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The U.S. Government's Global Hunger & Food Security Initiative

Photo credit: Khaled Khan, MarketShare Associates

LASTING ROOTS: ADVANCE II AND THE OUTGROWER BUSINESS MODEL IN GHANA

Part of the MSP Ex-Post Study Series

FEED THE FUTURE MARKET SYSTEMS AND PARTNERSHIPS ACTIVITY

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USAID
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CONTENTS

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All photographs included in this report were taken after receiving written and oral permission.

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ACRONYMS

ADVANCE	Agricultural Development and Value Chain Enhancement
DSD	Disrupting System Dynamics
FSP	Financial Service Provider
FTF	Feed the Future
GFSS	Global Food Security Strategy
GHS	Ghanaian Cedi
KG	Kilogram
KII	Key Informant Interview
MEL	Monitoring, Evaluation and Learning
MSA	MarketShare Associates
MSD	Market Systems Development
MSP	Market Systems and Partnerships
MSR	Market Systems Resilience
OB	Outgrower Business
SHF	Smallholder Farmers
USAID	United States Agency for International Development
USD	United States Dollar

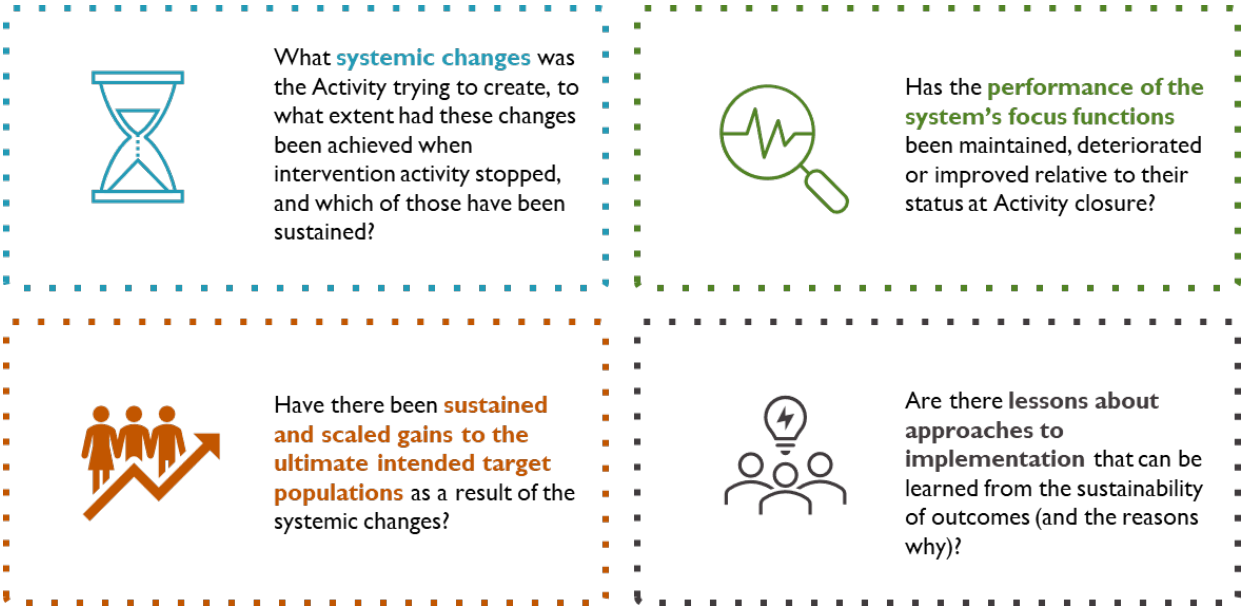
An exchange rate of 1 USD = 11.8 GHS has been used for the purpose of calculating the figures used in this report.

EXECUTIVE SUMMARY

This report addresses a well-recognized evidence gap[1] on the longer-term impacts created by market-driven programming; specifically, programming influenced by market systems development (MSD) principles. It does so by presenting the findings of an ex-post study conducted three years after the close of the Feed the Future Ghana Agricultural Development and Value Chain Enhancement (ADVANCE) II Activity in 2020. It examines the **scale and sustainability of changes resulting from ADVANCE II's outgrower business (OB) model**—shown in Figure 5 (in the body of the report)—in the maize, soybean, and rice sectors. The OB model was developed by supporting lead farmers to operate as micro or small enterprises that offered a range of services to smallholder farmers (SHF). These services include improved access to inputs, information, mechanization, and aggregation services for small farmers.

This study is one in a series of ex-post evaluations that are being conducted between 2023 and 2025 on USAID-funded MSD interventions around the world, including in Senegal (2023) and Bangladesh (anticipated 2025), which are available at https://agrilinks.org/post/usaids-ex-post-study-series-sustainability-and-scale-change-market-systems-development.

Figure 1: Ex-Post Study Research Questions



This study focused on four questions, as noted in Figure 1 above. These were addressed using a mix of desk research, 138 key informant interviews with market actors and other stakeholders remotely and in Ghana, a survey of 161 farmers in the 17 GFSS districts of northern Ghana, and a validation workshop with USAID/Ghana, private sector businesses, and legacy implementing partner staff. Findings were analyzed leveraging the Disrupting System Dynamics (DSD) framework (see Figure 6 in the body of the report) as an analytical tool for understanding systems change.

[1] BEAM Exchange's periodic evidence mapping of the results of MSD programming points to the lack of ex-post evidence on the enduring impacts of the approach. It is explored further in the blog, *The Great Challenge and Opportunity of MSD Ex-Posts.*

The Legacy of Systemic Change

The study examined four areas that demonstrated potential for systemic change at the end of ADVANCE II. Three years later, **three systemic changes had endured and thrived**, **while one did not**. Drawing from the DSD framework, these three changes included systemic disruptions and "stickier" changes in networks and norms as visualized in Figure 7 of the report.

✓ **There is better and more timely access to agricultural inputs and services targeting smallholder farmers in northern Ghana.** Farmers increasingly trust OBs as a source of timely quality inputs and mechanization, as the number of farmers accessing services through the OBs has increased by 37 percent since Activity closure. The OB model has proven competitive and resilient as OBs increasingly adopt an entrepreneurial mindset.

✓ **Input companies and dealers see a profitable business case for promoting quality inputs to remote farmers in northern Ghana.** Input companies and dealers experience an increase in sales after working with OBs in northern Ghana. Moreover, these companies invest in expanding their distribution channels in remote regions of northern Ghana by working with more OBs, rural agro-dealers, and village agents who support sales and marketing efforts.

✓ **Buyers and processors consider northern Ghana an attractive and consistent source of high-quality cereals**. They continue to procure larger quantities and superior-quality cereals from the region through OBs and other aggregators. Additionally, there has been increased demand from local processors situated in Tamale and surrounding areas. Furthermore, buyers and processors uphold a business relationship with OBs and aggregators devoid of formal contracts and credit support, as OBs have begun to engage in side-selling without fulfilling contracts.

✗ **The barriers to agricultural financing have not been resolved.** At this point, there is no evidence of formal financing and leasing models for equipment facilitating the expansion of mechanization services, as envisioned by ADVANCE II. Moreover, contract farming schemes offered by buyers (buyer-sponsored contract farming schemes) have largely ceased offering credit services through OBs. Instances of non-compliance with contractual agreements by OBs have eroded trust and attributed to the negative experiences encountered by many buyers and processors.

Performance of Systems Functions

This study focused on the performance of four functions within the maize, soybean, and rice systems (see Figure 2), of which **two have improved considerably, one has remained stable, and one has deteriorated since ADVANCE II's closure**.

Figure 2: Study Focus of Agricultural System Functions

Access to agri-inputs (improved) from retailers, rural agro-dealers, and village agents has continued to function effectively and efficiently for SHF. Input companies and suppliers are promoting the use of inputs to the farmers directly and through retail channels. The fertilizer price increase was a critical issue in 2022; however, despite the price hike, farmers continue to purchase fertilizer and large companies continue to supply it in the region. Farmers indicated an increase in their ability to access these inputs either in cash or on credit through OBs.

Farmers' **access to mechanization services (stable)** for post-harvest activities has also continued since the activity's closure. Farmers continue to rent tractors, shellers, and threshers through their OB. This service continues to improve in terms of service quality and timely availability. However, the number of tractors available from OBs is not enough to meet the demand for mechanization in the region. Only a limited number of OBs were able to self-finance additional tractors due to limited access to finance. Tractor companies have struggled to sell tractors due to the increase in price and the unavailability of suitable credit facilities for buyers. Accordingly, access to this focus function is stable.

The **aggregation of cereals (improved)** from farmers by OBs, traders, and aggregators has improved since 2020. OBs can aggregate larger volumes of produce acquired against credit services to farmers. Other aggregators and traders are also increasingly purchasing from farmers in the northern region. Moreover, formal buyers and processors are showing increased demand for quality cereals from these aggregators. Many local processors in Tamale and the surrounding areas are purchasing cereal from these OBs and local aggregators. Additionally, farmers now have multiple selling options, giving them better bargaining power and the potential to obtain higher prices.

Access to credit and finance (deteriorated) for farmers and OBs did not take off. Contract farming schemes introduced by buyers that provided inputs and services on credit have largely been discontinued. Only two of the buyers continued to offer these schemes on a small scale in 2023. Moreover, there has been no progress from financial institutions in providing financial tools to purchase large-scale agricultural equipment.

Gains for Target Populations

For the **target population of smallholder cereal farmers** in northern Ghana, evidence from the ex-post assessment shows improvement in agricultural practices, and uptake of inputs promoted through OBs have helped farmers increase on-farm productivity and overall profitability.

Impact on yields: Compared to Activity closure, OB farmers' yields rose for rice, but dropped for maize and soybeans. This is mainly due to the surge in the cost of fertilizer and inputs, which led to a drop in fertilizer application. However, yields were higher for OB farmers than for farmers not served by OBs in 2022—the only year in which comparison data exists.

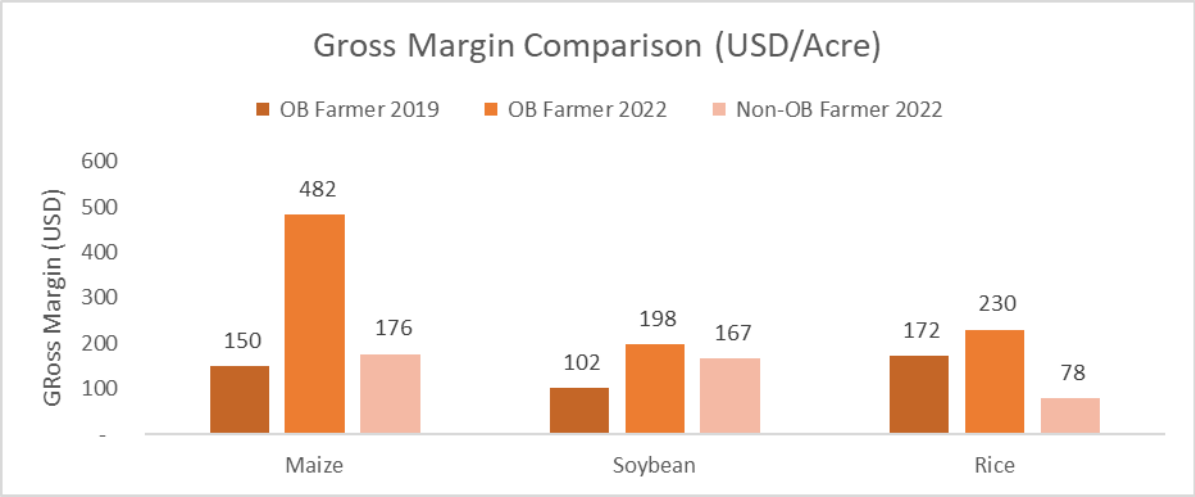
Table 1: Yield Per Acre Comparison for Farmers

Yield (kgs) per acre	OB farmer 2013	OB farmer 2019	OB farmer 2022	Non-OB farmer 2022
Maize	559	2,275	1,854	891
Soybean	364	1,008	659	548
Rice	364	1,393	1,425	840

Impact on gross margin: External factors (e.g., COVID-19, Putin's war in Ukraine) raised the prices of fertilizers and imported hybrid seeds and thus increased farmers' production costs. On average, OB farmers earned over 150 percent higher profits than non-OB farmers for maize and rice, and 19 percent higher profits than non-OB farmers for soybean.

The figure below shows the differences between OB and non-OB farmers' gross margins for maize, soybean, and rice in 2022. The figure also presents a comparison between the gross margins of OB farmers in 2022 as compared to 2019. OB farmers, in general, report greater gross margins as compared to previous years and non-OB farmers in 2022.

Figure 3: Comparison of Farmers' Gross Margin Per Acre (in USD)



Inclusion: The OB networks engage more women-led OBs to ensure greater outreach to female farmers. Women are also engaged in various capacities within the OB model. This includes women working as tractor operators for years.

Implications for Programming

While ADVANCE I initially addressed the weak readiness among farmers to supply quality produce, ADVANCE II was launched to implement a value chain development approach with a systems-thinking orientation. However, it emphasized capacity building for farmers (including strengthening ADVANCE I's lead farmers) and integrated other value chain actors into the intervention design by adopting a sequenced approach. The collective experience of ADVANCE and ADVANCE II offers valuable insights for future agricultural programming in Ghana.

1. **Trust is essential for enduring changes in market relationships.** In Ghana, there is limited trust between OBs and other market players, such as input companies, buyers, processors, and financial institutions. Without trust, investment from the formal value chain market actor will not flow to the SHFs. This may hinder the growth of the agriculture sector in northern Ghana.
2. **Subsidizing transactions creates quick results, but rarely leads to systemic change.** Evidence from ADVANCE II demonstrates that over-reliance on Activity support for fixed asset funding (such as tractors) can create dependency. An activity can instead employ non-financial forms of support, or smart subsidies, such as securing discounts from suppliers, or development of financial tools through commercial banks can have a more lasting impact. This is more likely to lead to sustainable and resilient change than direct-to-farmer co-investments.
3. **Enhancing OBs' business skills and revenue sources can mitigate the sustainability risks of microentrepreneur-driven business models.** The strong emphasis placed by the Activity on building the OBs' business acumen seems likely to have played an important role in their continued operations.
4. **Careful scaffolding of activities can support sustainable and systemic changes.** The thin market in which ADVANCE II sought to intervene required a set of fundamental shifts to better serve

smallholder farmers. Given the near absence of important market functions when it began, this necessitated encouraging new market actors (i.e., OBs) to launch. Supporting the creation of new market actors, such as OBs, can be helpful in a thin market.[2] This was followed by capacity strengthening activity for other actors, such as farmers and small to medium-sized enterprises (in the absence of other actors suited to play this role). That strengthened capacity provided farmers with improved access and affordability of inputs and linkages with the other actors in the value chain such as aggregators, buyers, and processors. The OB networks were later introduced to strengthen and sustain business development services and capacity strengthening activities.

[2] According to the M4P Operational Guide, a thin market exists, "where limited numbers of investors and entrepreneurial firms within the economy have difficulty finding and transacting with each other at reasonable costs."

INTRODUCTION

Market Systems Development (MSD) is gaining increasing recognition within USAID as a development approach with great potential to lead to sustainable and inclusive economic growth. This approach aims to "*build the capacity and resilience of local systems, leveraging the incentives and resources of the private sector, ensuring the beneficial inclusion of the very poor, and stimulating change and innovation that continues to grow beyond the life of the activity.*"[3] Despite this, because of the lack of ex-post evaluations on MSD programs, and the complexity of monitoring and assessing contribution to systemic change more broadly, there is limited formal evidence from robust evaluations that market-driven approaches actually lead to sustainable and scalable outcomes over time.

In recent years, ex-post evaluations have emerged as a useful approach to assess the durability of results and systemic changes created by MSD approaches, following their completion. Yet, only a few of these evaluations have been conducted to date. This evidence gap is particularly problematic, given the increasing adoption of MSD approaches by USAID and implementers.

What is an Ex-Post Evaluation?

An ex-post evaluation is defined as a performance or impact evaluation that examines a strategy, program, activity, or intervention at least one year, or several years, after it has ended. It can be used to answer questions about whether and how interventions and/or outcomes are sustained and what factors and contexts help or hinder USAID interventions and sustainable development outcomes.

Source: USAID (2021), Discussion Note: Ex-post Evaluations

USAID, through the Feed the Future Market Systems and Partnerships Activity (MSP), has endeavored to change this by supporting a series of ex-post evaluations of MSD programming. These studies aim to evaluate the sustainability and scale of outcomes from specific systemic changes catalyzed during USAID-funded activities that have applied key features of an MSD approach. The overarching objectives of these evaluations are to build the **evidence base across a range of contexts, while also contributing to improved methods for conducting future MSD ex-post evaluations.**

Using a criteria-based selection process, MSP deemed a sub-set of 19 Feed the Future Activities to be most suitable for ex-post evaluations. One of these was the Feed the Future Ghana Agricultural Development and Value Chain Enhancement (ADVANCE) II Activity. ADVANCE II, implemented by ACDI/VOCA in collaboration with TechnoServe International from 2014 to 2020, was the successor to ADVANCE I, implemented by ACDI/VOCA from 2009 to 2013 in a consortium that included TechnoServe, Winrock International, ACDEP, and PAB Consult.

Rather than evaluating the entire activity, this ex-post evaluation focuses on a single intervention area. This stems from the fact that ADVANCE II worked across multiple intervention areas, some of which did not employ a systemic approach. In the context of the Activity, **this ex-post evaluation focuses on**

[3] Campbell, Ruth. USAID's Leveraging Economic Opportunities, 2014. A Framework for Inclusive Market System Development.

the outgrower business (OB) model that aimed to increase cereal-producing smallholders' access to inputs, mechanization, and end markets.

OVERVIEW OF ADVANCE II

Feed the Future Market Systems and Partnerships Activity

The Feed the Future Market Systems and Partnerships (MSP) Activity aims to advance learning and good practice on market systems development (MSD) and private sector engagement (PSE) within USAID (Washington, D.C., and Missions), USAID implementing partners, and market actors by providing and improving upon the evidence, capacity, tools, technical assistance, and services required to design, implement, monitor, and evaluate activities. MSP supports USAID to bring about a major cultural and operational transformation by integrating PSE across all activities while deepening MSD and facilitative approaches across the program cycle.

Context

Ghana's agriculture sector is a critical component of its economy, employing 39 percent of Ghana's workforce and contributing significantly to the country's gross domestic product (GDP). According to the World Bank, as of 2019, agriculture accounted for approximately 18.9 percent of Ghana's GDP, highlighting its substantial economic importance. The most common crops produced in northern Ghana include maize, rice, soybean, and sorghum. Around 90 percent of soybean traded in Ghana is procured from the north (Martey et al. 2020). The maize, rice, and soybean value chains contribute significantly to the economic well-being of SHFs based in northern Ghana. The government of Ghana has implemented several initiatives aimed at promoting agricultural development in northern Ghana, which is typically characterized by a more challenging agricultural environment due to factors such as climate variability and limited infrastructure.

Activity Description

ADVANCE II aimed to enhance the competitiveness of Ghana's maize, rice, and soybean value chains by boosting productivity, improving market access, and building local capacity for 127,000 SHFs and value chain actors.

Feed the Future ADVANCE II

Date: March 2014 to June 2021

Prime: ACDI/VOCA

Subcontractors: TechnoServe, ACDEP and PAB Consultants

Budget: USD 41.56 million

Intervention focus: Cereal value chains (maize, soybean bean and rice) in Brong Ahato, Ashanti (northern part) and Northern Regions of Ghana.

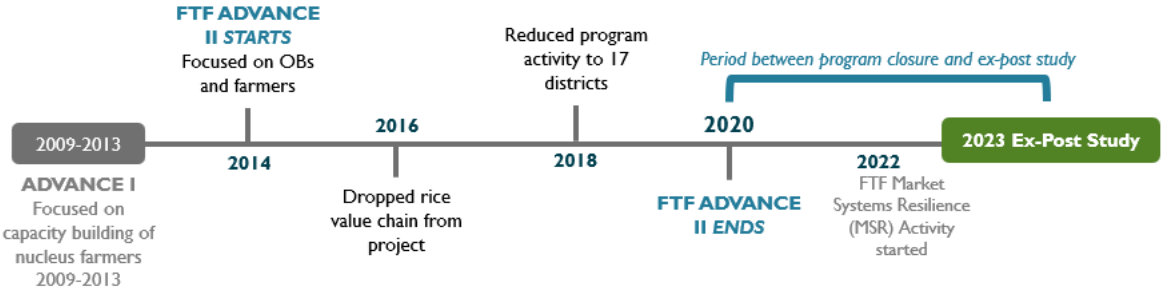
The predecessor activity, ADVANCE I, initially addressed weak readiness among farmers to supply quality produce. ADVANCE II evolved the lead model from ADVANCE I into an OB model, supporting leads in establishing input and mechanization service delivery, aggregation services, and connecting them with key stakeholders.

Using elements of MSD, ADVANCE II strengthened production capacity and developed linkages within the value chain.

In March 2022, the Feed the Future Market Systems and Resilience (MSR) Activity succeeded ADVANCE II, aiming to enhance commercial relationships, improve the rural entrepreneurship ecosystem, expand agribusiness services, and link policy initiatives to local economic governance.

Figure 4 illustrates the transition from ADVANCE I to ADVANCE II to MSR, depicting the engagement with market actors and the shift towards a more comprehensive MSD framework. ADVANCE II changed between 2016 and 2018, dropping the rice value chain and narrowing its geographical focus to 17 districts. Most activities were completed in early 2020, with a COVID-19 extension focusing on awareness and resilience activities, minimally impacting the ex-post study conducted in March 2023. MSR is adopting a more complete MSD framework to strengthen the agriculture market in northern Ghana using the OB model and OB network from earlier phases.

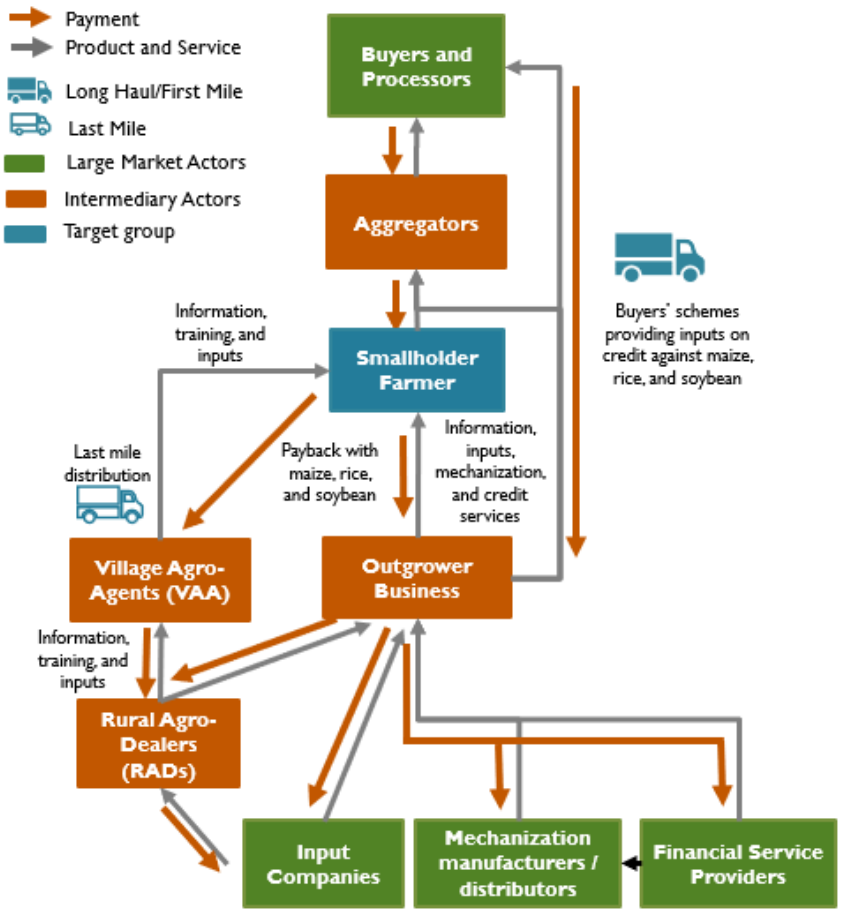
Figure 4: Evolution of the OB model through FTF Activities



Innovation Rationale and Description

ADVANCE II worked closely with ADVANCE I-trained lead farmers to develop the OB model. These lead farmers were supported to develop OBs, which operated as micro or small enterprises that offered a range of services to SHFs. Figure 5 shows the OB model supported by ADVANCE II, the flow of inputs and services it offers to farmers, and the relationship of the OB with other market actors.

Figure 5: Flow of services through OB model



Before the Activity, most farmers did not have a linkage with supporting market actors such as input companies, institutional buyers and processors, financial institutions, and extension services. ADVANCE II envisioned creating systemic change through a well-functioning intermediary with a local presence and the capacity to build business connections with formal market actors, concentrated on the OB model. According to the ADVANCE II Final Report, an OB (i.e., an individual enterprise) builds relationships with the public and private sectors that help provide services to SHFs. Operating at the village level, the OBs serve as links between farmers and service providers while offering some services themselves.

Table 2: Services Offered by OBs

Features	Description
Access to technical agricultural information and knowledge	OBs share knowledge on production and post-harvest techniques, conduct training and field plot demonstrations to boost productivity, and drive demand for higher-quality products among registered farmers.

Features	Description
Access to inputs	OBs provided inputs such as seeds, fertilizers, and pesticides to farmers on credit. OBs either purchased these inputs on cash or credit from local distributors or through buyer-sponsored contract farming schemes. Farmers payback for these services in the form of maize, soybean, and rice.
Access to mechanization	OBs provide mechanization rental services covering land preparation, threshing, and shelling to SHFs. Some also encourage mechanization by offering seed planters for enhanced on-farm productivity. These services are also provided to farmers on credit in return for cereals.
Access to agricultural credit and finance	OB, in several cases, continues to offer inputs and services on credit and introduced buyer-sponsored contract farming schemes that allow farmers to access credit for inputs, such as hybrid seeds, repaid through harvested cereals. The OB model also tried to facilitate financing options for inputs and mechanization.
Linkage to formal markets	OB offers aggregation services for buyers and processes to procure from the northern region. They aggregate maize, soybean, and rice procured against the credit services provided to farmers. This is then sold to formal buyers, processors, and aggregators through OBs promptly.

RESEARCH METHODOLOGY

Research Questions

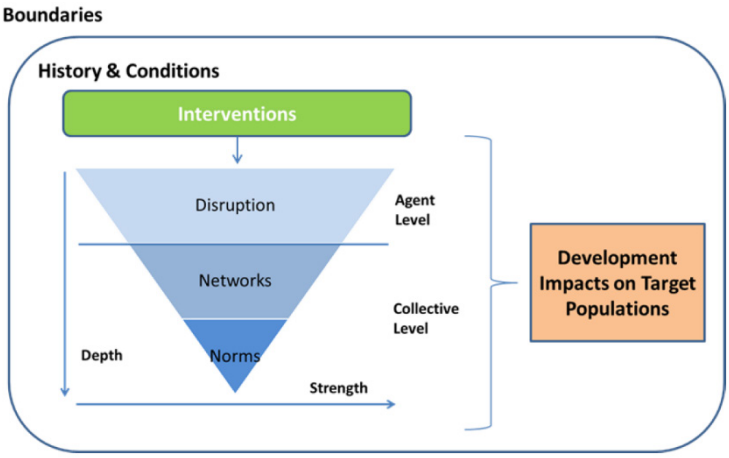
The ex-post study sought to answer the following core research questions:

1. **What systemic changes was the initiative trying to create, to what extent had these changes been achieved when intervention activity stopped, and of those that had been achieved, have they been sustained?** Why or why not? At what scale? Is there evidence of other positive or negative systemic changes arising from the initiative that were not originally intended?
2. **Has the performance of the system's focus functions been maintained, deteriorated, or improved relative to the status at activity closure?** Why or why not? What external factors impeded or contributed? Has the performance of the system's focus functions been able to effectively adapt and/or to absorb shocks and stresses (and if so, how)?
3. **Have there been sustained and scaled gains to the ultimate intended target population because of the systemic change(s)?** Why or why not? What external factors impeded or contributed to these sustained gains? At what scale? Have sustained improvements accrued to women, people suffering from poverty (typically with small landholdings or small and growing businesses), or geographically remote and marginalized groups? Why or why not? If not, what have been the primary constraints to greater equity of participation and benefit? Did this vary over time?
4. **Are there lessons about approaches to implementation that can be learned from the sustainability of outcomes (and the reasons for sustainability occurring/not occurring)?**

Research Framework

The researchers applied the Disrupting System Dynamics (DSD) Framework[4] as the primary analytical framework to examine the extent to which systemic changes—observed via disruptions, network changes, and norm changes—had **strengthened** (i.e., have been characterized by increased prevalence and diversity within the system) and/or been **sustained** (i.e., whether the systemic change is still in place). This framework was selected given its usefulness in validating if the initiative made progress to delivering systemic change, and the extent to which any successful change has been sustained and scaled by the time of the ex-post study.

Figure 6: Disrupting System Dynamics (DSD) Framework



This study used the DSD's definition of a systemic change as "*the diversion of a system down a new evolutionary path*" that can be observed via **disruptions, network changes, and norms changes.** Disruptions can include the incorporation of new business models, technologies, and any other innovations in the business model. Network changes can include shifts in the connectivity and flows in the system such as roles and relationships. Norms changes imply changes in behavioral expectations among market actors. The DSD framework was selected given its attention to spotting possible changes in network and norms, its articulation of specific signs to look for of each type of systemic change, its focus on relevant historical influencers and non-program-related factors, and its attention to the impact of systemic changes on target populations, and the extent to which any successful change has been sustained and scaled by the time of the ex-post study.

Research Approach

The research approach was informed by external experts and members of a technical advisory committee. A wide range of research tools and methods were used for three main purposes: i) to **validate** pre-existing assumptions and activity-collected data; ii) to **measure** the extent to which changes occurred since activity close; and iii) **explore** how, why, and where systemic changes have developed. Specific questions and research methods were selected to address each one of these aims. This included a review of Activity documents, other publicly available reports, Activity M&E data, primary business data provided by market actors, interviews with market actors and stakeholders, and focus group discussions with target populations.

[4] MarketShare Associates. Disrupting System Dynamics: A Framework for Understanding Systemic Changes. Washington: USAID Leveraging Economic Opportunities (LEO), 2016.

Key informant interview with a smallholder farmer from Tamale.
Photo Credit: Khaled Khan / MarketShare Associates

A mixed-methods approach was applied to develop an in-depth understanding of the present situation and changes that have occurred since Activity closure. This included surveys with 161 SHFs (124 OB farmers and 37 non-OB farmers[5]) and 75 OBs. The ex-post deployed a purposive sampling strategy for the OB farmers based on whether they were engaged with ADVANCE II and used any services from the OBs, and a convenience sampling strategy for the non-OB group who were not part of the OB model. We selected non-OB farmers with similar crops, land sizes, and market access to the OB farmers we surveyed. Findings from these surveys were supplemented by 52 in-depth key informant interviews (KIIs) with a wide range of market actors (See Annex 1 for a breakdown of these figures). This research was also supported by a review of secondary sources including Activity documents, MEL data, and other publicly available reports. The secondary resources informed the primary research tools and sample selection criteria. The raw data collected through the baseline, annual, and endline MEL surveys was also used for the quantitative analysis presented in the report. Lastly, a validation workshop with representatives from USAID/Washington, USAID/Ghana, private sector actors from Ghana, the technical advisory committee, and ADVANCE II participants was held in May 2023.

To analyze the findings, a comparison between OB farmers (who received service from OBs) and non-OB farmers (who did not receive service from OBs) was made to inform the contribution from ADVANCE II. It was not possible to calculate precise attribution of the OB model on changes in farmer incomes as the researchers did not have good baseline data for the samples. However, qualitative information was used to corroborate the quantitative data for farmer's incomes reported on the surveys.

For the market level, researchers identified and assessed multiple causal explanations using evidence collected through the interviews, theoretical inference, and critical observation. This process involved considering whether the relevant causal relationships outlined in the Activity's Theory of Change were correct, what additional social and contextual factors were at play, and how they contributed to the observed results. Causal explanations not supported by the evidence collected were dropped to ultimately reach a reasoned understanding of plausible contributions. This type of ex-post hypothesizing and interpretation helps make sense of the "surprises, contingencies, and dynamic changes that characterize most value chains" by detecting observable mechanisms.[6] To combat the risk of confirmation bias, the research team identified possible outcomes ex-ante that they might find, outlined alternative explanations for the emergence of those outcomes, and developed questions to determine which of the explanations was more plausible.

[5] The detailed research methodology is captured in a separate document. It indicates the sampling strategy for OB and non-OB farmers.
[6] Ton, Giel, Sietze Vellema, and Marieke De Ruyter de Wildt. *Development Impacts of Value Chain Interventions: How to Collect Credible Evidence and Draw Valid Conclusions in Impact Evaluation?* Journal on Chain and Network Science. 11(1): 69-84. 2011.

Supportive and Limiting Factors

Several supportive factors contributed to this ex-post study. The most salient ones include:

- **Availability of ADVANCE II staff and data.** Many former staff are currently engaged with FTF Market Systems Resilience (MSR). This aided the evaluation's ability to access information and interviewees' familiarity with the Activity and its aims. The staff were also able to share additional insights into the current state of the OB model due to their monitoring efforts conducted for MSR.
- **Time gap between ADVANCE II and MSR.** The main intervention activities under ADVANCE II ended in early 2020, prior to the COVID-19 Activity extension into 2021. This allowed the model to evolve organically without financial support or grants from other USAID activities (other than the COVID-19 Activity – which focused only on awareness related to COVID-19 and its prevention) for three years before the study team collected data in March 2023. The MSR Activity initiated a baseline survey to assess the status of OBs in late 2022. The information gathered has supported the ex-post study in measuring impact of the OB and OB networks in northern Ghana. Even though MSR officially started in early 2022, MSR activities had not impacted the OBs and the SHFs during the ex-post data collection time. It offered the study team an opportunity to observe the beneficiaries of ADVANCE II with minimum contamination from MSR.
- **Recall by farmers and OBs.** The ability to recall data from respondents was a critical factor for success as the study team collected production data for the past three years. During the quality assurance process, the research team was able to verify that the farmers and OBs were able to recall quantitative information for the last three years with little hesitancy. This helped verify quantitative insights from the endline.

Various limiting factors constrained the study, including:

- **Contamination.** There were several activities and donor activities within the agriculture sector in northern Ghana that made it difficult, in some locations, to isolate the external factors and analyze the contribution of the OBs and other market actors. This included:
  - Enhanced Nutrition and Value Chain project (2016-2021) — World Food Program's initiative to increase access to markets and processors for maize, rice, cassava, yams, and millet value chains.
  - MiDA Ghana — Supports agricultural value chains with a focus on agriculture market development and linkages with northern provinces of Ghana.
  - Degas Ghana — Agri fintech initiative that supports farmers to sell through a digital marketplace.
  - USAID AGRA — Supported input companies in promoting access to quality inputs in northern Ghana

  However, ADVANCE and ADVANCE II were the largest activities focusing on agricultural value chains in northern Ghana and the contribution on impact is likely to be higher compared to other programs. This reduces the effect of contamination.
- **Staff turnover in interviewee firms**. In some cases, it was difficult to interview the point of contact who had interacted with the ADVANCE II Activity and OBs due to a change of personnel in the organization. This made it difficult to access information related to the partnership and its contribution

to the current strategy of the company. However, we managed to triangulate information for various Activity staff members and partners to ensure validity.

- **Difficulty organizing interviews in various locations.** Securing interviews was challenging, especially for processors based in Ashante, where the team was not able to physically visit due to limited time and resources. The team, therefore, decided to conduct phone interviews where possible. Only a handful of the respondents were able to use meeting platforms like Zoom, Microsoft Teams, Google Meet, or WhatsApp call. Therefore, several phone interviews were conducted using a regular phone with only one respondent from one company answering all the questions.

KEY FINDINGS

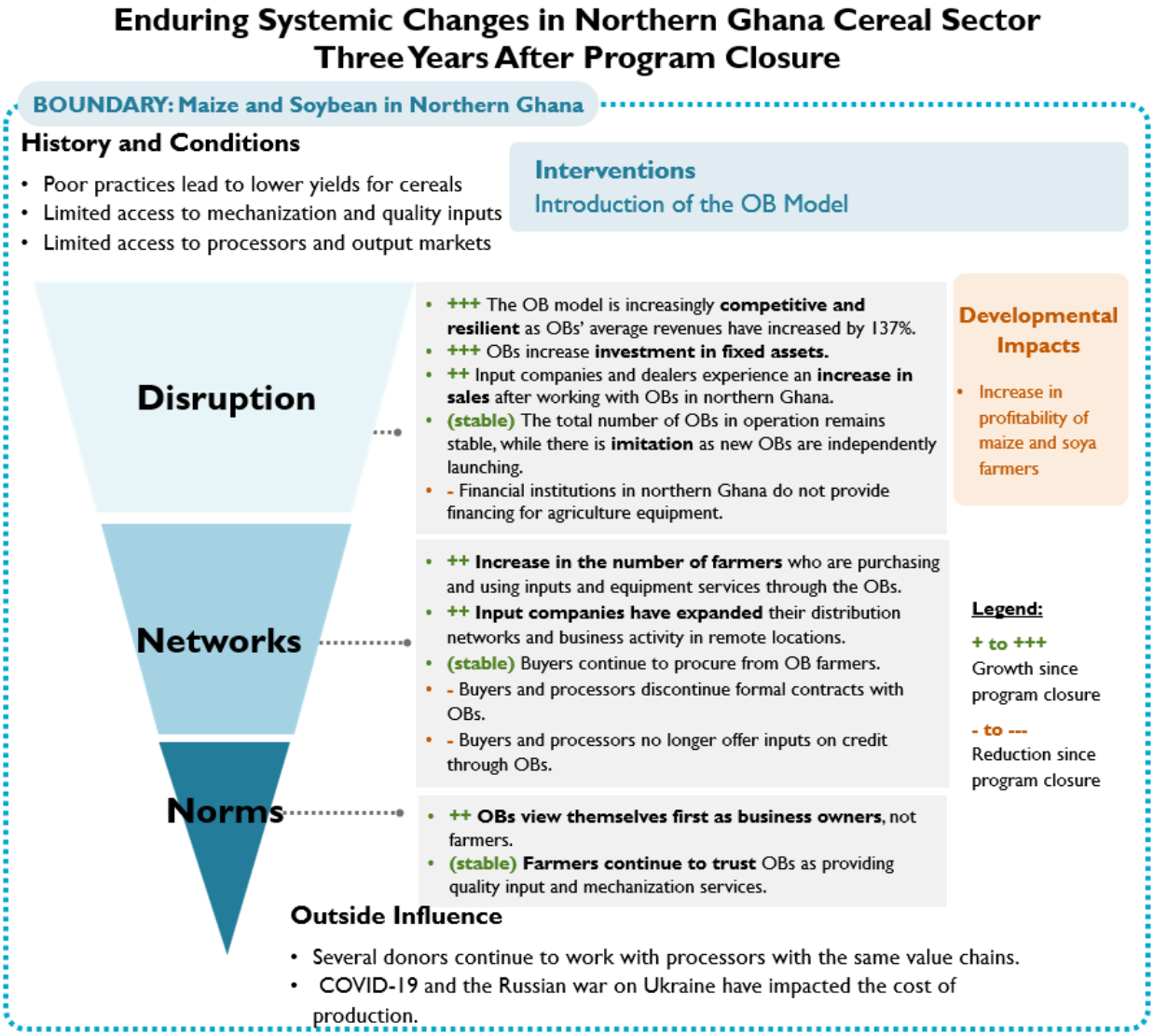
This ex-post study gathered evidence on the current status of systemic changes that were understood to have occurred by Activity closure in 2020 and had been influenced by the OB model. The findings indicate that **three systemic changes had endured and thrived**, **while one did not,** as noted by the "X" below.

- ✓ Outgrower businesses continue to operate and expand as a formal business unit providing a range of services to the smallholder farmers.
- ✓ Input companies recognize that there is a profitable business case for promoting quality inputs to remote farmers in northern Ghana.
- ✓ Buyers and processors consider northern Ghana as a major and consistent source of high-quality cereals.
- ☒ Barriers to agriculture financing have not been resolved.

Each of the systemic changes is described in detail below with evidence. To avoid redundancy, the performance of the focus functions introduced in the executive summary is woven into each section.

The following figure summarizes the key systemic changes identified by the study.

Figure 7: DSD framework: ADVANCE II Systemic Changes



Sustainability and Scale of Systemic Changes

Systemic Change #1: There is better and more timely access to agricultural inputs and services targeting smallholder farmers in northern Ghana.

Situation prior to ADVANCE II

Prior to ADVANCE II, 64 percent of SHFs farmers surveyed at baseline indicated difficulty in accessing quality inputs and mechanization. Fifty-seven (57) percent of those who were able to access inputs and services were not satisfied with it. This often led to the use of poor-quality inputs and low-quality produce of maize and soybean.

Before ADVANCE II, few farmers could access hybrid seeds, quality fertilizers, and pesticides. Farmers also found it difficult to access tractor services on time. This delayed land preparation and appropriate use of inputs, resulting in poor productivity and low yields. Additionally, farmers expressed dissatisfaction about poor affordability and distances to the nearest input shop. The average distance to an input shop or local retailer was 19 kilometers.[7] Most SHFs could not get tractor services on time, as they relied on nearby lead farmers with tractors who prioritized their own needs. Farmers also indicated resorting to manual methods before the ADVANCE II Activity. Additionally, the use of other mechanization services such as planters, harvesters, threshers, and shellers was not common in northern Ghana. The baseline study indicates that most SHFs relied on manual labor for seed planting, harvesting, and post-harvest processing of grains. Moreover, lead farmers were not aware of the business opportunity in delivering inputs and services. Although ADVANCE I worked with a total of 40 lead farmers to improve access to inputs and mechanization, these lead farmers were not structured to provide input and mechanization services to farmers around their farmland. This was primarily because they did not have enough capital or market linkages to provide consistent and timely input and mechanization services to farmers as a business model.

ADVANCE II Intervention

ADVANCE II supported lead farmers to set up OBs to provide agricultural inputs, mechanization services, and information. The program provided grants to OBs, and linked input companies with the OBs and farmers to promote inputs and good agricultural practices.

ADVANCE II supported lead farmers to create formal business entities called "Outgrower Businesses" (OBs). These OBs were registered business entities that operated as a service provider for SHFs. They were also trained by ADVANCE II to maintain business sales records and manage financial books. The

[7] ADVANCE II Baseline Studies for Northern Ghana, 2015.

Activity supported OBs to provide bundled services to nearby farmers that included two or more of the following: i) information and training on improved practices, ii) access to quality inputs, iii) access to credit, iv) mechanization services, and v) aggregation services.

ADVANCE II enhanced OBs' capacity to provide each of the above services. It trained farmers on good agriculture practices and safe use of inputs through a Training-of-Trainers (ToT) initiative.

During the Activity, ADVANCE II identified and provided 73 OBs with tractors (described further in systemic change #4 below). The Activity also provided 121 multi-crop shellers on partial grants and distributed seed planters to various OBs to enhance the use of mechanization services. ADVANCE II provided training for machine operators on land preparation, shelling, and threshing, who then offered these services to SHFs. OBs promoted these services to farmers through training activities and demonstrations to generate more demand. OBs also hired labor and machine operators to offer these services.

Outgrower Businesses vs. Lead Farmers

OBs had a registered business, while lead farmers were not operating as businesses.

OBs maintained a record of the farmers worked with, while lead farmers only had an informal network of farmers.

OBs provided several services to SHFs often on credit, while lead farmers would provide ad-hoc mechanization services.

Additionally, ADVANCE II developed linkages between OBs and private sector input companies and dealers to enhance access to inputs in the north. The Activity trained rural agro-dealers (RADs) to develop business plans and conduct input marketing. It also supported interested community members to become village agri-input agents (VAAs) who work for the RADs as commission-based input sales agents. In total, the Activity supported 89 RADs and 129 VAAs to enhance outreach to remote communities.

Situation by the time ADVANCE II ended

By the end of ADVANCE II, 193 OBs established through the program were operating as businesses and providing a range of services to SHFs. Ninety-one (91) percent of OB farmers were using some combination of high-performing seed, fertilizers, weedicides, and pesticides. The OBs invested 437,708 in new equipment to provide services to farmers, including tarpaulins, shellers, grain dryers, weighing scales, and moisture meters.

By the end of ADVANCE II, 193 OBs were actively providing inputs and mechanization services to SHFs. Forty-two thousand six hundred and fifty-two (42,652) SHFs accessed information, inputs, and mechanization through these OBs. Throughout the life of the Activity, OBs provided plowing services covering 94,987 hectares for women and 154,020 hectares for men.

Although post-harvest mechanization was less popular, most of the OB farmers at endline reported using threshing and shelling services. Nineteen (19) OBs reported purchase of multi-crop shellers without Activity support. In 2020, 7,362 farmers (2,467 of those female farmers) used threshing and shelling

services, compared to 338 farmers in 2015. Female farmers also found these to be more beneficial, as otherwise, they would have shelled maize manually using more time. Moreover, when these services were used together with tarpaulins for drying, farmers reduced the amount of foreign material and broken grains in their produce, thus improving the quality. In 2020, crop shellers generated USD 347,022 in revenue for the OBs.

Additionally, RADs expanded distribution into remote communities through VAAs who helped them increase their annual sales of products and services between 12 and 67 percent.[8]

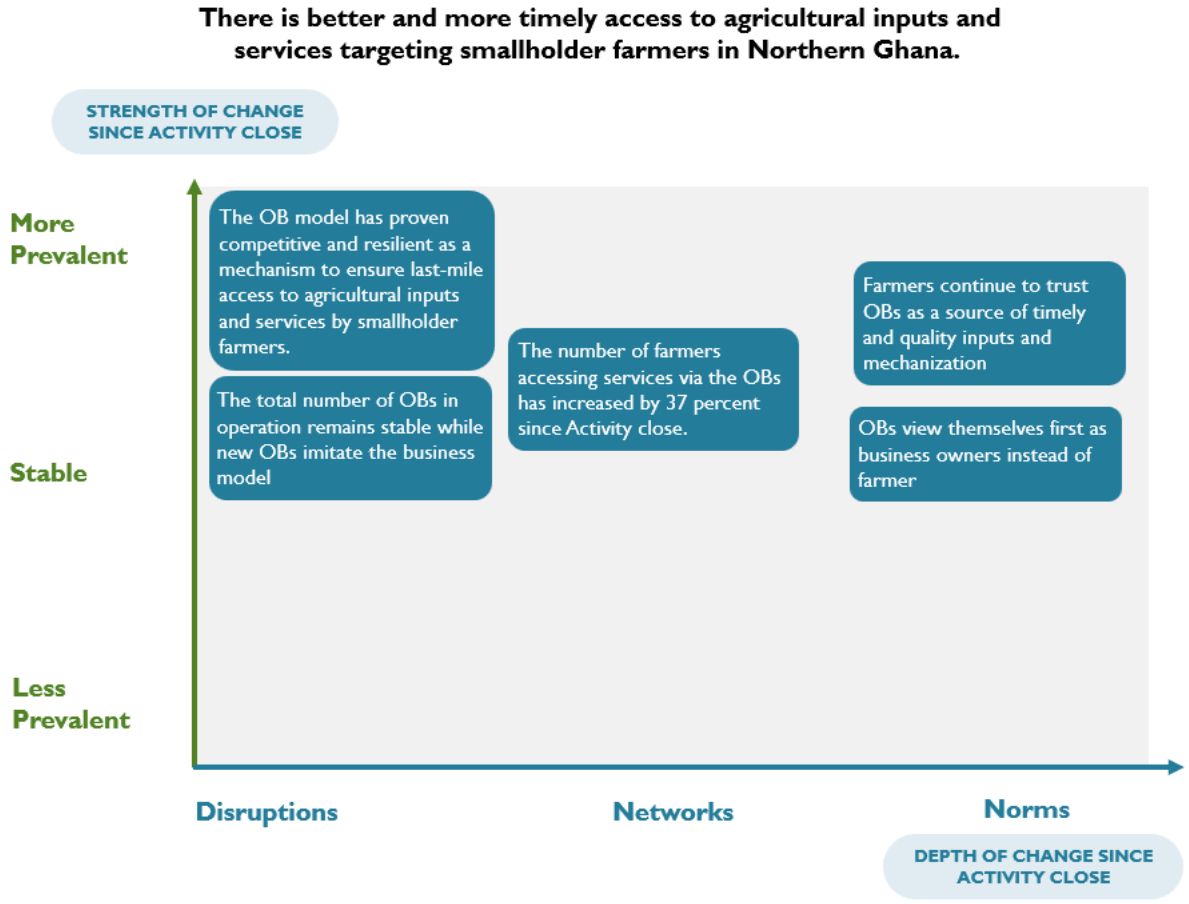
Three years later: Sustainability and scale of systemic change

Thirty-seven (37) percent more farmers benefit from timely access to inputs and services as OBs continue to expand to new regions and increase outreach activity. Additionally, there are signs of imitation of the model, with at least 11 new OBs that replicated this model between 2020 and 2022.

The following figure summarizes how aspects of this systemic change evolved between the end of ADVANCE II and the ex-post evaluation. Each one is described in more detail below.

[8] ACDI/VOCA, ADVANCE II Final Report, 2021.

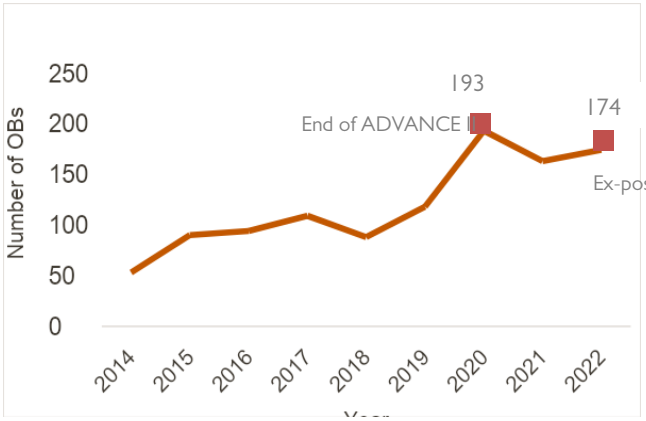
Figure 8: Evolution of Systemic Change: Timely Access to Agricultural Inputs



The total number of OBs in operation remains stable, while there are signs of imitation by new OBs.

The number of OBs remained stable throughout the ex-post. Figure 9 shows an increase in the number of active OBs in 2022 after a dip in 2021. Several OBs who were active in 2019 and early 2020 were unable to supply inputs to the farmers in 2021 due to economic turmoil. The economic crisis was due to the pandemic, high currency devaluation against US dollars, and high interest rates for credit. After the market price adjustment, OBs and farmers started to operate again in late 2022. This was captured during the ex-post as OBs started operating again.

Figure 9: Number of Active OBs



At least 11 new OBs were created between 2021 and 2022 without Activity support. These new OBs were previously either lead farmers or small agro-dealers who now provide a range of services and training to an organized group of farmers. Lead farmers were introduced to the model

through other OBs, farmers, or friends. The new OBs offer two or more of the following services: information, input provision, mechanization services, aggregation, and credit/finance.

New OB *Adam Baba, 45/M*
Sahakpaligu District, Northern Region

Adam established a small farming business in 2021 with 25 women and 25 youth farmers cultivating maize, rice, and soybean. His uncle has been operating as an input dealer and an OB since 2018. His uncle contacted him in 2020 to help procure additional grains for his OB to complete an order. The profits earned through his work with his uncle inspired him to set up his own OB.

At present, Adam provides his farmers with information and training on production practices, along with pesticides, herbicides, and mechanization services. He sells the grains aggregated from his farmer group to the same processors that his uncle connected him to.

He believes there is potential in the model and wants to increase the number of farmers, especially women farmers, as he believes it will help him secure additional funding and grants from donors. However, due to insufficient capital, he faces challenges in supplying inputs and increasing number of farmers.

All the new OBs offered information and training to farmers, while there was somewhat less provision of mechanization services (71 percent), seeds (57 percent), and aggregation services (57 percent). New OBs mentioned that this model helps them to maintain good relationships, provide support, and conduct business with the farmers more easily as they are in a group. Moreover, it mitigates the risk of default as farmers payback in the form of their grains. This is primarily because of the range of services farmers can access through OBs to help develop trusted relationships.

OBs view themselves first as a business owner instead of a farmer.

Interview findings indicate that the OBs developed and supported by ADVANCE II continue to think of themselves first as a business rather than a farmer. OBs have continued to invest in fixed assets to support their business activities. Investing in fixed assets (as opposed to only in operating assets like inputs, credit, and fuel) suggests OBs' confidence in the business model's viability and their vision to continue providing services to the farmers in the future. Sixty-nine (69) percent of the OBs indicated investing in business expansion by purchasing new tractors (28 percent), increasing storage facilities (21 percent), buying motorcycles for transportation (11 percent), and investing in other business activities. Annual investment by OBs increased from USD 3,255 in 2020 to USD 10,209 in 2022 (an increase of 214 percent).

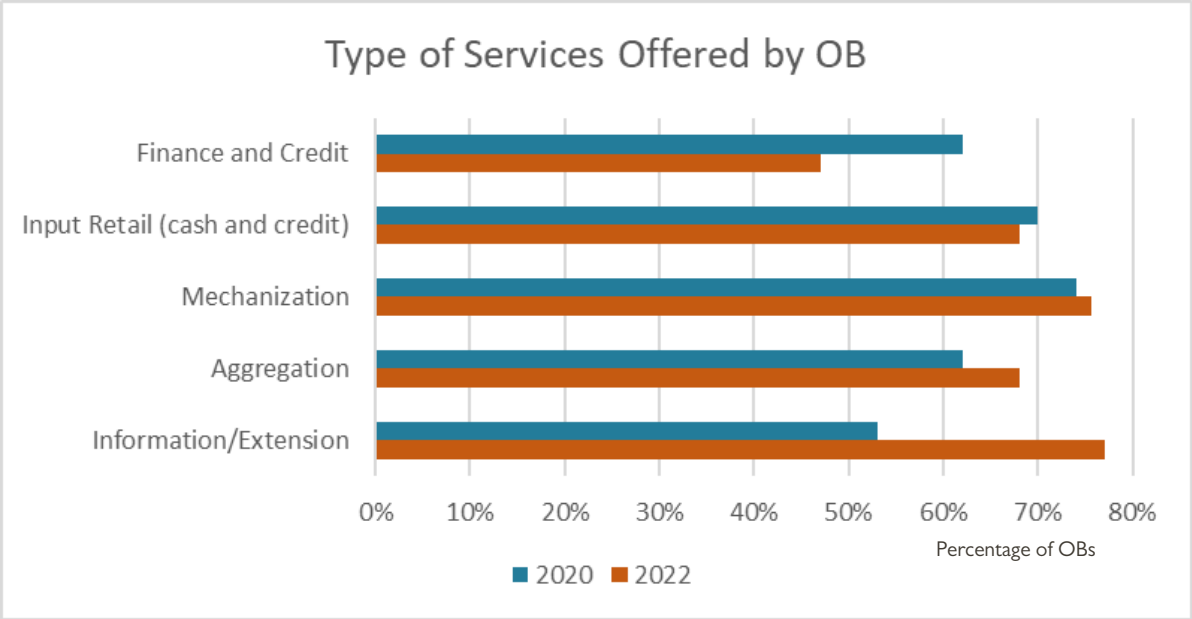
Moreover, these OBs continue to maintain financial records and manage books to capture sales and revenues earned through the various services they offer. This helps in managing their sales and demand of products.

The OB model has proven competitive and resilient as a mechanism to ensure last-mile access to agricultural inputs and services by smallholder farmers.

OBs have increased the number of services offered and revenue from those services from 2020 to 2022. OBs increased their average revenue from the sale of inputs by 80 percent in 2022 (USD 7,740) compared to 2020 (USD 4,300). However, higher revenue from inputs in 2022 is partially due to higher prices of agriculture inputs. Additionally, revenues from aggregation services per OB increased by 137 percent in 2022 (USD 39,745) compared to 2020 (USD 16,960).

Figure 10 shows the type of services offered by OBs in 2022 as compared to 2020[9]. As seen below, the function that grew the most included information and training of farmers (24 percent), followed by aggregation (6 percent), and mechanization (2 percent). The OBs continued to provide information and training to farmers to enable them to procure good quality cereal. Even though the buyer-sponsored contract farming schemes were largely discontinued by the buyers, OBs continue to provide inputs on credit and maintain stable input retail at ex-post as farmers pay back in the form of cereal, which presents a significant opportunity for OBs.

Figure 10: Types of Services Offered by OBs

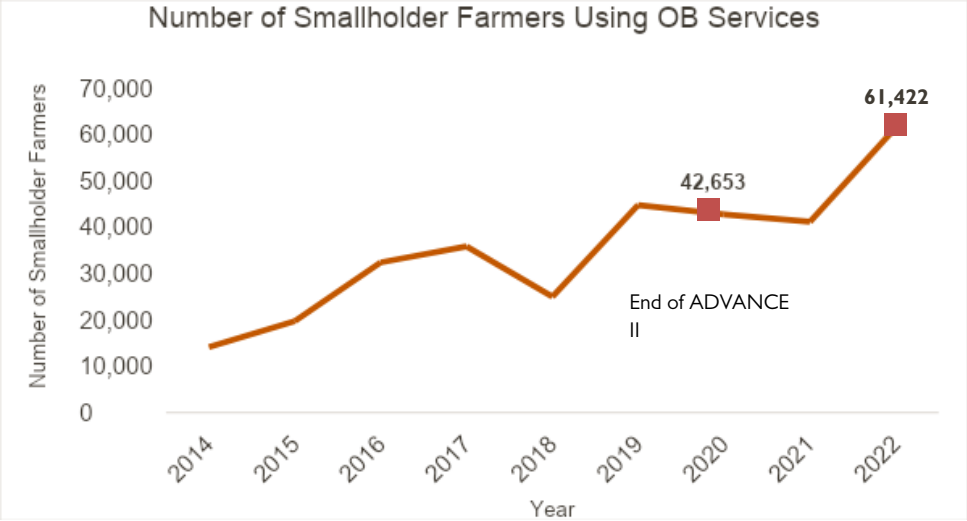


The number of farmers accessing services via the OBs has increased by 37 percent since the Activity closed.

Over the last three years, 37 percent more farmers (44,720 in 2019 versus 61,422 in 2022) are now using one or more services through OBs. Given the relatively stable number of OBs providing services from 2020 to 2022, this has been accomplished by OBs, on average, servicing 60 percent more farmers than at Activity close. In 2020, an OB served 221 farmers on average, which increased to 353 farmers in 2022.

[9] Final Evaluation of ADVANCE II 2021.

Figure 11: Number of Smallholder Farmers Using OB Services



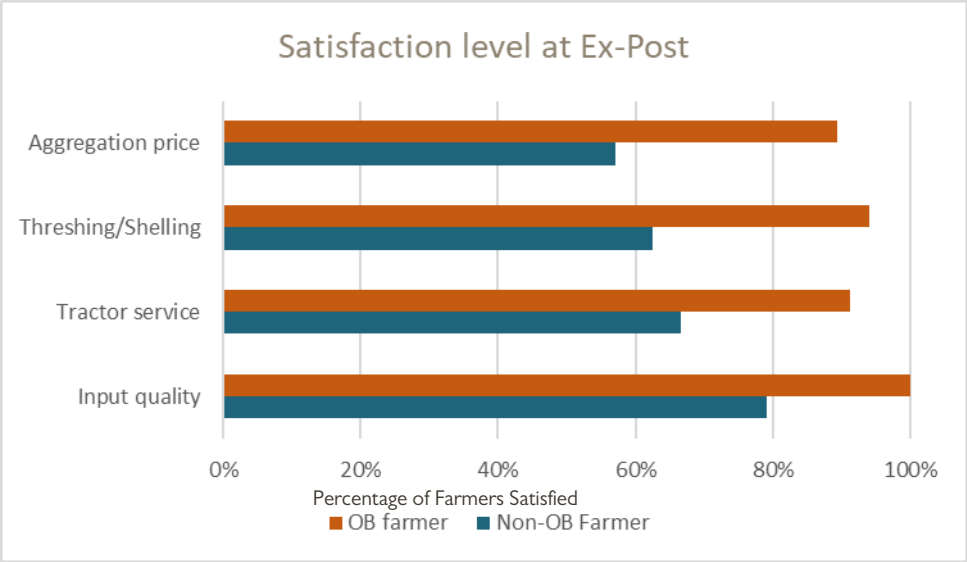
The increase in the number of farmers can be attributed to SHFs' greater trust in the OBs' ability to provide quality inputs and mechanization three years after the end of ADVANCE II. This is due to the affordability and timeliness of the services offered by OBs. Ninety-one (91) percent of farmers using tractor services through an OB were satisfied, as compared to 67 percent satisfaction from non-OB farmers who were getting tractor services on an ad-hoc basis through other service providers.

The increase in farmer outreach was also facilitated by the VAAs. Ninety-six (96) percent of farmers received their inputs through OBs, while 76 percent also received input services from the VAA. These VAAs were introduced to the OB model to facilitate last-mile distribution as it was difficult for the OBs to reach.

Farmers continue to trust OBs as a source of timely and quality inputs and mechanization.

Farmers continue to receive guaranteed and timely tractor services. Similarly, 94 percent of OB farmers expressed satisfaction with threshing and shelling services, in comparison to 63 percent of non-OB farmers. Thirty-four (34) percent of non-OB farmers indicated the primary reason for dissatisfaction with available services was due to delays. OB farmers indicated timeliness as among the top three reasons why they would continue to work with OBs.

Figure 12: Satisfaction Level of Farmers at Ex-Post



In summary, farmers working with the OBs value credit, timeliness, information, and access to processors and large buyers. On the other hand, farmers who are not working with the OBs suffer from using lower quality retained seeds and delays in services.

Systemic Change Area #2: Input companies and dealers see a profitable business case for promoting quality inputs to remote farmers in northern Ghana.

Situation prior to ADVANCE II

Before ADVANCE II, input companies did not target smallholder farmers in the north, especially remote regions, due to low demand for quality inputs. They did not invest in distribution network and marketing in the region causing access and affordability of inputs to be a challenge in Northern Ghana.

In 2015, most providers of inputs like seeds, fertilizers, and other chemicals were centered in urban areas. They did not see a viable market for input delivery in remote regions of northern Ghana, especially in remote locations such as the Wa and Eastern regions, due to both supply and demand-related challenges.

Low apparent demand for quality inputs: Most farmers lived far from places selling inputs, raising the cost and challenge of purchasing them. Moreover, few vendors offered quality inputs on credit, which created an additional barrier for SHFs to purchase them. Most SHFs, therefore, retained seeds from their harvest to replant the following season, which resulted in low yields.[10]

[10] ADVANCE II Baseline Studies for Northern Ghana, 2015.

High distribution and marketing costs: The cost of reaching potential customers with seeds and inputs in remote regions was high, as most farmers had small plots and were scattered across remote regions.

ADVANCE II intervention

ADVANCE II worked with input companies on marketing and distributing quality inputs to smallholder farmers in Northern Ghana. The program facilitated linkages between input companies and OBs to provide farmers in Northern Ghana regions with inputs.

ADVANCE II worked closely with prominent input companies such as YARA Ghana, John Deere, RMG, Chemico, and Dupont Pioneer (now Corteva) to set up demonstration plots and awareness campaigns to disseminate information about agricultural inputs to farmers. The Activity established linkages between the OBs, RADs, VAAs, and input companies to generate demand for inputs.

Through ADVANCE II's support, major input companies (importers and distributors) extended their distribution network by developing business relationships with the RADs and OBs. These linkages between existing dealers and the OB reduced the cost of distribution and marketing efforts in the north. The Activity established sustained agricultural input networks to make inputs accessible to SHFs through community promotions, OBs, VSLAs, and open market access. This resulted from the collaboration between the Activity and input companies on input promotions, as well as the appointment and support of VAAs.

The Activity also helped develop linkages between input companies and buyers to implement buyer-sponsored contract farming schemes that provided inputs on credit to OB farmers in exchange for grains at harvest. Inputs offered through these schemes included hybrid seeds, fertilizers, pesticides, and herbicides.

Situation by the time ADVANCE II ended

By the end of ADVANCE II, input companies and dealers had identified business opportunities for selling inputs in remote locations.

By the end of ADVANCE II, input companies and dealers recognized business opportunities for selling inputs through OBs in remote locations in northern Ghana and invested in doing so. The introduction of quality inputs across the 17 districts, through promotional activities, created greater demand and opportunity for new businesses. This resulted in input companies selling more improved seeds and fertilizers, as OBs purchased USD 4,045,525 worth of inputs from 89 agro-input companies to support 131,134 SHFs.[11] By the endline, rural agrodealers in Brong-Ahafo, Northern, and Upper East regional communities varied from one to 30, with an average of around 10 input dealers per community (prior data were not available).

[11] ADVANCE II Input and Fall Army Worm Learning Study Final Report (2019).

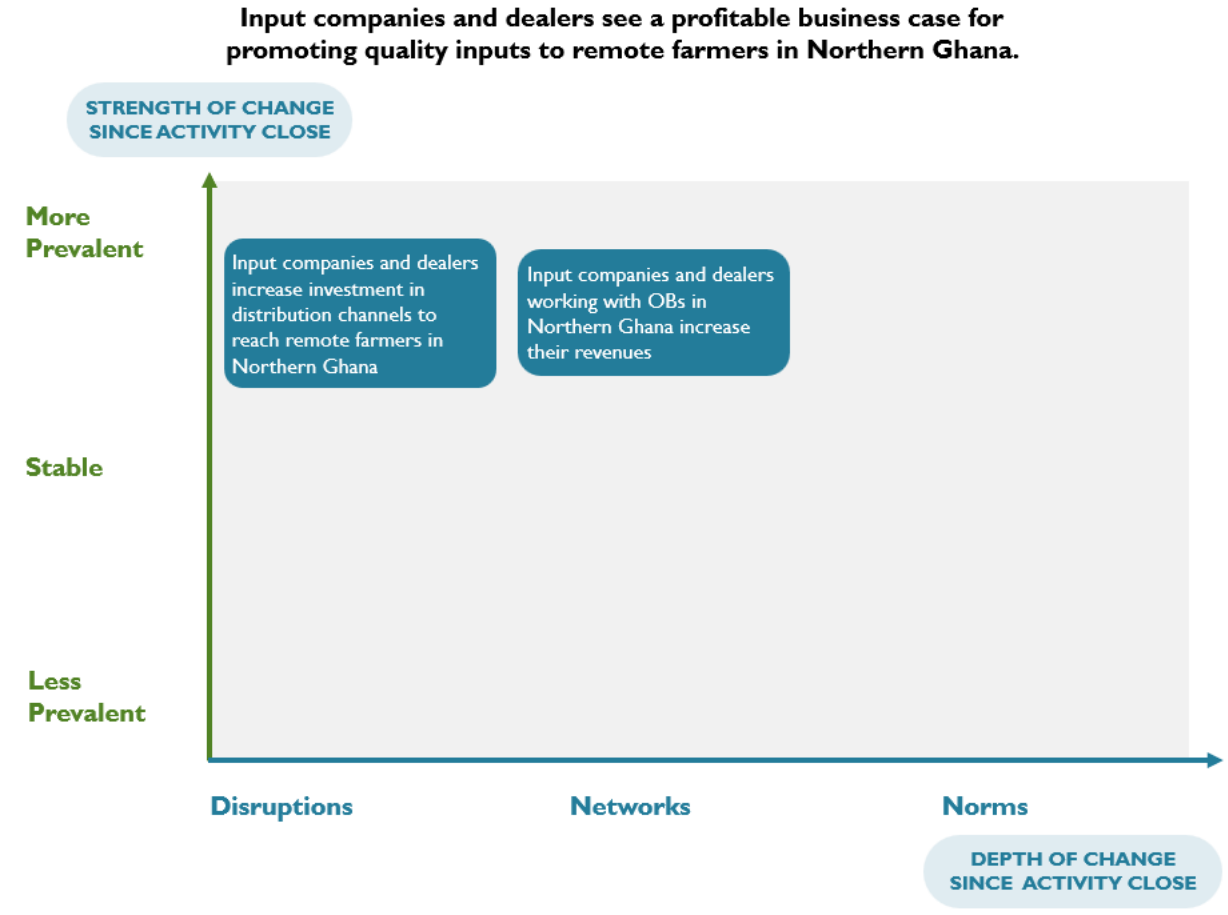
In 2019, ADVANCE II's input access study[12] showed that SHFs' access and application of inputs according to good agronomic practices increases as the distance between the point of sale and the farmer is reduced. This study showed that nearly 40 percent of farmers had VAAs in their community, and farmers generally traveled an average (median) distance of 5 km to the nearest agro-input dealer. Around 59 percent of farmers sourced inputs from the input dealers or VAAs in the community in 2019, compared to 46 percent before the Activity intervened.

Three years later: Sustainability and scale of systemic change

Input companies and dealers increased sales in northern Ghana by investing in their distribution channels and promoting good quality inputs.

The following figure summarizes how aspects of this systemic change evolved between the end of ADVANCE II and the ex-post evaluation. Each one is described in more detail below.

Figure 13: Evolution of Systemic Change: Profitable Business Case for Input Distribution in northern Ghana



[12] ADVANCE II Input and Fall Army Worm Learning Study Final Report (2019).

Input companies and dealers working with OBs in northern Ghana increase their revenues.

One indication that input companies see a profitable business case for selling inputs in northern Ghana is that 75 percent of the input companies interviewed reported that their sales have increased in the north and attributed a large portion of the increase to working through OBs. For example, the largest fertilizer company in Ghana increased its sales by 27% to 35,000 metric tons (MT) in 2022 from 27,500 MT in 2020, even with an increase in fertilizer prices. The company attributed much of its increased sales to the OB model, as that sales channel rose from 20 percent (5,500 MT) of its sales in 2020 to 30 percent (10,500 MT) in 2022. Similarly, one of the prominent seed companies sold 1,600 MT of quality seeds in 2022 compared to 950 MT in 2020, increasing sales by 68 percent. These companies indicated that the OB model has enabled them to sell inputs in bulk given that OBs buy inputs in large quantities after aggregating small orders from SHFs. Seventy (70) percent of agro-input companies and dealers shared that the model is well organized and reliable, makes it easy for them to sell inputs, and informs them about what kind of inputs are in demand. Thus, several companies started selling to OBs to increase their sales and grow/expand their businesses. In 2022, each OB was working with four input companies and dealers on average, compared to only two input companies and dealers in 2020.

On a smaller scale, RADs also experienced increased input sales since 2020. The table below shows that from 2020 to 2022 there was a 48 percent increase in RADs' seeds sales, a 168 percent increase in fertilizer sales, and a 244 percent increase in pesticide sales. Price hikes did play a big role in the increased value of pesticide sales in 2022, though RADs still sold 26 percent more pesticides in 2022 as compared to 2020.

> *"The OBs are our main customers. If you can get some of them to buy regularly from you, your profit will increase. The reason is that they buy in large quantities and the money comes in bulk. This even helps in records keeping because it is easier to calculate their transactions than the smallholders who buy in small quantities." – Input company*

Table 3: Annual Sales of RADs (USD)

Annual sales of RADs (USD)	2020	2021	2022	Total
Seeds	8,674	9,346	12,879	30,899
Fertilizers	10,218	13,575	27,399	51,192
Pesticides	12,729	15,277	43,821	71,827

Input companies increase investment in distribution channels to reach remote farmers in northern Ghana.

A second piece of evidence that the business case for supplying inputs to farmers in northern Ghana is increasingly recognized is input companies' growing investment in retail distribution channels. Forty-eight

(48) percent of the input companies indicated investing to expand their business to new regions of northern Ghana since the close of ADVANCE II. These companies used RADs and OBs as their distribution channels to reach new locations in northern Ghana. For example, the abovementioned fertilizer company reached 32 northern districts in 2018 before partnering with the Activity. By 2022, they had expanded to 50 districts in the Upper West, Upper East, and Northern regions. Similarly, the seed company worked in seven districts in 2017 before they partnered with the Activity. By 2022, they had expanded to a total of 11 districts of the Upper West region.

Input companies also benefited from RADs' investments in input distribution. The average value of these investments by RADs is approximately USD 3,100, and they mainly invest in storage and warehousing facilities.

"Before this model, we were working with [fewer] farmers and that was quite tiring and difficult. Now, we are diversifying, and we are using [the OB] model. We reach out to many of our farmers in a simpler way where risk is being shared between the company and the [OBs], and now we are also working in more districts because of the luxury we have in working with more farmers." – Rural agrodealers

Systemic Change #3: Buyers and processors consider northern Ghana an attractive and consistent source of high-quality cereals.

Situation prior to ADVANCE II

Prior to ADVANCE II, formal buyers were primarily procuring cereals from the southern and central areas of Ghana due to better quality and off-season production.

The large-scale buyers and processors of cereals in Ghana are located in the south and center of the country. Prior to ADVANCE II, they did not see northern Ghana as a viable location to procure cereal crops. Accordingly, at the time of Activity launch, 70 percent of the maize and soybean produced in the north was purchased at low prices by informal aggregators and local processors engaged in small-scale, localized business activity in the region. Large national processors were not directly procuring in the north for the following reasons:

Fragmented aggregation systems. Buyers faced a fragmented selling system in which large numbers of geographically dispersed SHFs were selling small amounts of crops. This made procurement of sufficiently large volumes time-consuming and expensive.

Poor cereal quality. The quality of cereal produced in northern Ghana was low due to poor on-farm practices and post-harvest handling. As a result, larger formal buyers and processors did not see northern

Ghana as a viable source of quality cereal for processing, even though the north is the largest producing region of soybean.

These reasons, combined with the long distances between northern Ghana and markets in the south, weakened the business case for aggregating crops in the north.

ADVANCE II intervention

ADVANCE II supported developing linkages between buyers and OBs. The buyer-sponsored contract farming schemes were introduced to provide hybrid seeds, fertilizer, pesticide, and herbicide on credit through formal contracts.

ADVANCE II facilitated linkages between buyers/processors and OBs to strengthen the maize and soybean supply chain from northern Ghana. Eleven companies implemented a buyer-sponsored contract farming scheme that allowed farmers to access inputs on credit through 80 OBs and pay back in kind with agreed quality and quantities. Seven percent of these OBs were also catering to female farmers. These farmers were registered with OBs, which provided traceability and records for OBs and buyers to ensure payback.

The Activity facilitated networking sessions and pre-harvest agribusiness events to encourage buyers to procure crops from OBs. The Activity also facilitated 100 trade missions involving 105 buyers and 698 OBs to buy cereals, share quality requirements, and improve post-harvest practices with the OBs and farmers.

ADVANCE II worked with smaller and local processors in northern Ghana to improve marketing, packaging, and processing activity. It and ADVANCE I both contributed financial and technical support for the establishment and subsequent expansion of several new processors including B-Diet in 2015 and AMSIG and Lolandi in 2016.

Situation by the time ADVANCE II ended

By the end of ADVANCE II, buyers and processors established linkages with the OB farmers, either directly or through OBs and other aggregators. Additionally, they increased procurement from OB farmers due to consistent quality of cereals.

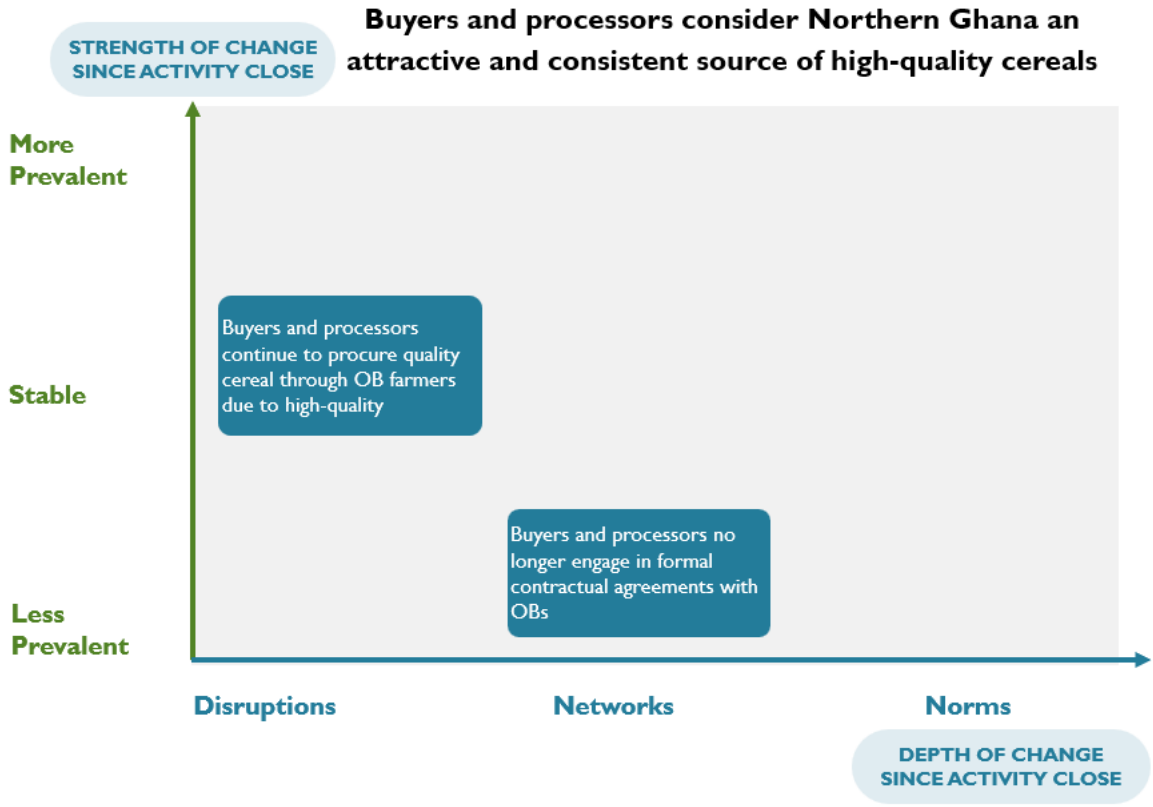
Farmers made notable improvements in cereal quality, achieved higher yields, and established linkages with various market actors to sell their produce. By the end of ADVANCE II, a total of 158 buyers, processors, and aggregators purchased nearly USD 147 million from OBs and OB farmers.

Three years later: Sustainability and scale of systemic change

The number of processors working with each OB increased by 77 percent as compared to the endline. Buyers acknowledged OB farmers produced better quality cereal and continued to procure from the north through the OBs.

The following figure summarizes how aspects of this systemic change evolved between the end of ADVANCE II and the ex-post evaluation. Each one is described in more detail below.

Figure 14: Evolution of Systemic Change: Quality of Ghana Cereals



Buyers and processors continue to procure quality cereal through OB farmers due to high quality.

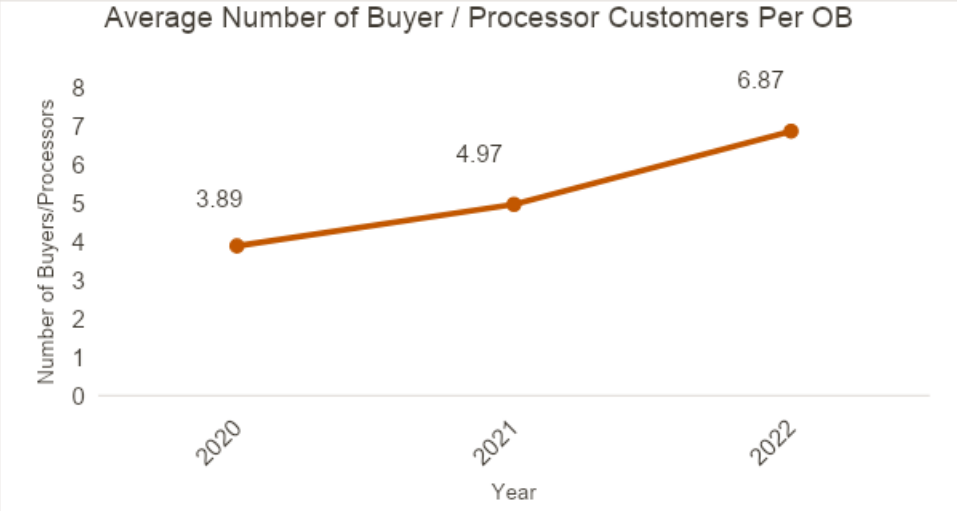
The farmers served by OBs have continued to be an important procurement source for buyers and processors in northern Ghana. Cereal processors based in Accra have continued to procure greater volumes of maize and soybean from the north through OBs than in 2020. The following table shows increase in quantities of maize, rice, and soybean procured through OB.

Table 4: Average Volume Procured through OBs

Average Volume Procured through OBs (in Metric Tons)	**2020**	**2021**	**2022**	**Percent of change**
Maize	39	37	43	10%
Rice	52	56	54	5%
Soybean	15	23	39	162%

Complementary evidence of the interest of cereal buyers in the north is the growing number of partnerships that each OB has with grain buyers. In 2020, each OB had partnerships with an average of approximately four grain buyers. This increased by 77 percent as of 2023 as each OB reported close to seven buyers. This trend can be attributed to two factors. First, greater volumes are being procured from OB farmers among new buyers and processors in sourcing maize and soybean from northern Ghana to sell in the south. Second, new local processors have emerged in Tamale and other northern areas that demand high-quality cereals. One of the key informants mentioned that there are approximately 200 small- and medium-sized processors in and around Tamale.

Figure 15: Relationship Between OBs and Buyers/Processors



A key driver of this continued interest in sourcing from the OBs is the quality of the cereals they provide. Seventy-nine (79) percent of buyers and processors acknowledged the advancements in production practices, resulting in improved quality of maize and soybean. Buyers believed the quality of OB farmers' production improved due to the ongoing training and awareness activities conducted by OBs. This improved quality has sparked increased interest among buyers and processors, prompting them to procure more grain from the Northern regions.

"Purchasing from the OBs is always better. This is because purchasing from the OBs maximizes my profit as compared to the others. I think they are doing well, and they have good quality products. The processes they go through before bringing the products are the same throughout, so they have better and consistent quality. In terms of timeliness, I think the OBs source is usually faster than the others." – Aggregator

Buyers and processors no longer engage in formal contractual agreements with OBs.

As noted above, buyers continue to work with OBs and procure cereal through them. Buyers note several advantages of buying from the OBs. When comparing OBs to non-OB aggregators, buyers and processors observed that purchasing crops through OBs tends to be faster and more efficient. Non-OB aggregators often lack the same level of organization and struggle with arranging transportation for the products. However, buyers also acknowledge that OBs primarily work with SHFs and thus cannot meet their required volumes.

The relationship between buyers and the OBs has become less formal since 2020. While buyers indicated trusting the quality of produce procured through OB, they did not trust OBs to honor their contractual obligations and more likely to side-sell to other aggregators at higher prices. Accordingly, 88 percent of buyers do not engage in formal contracts with the OBs but instead procure from them informally. This has implications for the long-term relationship of buyers with OBs, as buyers do not maintain exclusive supply chain relationships with OBs. This informal setting also has implications on access to credit through buyers which is discussed in detail in systemic change area #4.

Systemic Change Area #4: The barriers to agricultural financing have not been resolved.

Situation prior to ADVANCE II

Limited access to credit hampered the of inputs and mechanization services for smallholder farmers, resulting in lower yields and profitability.

The ADVANCE II baseline report indicated that farmers faced two significant financial constraints that affected their farm productivity and profitability:

Lack of financing for agricultural equipment purchases. One of the major constraints farmers faced was lack of access to loans for the purchase of farm machinery such as tractors, threshers, shellers, and harvesters. The baseline report indicated most of the farmers relied on informal loans or savings. Informal traders and money lenders charged high-interest rates on these informal loans

ranging between 50 and 100 percent per season. Only 30 percent of farmers reported saving. Given the high purchase price of agricultural equipment, none of these financing options provided sufficiently large sums to enable farmers to purchase them. A total of less than three percent of farmers in the Northern and Upper West regions, and about five percent of farmers in the Upper East, had access to loans from commercial banks.

Limited access to credit for inputs. Farmers often require liquid cash to purchase agricultural inputs and labor. Owing to their limited liquid assets, access to credit was therefore a key limitation to improving their agricultural productivity and adoption of new technologies. Ninety-seven (97) percent of the farmers indicated they did not have access to any type of loan for the purchase of inputs and mechanization services.

ADVANCE II intervention

ADVANCE II worked with financial service providers to finance 30 percent of the cost of farm equipment, with the Activity providing the remaining 70 percent of the cost as a grant. Additionally, it worked with buyers and input companies to provide key inputs and services on credit.

To address the issues relating to lack of financing, ADVANCE II deployed two primary interventions:

Linkages with financial institutions. ADVANCE II facilitated business relationships with 36 financial institutions to address some of the challenges experienced when acquiring equipment and production inputs. The Activity co-funded machinery and provided loan guarantees to the banks to help OBs receive loans to fund their 30 percent share of machine financing. These linkages were designed to enable financial institutions to see the business case for financing mechanization and equipment purchases following ADVANCE II's closure. Moreover, ADVANCE II collaborated with USAID Mobilizing Access to Finance in Agriculture (MFA) Activity and its predecessor Financing Ghanaian Agriculture Project (FinGAP) to provide business advisory services and linkages with financial institutions for the OBs.

Buyer-sponsored contract farming schemes. ADVANCE II encouraged the development of contract farming where buyers provided inputs on credit, secured against the delivery of maize and soybean at the time of harvest. ADVANCE II helped strengthen the regional supply chain through these schemes by facilitating linkages with 16 firms (up from a single firm at the end of ADVANCE I), including Agricare Ltd., Premium Foods Ltd., Vester Oil Mills Ltd., Cropcare Ghana Ltd., and Degas Ltd. to pre-finance inputs for outgrowers for repayment in produce.

Situation by the time ADVANCE II ended

ADVANCE II supported 16 companies to introduce contract farming schemes that enhanced farmers' access to inputs. Financial institutions had not started financing agricultural equipment purchases without Activity-provided grants.

By the end of ADVANCE II, the linkages with mechanization companies and financial service providers did not materialize into more sales of the machines from the suppliers, because developing market linkages alone was not enough without intervening further to develop a business case for financing equipment and mechanization in the agriculture sector. While ADVANCE II facilitated grants worth over USD 2 million cumulative for OBs to purchase tractors, rippers, and shellers, no additional loans were given out by financial institutions and there was no development of additional financial products to facilitate equipment financing.

By 2020, 81 OBs established formal contracts with buyers for the supply of high-quality cereals. Among the 81 OBs, seven percent were women, with 20 OBs from the Upper East Region, 30 from the Northern Region, and 31 from the Upper West Region. By the end of 2020, outgrower schemes allowed OBs and OB farmers to access nearly USD 6.3 million worth of inputs on credit.

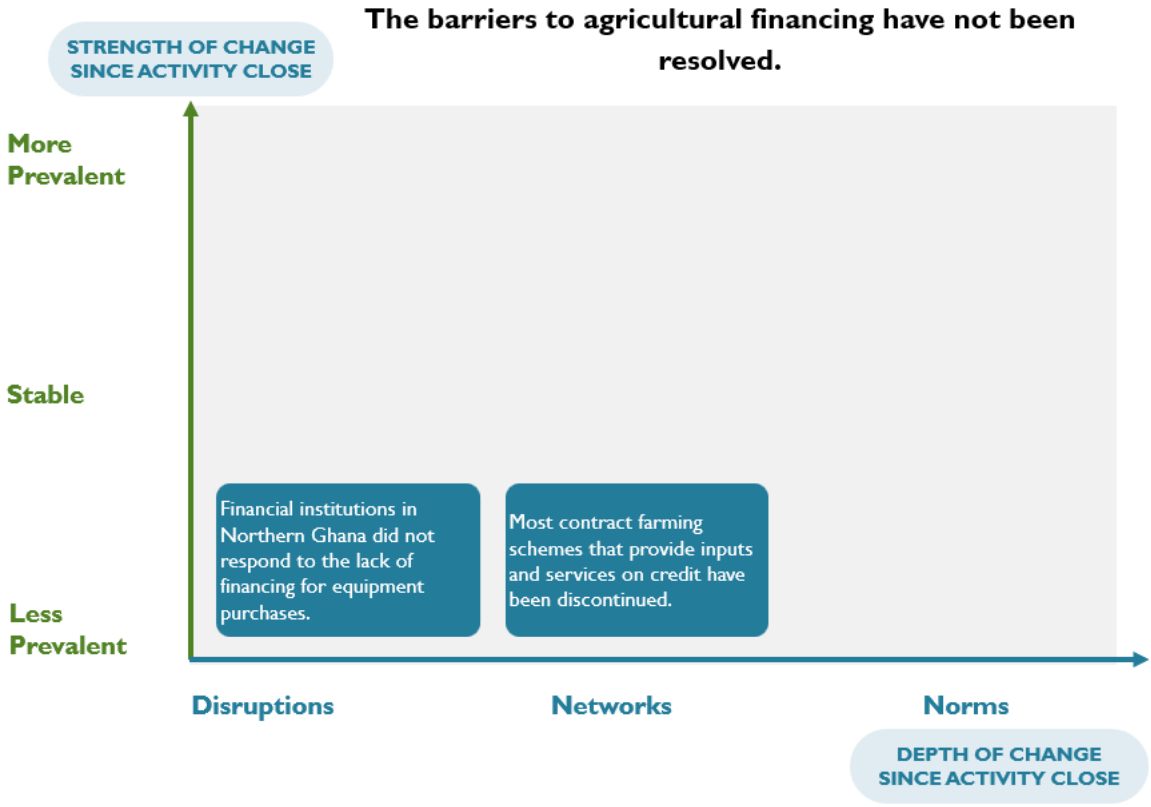
However, the companies that offered this contract farming model encountered challenges as OBs failed to supply the expected grains, and thus struggled to repay the credit provided in 2019. This resulted in a breach of the formal contracts, leading to a breakdown of trust between the processor and OBs.

Three years later: Sustainability and scale of systemic change

Access to agricultural finance remains weak. The contract farming schemes were largely discontinued due to low adherence to contractual obligations. Financial institutions did not develop or further strengthen their connection with OBs to provide loans for mechanization.

The following figure summarizes how aspects of this systemic change evolved between the end of ADVANCE II and the ex-post evaluation. Each one is described in more detail below.

Figure 16: Evolution of Systemic Change: Access to Credit and Finance



Financial institutions in northern Ghana did not respond to the lack of financing for equipment purchases.

The 70 percent subsidy on farm equipment did not incentivize equipment financing through formal financial institutions. No suitable financial model has emerged for potential buyers of medium and large machinery like tractors and combined harvesters. Equipment leasing models specific to the agriculture sector are virtually non-existent. Most financial institutions have prioritized lending to the mining sector over agriculture.

While the collaboration between FTF MFA and ADVANCE II aimed to provide OBs with loans and business advisory services, none of the financial institutions showed interest in providing the necessary loans or equipment leasing.

There was no evidence that the financing ecosystem responded to the high demand for farm machinery. Most of the OBs and other large farmers still depend on grant support to finance equipment and machinery. Out of the 68 percent of OBs who invested in their business following the closure of ADVANCE II, only 24 percent were able to secure some type of loan to invest in fixed assets. While OBs

indicated lack of equipment financing options as a key constraint, financial institutions believed low recovery rate and lack of trust were major impediments in addressing these constraints.

Since the prices of fertilizers increased, the average value of loans also increased. This in turn has led to the situation when we could finance a lower number of farmers with the same amount. – Rural bank

Most contract farming schemes that provide inputs and services on credit have been discontinued.

As discussed previously, buyers largely maintain informal relations with OBs and have discontinued the contract farming schemes that allowed greater access to inputs on credit for SHF. Only two of the buyers continued to offer these schemes on a small scale in 2023 and have largely ceased offering credit services through OBs. This shift can be attributed to the negative experiences encountered by many buyers and processors when previously dealing with OBs.

"…we do have some challenges with that when it comes to credit sales. It's a few number that are still owing us, but most of them do pay. Because a few are not able to pay, we have stopped credit sales for both farmers and retailers. They sometimes promise to pay with their produce, but they don't fulfill their promises." – Processor

Eighty-eight (88) percent of the buyers have expressed their reservations about implementing contract farming schemes through the OB model, mainly due to the absence of control mechanisms or means to ensure OBs' repayment. Some OBs, instead of honoring their obligations to those who provided them with input and services on credit, sold their products to others offering better prices. Dishonoring contracts has therefore created distrust between OBs and buyers. They no longer engage in formal contracts against credit input services, but continue to purchase from OBs. As a result of this, fewer OBs offer credit facilities to their farmers. At ex-post, 47 percent of OBs continued to provide credit support to SHFs, as compared to 62 percent in 2020. The lack of availability of credit is also tied to the increase in prices for key inputs such as fertilizers.

Sustained and Scalable Gains for Target Groups

Yields: In 2022, farmers (OB and non-OB) could not get their yield as high as in 2019 because of high input costs resulting from COVID-19 in 2020 and economic shocks in 2021-22. However, the quantitative survey shows that in 2022 the OB farmers achieved better yields compared to non-OB farmers. Farmers attributed the use of hybrid seeds, quality fertilizer, and pesticides towards higher yields. Also, yields for all farmers for all three cereals have improved in 2022 compared to the yield in 2013. This shows that there is a wider adoption of quality inputs and good cultivation practices among OB farmers. The following table shows the difference between OB and non-OB farmers' yield per acre for maize, soybean, and rice in 2022 and the baseline, end line, and ex-post yield for the OB farmers.

Table 5: Yield Per Acre After ADVANCE II Activity Closure

Yield per acre (kg)	OB 2013	OB 2019	OB 2022	Non-OB 2022
Maize	559	2,275	1,854	891
Soybean	364	1,008	659	548
Rice	364	1,393	1,425	840

Gross margin: External factors such as the pandemic, Russia's war in Ukraine, and overall economic instability have disrupted the input supply chain. There has been a significant increase in the cost of production for OB farmers because of these external factors, especially the prices of fertilizers and seeds due to fluctuations in the GHS against the USD.

Table 6 demonstrates that farmers served by OBs do not consistently receive higher prices than other farmers. OB farmers indicated receiving similar prices for maize, rice, and soybeans compared to non-OB farmers. However, their gross margins indicate benefits reaped through the increase in yield from inputs purchased through OB.

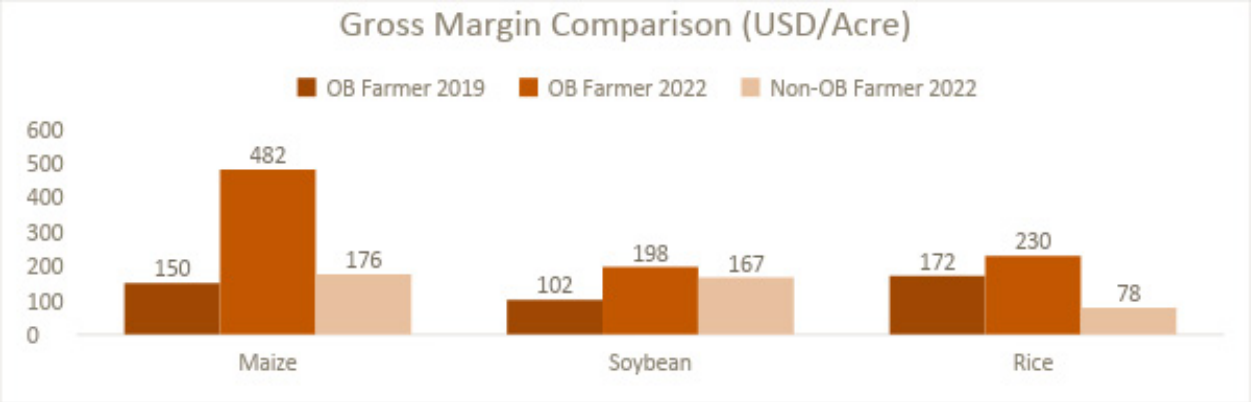
Table 6: Price Per MT After ADVANCE II Activity at Ex-Post

Price per MT (in USD)	Maize	Soybean	Rice
OB farmer	3.57	4.32	2.49
Non-OB farmer	3.79	4.22	2.12

OB farmers report consistently earning a higher gross margin than non-OB farmers. The figure below shows self-reported gross margin of OB farmers' at endline[13] and at ex-post and non-OB farmers' gross margin at ex-post for maize, soybean, and rice.

[13] Final Performance Evaluation of ADVANCE II, March 2021. The gross margin for 2019 is normalized for the Ghanaian Cedi to USD conversion rate for proper comparison. In 2019, 1 USD = 5.6 GHS, and in 2023 it is 11.8.

Figure 17: Comparison of Farmer's Gross Margin (in USD)



OB farmers have greater gross margins even after higher costs of production as compared to non-OB farmers. Maize and rice farmers' profits were more than 170 percent higher than non-OB farmers. Soybean OB farmers made only 18 percent higher margins compared to non-OB farmers due to the larger cost of production and marginal change in yields during 2022. OB farmers also reported higher gross margins in 2022 as compared to 2019. With the recent surge in fertilizer prices, several farmers switched production from maize to soybean as soybean requires less fertilizer for production.

Gendered results

One of the OB networks explained the benefit of adding female farmer groups to the OB Network and added five new female-only groups in 2022. These groups helped the OB network to reach more female farmers and engage them in new roles. For example, one of the group members became the first female tractor operator in Tamale after the OB network took the initiative to train her. Now, she has her own business.

All market actors (buyers, processors, input suppliers, and financial institutes) **reported that they found female farmers more honest and more likely to pay back credit**. Therefore, female farmers are an attractive clientele for OBs, processors, and buyers. In 2023, 53 percent of all OB farmers were female. This increased from 48 percent in 2020. However, the ex-post did not find any evidence that female farmers are receiving more credit compared to male farmers.

Most women in the north have limited access to land. Thus, these women usually support their husbands in cultivating their land. One processor (AMSIG) provides land access for the women to cultivate crops. The business allows women to bring their children to work, assigning some women to childcare duties while other women work on cultivating land and operating the processing center. All these women are paid equally.

IMPLICATIONS FOR PROGRAMMING

Implications for Broader MSD and Economic Development Programming

When ADVANCE I was launched, it intended to implement a value chain development approach with some market systems orientation. However, it changed to a more direct-support model during the implementation, focusing on the capacity building of farmers (including lead farmers) and less on working with value chain actors. ADVANCE II worked with the OBs and farmers to build capacity and later integrated other value chain actors in the intervention design. The collective experience of ADVANCE I and ADVANCE II and the findings presented in this ex-post evaluation offer several implications for designers, implementers, and evaluators of MSD and economic development programming.

Trust is essential for enduring changes in market relationships. Trust levels at the time of the ex-post were strong between OBs and the farmers they served, but weak between OBs and other market actors (e.g., input companies, buyers, processors, financial institutions). This was largely driven by OBs keeping their promises to farmers (e.g., timelines of service delivery) and their failure to honor contractual terms with processors and other buyers. A core driver of this difference is that OBs were able to display technical expertise and credibility, reliable delivery of services, and maintain an interpersonal bond with their farmers. This is supported by USAID's recent Enduring Results 4.0 study, which finds credibility and expertise, track record of delivery, and interpersonal skills as three key enablers of trust. A clear implication is for Activities to actively monitor trust between market actors, look for leading indications of mistrust, and quickly address signs of fraying relationships. Another is to support business models that incentivize transparency – as the Enduring Results 4.0 study found – and have built-in incentives for repeat engagement. The integrated finance model that was studied in a USAID-funded ex-post study in Senegal yielded much lower rates of farmers violating their contract terms by side-selling, in part given their strong incentive to maintain access to credit in subsequent years, the transparency that data sharing practices created, and the comparatively higher competition for paddy among processors following large-scale expansion of rice processing capacity.

Subsidizing transactions creates quick results but rarely leads to systemic change. The ADVANCE II experience supports a longstanding lesson of facilitation programs: subsidizing the transactions between market actors is much less likely to create systemic change than addressing the core drivers of market failures. In fact, the area where ADVANCE II disbursed the largest subsidies across its programming (underwriting the majority of the cost of agricultural equipment purchases) was also where it created the least systemic change. Although it was able to temporarily enhance access to agricultural equipment rental for many farmers in northern Ghana, no durable improvement in agricultural equipment lending resulted. There remains very limited lending for agricultural equipment, despite strong demand. Financial institutions and agricultural equipment companies did not respond to the demonstrated demand for agricultural equipment purchases given the range of unaddressed market failures that continue to the present, such as the high cost of capital and the high cost of tractors. Supporting business models that address these constraints can take longer to yield results but ultimately create more durable outcomes. The Activity studied in the USAID-funded ex-post study in Senegal pursued such an approach in encouraging the development of an equipment leasing market.

Enhancing OBs' business skills and revenue sources can mitigate sustainability risks of microentrepreneur-driven business models. A review of successful models for enhancing smallholder farmers' access to inputs at scale found that shortcomings in microentrepreneurs' managerial and strategic capacity and ambition for growing their businesses impeded such models' potential for sustainability following activity closure.[14] Their small size creates greater risks relative to large firms such that shocks will force the discontinuation of their business activities. The strong emphasis placed by the Activity on building the OBs' business acumen seems likely to have played an important role in their continued operations. ADVANCE II's support for "OB networks" that serve the OBs may have similarly helped, though this was not studied in-depth by the ex-post. Another contributor to the OBs' resilience was the diversity of services they offered. In northern Ghana's thin markets, this diversity enabled OBs to continue operating even as some of their revenue streams were disrupted and services were discontinued. Even with the increase in fertilizer and seed prices, OBs continue to offer mechanization and input services on credit to their farmers.

Careful scaffolding of activities can support sustainable and systemic changes. The thin market in which ADVANCE II sought to intervene required a set of fundamental shifts to better serve smallholder farmers. Given the near absence of important market functions when it began, this necessitated encouraging new market actors (i.e., OBs) to launch. As their capacity grew, ADVANCE II demonstrated how such early interventions can be bolstered and their effects magnified by introducing complementary activities. This included developing and strengthening the capacity of the OBs to operate as business owners and working with other market actors to facilitate access to inputs and mechanization services. A complementary timebound focus on building the capacity of OB farmers to enhance their production and processing capacity bolstered confidence among buyers and suppliers. As these interventions took hold, the introduction of the OB network and the development of OBs as trainers enabled farmers' continued access to information and capacity strengthening. This so-called "scaffolding effect" collectively acted as a catalyst of change for systemic change areas 1 and 2.

CONCLUSIONS

The findings of the ADVANCE II ex-post evaluation help to build the evidence base for the scale and sustainability of activities applying an MSD approach. ADVANCE II and the OB model that it introduced have left a significant mark on the northern Ghana agricultural sector that has continued three years following activity closure. This has happened, most significantly, in the maize and soybean sector where it was first applied, but it is increasingly improving access to a range of services for SHFs in the rice value chain as well.

As one in a series of ex-post studies being conducted by MSP until 2026, this ex-post marks the second contribution to what will be a growing base of evidence to help address this important research question.

[14] MarketShare Associates and ACDI/VOCA. Scaling Impact: Extending Input Delivery to Smallholder Farmers At Scale. Washington: USAID, 2015.

ANNEX 1: DESCRIPTION OF RESEARCH METHOD

Table I. Survey Targets and Actual Achieved

Market System Actor Type	Specific Type of Actor	Target	Actual
Outgrower Businesses	• Participating OBs that are continuing to use the OB model	30	50
	• Participating OBs that discontinue using the OB model	20	11
	• Non-participating OB starting to use the OB model	10	11
Smallholder Farmer	• Participating smallholder farmers continuing to use the OB model	30	59
	• Participating smallholder farmers no longer using the OB model	30	27
	• Non-participating smallholder farmers using the OB model	30	38
	• Non-participating smallholder farmers using another model	30	37

Table II. Interviewee Targets and Actual Achieved

Market System Actor Type	Specific Type of Actor	Target	Actual
Financial Institutions (36)	• Participating banks	2	2
	• Non-participating banks that lend to agricultural sector and who could have taken up the model	2	3
Rural Agro Dealer (RAD) Village Agri-Agents	• Participating input companies	4	6
	• Participating RADs that are continuing to use the OB model	8	9
	• Participating RADs who no longer use the OB model	4	2
	• Non-participating RADs that started using the OB after activity closure	4	4
	• RADs using any other model	2	2

Market System Actor Type	Specific Type of Actor	Target	Actual
Buyer Firms and Processors, or Aggregators (158)	• Participating buyers/processors that are continuing to use the OB model	5	12
	• Participating buyers/processors who no longer use the OB model	5	0
	• Non-participating buyers/processors that started using the OB after activity closure	3	3
	• Buyers/processors using any other model	3	3
OB Networks (21 – 18 zonal, 3 regional)	• Currently active	3	4

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