and communicated to DFFs as soon as possible	• TruTrade sales agents • FIPS-Africa Village-based Ambassadors • LivingGoods Community Health Volunteers
Fees	• DFFs paid to provide various services e.g., soil testing, poultry vaccination, signing up farmers • DFF could be paid to register farmers before they are able to access other revenue generating activities; this will make DFF role attractive	• Heifer Community Agrovets Entrepreneurs • FIPS-Africa Village-based Ambassadors • LivingGoods Community Health Volunteers
Stipend	• DFFs given cash and/or airtime to cover travel, communication and other expenses related to DFF functions	• KLPA Digifarm Village Advisors in Migori
Freebies	• DFFs receive products and services to incentivize commitment to role e.g., merchandise, training opportunities, farm inputs	• Heifer community facilitators

There are limited cases where field agents are paid a salary as this disincentivizes entrepreneurial behavior and increases financial and monitoring burden;

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Sample KPIs

Role	Key activities	Key performance indicators
Field force partner	• Recruit DFFs • Supervise / monitor regional managers • Develop training curriculum • Report to product owner	• DFFs recruited • Regional managers recruited • Value of produce sold • Net promoter score (as viewed by regional DFF manager)
Regional DFF manager	• Supervise / monitor DFFs • Train new and existing DFFs • Trouble shoot minor issues faced by DFF / farmer • Conduct quality checks on DFFs	• Share of active users served in coverage area • Net promoter score (as viewed by DFF) • Value of produce sold • Value of loans recovered by DFFs • Value of inputs sold by DFFs • Value of insurance sold by DFFs
DFFs	• Sign-up farmers • Prompt active use of Digifarm • Prompt loan repayment • Sell/distribute inputs • Supervise demo plot • Aggregate produce • Collect data	• Number of farmers registered • Number of farmers tagged to DFF • Number of active users served by DFF • Value of produce sold • Value of loans recovered • Value of inputs sold • Value of insurance sold • Quality of data collected • Ratings from farmers on performance and trustworthiness of DFFs through quarterly farmer meetings and mobile surveys

Organizations should set strict quality assurance and farmer information protection standards for DFFs. Any fraud or misinformation should lead to the immediate dismissal of a DFF. In addition, DFFs not meeting minimum set KPIs within a quarter should be relieved of duties and another DFF selected.

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Business Models

Breakeven targets for field force must be linked to revenue drivers and key costs

Illustrative DFF Business Modeling
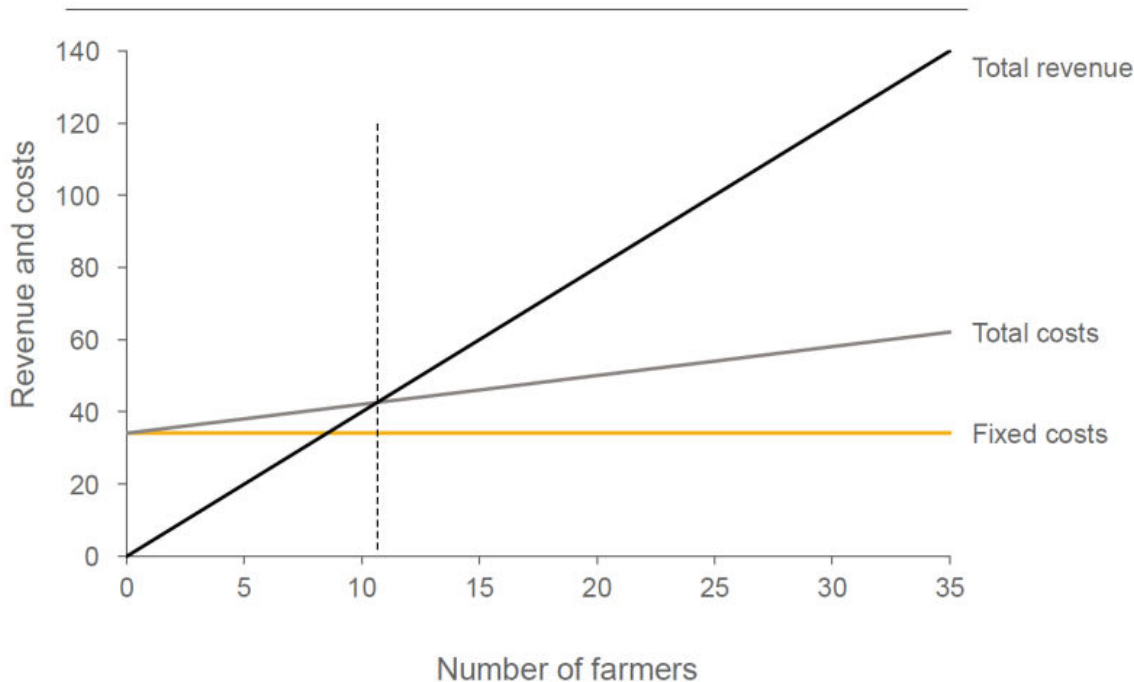
Business Case Variables to Consider:

Revenue can include
- Sales of inputs
- Market commissions
- Input loans
- Service fees (soil testing, geotagging, etc.)

Cost assumptions
- DFF recruitment cost
- Ongoing training cost
- Administrative costs
- Technology costs
- Change management costs
- DFF commissions, expenses and salary
- DFF supervisor commissions, expenses and salary

DFF must drive value ultimately to cover their own costs over time as revenue streams gain momentum

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Kenyan DFF Models

Organization type	Examples in the market	Field force model
Farmer-enablement organizations	FIPS-Africa, HEIFER INTERNATIONAL, ONE ACRE FUND	Use of extension workers to train farmers on good agronomic practices, distribute inputs and/or offer agro-services to vulnerable farmers to improve their food security.
Producer associations	KLPA, KTDA	Provide high level advisory, training and policy advocacy services to farmers within an ecosystem. Tend to have a wider reach and engage farmers through cooperatives and/or farmer groups
Aggregators / off-takers	TruTrade Africa, Veg Pro INTERNATIONAL	Use of field agents to aggregate produce and bring to market after harvest season. Sometimes engage farmers during the planting period to ensure best use of inputs
Input companies	sidai, syngenta, YARA	Use of field agents as extension workers who train farmers on how to use their products or as sales agents who sell products on a commission basis
Govt extensions workers		Govt employed extension workers provide agronomic and agrovet services/advice to farmers in a sub-county

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Partnerships

There are many types of organizations managing a field force across agricultural value chains and partnerships which can open beneficial pathways to growth and impact

Objectives and Benefits of the Collaboration
- Build capacity to scale to new geographies and value chains
- Ensure that producer farmers are available in the counties of operation, accessing quality inputs, services and finance to produce sorghum that will be aggregated for onward selling
- Offer learning points and opportunities to improve adoption, user experience, and profitability
- Address bottlenecks
- Leveraging on the ability of technology to enhance efficiency, traceability and accountability
- Prevent the duplication of efforts in counties
- Drive higher farmer production and lower rejection rates, as well as lower compliance costs
- Leverage DFF trainings and cross learnings from field activities and experiences
- Farmer mobilization and support for services including input bundles, loans and insurance and soil testing
- Shared networks, content and insights

Potential Risks of Collaboration
- Conflicting incentive-based remuneration plans for partners
- Coordination of clear field work plan across partners
- Coordination around farmer communications, support and links to markets and agro-dealers to ensure that input bundles are available when farmers need them
- Duplication of efforts, including farmer registration
- Coordinate the transportation of sorghum from aggregation points to EAML production plants in Kisumu and Nairobi
- Data sharing on farmers and performance needed for strong coordination

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Risks & Mitigation

Digital field force can both address and generate risks that must be managed

RISKS	MITIGATION
• **Late input delivery - miss planting season**	• **Coordinate early** around input needs and access with agrodealers
• **Crop failure** due to pest & disease, drought, poor practice, etc.	• Support **ag practices and provide practical tools at the right time**
• **Poor crop quality** or incorrect varieties	• Strong farmer data collection with links to inputs
• Loan **default**	• Follow up before and after repayments due
• Missed aggregation & side selling	• **Strong aggregation coordination**
• Farmer **data breach**	• **Strict data visibility protocols** for DFF
• Financial **fraud**	• Strong **digital systems for oversight**
• DFF encouraging farmers to **side sell**	• Random **field checks** against standards
• **Blocking farmers** from the system	• **1 strike rule enforcement**
• Technology risk	• **Adequate budget and staffing** to implement solution

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Organizations Interviewed

Organization	Name of interviewees	Position
DigiFarm (Safaricom)	Fred Kiio	Director for AgriBusiness
Dodore (AgriWallet)	Sijmen de Hoogh	Director
Empire Group International (Shamba Digital)	Lakshman Manickam Mukami Gitau	Director Head of Strategy and Programs
Farm Input Promotions Africa (FIPS-Africa)	Melanda Schmid-Ochieng	Director of Organizational Development
Heifer International	David Ojwang Viola Chemis	Director of Programs Production Advisor
Kenya Livestock Producers Association (KLPA)	Patrick Kimani	CEO
LivingGoods	Sylvain Romieu	Director of Field Operations
MKOPA	Michael Davis	Former Head of Distribution in Tanzania
TechnoServe (YieldWise)	Isaiah Kirema	Program Manager – Horticulture – YieldWise
TruTrade Africa	Stephen Katingima	Kenya Country Lead

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Thank You!

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