

EXPANDING DIGITAL SERVICES FOR SMALLHOLDER FARMERS in Sub-Saharan Africa (SSA)



What Have We Achieved and Learned?

IMPACT BRIEF

About Mercy Corps AgriFin

AgriFin was created in 2012 with the goal of supporting farmer-facing organizations to harness the promise of digital technology to expand critical services to smallholder farmers around the world.

AgriFin programs have supported more than **8 million** smallholders registered for bundles of services developed through the program and **150 partners**, as well as **16 million** farmers reached with digitally-enabled COVID-19 and Desert Locust support.

THREE IMPACT OBJECTIVES GUIDE AGRIFIN WORK:

- Smallholder Farmers (SHFs):** to increase income, productivity and resilience through access to high impact, digitally-enabled bundles of products and services with a strong focus on women.
- Institution:** to improve and scale sustainable offerings of digitally-enabled, inclusive products and services tailored to address the needs of smallholder farmers.
- Ecosystem:** to develop a vibrant ecosystem around smallholder farmers, to support service providers and improve farmer outcomes.

This impact brief summarizes research findings at the farmer, institution and ecosystem levels, including 17 studies conducted in 2020-2021, in collaboration with the Busara Center for Behavioral Economics (Busara), 60 Decibels, Dalberg and Causal Design.

Five core innovation areas are addressed by the studies, revealing impacts around: **Smart Farming & Ag Advisory, Financial Products & Services, Digital Markets, Logistics & Distribution, Data Readiness.**

Methodologies Applied in The Impact Studies

Key Informant Interviews, Human-Centered Design (HCD), Journey Mapping, Panel Study, Focus Group Discussion, Persona Creation, Administrative Data Analytics, Before-and-After Evaluation, Quant Experiment Evaluation & Prototyping



Smallholder Farmer Impacts

“ Before I opened the (Zanaco Bank) AgriPay account, I used to spend unnecessarily. Now with AgriPay, I only access the money I need. I can make better decisions and more productive decisions
- Female AgriPay user

“ They make me more excited about the services provided by DigiFarm. Also, they give me the enthusiasm to even try other services offered by DigiFarm that I haven't used
- Male DigiFarm user



Meaningful changes have been identified in 7 aspects of smallholder farmers' lives:

Production & Productivity: 70% reported increased production, with more than 60% experiencing increased productivity, largely driven by access to inputs, weather alerts, credit and mechanization

Income: More than 30% reported increased earnings from agricultural activities, driven by improved access to markets, learning and financial services

Resilience: 50% reported increased ability to cope with, and recover from, shocks leveraging savings, insurance, advisory, and irrigation

Digital Divide: 40% of active users were women, supported by digitally-enabled field force, women's savings groups, e-learning, and data driven services, including credit scoring

Quality of Life: Over 70% reported improved overall quality of life. Farmers who received bundled services were more likely to perceive and observe positive changes brought by various digital offerings

Agricultural Practices: 80% of farmers reported improved farming practices, with those receiving mechanization, as well as training and advisory services, more likely to report the change

Behavioral Change: Farmers have become more comfortable with phone-based digital services. Faced with COVID-19 and the Desert Locust crisis, farmers adopted new habits of seeking, using and contributing information and advice via trusted sources on multiple digital channels

A STUDY WITH 10 AGRIFIN PARTNERS CONDUCTED BY 60 DECIBELS FOUND:

First Access	84% first time accessing product/service
Alternatives	81% reported no access to alternatives
Challenges	30% reported challenges
Net Promoter Score	49 on a -100 to 100 scale
Agricultural Practices	80% reported improvement
Production	73% reported increase
Money Earned	70% reported increase
Change in Income	34% net increase
Quality of Life	77% reported improvement
Recovery from Shocks	53% increased ability

Farmers' perceived change between 2020 and 2021 (over pandemic period)
35% female respondents
0.97 relative inclusivity ratio implying that partners are reaching poor farmers

Farmers receiving **bundled services** were more likely to report improvements, with **no significant difference between male and female farmers** in terms of their profiles and the impacts they perceived.

Gender Impact Assessment

Busara and Dalberg with four AgriFin partners, including Arifu, Zanaco Bank, Safaricom DigiFarm and WFP's Farm to Market Alliance, assessed farmer user segments and mental models to better understand usage by gender, factors driving adoption and use, and impact on women's livelihoods. Key findings include:

Yields and Income: Increased yields and incomes, diversification of income streams, and improved financial discipline.

Time Poverty: Reduced time poverty, more time to attend to other household responsibilities and income-generating activities, as a result of improved efficiency in farming.

Decision-Making: Increased decision-making power over farm and household related issues, including when and how to deploy labor.

Agency: Increased agency in learning, confidence, and community standing, enabling greater control over their personal finances.

Nutrition: Improved nutrition for their families.

DigiFarm Impact

AgriFin and Busara conducted a panel study with Safaricom DigiFarm, which offers a broad range of bundled services to 1.4M registered farmers. Farmers reported that the service improved their livelihoods by supporting business expansion, increased knowledge on farming practices, and promoting savings. Specifically, they perceived the following impacts:

Resilience: DigiFarm provided timely and comprehensive SMS-based advice that increased resilience in dealing with external shocks (75% of respondents).

Learning: DigiFarm improved learning and farm practices, as well as capacity to use technology (90% of respondents).

Income: DigiFarm increased productivity and in turn income (90% of respondents).

Savings: DigiFarm is an increasingly trusted and secure platform, with more users switching to mobile wallets as their primary savings platform.

Arifu e-learning and DigiFarm loans significantly drove perceived impacts in capacity building, resilience, and farming outcomes, whether used alone or bundled.

Bundling services was seen to promote further uptake of Digital Financial Services (DFS), since a positive experience with one service encouraged farmers to explore and trial others.

Perceived Impact	Powerful Bundles
Capacity Building	Loan; Loan & Access to Market; Loan & Precision Ag SMS
Resilience	E-Learning; E-Learning & Precision Ag SMS; E-Learning & Precision Ag SMS & Loan; E-Learning & Precision Ag SMS & Loan & Access to Market
Productivity & Income	E-Learning & Access to Market



Smart Farming and Ag Advisory

SMS-BASED ADVISORY

AgriFin partners have made SMS an increasingly comfortable way for farmers to obtain farming knowledge and information, useful for making informed decisions and optimizing farming practices.

Agricultural Practices: 70% improved
Crop Revenue: 60% improved
Quality of Life: 70% improved

MECHANIZATION

Farmers are able to rent or purchase machinery from digital platforms offered by AgriFin partners to improve farm efficiency.

Agricultural Practices: 96% improved
Farm Yield & Crop Revenue: 80% + increased with an average of 44% increase in revenue
Quality of Life: 90% + improved

E-LEARNING

Leveraging the increasing mobile penetration in the region, AgriFin and its partners have offered interactive learning experiences to smallholder farmers, accessible with a basic phone. Farmers are able to gain quality learning of farming practices at their convenience.

Agricultural Practices: 80% + improved
Productivity & Farm Revenue: 50% increased with an average of 27% increase in revenue
Quality of Life: 70% + improved

SOIL TESTING

By scanning soil and extracting essential data on soil nutrition, the soil scanner enables farmers to make informed decisions about fertilizer use and soil fertility management.

First-time Access: 86% accessed such a service for the first time and found it hard to identify alternatives
Agricultural Practices: 70% + improved
Productivity & Farm Revenue: 40% + increased with an average of 22% increase in revenue

EDUTAINMENT

Education radio and reality shows, such as Shamba Shape Up (SSU) and Don't Lose the Plot (DLTP), edutainment is proven to drive affordable scale.

Users Reached: 12 million users in Kenya, Uganda and Tanzania have been reached through these channels with high content-based engagement among youth
Affordable Scale-up: Programs have had meaningful impact on farmer knowledge and attitudes, and triggered behavior change, as well as driving uptake of financial services, including insurance

From one of the case studies on the impacts of an edutainment program:

Agricultural Practices: 90% improved
Crop Revenue: 60% + increased with an average of 34% increase
Quality of Life: 65% improved

“ I am able to take care of myself and my family without having to rely on my husband for things like school fees. I am now financially independent, which gives me a sense of pride
 - Female Digital Trading user



Financial Products and Services

DIGITAL INPUT LOAN

Selected impact stories were told by Kenyan farmers who were able to use digital vouchers or loans to receive farm input from AgriFin partners.

HCD Applied: Human-Centered Design was applied to develop user-centric DFS that meet farmers' needs. The product design process included several cycles of prototyping, pilot study and integration
Features Valued: Most valued features include the possibility to get credit for buying farm input when farmers are low in cash to avoid the loss from missing the best planting time, and the good quality and affordability of inputs
Reported Impacts: Stronger resilience and capacity was reported, which was more salient when the loan was bundled with smart farming and digital market services

INSURANCE

By providing customized weather and crop insurance products that meet the varying needs of farmers, AgriFin and its partners have not only offered cushions for farmers against losses but also contributed to the increased level of awareness around risk control and management.

Easy Access: Farmers can access insurance products from local agro-dealers or financial institutions on the ground
Powerful Bundles: Farmers who receive insurance products bundled with complementary services (e.g. loan, GAP advisory, soil testing) are more likely to report improvements in farm outcomes and overall well-being
Quality of Life: Overall, 45% of the farmers have reported improved quality of life, as a result of the insurance products

MOBILE SAVING & BORROWING

Selected impact stories were told by Zambian farmers. Since 2016, AgriFin and its partners have applied HCD to design various DFS for smallholder farmers in Zambia.

Methodology: HCD applied with a gender lens, design for women
Viable Features: Mobile saving, borrowing and transaction
Value Proposition: Safety storage

Undergoing continuous design processes to better meet farmers' changing needs, these products have so far achieved:

18,000+ farmers registered | 40%+ women farmers | 350+ job creation for agents



Digital Markets

DIGITAL TRADING PLATFORM

Some AgriFin partners provided the digital trading platform that links farmers with secured buyers for fair prices.

Income Increase: 85% + reported from selling more or at better prices
Farmland Expansion: 40% + reported from secured buyers and reliability of services
Better Life Quality: 40% + reported from the overall usage of the services

Through some AgriFin partners, in addition to market access, farmers are offered training sessions and loans.

Training Effect: Those who attended more than 15 sessions recorded an average of over 2200kg of farm produce
Loan Effect: Farmers who got 5000 - 15000 Ksh recorded the highest average farm produce of over 1650kg
Agricultural Practices: 60% + improved
Crop Revenue: 40% + increased with an average of 24% increase in revenue
Quality of Life: 70% + improved

AgriFin has promoted the inclusion of, and connections between, a diverse range of actors serving SHFs, by de-risking their investments, facilitating partnerships, sharing knowledge and resources, augmenting digital platforms and bundling essential services, and increasing relevance of services to SHFs.

Partnerships & Networks: AgriFin has fostered strong partnerships between institutions and built networks across small and large actors addressing the needs of SHFs to promote collaboration, including in times of crisis.

Data Sharing: Leveraging its partnerships and networks, AgriFin has improved agricultural data sharing to increase adoption of digital, climate-smart technology

Logistics and Distribution

DIGITAL FIELD FORCE

AgriFin and its partners explored the need, business models and challenges around building an effective Digital Field Force (digitally-enabled field agents).

Market Access: Market access appears to be the key service that requires dedicated field force to support farmers through the full journey to grow, harvest and bring products to market

Women Power: Women make strong field agents and help bridge the gender gap amongst smallholder farmers

Technology: Technology plays a critical role and its implication has impacts particularly in: data collection and management, monitoring and evaluation, and real-time data and information sharing

Based on stories shared by 10 partners and engagements, different personas of Digital Field Force were identified, which enabled the development of targeted interventions.

“ This extends all the way back to what sort of data do you have in your organization, how does that need to be codified and collected, how can that be linked to product services insights, decision making and other use cases - **ISF Advisors (AgriFin Partner)**

Data Readiness

DIGITAL DATA MANAGEMENT

AgriFin has strengthened data management strategies for agricultural organizations that serve SHFs. In collaboration with the private sector, public-private initiatives, and government agencies, it has generated and shared key evidence and learnings to improve service offerings.

Early Stage: Most partners are at an early stage in their understanding and work with data in agricultural service provision. Support is often needed to spark interest in what can be done around specific use cases

Potential: Data has the potential to unlock a wealth of opportunities for smallholder farmers and agricultural organizations. Digitization of value chain operations is one of the vital steps to realize this potential

High Cost: Data collection is expensive and challenging. In the long run, digitizing value chain operations will lower costs and promote scaling, however the fixed cost of digitization may be a barrier for partners

Collaboration: Strong collaboration between the public and private sector and integrated data systems (including data sharing) will further the impact on both the ecosystem and farmer empowerment

Ecosystem Impacts

Through brokering critical new partnerships and generating actionable evidence, AgriFin laid the foundation for a series of commercial Digital Financial Services (DFS) and Digital Information Services (DIS) that are increasingly adopted by farmers. It has helped define the “conducive environment” necessary for DFS/ DIS development.

AgriFin’s impact can be seen across Ethiopia, Kenya, Nigeria, Tanzania and Zambia. This impact has been most visible in Kenya, with higher investment, greater time spent on the ground, and more digital infrastructure to leverage. AgriFin has enhanced tools, platforms and services designed to serve SHFs, and has promoted approaches, such as Human Centered Design (HCD) to better enable the ecosystem to identify and address farmers’ needs. It has successfully secured funding to extend program activities and tackle evolving challenges.

Designing for SHFs: AgriFin has promoted user-centric approaches, such as HCD, in research and product design, and the incorporation of farmer feedback into partners’ decision-making and strategy development, enhancing the relevance and suitability of products and services for SHFs

Learning & Adapting: AgriFin has spearheaded reflection and learning in the ecosystem, resulting in adaptation and improvement to investments, programming, and products and services

AgriFin has mobilized partners within the ecosystem to act rapidly in response to emergencies. In the context of the Desert Locust crisis, AgriFin worked closely with partners to launch a multi-peril digital solution within two months, which reached over 16 million farmers.

Emergency Response

IMPACT OF DIGITAL CHANNELS ON FARMER BEHAVIOR DURING CRISES

In 2020, AgriFin, with additional funding from Cisco and Skoll Foundations, leveraged digital channels to disseminate information on COVID-19 and the Desert Locust crisis. An impact study assessed changes in knowledge, attitudes and behaviors among select farmers in Kenya, Nigeria and Ethiopia. In 6 months, the campaign was able to reach over 16 million SHFs through TV, SMS, WhatsApp and Interactive Voice Response (IVR) calls. 75% of farmers reported they received critical information they enabled them to stay healthy and productive.

SMS + IN PERSON	SMS + TV CAMPAIGN	IVR CAMPAIGN	IVR + SMS + AGENTS
<p>KENYA WEFARM & PRODUCERS DIRECT</p> <p>There were positive effects on knowledge, attitude, and behavior compared to a control group. There was a 6.6 percentage point increase in the overall knowledge (11.37%), attitude (13.7%), behavior (1.74%) score</p> <p>Positive impact on knowledge and behavior</p> <p>Positive effects driven by increased knowledge of social distancing, COVID-19 transmission and tool sharing</p> <p>Increase in hand washing but less social distancing practices and mask wearing</p>	<p>KENYA ISHAMBA & MEDIAE</p> <p>Positive impact on knowledge and behavior</p> <p>Post campaign farmers reverted to poorer behavior</p> <p>Behaviors may be influenced by current on-farm activities</p>	<p>NIGERIA VIAMO & AIRTEL</p> <p>Knowledge and behavior changes small & insignificant</p> <p>This could be due to farmers not fully accessing the new content on the VR menu</p> <p>Observations indicate poor hand-washing practices</p>	<p>ETHIOPIA AGRICULTURAL TRANSFORM. AGENCY</p> <p>Positive impact on knowledge and behavior</p> <p>Farmers see IVR line as providing critical and practical information but rely on agents for locust</p> <p>Farmers have learned preventive and control measures against possible locust invasions</p>

There is a near-universal preference for receiving information through the SMS channel in the three Kenya and Nigeria case studies. Convenience and trust are the main drivers for this preference. A mixed-channel messaging campaign, such as complementing the IVR channel with SMS reminders, can be used to build trust on channels that farmers are less familiar with.