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EX-POST EVALUATION OF USAID/ UGANDA'S FEED THE FUTURE COMMODITY PRODUCTION AND MARKET (CPM) ACTIVITY

June 2021

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ACKNOWLEDGEMENTS

This evaluation activity would not have been possible without the support of partners in Uganda: Maarifa Consult, in particularly Saturo W. Lubega, our local consultants (Ambrose Kamya and Enock Tumuhimbise), and the enumerators collecting data in the field. Additional support was provided by former Pulte Institute staff member Tushi Baul during the design phase of the evaluation.

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Funding for the report was provided by USAID Uganda and the USAID Bureau for Resilience and Food Security through the MERLIN program and ERIE activity.

MONITORING, EVALUATION, RESEARCH, AND LEARNING INNOVATIONS

The Monitoring, Evaluation, Research, and Learning Innovations (MERLIN) is a program initiated by USAID's Global Development Lab with the goal of ameliorating understanding on the long-term impacts of activities through the monitoring and evaluation of development projects. The express goal is to provide long-term studies that will help USAID in decision-making processes. The program consists of a partnership between the Pulte Institute, AidData, Center for Effective Global Action (CEGA), Geo-Spatial Impact Evaluation (GIE), and Mathematica Policy Research (MPR).

SUGGESTED CITATION

Khatiwada, L. and Waitkuweit, K.H. 2021. Uganda Feed the Future CPM Ex-Post Evaluation. USAID: Washington, DC.

ACRONYMS

BDS	Business Development Services
COVID	Novel Coronavirus-2019
CPM	Commodity Production and Marketing
DEC	Development Experience Clearinghouse
ERIE	Expanding the Reach of Impact Evaluation
FGD	Focus Group Discussion
FtF	Feed the Future Initiative
ICT	Information and Communication Technology
KII	Key Informant Interview
MERLIN	Monitoring, Evaluation, Research, and Learning Innovations
Pulte	The Pulte Institute for Global Development at the University of Notre Dame
VA	Village Agent
VSA	Village Service Agent
SOPs	Standard Operating Procedures
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

BACKGROUND

USAID's Feed the Future (FtF) Commodity Production and Marketing (CPM) Activity implemented in Uganda between 2013 and 2018 intended to enhance agricultural value chains by incentivizing good agricultural practices during cultivation and market sales. This program improved the value chain by facilitating interactions between key actors, exporters, traders and village agents (VAs), and farmers. The intended impact of the CPM Activity is to promote best farming practices and provide resources to buttress the production and sale of beans, coffee, and maize. This study retrospectively evaluates the spillover and sustained impact of the CPM Activity after the closeout in 2018.

RESEARCH

The evaluation team, under the Expanding the Reach of Impact Evaluation (ERIE) activity, aimed to answer two key questions:

- How did market system changes facilitated by the CPM Activity spill over to affect non-recipient businesses?
- Have the relationships the CPM Activity facilitated between various market actors been sustained?

The ERIE team applied a mixed-methods evaluation approach to answer the key research questions. Specifically, the team designed a quantitative assessment of a clustered survey, and qualitative assessments of interviews and focus groups with key stakeholders. In terms of quantitative data collection, three types of surveys were conducted, with each survey focusing on one of the target groups: traders, VAs, and farmers. In terms of qualitative data collection, all four actors of the value chain: exporters, traders, VAs, and farmers. The key information interviews (KIIs) included former CPM participants, as well as some exporters and traders who had not participated in the CPM Activity. Focus groups were conducted with VAs and farmers who participated in the CPM Activity. Interviews were structured, while the focus group discussions (FGD) were semi-structured. The application of mixed-methods metrics was done to maximize the quality of information gathered.

The evaluation focused on two CPM Activity implementation zones: The West region and the North region. These regions were selected for their outlier characteristics: the number of VAs and farmers in the Western region is the highest among the four regions and the number of VAs and farmers in the Northern region is the lowest. Within each region, the evaluation team selected all the districts for the VA and the farmer surveys. The sample size for each group included: 38 traders, 213 VAs, and 232 farmers.

The sample size of qualitative analysis was roughly the half of the quantitative sample size. The KIIs and FGDs were organized in the same region/districts selected for the quantitative survey. The evaluation team also included 10 non-CPM Activity traders and 10 non-CPM Activity exporters to understand spillover effect of the CPM Activity outside of program areas. The qualitative sampling included 23 FGDs. Additionally, traders were part of the 28 KIIs and exporters were participants in 17 KIIs.

FINDINGS

The spillover effects and sustainability findings present a consensus across all parties in the value chain. The shared interest in these activities exemplifies the interconnectedness of goals for all parties involved in the cultivation, distribution, and sale of beans, coffee, and maize. The results support the overall positive finding of the CPM Activity as an activity exhibiting successful spillover effects and sustainability.

Survey results showed new farmers and VAs were joining the program. Even in cases where individuals were not joining the CPM Activity, the impact of the activity was positive. This is reinforced, qualitatively, in KIIs by non-CPM traders recognizing the Activity and noting its positive impact on the value chains. The improvements in quality standards were a positive spillover since the CPM Activity has led to higher quality products.

In exploring the sustainability of the CPM model, the evaluation found that the relationships between traders, VAs, and farmers were sustained as traders and VAs were providing various services to farmers. As the main value chain actors, farmers and VAs were driving interventions to upgrade and trigger a supply response to demand in the market. Moreover, the overall satisfaction with these relationships was high, there exist several inputs that are highly regarded among all parties involved in the value chain. Despite general satisfaction, the 2018, 2019, and 2020 data shows decreasing production and revenue in both regions. This could be attributed to the immediate vacuum created after the CPM Activity closeout in 2018, Uganda's macroeconomic situation and recent pandemic situation in the country. Still, there were reports of upward mobility of farmers and VAs after they were successful in their businesses. Some farmers are now working as VAs and some VAs are now working as traders.

Different parties involved in the value chain experienced varying degrees of negative impacts due to COVID. In regional comparisons across positions in the value chain, a large amount of VAs reported that the CPM Activity could not help them to position themselves to tackle the impact of COVID. Conversely, no farmers described the CPM as unsupportive. Still, multiple respondents said the training provided by the CPM Activity gave them the skills needed to handle agricultural market shocks stemming from the COVID pandemic.

Generally, within the sampled population, spillover and sustainability is positive. The CPM Activity interventions spilled over into other areas, creating positive impacts for non-CPM Activity participants and opportunities of upward mobility for individuals who engaged Activity. Additionally, the sustainability of the Activity is continuing due to demand and expansion of the existing support structures.

RECOMMENDATIONS

ERIE suggests the following recommendations for future USAID funded projects on agricultural production and marketing:

PROGRAMMING

- The CPM model, based on the facilitation of incentives that reward quality, successfully promoted the targeted value chains in Uganda. Related USAID agricultural programs should consider applying similar models.

- USAID can facilitate access to production loans more efficient by addressing the stigma traders, village agents, and farmers hold against loans. Financial institutions are generally unwilling to provide agricultural loan to small-holder farmers. Rather than providing loans to individuals, group-based loan from financial institutions can provide more opportunities for several farmers to access finance.

- USAID should attempt to reduce the impact of transportation challenges on value chains in two keyways. First, USAID should focus on promoting local markets that can shorten the geographic distance between market and farm on the value chain. This is also true that the local market is unable to utilize all the production. Thus, for the external market there should be a provision of local storage facility to keep the commodity when the transportation is not possible.

- Future USAID agriculture activities in these regions should attempt to engage CPM participants to amplify the impact of the CPM activity. One aspect of amplification is to provide support to allow for the value chain to be strengthened to support activities in export markets.

- In focus group discussions, farmers indicated that sometimes they are helpless if the service of a VA is not available for pest and diseases control. The farmers appear to not receive adequate assistance from the government mechanisms. In future iterations of the value chain model, government agencies ought to be linked so farmers can receive support when needed, particularly from agriculture extension services after the activity closeout.

- Spillover is found in neighboring areas, but its full impact is not evaluated. In future applications of the CPM model, spillover effects must be captured and reported into the system, especially reporting of new members. We recommend integrating a reporting system in the post-project situation.

- To ensure the sustainability for CPM Activity, an analysis of services that are not used in high frequencies, such as smartphones for market information and providing technology, should be reviewed in relation to the needs of the village agents to see if there is a gap in the needs of village agents with the capabilities of traders to provide similar services.

EVALUATION STUDIES

- Our evaluation was implemented two years after CPM Activity completion. For a telling long-term impact evaluation, the evaluation ought to be implemented after five years of project completion to track long-term impact. Thus, the team recommends conducting another evaluation in the future to confirm that the positive impacts revealed through this evaluation are sustained over time.

- Analyzing 2018, 2019, and 2020 production and revenue data shows decreasing trends in production and revenue in two regions. We suggest future researchers identify the factors that are responsible for this decreasing trend in production and revenue. Particularly, it is important to know if these trends are specific to the CPM Activity area or if the trends are being experiencing countrywide and the factors responsible for this trend.

- One issue we faced while implementing this evaluation is selecting CPM Activity farmers randomly. In most cases, the enumerators struggled to locate the individuals included in the project participant lists. For future data collection, it is important to keep the record of project beneficiaries who are active and update it regularly. It can be done with the partnership with the government.

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INTRODUCTION

BACKGROUND

This report—as part of the Expanding the Reach of Impact Evaluation (ERIE)—presents the findings of evaluation of Commodity Production and Marketing (CPM) Activity undertaken by the United States Agency for International Development (USAID) under the Feed the Future (FtF) initiative in Uganda. The principal purpose of this evaluation is to explore the impacts of the CPM Activity, two years after its completion. This report assesses the impact through an ex-post evaluation in two ways. First, the spillover of the CPM Activity into groups and areas of the agricultural value chain where the activities' interventions were not implemented was assessed. Secondly, we measured the sustained use and practice of activities associated with the CPM. The resulting report details outcomes related to the sustainability and spillover of the CPM. We then provide recommendations for key stakeholders' actions and decision-making for similar future activities. The results of the report offer an analysis of the sampled population, who were not selected randomly, and as a result, the data does not offer causal conclusions on the general state of agricultural activities in Uganda. Instead, this report evaluates the experiences of the respondents sampled during the data collection process.

DESCRIPTION OF CPM ACTIVITY

The CPM Activity was part of the Feed the Future (FtF) initiative in Uganda aimed at improving agricultural market value chains through enhancing training, engagement, and networking between farmers, exporters, traders, village agents, and other parties involved in agricultural production and/or agricultural markets. The CPM Activity was funded for a five-year period with a contract ceiling of $20,991,889 dollars and was implemented in 34 districts across the country.[1] The resulting engagement annually reported positive gains in various areas, including but not limited to: youth involvement, climate smart agriculture gains, bridging markets, increasing participation in market activities and the quality of training provided on production.[2]

The CPM Activity facilitated market system change within the target value chains. The Activity's theory of change was achieved through buyer-linked intermediary business models, which built trust and engendered win-win relationships between value chain actors. These relationships incentivized farmers to produce quality outputs by offering additional services and price differentiation. By targeting leverage points in the "middle" of the value chains, productivity and market access increased, which stimulated supply response to demand. Intermediary business models include buyer-linked village agents (VAs) and village service agents (VSAs), farmer organization depot committees, small-scale processors such as, coffee washing station operators, and farm service centers[3]. To further boost value chain efficiency and productivity, the CPM Activity facilitated interventions that linked intermediaries to indirect market

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[1] Chemonics (2015). Commodity Production and Marketing Activity FY15 Annual Report, p. 7

[2] Chemonics (2017). Feed the Future Zone of Influence Baseline Report December 2013, Chemonics (2015) Commodity Production and Marketing Activity FY15 Annual Report, Chemonics (2017) Commodity Production and Marketing Activity Annual Report (FY 2017)

[3] CPM Activity Final Report: 2018

system actors, such as financial institutions, insurance companies, input companies, information and communication technology (ICT) companies, and business development service (BDS) providers.

The CPM Activity focused on sustainability and scalability. To ensure ownership, every intervention used a "light-touch" facilitative approach whereby the CPM Activity did not become an active player in the value chain. This allowed for the gradual transition of CPM Activity-supported activities to relevant private and public sector stakeholders. Notable sustainable tools and approaches developed and facilitated by the CPM Activity include: 1) the private sector-led VA Model; 2) digitalization of agriculture production and services to smallholder farmers; 3) enhanced production and marketing service provision through "Combo Service Delivery"; 4) increased coffee productivity through "Every Tree Counts" (ETC); 5) delivering affordable BDS; 6) promoting girls' education through "Mary had a Little Goat"; 7) and promoting youth-led commercial agriculture through block farming. Under block farming, CPM Activity facilitated youth to link with agro-input dealers, financial services, competitive markets, BDS providers, and equipment suppliers. These services ware paid based upon post-harvest sales[4].

The Activity's development hypothesis states that if middle value chain actors understand the incentives to improve their supply chains; and if CPM Activity interventions change their behavior, they would then invest their time/money to:

- Increase farmer access to and use of high-quality inputs
- Improve farmer access to and use of production support services
- Increase farmer knowledge and adoption of improved farm management practices
- Increase farmer adoption of recommended post-harvest handling practices

Then, farming families will sustainably increase production and sales of high-quality beans, coffee, and maize, which will increase their incomes and long-term prospects.

The overarching impact of the CPM Activity on the value chain occurred, in part, due to the holistic approach taken while engaging the agricultural market structure. The CPM Activity focused on a wide breadth of topics: from activities related to cultivation (seeding, weeding, insecticides, fungicides), and economics (record keeping, market access), as well as, acknowledging the challenges (biological shocks, climate shocks, and human induced shocks) that the value chain faced. Despite such challenges, annual gains in targets for growth in cultivation and market interactions were linked to the implementation of the CPM Activity. Meaning the FtF initiative reports highlighted overall positive impacts on the target value chains for most years.[5]

The success of these activities is attributed to the component of sustainability, which this evaluation examines.

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[4] 4 CPM Activity Final Report: 2018

[5] Chemonics (2017). Feed the Future Zone of Influence Baseline Report December 2013, Chemonics (2015) Commodity Production and Marketing Activity FY15 Annual Report, Chemonics (2017) Commodity Production and Marketing Activity Annual Report (FY 2017)

MOTIVATION FOR LONG-TERM EVALUATION AND RESEARCH QUESTIONS

The CPM Activity closeout report indicates that the Activity increased agro-dealer networks, reduced product adulteration prevalence and opportunity for such adulteration, and improved credit access to farmers for a more efficient agricultural inputs to be purchased and used in a supply-demand system dynamic. While gains show promise, the creation of sustainable solutions to farmers' demands for genuine inputs is unfulfilled. After 2 years of completing the CPM Activity, USAID wants to know if the changes facilitated in the market system have continued to increase the production of beans, coffee, and maize; if sales, revenue and profits have increased, stayed the same or reduced since the end of the activity; if the changes have affected crop diversification, if the system led to sustainable change in the form of new or strengthened relationships and client-oriented business development services from which the farmers are benefiting and if the partnership and cooperation between different agents in this model are maintained. Specifically, USAID wants to ask the following research questions:

- How did market system changes facilitated by CPM Activity spill over to affect non-recipient businesses?
- Have the relationships CPM Activity facilitated between various market actors been sustained?

These key questions were subdivided with indicators that aim to explore the multifaceted nature of spillover effects and sustainability present in the CPM Activity's impact on the target value chains. Divisions of the questions also occurred along quantitative and qualitative methods, since each method offers various perspectives that can be analyzed to provide a holistic overview of the CPM Activity's impact on participants (see Annex 1 for complete questionnaire).

EVALUATION DESIGN

This evaluation applied a mixed-methods evaluation, with a quantitative assessment of a clustered survey applying a convenience sample, and qualitative assessments of interviews and focus groups with key informants. In terms of quantitative data collection, a stratified clustered design was implemented where the Strata is a region (i.e., Northern, Western, Eastern, Central) and clusters are districts within each region.[6] We focused on the Northern and western regions due to their outlier characteristics: the number of VAs in the Western region is highest among the four regions and the number of VAs in the Northern region is the lowest.[7] The evaluation design resulted in three types of surveys were conducted, with each survey focusing on one of the target groups: farmers, traders, and village agents (Appendix 1). In terms of qualitative data collection, interviews were conducted with exporters and traders, regardless of their participation with the CPM Activity. Focus groups were also held with farmers and village agents who participated in CPM Activity. Interviews were structured, whereas the focus group discussions (FGD) were semi-structured.[8] The application of mixed-methods metrics—interviews, focus group discussions and surveys—was done to maximize the quality of information gathered. For example, exporters were interviewed and not surveyed due to difficulties accessing them.[9]

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[6] PULTE INSTITUTE (2020B). ERIE UGANDA FTF DESIGN DOCUMENT Pulte Institute (2020b). ERIE Uganda FtF Design Document

[7] PULTE INSTITUTE (2020B). ERIE UGANDA FTF DESIGN DOCUMENT Pulte Institute (2020b). ERIE Uganda FtF Design Document

[8] Pulte Institute (2020b). ERIE Uganda FTFFtF Design Document

[9] Pulte Institute (2020b). ERIE Uganda FTFFtF Design Document

Remaining cognizant of the nature of the surveyed and interviewed populations, the evaluation also had to confront the challenge of collecting data during a pandemic.

SAMPLE SIZE

Quantitative surveys used a stratified clustered design and sampling respondents in a convenience sample. As a result, the evaluation relied on a snowball sampling technique, which was based on who was available and active in the CPM Activity to find the respondents. The strata is a region (i.e., Northern, Western, Eastern, Central) while clusters are districts within each region. Due to resource and time constraints, the evaluation focused on only two CPM Activity implementation zones: Western and Northern. These regions were selected for their outlier characteristics: the number of VAs and farmers in the Western region is the highest among the four regions and the number of VAs and farmers in the Northern region is the lowest. A possible explanation for the discrepancy between these regions is the proximity to the capital. The Western region is closer to Kampala, while the Northern region is a more remote location. An additional explanation for the regional difference includes variations on the specific target value chain commodity that the CPM Activity worked on in the regions, for example the Western region had a high presence of VAs and farmers dealing in the cash crop of coffee. Within each region, the evaluation team selected all the districts for the VA and the farmer surveys.

After considering their total number, we estimated the following sample size for each group of respondents from two regions for the survey (see the design document in the Annex):[10]

- Village agents (VAs): 170
- Farmers: 170
- Traders: 50
- The FGDs and KIIs were organized in the same region/districts selected for the quantitative survey. We included 10 non-CPM Activity traders and 10 non-CPM Activity exporters to understand spillover effect of CPM Activity outside of program areas. It was hard to know how many traders and exporters who were there were not affiliated with CPM Activity (their universe) so we decided to include 10 non-CPM activity traders and 10 non-CPM Activity exporters based on our capacity to conduct interviews with them. The total qualitative sample was as follows:
- Village agents (VAs): 10 FGDs
- Farmers: 10 FGDs
- Traders: 30 KIIs
- Exporters: 20 KIIs

[10] PULTE INSTITUTE (2020B). ERIE UGANDA FTF DESIGN DOCUMENT Pulte Institute (2020b). ERIE Uganda FtF Design Document

IMPLEMENTATION OF DATA COLLECTION

To collect data from the sampled districts, Pulte Institute contracted a Ugandan survey firm, Maarifa Consult. Maarifa Consult formed a team of 16 researchers for data collection. Maarifa Consult split the team into two parts and sent one team to the Northern region and another team to the Western region for data collection. While selecting the team members for fieldwork, Maarifa Consult assigned the field researchers based on their familiarity of the region and the language fluency the enumerators had in in each region. In addition to this, Pulte Institute also recruited two survey monitors for quality control purposes, who were present during the training sessions and for the entire fieldwork activity conducted in the Northern and Western Regions.

Individuals participate in an enumeration training in Maarifa.

PHOTO CREDIT: AMBROSE KAMYA

Our evaluation process started with training the higher-level team. The Maarifa and the Quality Control team were trained using materials organized and facilitated by the Pulte Institute team via Zoom. This training session was aimed at introducing the teams to why the study was being carried out, provided an overview of the CPM Activity, and outlined procedures to follow during while executing the evaluation. The training also offered guidance to the Maarifa team on how to conduct enumerators training efficiently.

The enumerators' training took 4 days, between the dates of October 29th to November 4th, 2020. The training took place in Kampala. The training was organized and facilitated by the Maarifa team and monitored by two Quality Control consultants. Thirteen enumerators and three supervisors attended the training. The enumerators were divided into two teams according to the regions: the Western and Northern Region Teams. The training clarified appropriate: usage of smart phones for data entry procedures, mock-ups of key informant interviews, and focus group discussions. There was also thorough survey tools training in local languages. The survey was in-person by using smartphones in data collection.

During the training, both the trainers and enumerators observed standard operating procedures (SOPs) for ensuring safety during in person interactions during the COVID-19 pandemic (Appendix 2). The members of the training wore a new disposable mask every day, hand sanitized, and always kept a social distance of 2 meters. In addition, both the quality control consultants and enumerators were encouraged to replicate SOPs during the data collection in the field with respondents and participants. All the enumerators were equipped with skills of how to use the data collection tools using tablets and smartphones through the training mock-ups.

The implementation of this ex-post evaluation was complicated due in part to the COVID-19 pandemic. To overcome the obstacles that the pandemic engendered, the Pulte Institute created a safety protocol

and coordinated with partners in Uganda to ensure that the evaluation could be conducted at a minimal risk to all parties involved in the in-person activities. Through training local enumerators and local evaluators to monitor the data collection process, the Pulte Institute was able to successfully conduct data collection as planned.

The successful data collection was not without its limitations. Note that the pandemic accelerated the overall timeline of the data collection process. The result of the rapid data collection was noted as a major challenge for the enumerators on the ground. Mainly two concerns were raised with the quick turnaround for data collection: pre-testing period was too short, and data collection had to be sped up in the field where the team had to travel several districts in short time periods. [11] The shortened timeline led to respondents being required to be interviewed quicker than they would be under normal circumstances. The evaluation team in Uganda recommended that future ex-post evaluations be conducted with a longer timeframe to avoid the negative impacts of time constraints.[12]

PRE-TESTING SURVEY DESIGN

After the trainings were completed, enumerators were given time to travel to their regions to prepare for the survey, interviews, and focus group activities. The instrument pre-testing and review of pre-testing data occurred between November 6th and November 9th, 2020. Staff members of the Pulte Institute ensured the responses met the standards indicated in the design document and analyzed gathered survey data. Once satisfied with the results, the main data collection commenced.

SURVEY INSTRUMENTS, FOCUS GROUP/INTERVIEW STRUCTURE AND THEIR ADMINISTRATION

Survey teams in Uganda conducted interviews contacting a finite number of households within each district. The survey was conducted using tablets and data was uploaded daily and reviewed for anomalies. Qualitative data progress was regularly monitored with the formatting of interviews and focus groups resulting in the documents being submitted in bulk once all evaluation activities were completed. Similar to the survey data, the qualitative interview and focus group data was reviewed for anomalies and formatted prior to analysis to include identifying information for individuals based on personal name, region, and occupation.

Data collection started on November 7th and ended on November 26th, 2020. As mentioned earlier, the data collection teams each visited one of the two regions and various districts in each region, which were as follows:

In the Western Region, the research team visited 14 districts which included; Mitooma, Kabale, Kyegegwa, Rubirizi, Bushenyi, Ibanda, Kamwenge, Masindi, Kiruhura, Isingiro, Sheema, Kaseses, Kanungu, and Ntungamo districts.

In the Northern Region, 11 districts were visited which included: Gulu, Lira, Kwani, Dokolo, Apac, Kole, Oyam, Omoro, Nwoya, Alebtong, and Amuru districts.

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[11] Lubega (2020). Field Completion Report

[12] Lubega (2020). Field Completion Report

In total, the following numbers of responses were completed for each region.

TABLE 1: SURVEY POPULATIONS BY REGION (ACTUAL IN PARENTHESIS)						
REGION	EXPECTED TRADERS SURVEYED	EXPECTED VILLAGE AGENTS SURVEYED	EXPECTED FARMERS SURVEYED	ACTUAL TRADERS SURVEYED	ACTUAL VILLAGE AGENTS SURVEYED	ACTUAL FARMERS SURVEYED
Northern [13]	25	60	60	14	63	83
Western	25	140	140	24	150	149

TABLE 2: KEY INFORMANT INTERVIEWS CONDUCTED BY REGION				
REGION	CPM EXPORTERS	CPM TRADER	NON-CPM EXPORTERS	NON-CPM TRADERS
Northern	2	8	4	7
Western	5	10	6	3

TABLE 3: FOCUS GROUP DISCUSSIONS CONDUCTED BY REGION						
REGION	FARMERS' FGDS			VA'S FGDS		
	Females	Males	Total	Females	Males	Total
Northern	20	24	48	6	22	28
Western	17	33	50	6	24	30

Enumerators visited a respondent's residence for the survey. Each survey took about 45 minutes to complete. Focus group discussions (FGDs) were conducted in a centrally located place. Key informant interviews (KIIs) were approached in two ways: some were face-to-face, while others were over the phone. Each FGD lasted for about 90 minutes and KIIs for 30 minutes. Five to eight people participated in each FGD. The discussion topics for the FGDs were mostly based on research question #2 (*Have the relationships*

A KII in the Western Region

PHOTO CREDIT: ENOCK TUMUHIMBISE

[13] The low response rate among traders in the Northern Region was simply caused by the lack of trader availability. The survey team was unable to locate numerous traders, and some traders who were located declined to participate.

between various market actors been sustained, and if so why, and if not why?). The interview questions for KIIs were based on research question #1: How *did this change spill over to affect non-recipient businesses?* The qualitative interviews responses were captured through the interviewer notes and recorded, which the Maarifa team later transcribed and translated into English. The transcripts were analyzed for emerging themes using Atlas.ti software.

DATA ANALYSIS AND REPORT WRITING

Data from the clustered surveys was formatted and analyzed using Stata (version 15) software. The research questions of interest guided the analysis. As previously referenced, analysis considers the survey design of the strata at the level of region, with standard errors clustered at the district level.[14] The analysis presents mean values and frequency calculations. In some cases, additional analysis in the form of the t-test statistics is used to comment on the statistical significance of findings when comparing the Northern and Western regions.

Qualitative data was collected and analyzed to supplement the finding of survey data. Basically, the qualitative data provides narratives on how the various value chain actors worked together to sustain the system established by CPM Activity including opportunities, challenges and achievements. In addition to this, the qualitative data was collected to understand the mechanism and process of how the spillover is occurring in near-by communities where the CPM was not implemented. Moreover, the qualitative data was analyzed to see how respondents used specific language to describe the impact that the CPM Activity had on the agricultural value chain. The result offered a narrative coding, which exhibits the language used by exporters, traders, village agents, and farmers to describe the content and context that informed their viewpoints of how the CPM impacted their lives.

STUDY LIMITATIONS

A major limitation of this evaluation is generalizing the findings. The sampling protocol, focusing on a non-random design for this evaluation, where we selected respondents based on convenience, limits the conclusions that can be extrapolated from the data. Mainly, no causal conclusions can be drawn from the data due to the sampled population's non-random nature in comparison to the overall population of agricultural actors in the value chain in Uganda. Our sample did not come from probabilistic sampling. While we attempted to select survey participants using a random sample from the list of program beneficiaries, such sampling was not feasible as most of the selected farmers and VAs were not available when we randomly selected them from the list. Our qualitative sample was also not selected randomly. Therefore, given both of these sampling practices, there is an increased likelihoods of sampling bias as well as a reduction in the chances of generalizable finds to other regions and value chains outside of the populations sampled for this evaluation.

As previously mentioned, this study was conducted from October 2020 to November 2020, during the COVID-19 pandemic. As a result, the original study plan was limited in the amount of in-person contact that could occur. Although safety protocols were enacted, the inability of Pulte staff to travel to the sites of the data collection to monitor the evaluation being conducted led to issues with the authors' abilities

[14] Pulte Institute (2020b). ERIE Uganda FTFFtF Design Document

to obtain first-hand accounts of the target value chains. The authors mitigated this limitation by requesting accounts of the value chains from survey monitors.

The key team members from Pulte wanted to visit Uganda to provide training to the enumerators and be present in the field for monitoring the data collection activities. Because of travel restrictions, we could not visit Uganda, train the enumerators, oversee the fieldwork, nor see the CPM Activity personally. To mitigate the impact that the lack of Pulte staff presence created, the team was in regular contact with the contracted quality control monitors, training them and monitoring the data output as it was being complied.

Another limitation, not related to the pandemic, was the bias of responses participants provided. The main issue is that the survey is dependent upon the respondents' ability to recall details of certain matters which occurred up to 3 years ago. As a result, respondents' answers might not accurately reflect past events. Nevertheless, recognition of such issues is important to acknowledge the inherent bias that exists within the methods used and the data collected. Moreover, it is important to stress that despite these biases the results still offer insights on how the CPM Activity functioned and its overall impact on the value chain since the closeout in 2018.

FINDINGS

DEMOGRAPHICS

Our findings start with presentation of general demographics of traders, village agents and farmers in our sample. Table 4 presents the age and gender of respondents by region.

TABLE 4: DEMOGRAPHICS BY REGION

SURVEY	REGION	FEMALES	MALES	AVERAGE AGE	AGE RANGE
Trader	Northern	4	10	47.1	30 - 66
	Western	3	21	50.0	31 - 86
Village Agent	Northern	12	51	42.7	24 -68
	Western	44	106	47.8	25 - 91
Farmer	Northern	30	40	41.2	20 - 87
	Western	53	109	49.0	24 - 85

TRADER DEMOGRAPHICS

As part of the survey used to evaluate the CPM Activity, responses from 38 traders were enumerated. For the trader population sampled, the mean age across regions was roughly equal with the west having a slightly older average. The self-reported biological sex of traders sampled demonstrates a skew in the population towards males in both regions. In relation to the dealings of crops, traders were diverse with 21 (55.3%) dealing in beans, 14 (36.84%) dealing in coffee, and 25 (65.8%) dealing in maize. Despite

traders dealing in multiple crops, there is still a substantial portion of traders who deal exclusively beans, coffee, or maize as compared to traders who deal in any combination of the three crops. In total 19 (50%) of traders dealt in only one of the three key crops.

The demographic differences, particularly the crop differences are explained in the regional variation that exists for each crop type. To start, for the Northern region 4 (28.6%) traders only deal in one crop, whereas 15 (62.5%) traders in the Western region deal in only one crop. This variation between specialized crop dealings among regions is unsurprising since it is similar to the findings from the village agent and farmer surveys.

VILLAGE AGENT DEMOGRAPHICS

For the village agent survey, a total of 213 VAs were interviewed as part of the evaluation process. The sample population consisted of respondents mean age was closer than the reported ages from traders. Moreover, the differences in self-reported biological sex were higher than those who responded to the farmer survey but lower than the group sampled for traders but still skewed towards males. In regard to the overall dealings of VAs, 110 (51.5%) dealt in maize, 132 (62%) dealt in beans, and 95 (44.6%) dealt in coffee. The number of VAs who solely dealt in one of the crops was 105 (49.3%) out of the total number of agents surveyed.

The regional differences seen in traders were also replicated in the data gathered on the VAs. In particular, the number of VAs who only dealt in one crop in the Northern region was 15 (23.8%), whereas the Western region has 90 (60%) of all VAs who deal in one of the three key crops.

FARMER DEMOGRAPHICS

Of the total 483 respondents surveyed, 232 were farmers. The respondents had the greatest difference in reported age across regions. The self-reported biological sex of respondents showed less difference in the Northern region compared to the Western region. Of the 232 farmer respondents, 106 (45.7%) cultivated maize, 126 (54.3%) cultivated beans, 156 (67.24%) cultivated coffee, and 137 (59.1%) cultivated two or three crops. Albeit the diversity of crops grown, there exists a substantial number of farmers who grow just one crop, with 95 (41%) farmers only planting beans, coffee, or maize.

The regions surveyed demonstrated noticeable differences in Ugandan farming practices. The sampled population demonstrates a clear difference in the diversity of crops cultivated in the regions. In the Northern region, 14 (16.9%) of all farms surveyed grew one of the three crops, whereas in the Western region, 81 (54.4%) of all farms surveyed grew one crop of the three key crops.

RESEARCH QUESTIONS AND FINDINGS

SPILLOVER EFFECT

RESEARCH QUESTION 1: HOW DID MARKET SYSTEM CHANGES FACILITATED BY CPM ACTIVITY SPILL OVER TO AFFECT NON-RECIPIENT BUSINESSES?

According to World Bank, one of the intended consequences of agricultural projects after a program ends is the spillover of its activities, with the intention that the activity and its impacts will continue past project completion.[15] People that were not targeted by the program might learn from the program and behave similarly as the people in program areas. There are difficulties in determining the tent, in terms of geographic coverage, and nature of the spillover effects for the CPM Activity. Our sample for determining spillover was small. Thus, the evidence is mostly anecdotal. It was not possible to draw a representative sample to understand the spillover effects for the CPM Activity as we had no idea where and how the spillover effect is happening including respondents' universe. Our aim was to understand whether the spillover is happening or not with a small sample, which was also feasible to conduct from budgetary perspective.

In order to elucidate the impacts of the spillover effects on the sampled population, we analyzed the quantitative and qualitative data to explore the changes that have occurred in the value chain since the conclusion of the CPM Activity. Our data is extracted from exporters, traders and village agents we interviewed and surveyed on the nature of the Activity since 2018.

We spoke with seven exporters who were early participants in CPM Activity. These exporters provided insights about how the effects of the CPM Activity spilled over through two routes— expanding the businesses outside of program areas and dealing with new traders and VAs. Five out of seven exporters were able to expand their business to new districts where they are adopting the CPM Activity model. They are also working with more VAs and traders compared to the time when the CPM Activity was there. The size of their business, in term of volume of produce and value, also increased. They attribute this change to CPM Activity. One exporter said:

> "It grew, of course Feed the Future helped but COVID disorganized everyone. The volume of the produce has increased, the market has also increased. We have also managed to increase on the crops on our value chain."
> —An exporter in Western Region

Other exporters noted that although an expansion of their business did not occur, they acknowledged that they are a bit better off. They attribute their ameliorated positions to Feed the Future. Exporters were given training on good storage practices, which proved a helpful practice for their businesses. They found that the number of traders in their network increased, but due to COVID exporting challenges increased since these traders are restricted at the border. When there were trade restrictions between two countries it was challenging for them to do business. To their relief when the lockdown was lifted, the market increased in its activity and

EXPORTER AND TRADER GEOGRAPHICAL SPILLOVER:

- Exporters report CPM Activity led to positive business practices.
- Exporters expanded their networks beyond national borders.
- Traders report spillover into districts not originally served under the CPM Activity

[15] Dillon, Bliznashka, and Olney (2020), p. 1

exporters were able to conduct more transactions with their cross-border partners.

In addition to interviewing CPM Activity exporters, we included 10 exporters who were not a part of CPM Activity to understand whether they heard about CPM, if they used any approach the CPM Activity uses in their businesses, and if the CPM Activity impacted their businesses. We also asked the non-CPM exporters what aspects of the CPM they like, and whether they have benefitted from the CPM program. Additionally, to inquire about potential the spillover of the CPM Activity, we ask non-CPM Activity exporters whether they have adopted any of the behaviors advocated by the CPM program and if so, how did they adopt them into their overall activities?

While a majority of these non-CPM Activity exporters heard about the CPM, very few of these exporters understood how the CPM Activity model works. Of those who have heard about the Activity and have used some of its approaches in their business, the CPM Activity positively impacted their business. For example, they learned how to engage VAs and expand the network in their businesses. Some indirect impacts of the CPM Activity exist, mainly for exporter businesses. The business boomed due to the new technology farmers were using, which produced lots of quality maize, beans, and coffee that exporters were now able to buy.

In analyzing the spillover effects quantitatively, we explored five facets of interest. First, we investigated how traders have assisted village agents/farmers in accessing production/market services outside of the CPM Activity. Second, we explored how traders assisted in providing information on prices, production loans, and other areas outside of the program. Third, we analyzed how village agents have assisted farmers through training or promoting good agricultural management practices outside of the program areas. Fourth, we studied how village agents assisted farmers in accessing loans and other financial support outside of the program area. Fifth, we examined whether the sales and revenue of crops have increased, decreased, or remained the same in the program areas since the end of the CPM Activity in 2018.

Types of services provided to farmers outside of CPM Activity area

Of the CPM Activity traders surveyed, a majority regularly worked with parties outside of the CPM Activity area. 32 (84.2%) of the traders reported that they worked with non-CPM Activity farmers. For farmers, traders offered a total of 12 services, which are as follows.

TABLE 5: TYPES OF SERVICES PROVIDED BY TRADERS TO FARMERS OUTSIDE OF CPM ACTIVITY AREAS	
TYPES OF SERVICES OFFERED	PERCENT
Agricultural Support (Good Practices)	63%
Market	60%
Cash Advances	34%
Access to Suppliers [i.e. networking]	29%
Training	18.4%
Loans	15.8%
Incentives for Using Services	13.2%
Quality Control Support	10.5%
Equipment for Agricultural Activities, promoting technology	5.3%
Assisting in Obtaining Labor Saving Equipment	2.6%
Providing Smartphone Support for Monitoring Market Information	2.6%
Other	2.6%

As Table 5 demonstrates, CPM traders offered new farmers, who were not originally part of the CPM Activity, a variety of activities. The most referenced areas of support that traders provided were related to market and good agricultural inputs. Conversely, traders offered the least amount of support in areas related to technology, be it the labor-saving equipment or smartphones for accessing market information. Thus, the majority of activities focused on supporting the cultivation of crops or the market activities, including the ability to finance crops transportation costs. The reasoning for such support lies, in part, on the dependency that traders have on crops. To clarify, since the traders are selling crops for profit, their interests are on the production of a good product, which is supported through improving agricultural practices. The resulting impact of traders' actions was the spillover of CPM practices to new participants. Thus, the activity shows signs of expansion beyond its original population.

Types of services provided to New Village Agents after the CPM Activity ended

CPM Activity traders also continued to expand their client base, working with parties after the CPM Activity ended. The main reason of expansion of their business is when they started getting more orders for quality produce from the exporters, the traders started to reach out to more VAs in and outside of CPM Activity areas. Of the 38 traders surveyed, 33 (86.8%) reported working with new village agents at the end of the CPM Activity. By region, of the 33 traders who worked with new village agents, 13 were Northern traders and 20 were Western traders. Five traders indicated they no longer worked with village agents after the CPM activity ended in 2018, one trader from the Northern region and four

traders from the Western region. Nevertheless, the majority of the traders sampled reported ongoing relationships with their village agent counterparts.

TABLE 6: TYPES OF SERVICES PROVIDED TO NEW VILLAGE AGENTS AFTER CPM ACTIVITY ENDED	
TYPES OF SERVICES OFFERED	PERCENT
Agricultural Support (Good Practices)	47.4%
Market	42.1%
Other	39.5%
Cash Advances	34.2%
Training	28.9%
Access to Suppliers [i.e. networking]	13.2%
Loans	13.2%
Incentives for Using Services	10.5%
Quality Control Support	10.5%
Providing Smartphone Support for Monitoring Market Information	5.3%
Equipment for Agricultural Activities, promoting technology	5.3%
Assisting in Obtaining Labor Saving Equipment	2.6%

As shown in Table 6, new VAs outside of the CPM Activity received the greatest amount of support for market and agricultural best practices from the CPM Activity traders after the CPM Activity ended in 2018. Yet, these percentages for the new VAs, when compared to new farmers outside the CPM Activity are lower (see Table 5). Moreover, except the similarities of agricultural support and market support being salient to both new farmers and new Vas, the importance of other activities offered to the VAs outside of the CPM Activity (39.5%) is much higher than that of non-CPM farmers (see Table 5; 2.6%). One possible explanation for this difference relates to the complexity of the trader-VA relationship. The farmers and traders' interests revolve around crops, their cultivation and sale. The VAs work in additional areas such as receiving training inputs that they can then pass on to farmers. Thus, a more diverse set of interactions involving transactions of resources between traders and VAs, which is required to ensure that VAs can provide services to farmers. The additional supports that the traders offered, which were not listed in the survey but noted by VAs when responding to the survey questions exemplify how the needs of VAs and farmers differ in certain respects. These differences are also present in areas where new VAs outside of the CPM Activity noted receiving the least amount of support such as using smartphones for market information and support in accessing labor saving equipment. Although, there is a greater level of access to most activities that the traders support for new VAs when compared to new farmers (as denoted by the gradual decrease in the percentages reported in Table 6 compared to the steeper decrease in the reported percentages in Table 5), the

overarching trend of favoring market and agricultural practices remains consistent across the populations that the traders serve.

Qualitative data also shed light on how traders expanded their business and served VAs and farmers in new areas. We include 28 traders in our interviews, 10 were non-CPM Activity traders, who were not a part of CPM Activity business model when the project was active.

We asked CPM Activity traders about business expansion with activities in new areas, increases in the volume of business, working with more VAs, and providing services to them. Over two-thirds of the CPM traders confirmed that they expanded their business outside of the original CPM Activity areas by opening new branches. One trader mentioned that he was able to expand his business outside of the CPM:

"Yes, it has expanded a little outside the CPM Activity program areas because we are also operating in parts of Kaberamaido district like in Alwa sub-county. This is our neighboring district. I guess we are trying to put our feet slowly in other districts starting with this one."
— A trader in Northern Region

A focus group discussion in the Western Region

PHOTO CREDIT: ENOCK TUMUHIMBISE

The expansion of businesses into new areas resulted in the number of reported VAs increasing as well. The VAs hold the key position in CPM Activity by working between the traders and farmers. This expansion also resulted in increased quantities of crops they purchased from farmers within networks. When traders cover new areas, the farmers benefit most. The farmers obtain support for the cultivation of key crops and reduce concerns regarding the sale of produce since they have a trader committed to purchasing their products. Moreover, some traders expanded their business when they found business partners in those areas. One trader proudly said:

"I applied the knowledge and skills we were trained in under Feed the Future/CPM Activity program which helped my business to grow. The number of village agents I work with has also increased from 20 to 25. With this increased number of village agents, growth is possible. I am also buying a little more produce than I used to."
—A trader in Western Region

The traders that expanded their business attribute their growth to CPM Activity. After training from Feed the Future CPM Activity and establishing a demonstration garden in the local community, the

traders said that they were able to convince many skeptical farmers to use new inputs. Previously, many farmers held negative perceptions about fertilizer and herbicides. The farmers believed that fertilizer and herbicides spoiled the soil, but after seeing results from the demonstration garden, they are keen to utilize farm inputs, including fertilizers. Farmers who did not participate CPM Activity are also using the new inputs.

However, not all traders were successful in expanding their businesses. For example, many traders mentioned that they lack enough capital to expand the business. In all KIIs and FGDs, access to capital was presented as a challenge for sustaining the CPM Activity model. One trader mentioned:

> "My business has not expanded to other areas because I don't have enough capital to expand to other areas. Maybe in the future when the business normalizes then we can think about expansion for now we are focusing on survival."
> —A trader in Northern Region

We also spoke with 10 non-CPM Activity traders, and the majority said they heard about the CPM Activity and tried to adopt some of the practices, e.g., working through a VA to promote the value chain in their businesses. They also said that their business is positively impacted by the CPM Activity. The post-harvest handling technologies like, maize shellers and cleaners that were brought on board because of the CPM Activity improved their grain quality. When new technology was introduced, the traders could offer quality produce products. The new technologies also increased capacity to do business with larger exporters that exported to regional markets in Sudan and Kenya. The quality of produce was the main reason for the expansion of traders' businesses.

The surveyed non-CPM Activity traders, who are cognizant of the CPM Activity model, describe a positive impact on their businesses. One non-CPM Activity trader shared his story this way:

> "It has helped me with the issue of quantity and quality. I no longer struggle with farmers over this; the village agent guides the farmers accordingly. Also, now I know something little about CPM Activity."
> —A trader in Northern Region

The anecdotal evidence from non-CPM Activity traders' interviews, provides insight into how the CPM Activity spilled over into the agricultural value chain. From expanding markets and training in inputs, to better crops being produced, non-CPM Activity traders have a mostly positive view of the CPM Activity. The crux of this spillover impact lies in the fact that CPM Activity trained farmers, traders, and village agents are not in a closed system— instead they are in an open system, where they interact with non-CPM Activity parties. Non-CPM Activity traders noticed positive results from farmers were CPM Activity trained. As a result, the spillover is twofold. First, the non-CPM traders are learning about the CPM Activity, therefore the CPM Activity has exceeded its original range. Second, the quality of the interactions between farmers and traders in general is improving because the farmers and traders are familiarized with the CPM Activity model, which helps create higher quality products.

Services provided by VAs to farmers outside of CPM Activity area

CPM Activity VAs reported working with new farmers at a rate of 90.1%, with 192 VAs out of the 213 agents surveyed reporting that they work with non-CPM Activity farmers. CPM Activity village agents offered non-CPM Activity farmers a total of 10 services.

TABLE 7: TYPES OF SERVICES PROVIDED TO NEW FARMERS BY VAS OUTSIDE OF CPM ACTIVITY AREAS

TYPES OF SERVICES OFFERED	PERCENT
Agricultural Support (Good Practices)	78.4%
Market Information	50.7%
Training	34.3%
Input Sale	22.5%
Loans	11.3%
Cash Advances	17.8%
Quality control	11.3%
Assisting in Obtaining Labor Saving Equipment	4.2%
Input Setup	3.3%
Providing Smartphone Support for Monitoring Market Information	2.8%

New Farmers were benefitted:

- A majority of village agents work with new farmers.
- Most support focused on market and agricultural practice activities.
- An overwhelming majority of village agents report playing a facilitating role for production and marketing of commodities.

Similar to the results of traders who supported new farmers and VAs, the type of support that VAs provided to new farmers also focused on the areas of market and agricultural practice services. Table 7 highlights how VAs' supported new farmers with the implementation of good agricultural practices that included land preparation, sowing, weeding, irrigating, disease-pest control and harvesting. The least referenced support offered by village agents to new farmers were smartphones for market information and VAs providing incentives to entice new farmers to use the CPM best practices. The resulting information demonstrates that VAs have the same trend of supporting access to market and good agricultural practices as compared to other support from the CPM Activity provided by the traders. For both traders and village agents, the emphasis on these interventions were pragmatic, since the Activity focused on aspects of the economics including input sales, loans, and cash advances, in the value chain and the improvement of crops.

Trends in Number of Farmers VAs worked with After CPM Activity Ended

When questioned on the trend of how many farmers the VAs work with after the completion of the CPM Activity, the overall result was that the trend is increasing.

TABLE 8: TRENDS IN CPM PARTICIPATION AMONG FARMERS AND VILLAGE AGENTS AFTER THE ACTIVITY ENDED		
TRENDS	NORTHERN REGION	WESTERN REGION
Increasing	53 (84.1%)	128 (85.3%)
Decreasing	7 (13.2%)	18 (12.0%)
No change	3 (5.7%)	3 (2.0%)
Unsure	0 (0.0%)	1 (0.7%)

As Table 8 above demonstrates, the majority of the 213 VAs surveyed reported an increase in the trend of farmer participation since 2018. Although, some village agents in the Western region reported decreases in the trend of how many farmers they have worked with since 2018. Overall, the trends reported from the village agents surveyed demonstrate that the CPM Activity continued to grow after its original end date in 2018.

The qualitative data provides more insights about these relationships. VAs are the key players in the CPM Activity business model and they played central roles in expanding the CPM Activity model outside of program areas. We specifically asked, what help have they provided to train and/or promote the use of good agricultural management practices to farmers outside of the program areas? As a result, the need to understand how new farmers are supported would elucidate how VAs provided support in good agricultural management practices.

During the focus group discussions, many VAs pointed out that they were able to serve more farmers than the ones originally engaged with in the CPM Activity. This ability to serve new farmers led to VAs working with more farmers who were not a part of the CPM Activity. Once they started working with the farmers, their capacity to work with more farmers, in terms of investment, revenue, and technology transfer, has increased. As a result, they were able to serve more farmers. According to one VA, new farmers adopting CPM Activity promoted technologies, like post-harvest technologies to handle produce. This practice alone helped to improve their product quality, which was not the case before they embraced it. These farmers personally come to VAs to get help and the VAs are helping them.

Farmers who were not a part of CPM Activity are attracted to CPM Activity now:

- Farmers reported a consistent rate of new fellow farmers joining the CPM Activity after it ended in 2018.
- Farmers state increased organization amongst other farmers due to the CPM Activity.
- The accessibility of input demonstrations attracted non-CPM Activity farmers to the program.

These VAs also assisted farmers to access production loans outside of program areas. Some VAs linked farmers with financial institutions and some provided them with personal loans. Sometimes the traders also invested in farmers linked to a VA. The farmers linked with VAs considered to be more successful. The traders expected to recuperate the investment of their loan when farmers harvested their crop.

Many farmers have adopted and used the methods taught by the CPM Activity. Most of the VAs mentioned that they know somebody who was not a part of the CPM Activity but adopted CPM Activity practices. This suggests that spillover is happening. For example, the coffee value chain was benefitting from technology to dry coffee beans that was seen by many farmers who then wanted to apply the new techniques in their businesses. As a result, as VAs said, the farmers approach VAs to learn the techniques.

The spillover effect was also noted during FGDs with farmers. There could be two possible routes where the spillover effect could have happened. First, farmers previously not participating in the CPM program areas are now participating in the structures and activities that emerged from the CPM Activity after seeing the benefits of the CPM model. Second, farmers who are residing outside of the CPM areas are joining the CPM Activity after seeing benefits of the CPM business model. The FGD participants' input was invaluable in understanding how fellow farmers from these two groups are now involved in CPM promoted activities.

Over fifty percent of FGD participants said that they know somebody who adopted the CPM activities after the CPM ended in 2018. In most cases farmers who did not participating in the CPM Activity observed new crop production technology introduced in the villages. The farmers' interest in the technology led to them joining the group. Many demonstration plots were established in program areas. The demonstration plots set up by the program was instrumental in attracting people's attention. The sites provided the "evidence" that the investment and proper application of genuine inputs increases crop productivity. A FGD participant, who recently joined CPM activities, confirmed that he is benefitted from the CPM model after joining it:

> "In my case, I am the live example. I never used to be in this group. I used to grow my crops and they do not do well, so I asked to join this group and then I received trainings which were totally contrary to the knowledge I used to have. And these trainings have helped me to produce better yields."
> —A FGD participant in Northern Region

These phenomena indicate that the spillover is happening, which will not only help to expand the benefits of improved market access and adoption of improved agricultural practices, but also sustain the activities. Most of the FGD participants noted that at the beginning, their groups were smaller. As non-beneficiary farmers joined, their group size grew. They said new farmers benefitted from the program by using new technology in farming, obtaining advice on how to improve agricultural practices, and in some cases getting access to production loans. Ultimately, participating in activities promoted by CPM ameliorates participants access to improved technologies and markets which in turn improves market system competitiveness.

SUSTAINABLE IMPACTS

RESEARCH QUESTION 2: HAVE THE RELATIONSHIPS THE CPM ACTIVITY FACILITATED BETWEEN VARIOUS MARKET ACTORS BEEN SUSTAINED? IF SO, WHY? IF NOT, WHY NOT?

ERIE's evaluation examined to what extent the CPM Activity created sustainable change among participating businesses and beneficiary farmers by analyzing the performance and facilitated market system changes two years after the Activity's close-out. Our analysis focused on whether the relationships between the traders, VAs, and farmers are still intact and if they continue to work together. Further, after analyzing qualitative data, we explain the types of relationships between respondents and the reasons why participants in the CPM Activity maintained their relationships.

Type of services provide to VAs by traders and their perceived quality of services

For the 11 services that traders who participated in the CPM activity provide, there is a clear distinction in the trader's scope of improvement. For the traders that participated in the activity, their willingness to invest in the services is likely, except for some traders who had negative responses regarding financial services such as cash advances and loans. Specifically, the negative responses for cash advances was slightly higher than the non-positive responses for loans.

Overall, the number of responses related to the future investments from traders is low, with a majority of traders surveyed not providing information on their plans for future engagement. One reason for the low response rate might be due to the end of the program limiting traders' interest in providing future investments in CPM activities. Another reason is availability of liquid fund to invest. For traders who provided their investment preferences, however, their likelihood of investing in the CPM activities is reported as being likely overall for all services.

TABLE 9: TRADER LIKELIHOOD OF FUTURE INVESTMENT IN INPUTS

TYPES OF SERVICES	LIKELY TO INVEST		NOT LIKELY TO INVEST	
	NORTHERN	WESTERN	NORTHERN	WESTERN
1. Willingness to invest to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	2 (14.3%)	11 (45.8%)	0.0%	0.0%
2. Willingness to invest to access production loans	2 (14.3%)	1 (4.2%)	1 (7.1%)	0.0%
3. Willingness to invest in a cash advance to buy produce	2 (14.3%)	5 (20.8%)	0.0%	3 (12.5%)
4. Willingness to invest in incentives for using inputs	2 (14.3%)	2 (8.3%)	0.0%	0.0%
5. Willingness to invest in access to market information that enables delivery of production & market services to farmers	5 (35.7%)	9 (37.5%)	0.0%	0.0%
6. Willingness to invest in acquisition of quality control equipment (such as moisture meter, weighing scale, etc.) that to ensure quality for produce	0.0%	4 (16.7%)	0.0%	0.0%

7. Willingness to invest in access to funds to acquire labor saving technologies or equipment	1 (7.1%)	0.0%	0.0%	0.0%
8. Willingness to invest in promoting technologies	1 (7.1%)	1 (8.3%)	0.0%	0.0%
9. Willingness to invest to Trained /select individuals to attend trainings that strengthened capacity to transfer knowledge and skills to farmers	2 (14.3%)	9 (37.5%)	0.0%	0.0%
10. Willingness to invest in acquisition of a mobile phone used to promote market information access to farmers	1 (7.1%)	0.0%	0.0%	0.0%
11. Willingness to invest in connecting individuals with suppliers (networking)	0.0%	4 (16.7%)	0.0%	0.0%

N = 38

Table 9 above exhibits the responses from traders regarding their likelihood of continued investment in the CPM Activity over all traders surveyed. For the first two columns after the types of services, the likely to invest columns are a combination of the reported values of very likely to invest and likely to invest in an input or service. Similarly, the last two columns of the table are the percentages of respondents who reported being neutral, unlikely, or very unlikely to invest in inputs or services in the future. As the table shows, a majority of respondents who participated in the CPM Activity reported being likely to invest in the services and inputs that they provided. The areas of agricultural practices, market information, and training provided the highest responses whereas using labor saving technologies and smartphones had the lowest responses. Additionally, for a small subset of the 38 traders surveyed, financial services such as loans and cash advances were reported as having minimal repeat investment from respondents. Regionally, Western traders had a lower reported likelihood of being willing to invest in cash advances as compared to Northern traders. However, overall, for all other services and inputs Western traders had higher likelihood rates as compared to northern traders.

The regional differences are expected, due to the sampling of the population, more of the sampled traders came from the Western region. Additionally, the higher likelihood of traders to invest in agricultural practice, market, and training supports is logical. Since the traders are on the higher level of the value chain, they will need to focus on all aspects of the production process to ensure a quality product is being produced. The emphasis on training is also unsurprising since the traders are a source of inputs and services for both VAs and farmers. As a result, training is a quintessential element of the value chain for traders, since properly trained VAs and farmers improve product quality.

Communication and quality of relationship

The CPM Activity traders not only provide an array of services to VAs, but also have ongoing partnerships with them, providing VAs with support in agricultural or market services. Overall, traders offer a total of 11 different types of services to VAs. The majority of CPM Activity traders did not provide information on the frequency with which they engaged in a particular

Trader Investments in CPM Activity:

- A majority of traders involved with inputs report being likely to continue investing in CPM Activity.
- Agricultural practices, market support, and cash advances had the highest frequencies per year.

activity. For the 11 services referenced, save for agricultural practices, market support and cash advances made up the highest response rates. Most other services were below 15 percent across each region.

TABLE 10: FREQUENCY OF SERVICES PROVIDED BY TRADERS TO VAs		
TYPES OF SERVICES	MEAN OF INTERACTIONS 1 TO 20 TIMES PER YEAR	
	NORTHERN	WESTERN
1. Assisted me to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	2.25	4.36
2. Assisted me to access production loans	1.5	1
3. Provided me with a cash advance to buy produce	1.33	3.4
4. Provided incentives for using inputs	2	6.5
5. Helped me to access market information that enabled me to deliver production & market services to farmers	3.71	6.44
6. Helped me acquire quality control equipment (such as moisture meter, weighing scale, etc.) that I use to ensure quality for produce I buy	0	3
7. Helped me access funds to acquire labor saving technologies or equipment*	2	0
8. Probability of promoting technologies	2	2
9. Trained /selected me to attend trainings that strengthened my capacity to transfer knowledge and skills to farmers	2.5	3.44
10. Assisted me to acquire a mobile phone that I use to promote market information access to farmers	2	0
11. Connecting individuals with suppliers (networking)	2	5.75

Significance level: *P ≤ 0.05 **P≤ 0.01 ***P≤0.001 N = 38

As Table 10 demonstrates, the mean of interactions is higher on average for Western traders as compared to Northern traders. The activities with the lowest frequencies were related to various types of technology: labor-saving technology and smartphone usage to obtain market information. One possible explanation for the low level of support for technological inputs may be the high cost of entry for such services. Additionally, there is limited infrastructure for certain technologies, e.g., cellphones, which would also make them less likely to be offered by traders as possible inputs to ameliorate the target value chains.

Although there is a low frequency reported for a majority of services that traders offer VAs, a majority of traders did report on the quality of their relationship with the VAs and the issues that arose. Table 11 provides an overview of the regional differences in the challenges that traders face working with VAs.

TABLE 11: CHALLENGES TRADERS FACED SERVING VILLAGE AGENTS

CHALLENGE	NORTHERN REGION	WESTERN REGION
Commodity Price	11 (78.6%)	13 (56.5%)
Transportation	9 (62.3%)	13 (56.5%)
Quality/Quantity Control	10 (71.4%)	19 (82.6%)
Other	11 (78.6%)	6 (42.9%)

N = 38

A majority of traders (97.4%) reported at least one challenge that they faced with VAs. When surveyed on challenges related to pricing, transportation, and the quality/quantity of crops provided, traders noted the greatest challenge being the quality and quantity issues with crops. A total of 76.3% of traders mentioned that crop quality and quantity challenges impacted their relationship with village agents. Similarly, 63.2% of traders mentioned commodity pricing challenges that they faced with village agents. Transportation issues were the least problematic, with 57.9% of traders mentioning transportation challenges as an issue that impacted their relationship with village agents. Despite the relational challenges, VAs who participated in activities did report a willingness to continue to invest in services.

Scope of improvement in the services provided

Given the frequency of services that traders provide; the challenges that they faced with pricing, quality control, and transportation; and their generally low incentives, it is apparent that traders surveyed were not satisfied with their engagement in certain CPM Activity services. In particular, the financial interactions that they were having with VAs were the point of most contention. However, despite some traders expressing a low willingness to invest in certain services, 81.8% of the services were described as likely investments for traders in the future. More importantly, even though financial services did have a few negative results, the majority of traders who provided such services still reported being likely to invest in the

Main challenges for traders from VAs include:

- Pricing.
- Transportation.
- Quality and quantity of products.

provision of financial services to farmers. The willingness among traders to invest in services demonstrates the potential sustainability of CPM Activity, since a majority of the services have continued longevity if traders continue to invest in them.

The scope of investment in the services provided are also supported through the quantity of VAs that traders served during the last season. In particular, the number of VAs supported varied by traders. Some traders reported that they supported at least one VA last season and others said they supported up to 100 VAs with certain services. As a result, the scope of improvement for services traders offer suggests a substantial amount of VAs who received support from the traders. For services such as, training on good agricultural practice, market services, and cash advances, traders indicated that they supported a large number of VAs. The continued relationships for traders with VAs despite the challenges they reported, is possibly the result of the positive effects of traders' willingness to invest on the CPM Activity for the targeted value chains as a whole, or this could otherwise be a result of the market system in these regions of Uganda. Positive effect of the willingness to invest. As for some probable causes of the willingness to invest the longevity of the relationships could be a byproduct of investment. VAs see the impact of trader's investing in CPM established activities and continue to work with them. Or it could be that the market systems and the dependency that exists between traders and VAs is what contributes to a continued relationship. Moreover, traders continuously look for quality products which they can get by working with the VAs. This is the driving force for their continued relationships.

Qualitative data provides more insight on this relationship. The evaluation team collected qualitative data on whether the CPM Activity facilitated relationships, as well as whether client-oriented business development services from CPM Activity assisted, traders, exporters, village agents, and farmers. Our evaluation examined if the value chain actors are still following the model which seeks to increase farmers' access to and use of high-quality inputs while improving farmers' access to and use of production support services from VAs and traders. Concurrently, our evaluation examines if the farmers are still using post-harvest handling practices for the quality of produce. The continued longevity of the post-harvest handling practices would strengthen the vertical relationships between intermediaries and farmers.

We specifically studied the relationships between the different market actors who were targeted by the CPM Activity. This included village agents (VAs), traders, and farmers. We analyze this to understand which relationships were sustained, and identify the reasons behind these sustained relationships.

CPM interventions in the bean, coffee, and maize value chains aimed to improve smallholder farmer productivity and post-harvest handling through increased access to affordable, genuine (quality) inputs (including improved seed varieties); new production and post-harvest handling services and technologies (including climate-smart technologies); and improved storage practices. The role of traders is crucial for sustaining the value chain. All the traders we spoke with confirmed that they are working with VAs to promote various practices and services across value chains that CPM Activity supported. In most of the cases traders mobilized VAs who provided direct services to farmers, including guidance on how to grow beans, coffee, and maize. The VAs also taught farmers agronomic practices of crops, from planting, weeding, mulching, pruning (in case of coffee), spraying and harvesting. In some cases, they also provided short-term loans to farmers for buying various types of inputs. This helps produce quality products. The traders also buy the products from farmers via VAs.

Some traders reported that they have a team of people who inspect farmers' gardens, and analyze the crops, noting challenges and suggesting if it requires pruning, spraying depending on what disease has attacked the crop. They tell farmers what is needed to address the challenges that they face. For the farmers who have huge coffee plantations, for example, traders arrange to have the fields sprayed and pruned to make the coffee less susceptible to diseases. Farmers are charged some money (around 300 UGX (about .10 USD) per plant) for spraying. In general, the inputs are at the cost of the farmers.

Most of the traders who we spoke to mentioned that they provide a variety of support to VAs and farmers, which help to promote value chain. Services include offering production loans, and training farmers. One trader in the Western region mentioned:

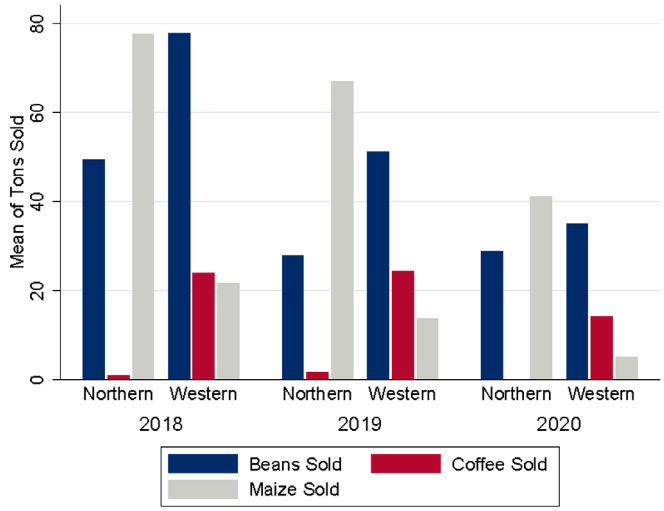
> "Yes, we still work together. For example, we can advance a certain amount of money to VAs that buy from the small holder farmers. For the sake of the farmers, we offer them training and it helps them to always contact agents in case there is a pest or disease attacking the crop which helps with the strengthening of the relationship. The farmers are then advised on what pesticide or any other input to use."
>
> —A trader in Western Region

All the traders confirmed that the relationships exist between all the actors: VAs, farmers, traders and exporters are working as planned.

Trends in sales and revenues after 2018

One aspect of the CPM Activity, which was critical to the Activity and its sustainability over time, is the enhancement of market factors, such as supporting the quality and quantity of crops sold, for all participants. As a result, the ex-post evaluation explored the sales and revenue of traders and village agents since the end of the CPM Activity in 2018, through surveys asking questions on the tonnage and revenue earned per year.

Figure 1: Traders' Crop Tonnage per Year by Region



As Figure 1 demonstrates, there is a general decreasing trend in relation to the tons sold when comparing 2018 to subsequent years. This general trend is concerning regarding the sustainability of the CPM since it appears that there is a general decrease in crop yields. However, the general decrease is not universal as denoted by differences in crop market dynamics across regions. For example, Western traders sold more tons of coffee than Northern traders. However, the Northern traders surveyed sold more beans and less maize when compared with Western traders. The decrease in trends across all

crops sold for the year 2020 can be interpreted as a result of the COVID pandemic and its impact on trade. Several secondary sources discuss COVID's impact on the agricultural sector in Uganda.[16] During the pandemic, the World Bank noted that in Uganda there existed a risk of harm to agriculture-based economies in the rural regions of Uganda.[17] Similarly, the Famine Early Warning System Network (FEWS NET), noted that there were below normal harvests in Uganda during the pandemic, while stressing that COVID based restrictions would only exacerbate the problem.[18] Nevertheless, it is difficult to assume a causal relationship between the drop in tons sold and the pandemic without further study. In the case of the drop in crops sold in the year 2019, it is possible that another factor was the end of the CPM Activity. The completion of the Activity could have impacted sales, since its end might have created a gap in the overall value-chain. This is possible since the CPM Activity was reported as having a strong impact on the target value chains.

Nationally, the crop production in Uganda has increased in 2019. FEWS NET reports that there was overall 7 percent increment in maize production in Uganda in 2019 compared to previous year[19]. The Food and Agriculture Organization (FAO) reports that the year 2019 received abundance rains throughout Uganda so the drought does not appear to be a factor for reduction in crop production[20].

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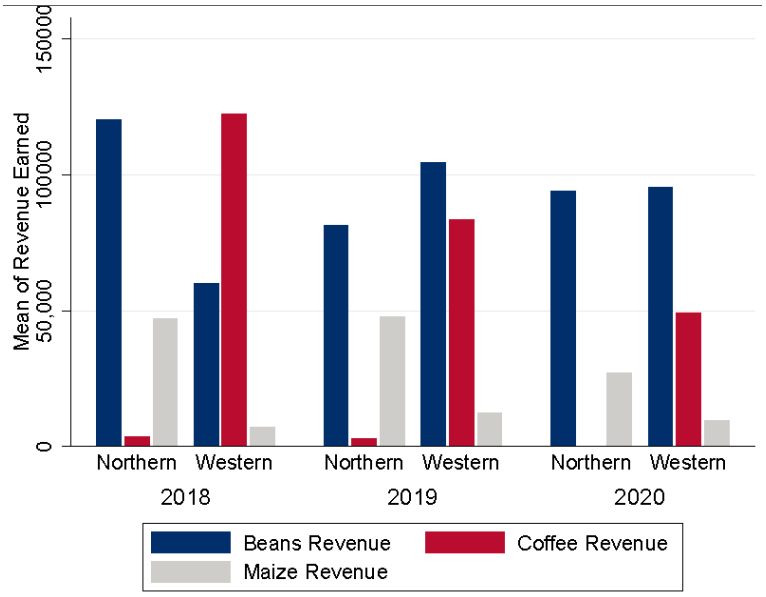
16 Several sources are discussed in the proceeding sentence on the impact of COVID and the agricultural sector of Uganda. One regularly used survey from the World Bank is the Living Standards Measurement Study. The study has a data collection period from 2009 to 2020. However, for the 2019-2020 collection period, no data is currently available. Given this limitation and the only available data discussing the 2017-2018 season, the data does not provide enough information on COVID due to the available information predating the pandemic. (see https://www.worldbank.org/en/programs/lsms/initiatives/lsms-ISA#8)
17 World Bank (2021) Monitoring COVID-19 Impacts on Households in Uganda: Findings from the First Round of the High-Frequency Phone Survey (English)
18 USAID (2021) https://fews.net/east-africa/uganda
19 FEWS NET (2020): https://reliefweb.int/sites/reliefweb.int/files/resources/East%20Africa%20Maize%20and%20Market%20Supply%20Outlook_FINAL.pdf

20 FAO report: http://www.fao.org/giews/countrybrief/country/UGA/pdf_archive/UGA_Archive.pdf FAO report: http://www.fao.org/giews/countrybrief/country.jsp?code=UGA&lang=en

Figure 2: Traders' Crop Revenue Earned per Year by Region



When comparing crop revenues for traders, the sustainability of the market becomes more apparent. As Figure 2 demonstrates, bean revenue is high across all regions and years, outperforming every crop studied for every year, except for coffee in 2018. The remaining results in Figure 2 demonstrate a decrease in some areas but an increase in others. To clarify, 2019 was a weak year for bean sales relative to 2018, but traders reported an increase in bean sales for the Northern region in 2020. These trends also seem to have been impacted by the COVID pandemic, albeit to a lesser degree for certain crops. Beans appear to the least impacted crop in the region whereas maize and coffee exhibit signs of decrease corresponding the year 2020, at a minimum. These differences can be assumed to be a result of the pandemic or other macroeconomic factors, yet the resilience in bean revenue is not a clear, since the revenue earned appears to be stable across years and regions save the revenue's reported in the Western region in 2018 and in the Northern region in 2019. One possible reason for the stability of bean revenue might be due to its importance to the general diet of individuals in the region.

Types and quality of support provided to VAs by traders

VAs occupy the "middle" position in the CPM Model, resulting in their interaction with both traders and farmers. Given this position, VAs offer a unique perspective on the impacts of the CPM Activity on the target value chain. From being supported by traders to supporting farmers in a myriad of ways, the VAs are the fulcrum of the CPM Activity. As a result, of their positions, the current section provides a discussion of VAs views on the services they received from traders and the services they provided to farmers.

Village Agent Activity and Support:

- Village agents mentioned that a majority of the support received was either focused on agricultural practices or markets.
- The most frequent services traders provided to village agents focused on input support or sale.

VAs were surveyed on the frequency of interactions that that they had with traders during the last 12 months. The number of recorded interactions varied for each activity, with a minimum of 1 to a maximum of 100 for certain services. Despite the wide range that exists, the majority of interactions that village agents have regarding a particular service that they received are skewed towards the lower end of the distribution.

TABLE 12: FREQUENCY OF SERVICES RECEIVED BY VILLAGE AGENTS FROM TRADERS			
TYPES OF SERVICES	MEAN OF INTERACTIONS		DIFFERENCE IN MEANS
	NORTHERN	WESTERN	
1. Assisted me to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	3.71	3.52	0.19
2. Assisted me to access production loans	2.57	3.14	0.57
3. Provided me with a cash advance to buy produce	2.74	1.94	0.8
4. Provided support setting up agro inputs	1	7.38	6.38
5. Helped me to access market information that enabled me to deliver production & market services to farmers	3.12	6.27	3.15**
6. Helped me acquire quality control equipment (such as moisture meter, weighing scale, etc.) that I use to ensure quality for produce I buy	1.5	2.91	1.41
7. Helped me access funds to acquire labor saving technologies or equipment*	1.75	4.7	2.95
8. Assistance with sale of inputs	2.73	5.72	2.99
9. Trained /selected me to attend trainings that strengthened my capacity to transfer knowledge and skills to farmers	4.10	3.70	0.4
10. Assisted me to acquire a mobile phone that I use to promote market information access to farmers	0	3.33	3.33

Significance level: *P ≤ 0.05 **P≤ 0.01 ***P≤0.001

As the results in Table 12 show, the number of times village agents reported receiving support from traders during the last season was higher than the reported support provided by the traders sampled. As with traders, the activities that VA's most frequently provides services on include agricultural practices, market activities, and cash advances. The most significant of the differences in the type of service being for market services. Similar to the reports from traders, the lowest frequencies were for services related to equipment technology, mainly labor-saving equipment and smartphones. Unlike traders, village agents reported that activities around inputs, both selling and supporting them are the

highest frequency events for the year. The high averages of these input-focused services are not surprising since the village agents are the intermediaries who provide the inputs to farmers.

The amount of communication among traders and VAs was also informed by two relational factors between the two parties: the status and duration of their relationships. In the case of the former, a majority of VAs report that the trader who they work with is not a relative, 180 (84.5%). Moreover, of the VAs surveyed, 189 (89.2%), a majority stated that they only worked under their current trader for less than one year. Particularly telling is the relative recentness of the interactions between VAs and traders, coupled with the modest number of interactions regarding particular services that traders offer. The duration of these relationships does not mirror the quality relationships VAs have with farmers.

Types of services VAs provide to the farmers

In addition to receiving assistance with services, village agents are also a source of assistance for farmers, supporting them in their needs. Village agents were surveyed on 10 CPM activities that they could offer farmers.

TABLE 13: NUMBER OF TIMES VILLAGE AGENTS PROVIDE SERVICES TO FARMERS OVER A 12-MONTH PERIOD			
TYPES OF SERVICES	MEAN OF INTERACTIONS		DIFFERENCE IN MEANS
	NORTHERN	WESTERN	
1. Assisted to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	3.87	6.84	2.97
2. Assisted to access production loans	1.75	2.93	1.18
3. Provided with a cash advance to buy produce	2.19	3.82	1.63
4. Provided support setting up agro inputs	2.4	1.5	0.9
5. Helped to access market information that enabled me to deliver production & market services to farmers	3.48	9.00	5.52**
6. Helped to acquire quality control equipment (such as moisture meter, weighing scale, etc.) that I use to ensure quality for produce I buy	2.6	2.28	0.32
7. Helped to access funds to acquire labor saving technologies or equipment*	2.33	25.6	23.27
8. Assistance with sale of inputs	2.32	7.62	5.3
9. Trained /selected to attend trainings that strengthened my capacity to transfer knowledge and skills to farmers	3.72	7.66	3.94
10. Assisted to acquire a mobile phone that I use to promote market information access to farmers	2	1.67	0.33

Significance level: *P ≤ 0.05 **P≤ 0.01 ***P≤0.001 N=213

As Table 13 shows, village agents describe providing training on good agricultural practices, and access to market information as the most frequent activities offered to farmers. For the other activities, the majority of these interactions are well under four times per year for most services. Moreover, the difference in means is a result of the response from the Western region's village agents. Given this within our sample, it is clear that Western VAs are more likely than Northern VAs to offer market information services. The reason for such a difference could be associated with the fact that, as

mentioned in the design document, in Western region they mostly deal with coffee which requires more market information than maize and beans. Thus, the possibility of provision of market support is higher.

Support to access production loans and inputs

VAs continuously supported farmers in multiple ways, but areas of particular interest are loans and input provision. For loans, a total of 37 (17.4%) village agents were recorded providing loans to farmers last season. Regionally most village agents providing loans were located in the Western region of the country, with 78.4% of village agents who offered loans residing in the West. Conversely, the remaining 21.6% of village agents who provided loans resided in the Northern region. The Western region is a center for coffee value chains. Thus, the farmers in Western region need more capital for producing coffee compared to maize and beans. The cost of paying back in-kind agricultural inputs after harvest is compounded by a reluctance of VAs to provide loans to VAs.

For inputs, village agents have two options for providing support, through the sale or the setup of services and practices for farmers. In the case of sales, a total of 72 (33.8%) of village agents offered support of which 47 (65.3%) from the Western region of the country and 25 (34.7%) from the Northern region. For the assistance in setting up inputs, relatively few village agents provided support to farmers. Only 7 (3.3%) village agents reported offering support in the setup of agricultural inputs. Of these village agents, a majority were from the Northern region, with 5 (71.4%) village agents offering the support whereas only 2 (28.6%) Western VAs offered similar support.

Ultimately, for our sample, it appears that VAs are more likely to provide access to inputs instead of financial support. One reason for this is that financial support requires capital up front and has a greater risk of loss. However, the activities related to input support, in both sale and setup, does not come with the inherent risk of financial loss for the VAs.

Quality of relationship and satisfaction level

Village agents discussed their satisfaction with traders the 10 services referenced in the survey using a scale of 1 to 5, with 1 being very dissatisfied and 5 being very satisfied. The majority of village agents who engaged in the 10 services of interest recorded neutral levels of satisfaction.

TABLE 14: VILLAGE AGENTS' MEAN SATISFACTION RATES PER ACTIVITY			
TYPES OF SERVICES	MEAN OF INTERACTIONS		DIFFERENCE IN MEANS
	NORTHERN	WESTERN	
1. Assisted me to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	4.18	3.96	0.22
2. Assisted me to access production loans	3.08	2.75	0.33
3. Provided me with a cash advance to buy produce	3.26	3.02	0.24
4. Provided support setting up agro inputs	2.33	2	0.33
5. Helped me to access market information that enabled me to deliver production & market services to farmers	4.11	4	0.11
6. Helped me acquire quality control equipment (such as moisture meter, weighing scale, etc.) that I use to ensure quality for produce I buy	4.4	3.55	0.85
7. Helped me access funds to acquire labor saving technologies or equipment	3.25	2.4	0.85
8. Assistance with sale of inputs	3.2	3.03	0.17
9. Trained /selected me to attend trainings that strengthened my capacity to transfer knowledge and skills to farmers	3.89	3.83	0.06
10. Assisted me to acquire a mobile phone that I use to promote market information access to farmers	0	2	2

Significance level: *P ≤ 0.05 **P≤ 0.01 ***P≤0.001

As Table 14 shows, for agricultural practices and market information the mean response for the level of satisfaction village agents felt was positive. For these services, village agents reported a mean satisfaction level between satisfied and neutral with Northern VAs having higher satisfaction rates than Western VAs for nearly all services. Additionally, for input setups and phone support, the village agents were dissatisfied. When taking into account the overall satisfaction level of village agents within the CPM Activity, the mean satisfaction score is 3.13. That is a neutral score. As previously noted, the activities

with the highest salience to the CPM Activity, meaning agricultural practice and market support have the highest satisfaction ratings for any input.

The qualitative data provides additional insights about the work of VAs. The VAs play the central role in CPM Activity model as they sell inputs; conduct demonstrations with input suppliers to create demand; offer post-harvest and processing services; purchase produce through cash, mobile money, or bank transfer; bulk and transport produce; facilitate credit; and provide ongoing extension and quality control advice. The VAs provide a variety of services for good agricultural management practices to farmers. VAs are continuously conducting needs assessments with farmers, consolidating orders, and conducting bulk procurement with partial payments to suppliers using mobile money. Agents are regularly in touch with farmers, ensuring timely delivery.

Village Agent Capacity in Value Chains:

- Village Agents are a primary edifier for farmers on CPM Activity inputs.
- Village Agents report holding roles that transition across market and agricultural portions of the value chains.

The VAs services are not limited to providing technological knowledge, but also showing the practices. VAs reported that they taught farmers improved crop production practices and how to harvest. They also teach farmers about financial planning so that the farmers can use own saving to invest in production . A VA said:

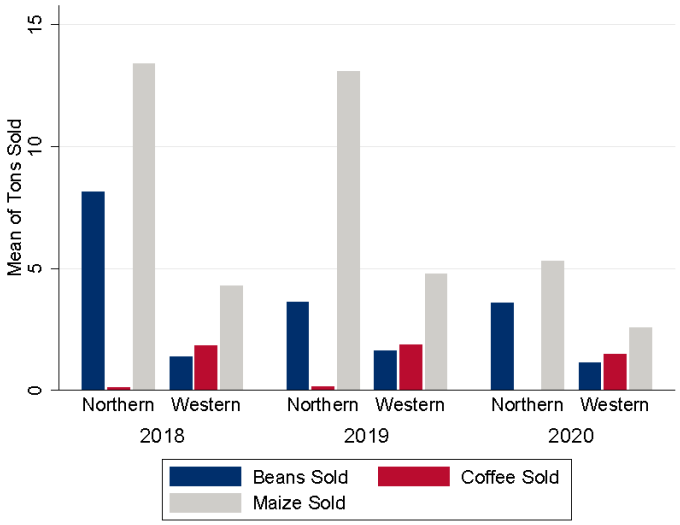
> "We teach them from the beginning for example when one wants to plant beans, how they can plant in time, so that the season does not leave them behind because that also has negative effects. We also teach them how to sort seeds for planting, spacing while planting, how they can apply fertilizer, how they will weed."
> —A VA in Western Region

Most of the VAs in the FGDs mentioned that they mostly teach farmers about post-harvest handling. They even lend them tarpaulins, so that farmers do not dry coffee beans on the ground. This is to help improve product quality. In addition to providing technical support, the process of learning from someone means that one is drawing motivation from VAs or other trainers The VAs are a source of motivation to the farmers when they provide them with production loans. This motivates production in the value chain through addressing one of the major barriers to smallholder farmer productivity: financial limitations. In short, financial exclusion is one of the biggest barriers to smallholder farmer productivity. Farmers in rural areas already face challenges in accessing affordable production and marketing services, and financial exclusion only compounds this issue. Thus, the importance of continued financial support in these rural areas offers smallholder farmers an opportunity to strengthen their productivity.

Overall trends of sales and revenues of crops by VAs

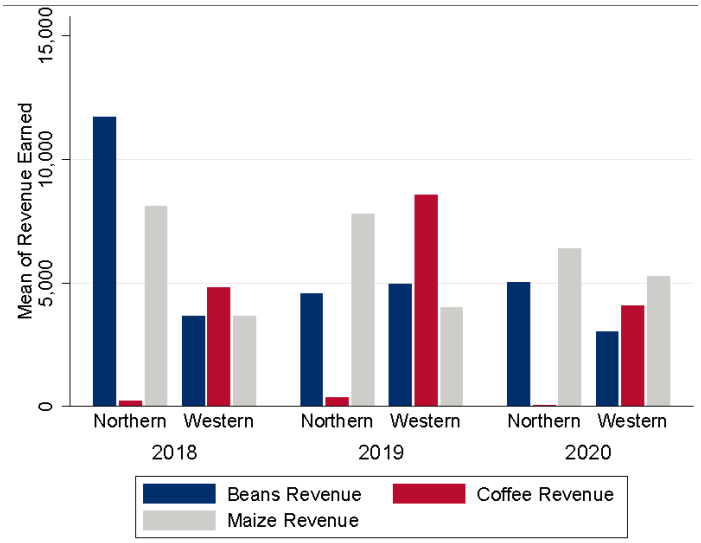
The investments that VAs make in their relationships with farmers implicitly informs their sales of products. The proceeding analysis shows the quantities of produce sold and revenue earned by VAs after the CPM Activity closeout in 2018.

Figure 3: Village Agents' Crop Tonnage per Year by Region



As shown in Figure 3, there is a general decreasing trend in quantities of produce sold from 2018 to 2020. Additionally, Western VAs sold more tons of coffee than Northern VAs. However, the Northern village agents surveyed sold more beans and less maize than Western village agents. The decreases in tonnage sold per year for VAs between 2018 and 2020, maybe due the impact of COVID pandemic. Moreover, the initial drops in 2019 as compared to 2018 might also have been because the end of the CPM Activity created a small vacuum in the value chain.

Figure 4: Village Agents' Crop Revenue Earned per Year by Region



When comparing crop revenues for village agents, Figure 4 demonstrates a fluctuation in reported revenues across all regions and years. This oscillation in revenue is in part impacted by reported market shocks that VAs reported as an influencing factor in their activities. For village agents in the Northern region beans outperformed all other crops in 2018, but in 2019 and 2020 maize revenues were higher. For the Western region coffee outperforms every crop studied and for every year. The results in Figure 4 demonstrate a decrease in some areas and stagnation in others. To clarify, 2019 and 2020 bean sales in the Western region, although weaker than bean sales relative to 2018, were closely related with the reported revenue earned. As previously states, the decrease in crops for 2020 can be linked to the COVID pandemic. Similarly, 2019 can also be linked to the end of the CPM Activity program in 2018 creating a vacuum where program activities might have ended that hurt the overall production and sale of crops.

The reported quantities of produce sold and revenue generated over the three-year period surveyed demonstrates an overall trend of a decrease across all crop types and regions.

Trend of adoption of Good Agricultural Practices

Village agents were asked about the trend of adoption and how many farmers have accepted the agricultural practices espoused from the CPM Activity. Of the 213 village agents surveyed, 181 (85%) reported that they saw an increase in farmers adopting CPM Activity practices (see Table 15).

TABLE 15: TREND OF ADOPTION OF GOOD AGRICULTURAL PRACTICES		
TRENDS	NORTHERN REGION	WESTERN REGION
Increasing	59 (93.7%)	136 (90.7%)
Decreasing	1 (1.6%)	10 (6.7%)
No change	3 (4.8%)	4 (2.7%)
Unsure	0 (0.0%)	0 (0.0%)

Pay for services

Some village agents reported that they charged fees to farmers for training. Despite the existence of this practice, it was not widely used among the village agents surveyed. In total only 8 (3.8%) village agents reported charging a fee to train farmers. Only 8 village agents surveyed charged fees, 5 were Western VAs whereas 3 were Northern VAs. The majority of village agents 205 (96.2%) of respondents reported that they did not charge a fee for training services they provided to farmers.

Loan provided by VAs to the farmers

A total of 37 (17.4%) of village agents reported providing loans to CPM Activity farmers. Similarly, from the sampled population of village agents, 24 (11.3%) also reported providing loans to non-CPM Activity farmers.

TABLE 16: LOANS PROVIDED TO FARMERS BY REGION AND FARMER TYPE		
TYPE OF ACTOR	NORTHERN REGION	WESTERN REGION
CPM Activity Farmers	8 (12.7%)	29 (19.3%)
Non-CPM Activity Farmers	8 (12.7%)	16 (10.7%)

As the table demonstrates, Western VAs provided more loans to both CPM Activity and non-CPM Activity farmers. More importantly, the number of loans provided for each group varied. Excluding outliers, village agents who provided loans to CPM Activity farmers reported providing between 1 to 30 loans. The average amount of money/credit that CPM Farmer's reported receiving for a loan was 1,272,500 shillings ($360.67). Similarly, for non-CPM Activity farmers, village agents provided between 1 to 12 loans during the last season. The average amount of money/credit for non-CPM farmers is not available due to the survey design not include CPM farmers as a target population.

Pivoting toward qualitative data analysis, all of the VAs interviewed during the FGDs stressed that after CPM Activity program ended, they did not stop working as a VA nor did they stop providing services to farmers. More importantly, some of the VAs were able to connect the farmers with various loan advancing agencies for farming loans with low interest rates. Farmers were able to pay back these loans after 3 months with an interest of 2%. Many VAs also gave small loans to the farmers if they have funds in their bank accounts. The loan was not strictly monetary since in-kind loans were also offered in the form of necessary agricultural supplies such as, fertilizer. VAs provided fertilizers and other inputs as a loan to farmers who pay back the investment during the harvesting of the crops. There is also a report that instead of asking for loans from other people/institutions, many farmers have their own saving and loan groups and the money they save is used for proving short-term loans— albeit in small scale, to needy members who pay back with nominal interest.

We also asked if there is a vertical movement of VAs to become traders after their business was successful. Over 50 percent of VAs were aware of somebody who was working as a VA but expanded their business and now act as a trader. This vertical movement was possible when they were able to deal with more farmers and buy more quality products from them. As the CPM envisioned, the VAs are continuously the main interface with farmers, buying produce on behalf of exporters, processors, traders, or apex farmer organizations.

For many VAs, their roles in the value chain have not only been sustained, but have also expanded. VA report that while previously they dealt with a small amount of crops now the volume has increased and led to the opening of new collection centers. However, our survey data does not support this. One VA said:

> "My business has expanded in way that if you find that you have been trading five tons but now you trade eight tons, that means that business has expanded."
> —A VA in Northern Region

This is not always positive. In one FGD, 6 out 7 Village agents said they are not supporting farmers because there are no inputs they can offer to farmers. In addition, VAs noted COVID-19 impacted ability to provide other services. The pandemic affected mobility and ability to provide training, with 184 (86.4%) of VAs reporting travel issues.

Average amount of time farmers worked with VAs

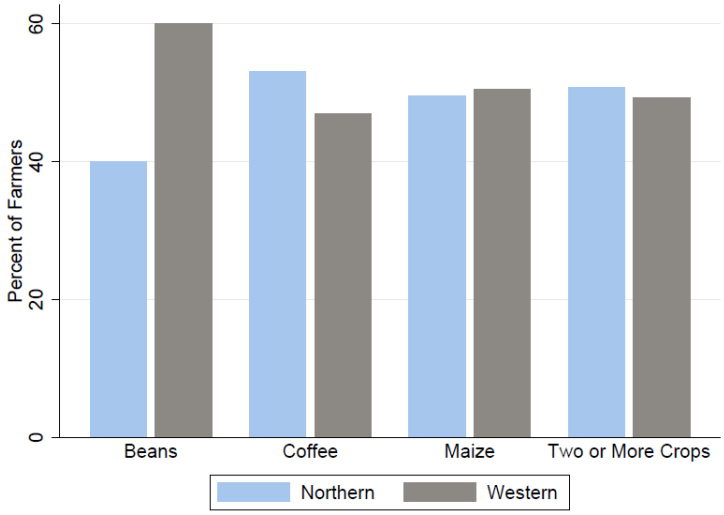
Farmers surveyed were asked to report the number of years they had worked with a particular VA. The options provided were less than 6 months, 6 months to 1 year, 2 to 3 years, and more than 4 years. A majority of farmers 128 (55.2%) reported working with a village agent for more than 4 years. Of these 128 farmers, 100 (66.7%) of them were from the Western region and 28 (44.4) were from the Northern Region. For the Northern region 49 farmers reported working with a village agent for 2 to 3 years whereas the Western region had 45 farmers report working with a village agent for the same duration. The remaining options of farmers who worked with village agents for a year or less was under 3 respondents for each category and each region.

Receiving training on the use of Good Agricultural Management Practices after 2018

When asked about the level of access to good agricultural practices after 2018, a majority of farmers reported that from 2018 to 2020 they had access to practices and trainings through the promotions

provided by village agents. In total, 217 (93.5%) of farmers surveyed reported accessing improved practices and trainings in the last three years. Regionally, 79 Northern farmers and 138 Western farmers accessed the practices.

Figure 5: Farmers Access to Promotion of Agricultural Practice Trainings from 2018 to 2020.



When reviewing crops, as Figure 5 demonstrates it becomes clear that are large differences between regions in the access to improved practices and trainings for bean farmers. Conversely, farmers who cultivate maize or who cultivate two or more crops are relatively close to the number of farmers who report accessing good agricultural practices. Predictably, there exist differences between coffee farmers in the Northern and Western regions. Keeping in mind that there are few coffee farmers from the Northern region, with only 8 farmers in the sample population who cultivate coffee.

Types of support received from VAs

Nearly all CPM Activity farmers, 227 (97.8%), report receiving training support from village agents on an array of activities. The activities were as follows: improving variety /seed use/seedlings, timely planting, proper spacing, timely weeding, timely pruning/ thinning/stacking, crop rotation, construction of bands, proper application of chemical fertilizer, organic farming /mulching, timely herbicide application, timely fungicide application, timely insecticide application, timely harvesting, irrigation, farm planning/record keeping, and other services.

TABLE 17: SUPPORT FARMERS RECEIVE FROM VILLAGE AGENTS			
TYPES OF SERVICES	MEAN OF INTERACTIONS		DIFFERENCE IN MEANS
	NORTHERN	WESTERN	
1. Improved variety/seed use/seedlings	3.37	8.34	4.97**
2. Timely Planting	2.91	5.62	2.71***
3. Proper Spacing	2.97	6.08	3.11***
4. Timely Weeding	2.74	6.15	3.41***
5. Timely Pruning/Thinning/Stacking	3.25	6.47	3.22
6. Crop Rotation	2.63	5.77	3.14***
7. Construction of Bands	0	5.66	5.66
8. Proper Application of Chemical Fertilizer	2.90	6.2	3.3*
9. Organic Farming/Mulching	2.8	5.52	2.72*
10. Timely Herbicide Application	2.57	5.58	3.01**
11. Timely Fungicide Application	2.43	7.45	5.02
12. Timely Insecticide Application	2.81	6.10	3.29***
13. Timely Harvesting	2.49	5.67	3.18***
14. Irrigation	2	6.89	4.89*
15. Farm Planning/Record Keeping	2.42	5.60	3.18**
16. Other Services	3.8	7.5	3.7

Significance level: *P ≤ 0.05 **P≤ 0.01 ***P≤0.001

As Table 17 shows, in total 15 specific CPM Activity services were documented and the frequencies of how often farmers received support from village agents for a particular service over a 12-month period. Of the 15 practices of interest, farmers reported that the frequency of interactions ranging from as little as 1 per year to as many as 30 times per year in some cases.[21] Moreover, a majority of farmers reported planting, weeding, and spacing as the activities in which they received the most training. Regionally, Western farmers had more training sessions than Northern farmers. Coffee, which is a common crop in the Western region, requires more technical support than other crops. That could explain the higher rates of training in the Western region.

Summary of Farmer Training Rates:

- Western farmers reported receiving training at higher rates than Northern farmers.
- Construction band training was only reported by Western farmers.

In the case of the surveyed farmers, we were able to detect statistically significant differences between Northern and Western farmer responses for several activities, including the following: construction of bands, record keeping, pruning, mulching, and irrigation. These findings could be explained by the large number of VAs in the Western region as compared to the Northern region. Nevertheless, the principal result is that the Western region has greater access to services in our sample population.

FARMERS' SATISFACTION WITH VAS SERVICES

Farmers were asked to rate the services provided by CPM Activity village agents. The results were that overall, a majority of farmers ranked the village agents' trainings and services as fair 113 (48.7%), whereas an additional 86 (37.1%) of farmers ranked the services as good.

TABLE 18: FARMERS SATISFACTION WITH VAs SERVICES

SATISFACTION LEVEL	NORTHERN RATES	WESTERN RATES
Good	44 (53.0%)	42 (28.2%)
Fair	32 (38.6%)	81 (54.4%)
Poor or Very Poor	5 (6.0%)	22 (14.8%)

As Table 18 demonstrates, in total 96% of farmers responded on their overall satisfaction with the VA services. The majority of the farmers ranked the services as fair, with only 27 (11.6%) farmers ranked the services that village agents provide as poor or very poor. Regionally these differences are consistent with the sample size, where the Western farmers occupy more of the response than the Northern farmers. The only exception to this rule is the farmers who reported that the services were good. In total 44 Northern farmers and 42 Western farmers described the training received as good, with the

[21] This is after the removal of outlier cases from the survey data.

majority of Northern farmers describing their satisfaction as good compared the majority of Western farmers describing their satisfaction as fair.

Frequency of communication and quality of relationship with VAs and traders

Farmers surveyed for the evaluation were asked to describe their relationship with village agents and their satisfaction levels with the inputs they received. Of the 232 farmers surveyed, 202 (87.1%) described having a positive relationship with the village agents and continuing to work with the village agents for that reason. Moreover, a majority of farmers 128 (55.2%) reported working with their village agent for more than 4 years. These strong positive relationships variables demonstrate the sustainability of the relationships formed between farmers and village agents. Further exemplifying the positive relationship is that a majority of farmers, 205 (88.4%), reported that they continued to work with village agents even after the end of the CPM Activity.

For satisfaction levels, with one representing very dissatisfied and five representing very satisfied, the mean values demonstrate in Table 19 provide the average of satisfaction for each input. Satisfaction levels were recorded for both pre- and post-harvest activities. Overall, most farmers rated their satisfaction levels as neutral.

TABLE 19: SATISFACTION LEVELS FARMERS REPORTED FOR SERVICES AND PRACTICES			
TYPES OF SERVICES	MEAN OF INTERACTIONS		DIFFERENCE IN MEANS
	NORTHERN	WESTERN	
Satisfaction with Improved variety/seed use/seedlings	3.17	2.8	0.37
Satisfaction with Timely Planting	4.24	3.98	0.26
Satisfaction with Timely Weeding	4.3	3.89	0.41*
Satisfaction with Timely Pruning/Thinning/Stacking	2	2.22	0.22
Satisfaction with Proper Application of Chemical Fertilizer	2.81	3	0.19
Satisfaction with Timely Insecticide Application	4.37	4.13	0.24
Satisfaction with Market Information	3.38	3.17	0.21
Satisfaction with Irrigation	0	2.13	2.13
Satisfaction with Soil Inputs	3.53	2.2	1.33**
Satisfaction with Shelling Services	3.38	3.22	0.16
Satisfaction with Pulping Services	3.5	3	0.5
Satisfaction with Plough Services	2.92	3	0.08
Satisfaction with Inspection Services	3.47	3.04	0.43***
Satisfaction with Grain Cleaning Services	2.18	2.1	0.08
Satisfaction with Electronic Payment Services	0	1.5	1.5
Satisfaction with Drying Services	2.38	1.96	0.42***
Satisfaction with Digital Profiling Services	0	1	1
Satisfaction with Bulking Services	3.38	3.36	0.37
Satisfaction with Post-Harvest Services	3.24	2.96	0.26*

Significance level: *P ≤ 0.05 **P≤ 0.01 ***P≤0.001

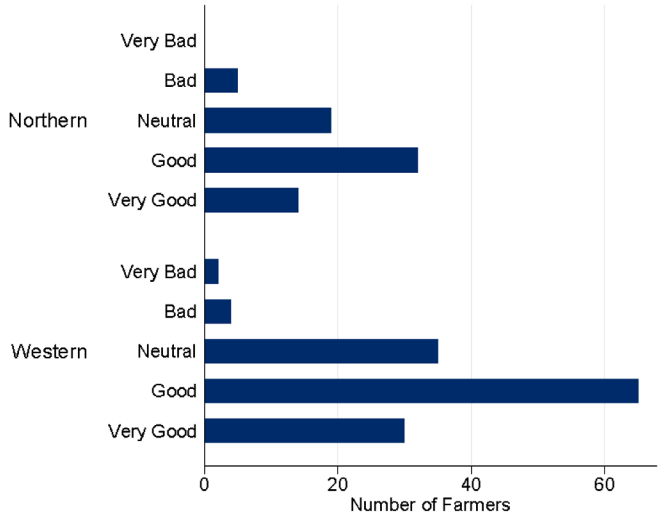
As Table 19 shows, the lowest rated inputs that have means around the levels of dissatisfied or very dissatisfied are as follows: pruning, irrigation, grain cleaning, electronic payments, and digital profiling. Conversely, farmers, on average, reported being most satisfied with the following services : weeding, planting, and pesticides. Ultimately, farmers reported satisfaction levels across all inputs was neutral, since the mean of all satisfaction levels was roughly 3. The activities with the highest satisfaction, weeding, planting and pesticide use are all related to increasing crop yields. Thus, it is unsurprising that the most practical services are the most satisfying for the farmers surveyed. The satisfaction levels of

farmers also differed regionally, with Northern farmers reporting higher satisfaction rates than Western farmers.

Quality of input provided

Of the 232 farmers survey on the quality of inputs sold by village agents, 141 (60.8%) reported that the quality of the inputs was either good or very good. Moreover, a minority of farmers 11 (4.6%) described inputs as being bad or very bad.

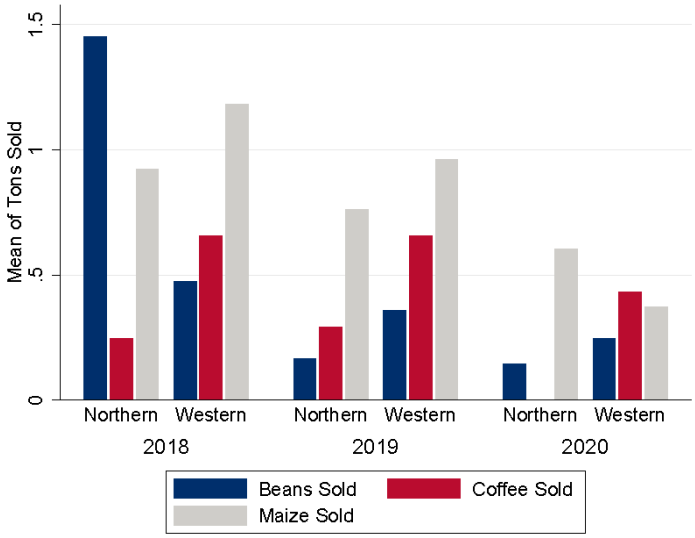
Figure 6: Quality of Products/Services from CPM Activity after 2018



As Figure 6 demonstrates, regional differences between the responses are non-existent. In short, a near equal proportion of farmers in each region see the quality of the inputs provided as the same. The sole difference between the regions is that of the farmers who described inputs as very bad. These respondents are from the Western region.

When reviewing the trends in farming in relation to the quantities of produce sold and the revenue earned, there exists an array of differences in reported quantities.

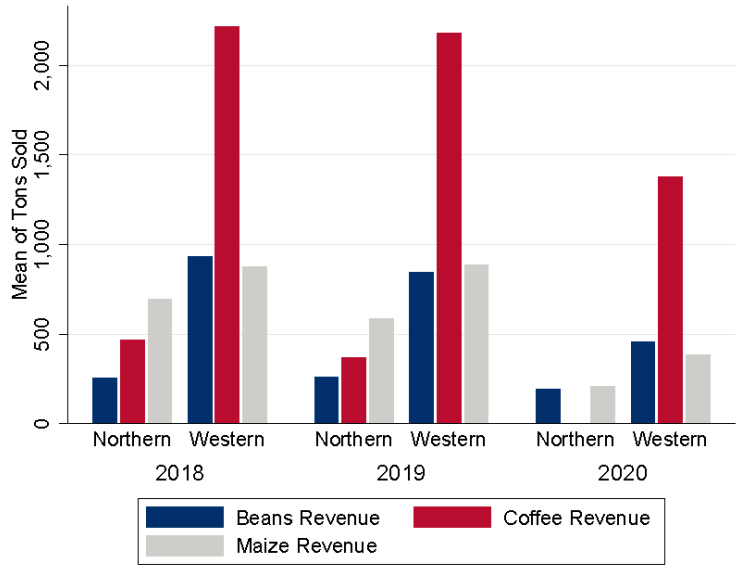
Figure 7: Farmers' Produce Sold per Year by Region



In the case of sales, as Figure 7 demonstrates, the general trends in the tons sold of the key crops places beans maize as the most sold crop for every year and in both regions, save the Western region's yields in 2020. Moreover, the general trend in crop sales decreases over the three-year period surveyed. Some findings to crops and regions show outlier trends. Northern maize farmers are outliers, reporting slightly higher sales in 2019 than 2018. Northern bean farmers recorded the highest sales rates of any crop but suffered heavy losses in the years after 2018. In the Western region coffee sales were relatively stable between 2018 and 2019. Coffee beans also had the smallest losses in 2020 compared to the other crop types.

Looking to revenue earned from crops sold, as Figure 8 shows, the revenues earned were greatest for coffee. Due to coffee's status as a cash crop and the majority of its cultivation occurring in the Western region, the farmers cultivating and selling coffee in the West reported the highest revenues. Revenues reported were similar between 2018 and 2019, but had a major decrease in 2020. This can be attributed in part to the difficulties of the COVID pandemic.

Figure 8: Farmers' Crop Revenue Earned per Year by Region



Farmers participating in FGDs consider production, post-harvest handling, and marketing services provided by intermediaries to be helpful for production and marketing. The majority of farmers said that they do not pay for the services they receive from the VAs. Over 90 percent of FGD participating farmers described receiving direct supports from VAs for their good agriculture management practices. These practices include timely ploughing, selecting quality seeds, sowing, weeding, spraying, harvesting, post-harvest handing of produce and marketing. A farmer said,

"Some agents at times call me on phone updating on what is going on, they give me pesticides for spraying. Like my agent Jacklyn even comes to my garden to guide me on how I should do things."
—A farmer in Western Region

Over two-thirds of participating farmers reported that the production of crops grown increased in recent years. Improved yields benefit both the farmer and VA. Their business relationship is more likely to be sustained because the farmer is more likely to go back to the VA for future business. In turn, the VA is incentivized to continue providing quality inputs and services. Both parties attribute this success to the CPM Activity, which provided a unique opportunity to learn about new technology and marketing of products. Still due to COVID-19, the whole agriculture sector is affected. One farmer mentioned:

"The level of production has greatly increased in the last three years due to the training we received. To me this increase in production and also revenue boosted my morale in farming. Personally, I was geared to perform better this year than in the previous years but all these plans failed because of Covid-19 which also caused the collapse of market."
—A farmer in Northern Region

About two-thirds of farmers in FGDs mentioned that they buy input supplies from traders and VAs. Since farmers often do not have time or money to go to town for inputs, the availability of these inputs locally is critical for farmers. The traders and VAs not only sell these inputs to the farmers, but also offer insights and suggestions to them. The traders and VAs discuss how and when to apply inputs. The VAs also coordinate the input supplies between the sellers and farmers. In particular, VAs address the following issue: if the supplies are not available locally, VAs utilizing the networks established by CPM to provide inputs. Most of the farmers participating in the FGDs acknowledge that they receive assistance in obtaining the correct inputs at a good price due to the VAs. For the sale of their produce, the farmers are also working with VAs who mediate the relationships between farmers and traders to make a deal. Most of the farmers participating in the FGDs said that they work with a local agent who supplies the products to traders in their network.

About one-third of farmers also reported that they know somebody who was able to produce more crops, and adopted the role of a VA. This vertical movement was possible because of the CPM Activity training. This is also an indication that the CPM Activity model introduced is working. Farmers are benefiting with some successful farmers moving to next level. Most of the farmers spoke about their relationships with VAs and other value chain actors after joining the program. All the farmers had positive perception about the VAs and traders and reported that their relationships with VAs and other actors in the value chain are sustained. A majority of the farmers expressed satisfaction with the VAs who are directly provide services to them. Farmers conveyed trust in VAs, noting how they could rely on VAs for assistance Moreover, support for good agronomic practices, improved post-harvest handling practices, and recordkeeping, strengthened the relationships further to the benefit of the entire system. One farmer said,

"We always call the agents when things are not good, I faced a challenge as the coffee was ripening before time, I called the agent who advised that I feed the plant and when I did it, the tree is now ok. They help with the guidance."
—A Farmer in the Western Region

We also included questions around sustainability of the CPM model in the long run. Most of the farmers in the FGDs think that the CPM model will be sustainable. Farmers require a variety of supports for the successful production of their crops. The CPM model ensures such support through buyer-linked intermediary business models extends services down the value chain for improved production and marketing. Because of the CPM, farmers report that their production increased and they want to keep their relationships with VAs and traders. Coffee farmers believe they benefitted more from the CPM Activity compared to bean and maize farmers. Such a claim is rooted in the coffee value chain needs, which require more inputs and support for its production and marketing. A farmer in the North Region said:

"Before Feed the Future taught us about destroying pests and diseases by spraying insecticides and pesticides, my crops would really struggle. I would get very miserable harvests which is not the case now. So, I intend to keep using pesticides, insecticides and even herbicides."
—A Farmer, Northern Region

Despite the successful implementation of inputs in the value chain, factors persist that are hindering the successful of application of the CPM Activity. One is access to production loans for most of the farmers. Since many financial institutions do not provide loans to farmers, it is challenging to access capital to invest in agricultural production. In some cases, VAs and traders tried to link them to financial institutions or in some cases they provided some loans directly to the farmers. Another factor that hinders the farmers in rural areas is poor road network and unavailability of transportation. Lack of transportation affects the delivery of inputs during the planting time, as well as, the transportation of products to the market during the harvesting. Lately, COVID created additional challenges for farmers, as there were limitations for movement and trades due to travel restrictions in the country.

COVID-19 IMPACT

The COVID-19 pandemic has impacted multiple institutions, structures, and the daily functions of countless markets. The parties involved in the agricultural value chain in Uganda are no different. For the village agents and farmers surveyed, an overwhelming majority reported that the pandemic had a negative impact on their market and/or agricultural activities. Of the 213 VAs surveyed, 212 (99.5%) stated that the COVID-19 pandemic negatively impacted their business. Similarly, of the 232 farmers surveyed, 231 (99.6%) reported the pandemic was negative for their activities. The resulting pervasiveness of the pandemic was captured through survey tools, which inquired about the travel, services, and produce availability barriers that emerged due to the pandemic.

Travel

Given the rural location of many farmers, travel between cultivation sites and markets are of the utmost importance for the sustainability of the agricultural value chain in the regions surveyed. A majority of village agents and farmers reported having travel difficulties due to the pandemic.

TABLE 20: NUMBER OF VILLAGE AGENTS AND FARMERS REPORTING TRAVEL DIFFICULTIES DUE TO COVID-19

TYPE OF ACTOR	NORTHERN	WESTERN	TOTAL
Village Agent	57	127	184 (86.4%)
Farmer	71	122	193 (83.2%)

As Table 20 demonstrates, the travel difficulties between village agents and farmers were very similar. Regionally, there is little difference between the two parties in relation to travel difficulties. Farmers in the Northern region did have a slightly higher number of respondents who reported travel issues, however, the overall totals in the table demonstrate that village agents have a slightly higher rate of reporting travel issues due to COVID.

Services

Complicating the travel limitations imposed upon the value chain due to the pandemic, services also suffered. In particular, our evaluation recorded the impact that COVID had on services in the value chain by asking respondents if the demand for services had decreased. Similar to the travel limitations imposed due to the pandemic, the decrease in demand for services was reported.

TABLE 21: NUMBER OF VILLAGE AGENTS AND FARMERS REPORTING LESSENED DEMAND FOR SERVICES			
TYPE OF ACTOR	NORTHERN	WESTERN	TOTAL
Village Agent	38	88	126 (59.2%)
Farmer	34	82	116 (50.0%)

Table 21 documents how the amount of village agents and farmers who reported the lessening of services among participants in the value chain is nearly equal. However, similar to the travel impacts, village agents exhibit a slightly higher overall rate of reported decreases in services provided. The minor increase in village agents' responses as compared to farmers is not a surprise. Mainly, this is to be expected since village agents are the primary providers of such inputs, hence they would be more likely to note a decrease in the demand compared to any other party.

All value chain actors reported COVID's adverse impacts:

- All actors in the value chain surveyed reported COVID negatively impacted business.
- Village Agents were more likely to see the CPM Activity as unhelpful in dealing with the COVID pandemic.

Produce Availability

The complications facing the value chains due to COVID led to difficulties with the availability of products in the market. As with the previous difficulties, the majority of village agents and farmers surveyed reported a decrease in produce availability either for sale or purchase.

TABLE 22: NUMBER OF VILLAGE AGENTS AND FARMERS REPORTING DECREASED AVAILABILITY OF PRODUCTS			
TYPE OF ACTOR	NORTHERN	WESTERN	TOTAL
Village Agent	30	83	113 (53.1%)
Farmer	45	71	116 (50.0%)

As Table 22 notes, both village agents and farmers reported that the COVID pandemic negatively impacted the availability of products. More farmers in the Northern region reported issues than village agents in the Western region. Regionally, there was little difference between the village agents and farmers in reported issues with product availability. Overall, the differences are minor and the similarity in responses between the sampled village agents and farmers is not surprising. The relationship of village agents and farmers is dependent, in part, on the transfer of products between both parties.

The Impacts of COVID on CPM Activity Beneficiaries

The reported impacts of the COVID pandemic were similar between village agents and farmers surveyed. However, when asked to the support that the CPM provide in mitigating the negative effects of the pandemic, there exist strong differences between village agents and farmers.

TABLE 23: NUMBER OF VILLAGE AGENTS AND FARMERS REPORTING CPM SUPPORT COPING WITH PANDEMIC			
TYPE OF ACTOR	NO HELP	CPM ACTIVITY PRACTICES LEARNED	OTHER
Village Agent	90 (42.5%)	53 (24.88%)	47 (21.82%)
Farmer	0 (0%)	50 (21.55%)	33 (13.23%)

As Table 23 shows, a majority of village agents describe the CPM as being no help in providing coping mechanisms for addressing the negative impacts of the COVID pandemic. On the other hand, no farmers reported that the CPM was no help. Both village agents and farmers describe how the commodity production practices they learned from the CPM Activity were useful for coping with the pandemic. This was also mentioned in qualitative discussions with the farmers that the practices learned from CPM Activity were instrumental for coping with the impact of the pandemic. The remaining respondents described an array of other ways in which the CPM Activity provided support in addressing the pandemic. These activities include the provision of health information, tips for self-care, financial support or supplies, and storage for crops. Respondents inaccurately identified CPM as the provider of these services, as CPM Activity was not there to provide these services when the COVID hit the areas.

The qualitative interviews and focus group discussions highlighted how exporters, traders, VAs, and farmers experienced the impact of COVID-19 in their business. Exporters mentioned the halting of international trades, which impacted their business adversely. The trade of coffee was impacted more due to border closures. Traders and VAs noted how the trade of all three crops decreased. Farmers explained how the production of beans, coffee, and maize were impacted as a result of impositions of restrictions in movement. This limitation led to farmers being unable to get inputs on time to apply for crop production. Our survey data shows that COVID's impact varied among the different parties involved in the value chain. In our comparisons across regions and positions in the value chain, several respondents reported that the CPM Activity was not providing support. Conversely, multiple respondents noted that the training they received from the CPM gave them the skills necessary to ensure that they could handle the unexpected shock that the COVID pandemic caused on the agricultural market. Although we see a drop in both productivity and profits, these drops cannot be fully correlated with the pandemic.

CONCLUSION AND RECOMMENDATIONS

One of the intended consequences of agricultural projects is the spillover of its activities past project completion. In addition, if the technologies and practices introduced by the project are found to be beneficial, the beneficiary communities are expected to promote and maintain the good practices—resulting in the sustained impact of the project. Farmers typically learn from their fellow farmers, resulting in technology dissemination into neighboring areas. This evaluation proves that there are both spillover effects and sustainable effects of the CPM Activity in Uganda. However, due to our inclusion of small non-representative sample in our evaluation cannot capture the full extent of these effects, in terms of: geographic coverage of spillover, and full economic impact, terms of production and sales.

SPILLOVER EFFECTS

Our findings demonstrate that the CPM did reach farmers who did not participate in the activity. These farmers benefited from the activities that continued after the CPM Activity ended. There were also documented spillover effects for non-CPM Activity traders, who benefited from improved quality of produce attributed to the CPM Activity. Spillover effects found from the CPM Activity reached across various actors, crop types, and districts in Uganda. The permeation of the CPM Activity throughout these areas not originally part of the program alludes to the beginning of a successful spread of the interventions promoted from the Activity in the regions surveyed.

Quantitative data demonstrates that of the traders, village agents, and farmers surveyed, the overarching trend is one of integration. New farmers and village agents were reported as taking part in interventions set up during the program. Even in cases where individuals were not joining the CPM Activity directly, they knew of and mentioned the impact of the CPM Activity. This is qualitatively exemplified through the interviews where non-CPM Activity exporters and traders describe recognizing the CPM Activity, noting its positive impact on the value chain. Mainly, the non-CPM Activity exporters and traders describe how the standards of the produce cultivated improved. Improvement in the standards was seen as a positive spillover since the CPM Activity has led to a higher quality product.

A great barrier to smallholder farmer productivity and rural agricultural enterprises is the ability to provide affordable production and marketing services to farmers in Uganda. It is more challenging to get production and marketing services for cash crops like coffee. The CPM Activity provided these opportunities to the farmers not only who are participating in the CPM Activity from the beginning, but also to those who want to get the benefits of CPM Activity business model now. More farmers and small enterprises are getting services and benefits from the different CPM Activity agents. The services of agricultural practices and market information support are the most liked and reported services across all parties in the value chain. The shared interest in these activities exemplifies the interconnectedness of goals for all parties involved in the cultivation, distribution, and sale of beans, coffee, and maize.

It is important to note that one area in particular that did not have a strong spillover effect was financial supports and activities. There respondents from each actor group (traders, village agents, and farmers) view the loan and cash advance activities with a minor level of negativity in regards to the use of these activities. As a result, spillover was not realized in terms of financial support for all participants.

SUSTAINABLE IMPACT

The evaluation found that the duration of relationships between farmers and village agents were sustained. The overall measured satisfaction with these relationships was high. Although the general satisfaction with CPM Activity inputs is neutral, there exist several inputs that are highly regarded among all parties involved in the value chain. In particular, these inputs consist of the good agricultural practices and market information practices. Additionally, new participants in the CPM Activity who joined after the Activity's direct support ended are described as having the same access to inputs and services as participants who originally joined the CPM Activity. As a result, this suggests a combination of robust spillover effects and a continued sustainability in the Activity since participants who were not part of the CPM Activity during its USAID supported period are still reaping benefits from the Activity.

In the data collected, we found that traders, village agents, and farmers were satisfied with agricultural inputs at higher rates than other services provided. The overall trends reported show an increase in adoption of CPM Activity practices. Qualitative data elucidates these increasing trends through providing information on how the Activity's agricultural inputs were received. The importance of showing the functionality of the inputs dispels previously held beliefs on the negative impacts of tools, such as fertilizer and pesticides. Dispelling stigmas supported the CPM Activity's expansion and adoption with farmers in particular. Equipment and technology-based inputs have the lowest use rates among all parties surveyed.

The effects presented were limited due to the COVID pandemic. As noted in this evaluation, multiple parties reported struggling due to the pandemic. Although the CPM Activity ended roughly a year before the pandemic began, farmers did report that the CPM Activity assisted them during the difficult time of the pandemic. In particular, the farmers cite how the training they received assisted them in harvesting better crop outputs, thus incentivizing sales from previous years, these structures carried over so that even after the program's end and during the pandemic interventions were being used. For farmers who reported that the CPM Activity was of no assistance, a majority of those VAs surveyed noted that this was due to the CPM Activity no longer existing. Nevertheless, from the analysis conducted it is safe to conclude that the program continues despite the pandemic's negative impacts. One way of examining sustainable impact of agricultural projects is analyzing commodity production trends. Analyzing 2018, 2019, and 2020 production and revenue data shows decreasing trend in production and revenue in two regions. The common reasons cited for reduction in production are drought, lack of production loan, and market failure as there was not enough demand for some commodities. Additionally, the vacuum created immediately after ending the CPM Activity in 2018 could be responsible for this decrease in production and revenue.

We did not see drastic differences in qualitative and qualitative findings. Instead, our evaluation finds that the majority of parties involved in the CPM Activity and surveyed for this evaluation were interested in agricultural practices and market support inputs. Traders, village agents, and farmers also reported the spillover of the CPM Activity in various aspects of the targeted value chains. We did gain unique perspective from the interviews with exporters, as they were not included in the quantitative data collection. As such, some exporter comments, such as the discussion of trade across nations, are not reflected in the other populations surveyed. Another difference is some respondents reported vertical movement of some value chain actors. During the qualitative interviews, farmers and VAs reported that they know somebody who was able to expand their business now working as VAs in case of farmers, and as traders in case of VAs. This demonstrates that upward mobility is possible if you are successful in your business for participants in the CPM Activity. Finally, the survey discussed loans, which had a low response rate in part because it focused on the CPM Activity loans provided by VAs. However, the qualitative data demonstrates that VAs would send farmers to third-party institutions at times for loan support. Moreover, the farmers themselves had their own loan cooperatives, which the survey did not capture.

The greatest limitations of the CPM Activity revolved around the technological services provided relating to equipment that parties could use in agricultural and market related activities. A minority of respondents reported engaging with services related to labor saving equipment and smartphones used for obtaining market information. Although the overall sentiment of the handful of sampled respondents was positive, the general lack of respondents who noted using or receiving support in these

technological services, raise a question as to the efficacy of these services in rural areas. Conversely, across the traders, village agents, and farmers surveyed, a consensus emerged in the data. Quantitatively, all parties surveyed reported that inputs related to agricultural practices, market information, and cash advances were the most activities with the highest engagement. Qualitatively, more detail was provided on specific agricultural related activities and practices that traders, farmers, and village agents adopted.

The general conclusions that can be extrapolated from this ex-post evaluation are that, for the sampled population, the question of spillover and sustainability is positive. In the case of the former, the CPM Activity seems to have spilled over into other areas, creating positive impacts for non-CPM Activity participants, opportunities for new districts to take part in the Activity, and upward mobility for individuals engaging in the CPM Activity. Additionally, the sustainability of the CPM is promising. Mainly the continued longevity of the Activity is due to the ongoing use and expansion of the existing support structures that support activities.

RECOMMENDATIONS

PROGRAMMING

- The CPM Activity model seems to work in promoting the targeted value chains in Uganda. Other agricultural programs under USAID may learn from the CPM Activity by applying modules for greater impacts. The CPM's theory of change assumes the horizontal and vertical relationships of value chains will cause a transformation so that actors themselves are driving interventions to upgrade and trigger a supply response to demand in the market. Applying this model in future value chains would help to have higher impacts.

- There were several challenges. Learning from those challenges that would provide critical feedback to USAID for its other programs. One thing that USAID can do differently to make the production loans more efficient is to address the negative views that traders, village agents, and farmers have of loans. Another means to improve loans services is to increase access to the service in general. To truly understand why the aforementioned parties are dissatisfied with loans, studies should be conducted. The minimal reports of traders, village agents, and farmers discussing the use of production loans raise a concern regarding the accessibility of production loans. Moreover, the relationship that production loans have, in comparison to cash advances, should also be explored.

- Transportation, as a large infrastructure project, is not an area in which USAID can easily intervene. There are two keyways to attempt to reduce the impact that transportation issues have on the value chain. First, the value chain can be shortened. Investments can be made to decrease the distances and travel requirements by focusing on promoting local markets. This can be accomplished through investing in local trading hubs or smaller markets in the rural areas to provide greater opportunities for farmers to sell their crops. A second way to address this issue is to explore other means through which transportation could be reduced. For example, radios can be sent to participants to reduce their need to travel to obtain market information. In addition, the value chain actors can work with their local authorities to lobby to fix the local road system so that it will ease transportation services.

- The project beneficiaries stated that they need some support for continuing their activities, e.g., connecting with technical support team to address insect-pest problem. If the USAID has other

agriculture support program planned for implementation in the region, such programing can leverage the work of the CPM Activity through connecting participants of future activities with those farmers who were working under CPM Activity so that they can get support to keep their business going.

- In our focus group discussions, farmers indicated that sometimes they are helpless if the service of a VA is not available for pest and diseases control. It appears that they are not receiving assistance from the government on pest and disease control. In the future value chain interventions, there should be efforts to link government agencies in the activities so that the farmers can get support when there is a need, e.g., from agriculture extension services.

- Spillover is seen in neighboring areas, but its full impact is not measured. There should be a way in future applications of the CPM model to capture and report spillover effects in the system, especially reporting of new members. One recommendation to integrate such spillover metrics is to establish a reporting system in the post-project situation.

- To ensure the sustainability for CPM Activity, an analysis of which services that are not used in high frequencies, such as smartphones for market information and providing technology, should be reviewed in relation to the needs of the village agents to see if there a gap in the needs of village agents with the capabilities of traders to provide such services.

EVALUATION STUDIES

- One issue we faced while implementing this evaluation is selecting CPM Activity beneficiaries randomly. We had a list of farmers and VAs participating in the program from the database. But there were severe challenges in locating the randomly sampled farmers for participation in the interviews. Most of the time they failed to find the selected person that were listed. It is unclear why we failed to find the participating farmers. To address this issue, we first contacted the VAs who provided a list of farmers who work with them. This helped us to meet the required number of samples for the data collection. For future data collection, it is important to keep the record of project beneficiaries who are active and update it regularly. This can be enacted through promoting VAs as a source of record keeping, where training on keeping participant data becomes a standard for future activities.

- Our evaluation was implemented within two years of completion of CPM Activity. For a long-term impact evaluation, it is generally recommended that an evaluation be implemented after five years. Thus, conducting another evaluation in the future can help us understand if the program has continued and what are the impacts are sustained.

- Analyzing 2018, 2019, and 2020 production and revenue data shows decreasing trend in production and revenue in two regions. We must understand the factors that are responsible for this decreasing trend in production and revenue. Particularly, it is important to know if it is specific to CPM Activity or the trend is widespread and impacted the country as a whole. Future studies could analyze the Activity in relation to a comparison group, such as directly surveying both CPM participants and non-CPM participants on more general questions related to the agricultural value chains in the country.

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APPENDICES

APPENDIX 1 : ERIE UGANDA FTF DESIGN DOCUMENT

SEPTEMBER 1, 2020

THIS IS A LIVING DOCUMENT AND DESIGN ASPECTS WILL BE ADDED/DELETED AS WE ARE MOVING FORWARD DEPENDING ON THE AVAILABILITY OF DATA

The ex-post evaluation will answer two questions on the work carried out by the USAID/Uganda Feed the Future Commodity Production and Marketing Activity (CPMA). The purpose of this document is to outline the evaluation design (methodology, sample frame, and data analysis) for the evaluation.

I. Methodology:

To study this question, the evaluation will utilize a hybrid/mixed methods evaluation approach. Through this approach, the evaluation team will collect quantitative data using participant and beneficiary-based surveys as well as qualitative data collection such as focus group discussion (FGD) and key informant interviews (KII) data from village agents (VAs), exporters, traders and farmers in the program areas. The evaluation will survey and provide findings from both male and female participants and beneficiaries who worked, or benefitted from CPMA's work, on strengthening the output market of beans, coffee and maize, the principal value chain commodities of USAID/Uganda's phase one Feed the Future Strategy and supported by CPMA.

To study the challenges or shocks that could have affected the target area (i.e., drought/insufficient rain, market volatility), and therefore impacted the sustainability of CPMA results, the evaluation team will ask questions related to COVID19 and past natural calamities and how that has influenced the functioning of markets and these indicators.

II. Evaluation Respondents: Exporters, Traders, Village Agents, Farmers.

We will collect quantitative data from traders, VAs and farmers. CPMA worked extensively with traders and VAs to benefit farmers in the areas CPMA worked. The VAs, in particular, are pivotal to the CPMA model- they are responsible for connecting the farmers with the traders, exporters and other actors in the value chain of the different crops. We have obtained the list of traders, VAs and farmers from the beneficiary list of the CPMA program with the help of Chemonics. Further discussion on the sample size estimates for each evaluation respondent is found in the "sample size" section.

The exporters are potentially busy actors who do business with agents from all over Uganda. Therefore, it makes sense to conduct in depth qualitative data collection with the exporters.

Along with collecting quantitative and qualitative data in CPMA program areas, the evaluation team will also collect qualitative data of traders/exporters in non-program areas through KIIs in order to:

- Understand the differences in the way market functions without the CPMA activities
- If the exporters in non-program areas have heard about the CPMA and the channels.

- How the CPM might benefit the exporters in the non-program areas or how they think CPMA can benefit.

III. Data to be Collected

Question 1: How Did Market System Changes Facilitated by CPMA Spill Over to Affect Non-Recipient Businesses?

The evaluation will determine to what extent CPMA facilitated market system changes continue to bring about changes to former CPMA participant and non-participant businesses (i.e., increased, reduced, or no change). Specifically, the data will be collected to determine changes in:

- the exchange of coffee, maize, and beans by participant/non-participant businesses;
- sales, revenue and profits of beneficiary farmers and participant/non-participant businesses
- product/service diversification as a result of evolving market dynamics by participant/non-participant businesses.

Example of Quantitative Data to be collected by market actor type:

Traders

To study spillovers, we will ask the following questions to the traders in program areas:

- Whether they have helped VAs/farmers to access production/market services outside of program areas?
- Assisted VAs/farmers to access information on prices, production loans, etc. outside of program areas

Other information:

Whether sales, revenues of crops have increased or decreased or remained the same in the program areas after 2018.

Whether they have seen product/service diversification over these years in the program areas.

Village Agents

- Whether they have helped farmers to train and/or promote the use of Good Agricultural Management Practices to farmers outside of the program areas? (spillover)
- Assisted farmers to access production loans, etc. outside of program areas (spillover)
- Whether sales, revenues of crops have increased or decreased or remained the same since they have participated in the program? (system change)

- Whether they have seen product/service diversification since they have participated in the program? (system change)

Qualitative data spillover

The qualitative data will be collected from exporters and traders who are non-program participants.

Tatiana mentioned that spillover is not just via farmers, but also other actors. Spillover implies copying (other target enterprises copying behavioral changes that have been adopted by those affected directly by program activities) and crowding in (enterprises at levels other than the target level copying behaviors that those affected by program activities have adopted or entering a sector or value chain as a result of improved incentives and environment created (at least partly) by the program).

Qualitative interviews will also help us address the questions related to copying and crowding in of spillover effects.

To address the spillover, we will ask non program participants whether they have heard about CPM, what aspects of CPM do they like and whether they have benefitted from CPM program in any ways even though they are not participating in the program and in what ways? Whether the CPM program has helped them cope with Covid and other shocks and how? Whether they have adopted any of the behaviors advocated by the CPM program and how?

Systemic changes

Program participants: Exporters, Traders, VAs and Farmers

We will ask them about:

- How the sales, revenue and profits of beneficiary farmers and participant/non-participant businesses have changed after the CPM program has ended? The reasons for those changes?

- How product/service diversification as a result of evolving market dynamics by businesses have evolved?

Question 2: Have the Relationships CPMA Facilitated Between Various Market Actors Been Sustained? If so, why? If not, Why Not?

The evaluation will determine to what extent the CPMA activity created sustainable change among participating businesses and beneficiary farmers by analyzing performance and facilitated market system changes two years after activity close-out. The evaluation team will collect data on the evolution of CPMA facilitated relationships and client-oriented business development services from CPMA assisted farmers, village agents, traders, and exporters.

We will specifically study the relationships between the different market actors based on the CPMA activities. This will include village agents (VAs), traders, farmers, producer organizations, input stockists, local government, higher level market influencers. We will analyze this to understand which relationships were sustained, the heterogeneous effects between male/female participants/beneficiaries, and identify the reasons behind these sustained relationships.

Tatiana mentioned whether a factor analysis would be useful to answer the WHY of the question? I am thinking of study as perhaps going two ways: either we look at the facilitated change and then its sustainability, or look at the result (the sustained relationship) and work back to see why (similar to what I think outcome harvesting does)? Just some thoughts. Whether we would be able to tell, based on the characteristics you capture of respondents, which of those characteristics are most correlated with sustainability of results. I had understood it would be a type of factor analysis.

Through a type of factor analysis, we will also be able to tell, based on respondent characteristics, which characteristics are most correlated with sustainability of results.

Information to be collected by market actor type includes:

Traders

- Whether they have helped VAs/farmers to access production/market services?
- Whether they have assisted VAs to access information on prices, production loans, etc.?
- Frequency of communication and quality of relationship
- What type of services do they provide to Vas and their perceived quality of services?
- What are the scopes of improvement in the services provided?

We will provide them options in the answers whereby the respondents can self-report whether they have continued providing support to VAs or not and the degree to which they have provided support. We will estimate the proportion of traders who respond positively, negatively or neutral to these questions. This will help us to capture whether the indicators have changed over time in a positive or negative direction or it has been sustained over time.

Village Agents

- Whether they have helped farmers to train and/or promote the use of Good Agricultural Management Practices to farmers?
- Frequency of communication and quality of relationship with farmers and traders
- What kind of support (including quality of support) do they receive from traders?
- Whether they have assisted farmers to access production loans or inputs?
- What is the quality of relationship between VAs and farmers/ traders?

(Tatiana's comment on the need to develop methodology on measuring quality of changes to a relationship in order to analyze qualitative data is addressed via survey questions and qualitative interviews.)

Farmers:

- Whether they are receiving training on the use of Good Agricultural Management Practices after 2018?
- What kind of support do they receive from VAs?
- What Kind of support do they receive from traders?
- Frequency of communication and quality of relationship with VAs and traders
- Whether production/services are increasing /decreasing after 2018?

Qualitative Data:

- Participants: Exporters, traders, VAs and farmers
- We will conduct FGDs with VAs and farmers and KIIs with exporters and traders. We will ask them questions about their relationships with different actors in the CPM program, whether they have sustained overtime, why and why not, what factors enable/ensures sustainability of relationships.

IV. Sampling and Sample Size

Quantitative surveys will use a stratified clustered design. The Strata are regions (i.e., Northern, Western, Eastern, Central) and clusters are districts within each region. Due to resource constraints, the evaluation will focus on only two CPMA implementation zones: The Northern and the Western regions. These regions are selected for their outlier characteristics: the number of VAs in the Western region is highest among the four regions and the number of VAs in the Northern region is the lowest. A possible explanation for the discrepancy in activity between these regions is the proximity to the capital and the value chain commodity that CPMA worked on in the region. Data will be collected to clarify these influences on CPMA activity. Within each zone, the evaluation team will randomly select districts such that the total numbers of VAs to be surveyed has been met.

To determine the total number of VAs to be surveyed we used the following formula:

$$n = \frac{z^2 \hat{P}(1-\hat{P})}{e^2 + \frac{Z^2 \hat{P}(1-\hat{P})}{N}}$$

Where e is the desired margin of error. We assume it to be .10.

Z is the value corresponding to the desired level of confidence. (1.96)

N is the size of the population in our case PMP's village agents/ exporters. (1310 VAs)

$\hat{P}$ is the estimated proportion for e.g. proportion VAs with a certain characteristic that we are interested in measuring. We assume it to be .5

Using the above assumptions, n=90.

Adjusting for the size of the population ($\frac{N}{n_1 + N}$), the required sample size is: 90*(1310/90+1310) =84

After adjusting for design effect (ratio of the variance of the sampling variance of the estimator under given design to the sampling variance of the estimator under simple random sampling) which is assumed to be 2 for clustered design, we get the required sample size approximately to be 170 VAs.

To calculate the VAs within each district for the survey we will follow the proportional allocation rule whereby we weigh each district with the proportion of VAs available in that district i.e.

$$a_1 = \frac{N_1}{N}$$

For the Western region we will survey, 170*(531/531+234) = 117 VAs and 53 VAs from the Northern region.

The research team assumed a 100% response rate for the VAs. It might be the case that the VA might not consent to answer the survey. In that situation we will select randomly other VAs for a survey.

Rationale of sample size for traders and farmers:

Each VA is associated with a trader. We will survey the traders associated with a VA for the trader survey. The number of traders interviewed will be less as in a district each trader works with multiple VAs. Consecutively, we will survey farmers associated with the VAs chosen for the survey. The number of traders to be surveyed will be approximately 50 and farmers about 170.

For qualitative surveys, we will include about 50 percent of quantitative samples through the FGDs and KIIs, which seems feasible also from budgetary and logistic perspective. We will do 10 FGD with the farmers and 10 FGDs with VAs. We anticipate 8-10 participants in each FGD. The FGDs and KIIs will be done in the same region/districts that are selected for quantitative survey. For traders and exporters KIIs, we will cover over 50 percent traders and exporters available in sampled and outside of sampled regions.

Total sample

Quantitative: 390 respondents

Village agents (VAs): 170

Farmers: 170

Traders: 50 (approx.)

V. Qualitative Analysis Sample Size

Our qualitative analysis entails conducting FGD and KIIs with the VAs, farmers, traders, and exporters. To answer research question one, we will mostly use KIIs with the exporters and traders and FGD with VAs. For question number two, we will mostly use FGDs with farmers and VAs.

For the sample of qualitative analysis, we will include about 50 percent of quantitative samples through the FGDs and KIIs, which seems feasible also from budgetary and logistic perspective. We will organize 10 FGDs with the farmers and 10 FGDs with the VAs. We anticipate 8-10 participants in each FGD. The FGDs and KIIs will be done in the same region/districts that are selected for quantitative survey. However, they might not be the same people who are selected for the survey. For traders and exporters KIIs, we will cover over 50 percent traders and exporters available in sampled and outside of sampled regions.

Qualitative: ~ 210 respondents

Village agents (VAs): 10 FGDs (~80 VAs)

Farmers: 10 FGDs (~80 farmers)

Traders: 30 KIIs

Exporters: 20 KIIs

Each FGD will last for about 90 minutes and KIIs for 60 minutes. The discussion topics for FGDs will be based on the research question #2 (Have the relationships between various market actors been sustained, and if so why, and if not why?). The interview questions for KIIs will be based on the research question #1 (How did this change spill over to affect non-recipient businesses?). All qualitative interviews will be captured through the notes and voice recorders, which will be later transcribed and translated into English. The transcripts will be analyzed for the emerging themes using Atlas.ti software.

VI. Data Collection, Field Training, Testing of surveys and Data quality

The ERIE team will work with a local Ugandan firm for data collection, who will help in selecting and recruiting enumerators and providing logistical arrangements and field supervision of the data collection exercise. Researchers have made preliminary contact with some prospective firms that can fill this role in the evaluation. The local firm will identify the enumerators, including qualitative experts, and mobilize them for data collection. In order to sustain and expand best impact evaluation practices beyond the life of the project, the researchers will work in tandem with the data collection team and enumerators during the project to ensure that in addition to implementing data collection work, local capacity is built throughout the evaluation.

Researchers will develop questionnaires for traders/exporters, VAs and farmers and other stakeholders in close consultation with the USAID. Researchers will use tablets/smartphones to administer the surveys in the field. Researchers will acquire approval for tools from USAID and then conduct field tests for the validation of the instruments, adjusting the tools as necessary.

Researchers will provide training and supervision to implement the survey instruments designed for data collection to ensure quality. In addition to enumerators, the team will hire supervisors and field managers, who will help to ensure quality data collection. Following are details regarding the training and piloting:

Enumerators and supervisors will participate in a three-day training program covering study backgrounds, survey skills, quality control, and data protection techniques. During training, enumerators will also have the opportunity to participate in several interviews to practice conducting the survey. After the survey, researchers will conduct field testing of the survey tools to ensure the language used in the survey is understandable, questions appear in sequence, and timing is adequate for conducting the survey. In addition, issues with smartphone usage during the survey, logistical arrangements, and other factors will be addressed. Field testing will be closely supervised by the University of Notre Dame's Pulte Institute researchers. When researchers return from field testing, they will address any issues that arose during the testing and finalize the survey accordingly.

ERIE plans to complete data collection in two weeks. Two staff members from the Pulte Institute will also be present in the field to supervise all activities. We will decide which medium/software to use for data collection after discussions with the survey firm.

In advance of commencing with any primary data collection, the ERIE team expects to submit all tools and design documents for approval by the University of Notre Dame's Institutional Review Board (IRB). While the team expects the application to be exempt, no IRB approvals are being given at the moment for in-person data collection in areas where COVID-19 is not being adequately managed. As a result, ERIE expects to receive conditional exempt status on its research tools with final approval to be received once in-person data collection can take place.

VII. Data Analysis Plan

The evaluation team will look at the calculations underlying each indicator, as well as the data processing required to answer the evaluation questions, to develop a detailed analysis plan. The analysis will include:

Tabulations: The indicators will be disaggregated by gender, crops and regions.

Statistical tests such as t-tests based on gender and region, will be performed to measure statistical significance for the responses of farmers, village agents and traders collected in the quantitative surveys. Key indicators will be weighed by the probability of sampling.

Comparisons of program and non-program areas: Researchers will analyze whether there exist differences between qualitative responses of program and non-program farmers, traders, exporters. Through comparisons we can find out the benefits of the CPMA to the beneficiaries and whether the non-beneficiaries expressed any difference in outcomes the CPMA program would have brought if they had access to it. Also, we can study the spillover effects through comparisons.

We will produce a draft report with figures for the indicators listed above and present it to USAID and other stakeholders for their review. Researchers will finalize the report after incorporating all suggestions made. The report will contain statistical tables, graphs, and other graphics to support the analysis, allowing the readers to more thoroughly understand the findings being presented.

APPENDIX 2: SURVEY AND SAMPLE SIZE

We have constructed a dataset of VAs from the materials provided to us. Here we list a few descriptive statistics of the data.

In the Northern region we have 15 districts with 234 Village agents.

DISTRICT	FREQ.	PERCENT	CUM.
Amuru	2	0.85	0.85
Apac	6	2.56	3.42
Dokolo	16	6.84	10.26
Gulu	19	8.12	18.38
Kaberamaido	1	0.43	18.80
Kasese	1	0.43	19.23
Kiryandongo	48	20.51	39.74
Kole	26	11.11	50.85
Lira	19	8.12	58.97
Masindi	57	24.36	83.33
Nebbi	1	0.43	83.76
Nwoya	5	2.14	85.90
Omoro	11	4.70	90.60
Oyam	15	6.41	97.01
Zombo	7	2.99	100.00
Total	234	100.00	

In the Western region we have 13 districts with 531 Village agents.

DISTRICT	FREQ.	PERCENT	CUM.
Bushenyi	35	6.59	6.59
Ibanda	93	17.51	24.11
Isingiro	49	9.23	33.33
Kabale	31	5.84	39.17
Kamwenge	43	8.10	47.27
Kanungu	87	16.38	63.65
Kasese	98	18.46	82.11
Kiruhura	17	3.20	85.31
Kyegegwa	15	2.82	88.14
Mitooma	23	4.33	92.47
Ntungamo	10	1.88	94.35
Rubirizi	10	1.88	96.23
Sheema	20	3.77	100.00
Total	531	100.00	

APPENDIX 3: TRADER SURVEY

INFORMED CONSENT

My name is…… from Maarifa Consulting. Maarifa Consulting is implementing a survey on behalf of the University of Notre Dame, in the US. USAID and its Feed the Future Uganda Commodity Production and Marketing Activity (CPMA) has commissioned the University of Notre Dame to carry out a survey with traders, Village Agents and farmers in order to develop and promote good practices and optimal behaviors in the production and marketing of maize, beans and coffee. You have been selected as one of the traders to be interviewed in this exercise. I would like to ask you some questions related to the production and marketing of maize/beal/coffee. Your privacy is important to us. Private information that directly identifies you, like your name, address and telephone, will not be included in the information we share with anyone outside the study team. We may share information that indirectly identifies you, such as your village or district name, with the organization sponsoring this study or other researchers who will protect your information. When survey responses are shared with the public, no information will be included that can link you to the study. The information you provide will be useful for future planning, implementation and determining the performance of this activity being implemented within this area. Participation in this survey is voluntary and you can choose not to take part at any time.

If you have any questions, please feel free to contact… Sataro… in this phone number XXX

Respondent consented to be interviewed?
1. Yes
2. No

Region: use filter to select the region
District: based on filtered region
Sub-County:
Village:

PERSONAL DETAILS

Interview ID #: create a unique ID for each interviewee
Name:
Gender (do not ask): 1. Male 2.Female
Age

Research Question 1:

What crops are you trading/dealing in? *(Multiple selection possible)*
1. Maize
2. Beans

3. Coffee

How long have you been operating as a commodity trader for (value chain)?

What is the quantity of crops in tons that you have sold from the last cropping season? *(Look at records if available)*
Maize
Bean
Coffee

What is the quantity of crops in tons that you have sold in the following years? *(Look at records if available)*
2018 - Maize bean coffee
2019
2020

How much revenue did you generate (in UGX) from the last cropping season? *(Look at records if available)*
Maize bean coffee

How much revenue did you generate (in UGX) in the following years?
2018 Maize bean coffee
2019
2020

How much profit/loss did you make (in UGX) from the last cropping season? *(Look at records if available)*
Maize bean coffee

How much profit/loss did you make (in UGX) in the following years?
2018 Maize bean coffee
2019
2020

Do you keep records of profits, revenues, losses and business in general (Y/N)?

In the last one year did you do business in any other crop apart from maize, coffee and beans?
If yes, which crop/s?

Have you participated in any other program apart from the CPM Activity that supports agricultural market systems? Names of these programs and implementers.

Have you received any material/ in-kind support from these programs?
If yes, What kind of support?

Spillover/ relationships and quality of relationship

How many Village Agents are you working with currently? _____
When the CPMA ended in 2018, how many VAs were you working with? _____
On an average, how long have the village agents worked with the village agent model?
Have the village agents worked with you even after the CPMA ended? Yes/No
Do you provide any support/incentives to your VAs? Yes/No
If yes, **in the last year,** what rewards, support or assistance have you provided to your VAs to help them deliver production and market services to farmers? (Multiple responses applicable)

TYPE OF SUPPORT/ASSISTED PROVIDED (PROBE FOR DETAILS)	SUPPORT/ ASSISTED RECEIVED?		VAS SUPPORTED	FREQUENCY OF INTERACTION
	YES	NO	#	
1. Helped VAs to train and/or promote use of Good Agricultural Management Practices to farmers	1	2		
2. Assisted VAs/farmers to access production loans	1	2		
3. Provided cash advance to help VAs deliver production & market services to farmers	1	2		
4. Helped VAs to acquire quality control equipment (such as moisture meter, weighing scale, etc.)	1	2		
5. Helped VAs to access funds to acquire labor saving technology or equipment*	1	2		
6. Assisted VAs to acquire genuine inputs for sale through linkages with a genuine input supplier	1	2		
7. Assisted VAs to attend trainings to build their capacity to transfer knowledge and skills to farmers	1	2		
8. Assisted VAs to acquire smart phones with ICT platforms to access/promote market info to farmers	1	2		
9. Assisted VAs to promote labor saving technologies among farmers	1	2		
10.Provided VAs with incentives as reward for good performance	1	2		
11. Provided ready market for produce purchased by VAs	1	2	-	
12. Other (activity) Specify				

In the last 12 months, from how many Village Agents and farmers you have bought produce repeatedly? (Approximate)
Number of VAs…
Number of Farmers..._____

Has the quantity/ quality of each crop improved?

What are the major products you bought? List them according to volume.

a. Coffee____
b. Beans____
c. Maize____
d. Others(specify)

Spillover

Have you started to work with new Village Agents after the CPMA ended?
If yes, how many of them? _____
What type of services are you providing to them? Copy the table

TYPE OF SUPPORT/ASSISTED PROVIDED (PROBE FOR DETAILS)	SUPPORT/ ASSISTED RECEIVED?		VAS SUPPORTED	FREQUENCY OF INTERACTION
	Yes	No	#	
1. Helped VAs to train and/or promote use of Good Agricultural Management Practices to farmers	1	2		
2. Assisted VAs/farmers to access production loans	1	2		
3. Provided cash advance to help VAs deliver production & market services to farmers	1	2		
4. Helped VAs to acquire quality control equipment (such as moisture meter, weighing scale, etc.)	1	2		
5. Helped VAs to access funds to acquire labor saving technology or equipment*	1	2		
6. Assisted VAs to acquire genuine inputs for sale through linkages with a genuine input supplier	1	2		
7. Assisted VAs to attend trainings to build their capacity to transfer knowledge and skills to farmers	1	2		
8. Assisted VAs to acquire smart phones with ICT platforms to access/promote market info to farmers	1	2		
9. Assisted VAs to promote labor saving technologies among farmers	1	2		
10.Provided VAs with incentives as reward for good performance	1	2		
11. Provided ready market for produce purchased by VAs	1	2	-	
12. Other (activity) Specify				

Have you helped VAs outside of program areas?
If yes, How many Village Agents are you working with? _____
How long have they worked with you?
What type of services are you providing them?

TYPE OF SUPPORT/ASSISTED PROVIDED (PROBE FOR DETAILS)	SUPPORT/ ASSISTED RECEIVED?		VAS SUPPORTED	FREQUENCY OF INTERACTION
	YES	NO	#	
1. Helped VAs to train and/or promote use of Good Agricultural Management Practices to farmers	1	2		
2. Assisted VAs/farmers to access production loans	1	2		
3. Provided cash advance to help VAs deliver production & market services to farmers	1	2		
4. Helped VAs to acquire quality control equipment (such as moisture meter, weighing scale, etc.)	1	2		
5. Helped VAs to access funds to acquire labor saving technology or equipment*	1	2		
6. Assisted VAs to acquire genuine inputs for sale through linkages with a genuine input supplier	1	2		
7. Assisted VAs to attend trainings to build their capacity to transfer knowledge and skills to farmers	1	2		
8. Assisted VAs to acquire smart phones with ICT platforms to access/promote market info to farmers	1	2		
9. Assisted VAs to promote labor saving technologies among farmers	1	2		
10.Provided VAs with incentives as reward for good performance	1	2		
11. Provided ready market for produce purchased by VAs	1	2	-	
12. Other (activity) Specify				

Quality of relationship

On the scale of 1 to 5, where the lowest score 1 is Very Unlikely to invest at all and the highest score 5 is Very Likely to invest in, please indicate which of the following items you are likely to invest more of your time and resources in the near future?

OPTIONS	VERY UNLIKELY	UNLIKELY	NEITHER UNLIKELY, NOR LIKELY	LIKELY	VERY LIKELY
	1	2	3	4	5

1. Helped VAs to train and/or promote use of Good Agricultural Management Practices to farmer
1 2 3 4 5
2. Assisted VAs/farmers to access production loans
1 2 3 4 5
3. Provided cash advance to help VA deliver production & market services to farmers
1 2 3 4 5
4. Helped VAs to acquire quality control equipment (such as moisture meter, weighing scale, etc.)
1 2 3 4 5
5. Helped VAs to access funds to acquire labour saving technology or equipment*
1 2 3 4 5
6. Assisted VAs to acquire genuine inputs by linking them to a genuine input supplier
1 2 3 4 5
7. Assisted VAs to attend trainings that strengthened their capacity to transfer knowledge and skills to farmers 1 2 3 4 5
8. Assisted VAs to acquire smart phones with ICT platforms to access/ promote market info access to farmers 1 2 3 4 5
9. Assisted VAs to promote labour saving technologies among farmers
1 2 3 4 5
10.Provided VAs with incentives as reward for good performance
1 2 3 4 5
11. Provided ready market for produce purchased by VAs
1 2 3 4 5

Have you worked with farmers who were not part of the CPMA program?
If yes, how many farmers are you working with? _____

How long have they worked with you?
What type of services did you provide? Copy from table

TYPE OF SUPPORT/ASSISTED PROVIDED (PROBE FOR DETAILS)	SUPPORT/ ASSISTED RECEIVED?		VAS SUPPORTED	FREQUENCY OF INTERACTION
	YES	NO	#	
1. Helped farmers to train and/or promote use of Good Agricultural Management Practices to farmers	1	2		
2. Assisted farmers to access production loans	1	2		
3. Provided cash advance to help farmers deliver production & market services to farmers	1	2		
4. Helped farmers to acquire quality control equipment (such as moisture meter, weighing scale, etc.)	1	2		
5. Helped farmers to access funds to acquire labour saving technology or equipment*	1	2		
6. Assisted farmers to acquire genuine inputs for sale through linkages with a genuine input supplier	1	2		
7. Assisted farmers to attend trainings to build their capacity to transfer knowledge and skills	1	2		
8. Assisted farmers to acquire smart phones with ICT platforms to access/promote market	1	2		
9. Assisted farmers to promote labour saving technologies	1	2		
10.Provided farmers with incentives as reward for good performance	1	2		
11. Provided ready market for produce purchased by farmers	1	2	-	
12. Other (activity) Specify				

Copying and Crowding-in

Do you know other traders who have entered into the maize, bean or coffee business after knowing about the CPMA activities? Y/N
How many traders?

Do you know of traders who were not part of the CPMA program but have adapted practices recommended by the CPMA program? Y/N
How many traders?

Challenges

Do you have enough storage facilities for all the staple crops or produce you buy? Y/N

Do you have any problems in selling out/exporting the commodity that you buy?
If yes, what are the problems?

a. Export/Import restriction from govt
b. Supporting infrastructure (road network/port/storage facility)
c. Demand from outside
d. Competing with cheap commodities from outside of Uganda

Are there associations in the area (i.e., traders associations/exporters associations)?
If yes, are you a member of such an association?

What challenges do you face in sustaining your relationship with VAs?
Options fixed by piloting: Transportation
Commodity price
Quality/Quantity

What challenges do you face in sustaining your relationship with farmers?
Options fixed by piloting: Transportation
Commodity price
Quality/Quantity

Shocks questions
Did you face any shock in the last cropping season? (put in a table, answer Y/N, if Y, how many times for each shock?)

- Climate: thunderstorms, flooding, landslides, heat/cold waves, drought, wildfires, climate variability
- Human induced: market failures, conflict, gender-based violence, crime/violence, fire, social exclusion/discrimination, population pressure, irregular migration, land/soil degradation
- Biological: diseases

How has it influenced you?
How did you cope with it?
Has the CPMA helped you cope with the shock?
In what ways did the CPMA help you cope with the shocks?

How has the recent COVID-19 pandemic impacted your business? (Select all that apply.)

a. Reduced travel/transport opportunity
b. Less demand from outside
c. Less availability of produce for marketing

d. Loss in profit
e. Loss in crop productions
f. Other_____

Did you provide any extra services, like storage facilities, for coping with COVID-19?
What type of services?

- Loan
- Transport
- Storage
- Access to inputs
- Credit facility
- Information about the price
- Other_____

How are you coping with COVID-19?

How has the CPMA helped you to cope with COVID-19?

THANK YOU
END OF INTERVIEW

APPENDIX 4: VILLAGE AGENT SURVEY

INFORMED CONSENT

My name is…… from Marifa Consulting. Maarifa Consulting is implementing a survey on behalf of the University of Notre Dame, in the US. USAID and its Feed the Future Uganda Commodity Production and Marketing Activity (CPMA) has commissioned the University of Notre Dame to carry out a survey with traders, Village Agents and farmers in order to develop and promote good practices and optimal behaviors in the production and marketing of maize, beans and coffee. You have been selected as one of the traders to be interviewed in this exercise. I would like to ask you some questions related to the production and marketing of maize/beal/coffee. Your privacy is important to us. Private information that directly identifies you, like your name, address and telephone, will not be included in the information we share with anyone outside the study team. We may share information that indirectly identifies you, such as your village or district name, with the organization sponsoring this study or other researchers who will protect your information. When survey responses are shared with the public, no information will be included that can link you to the study. The information you provide will be useful for future planning, implementation and determining the performance of this activity being implemented within this area. Participation in this survey is voluntary and you can choose not to take part at any time.

If you have any questions, please feel free to contact… Sataro… in this phone number XXX

Respondent consented to be interviewed?

1. Yes	
2. No	

Region:	District:
Sub-County:	Village:

PERSONAL DETAILS
Name
Age
Gender (do not ask): 1. Male 2.Female

What crops are you dealing in?
1. Maize
2. Beans
3. Coffee

How long have you been operating as a VA for (value chain)?

What is the quantity of crops in tons that you have sold in the last cropping season?
Maize beans coffee

What is the quantity of crops in tons that you have sold in the following years?
2018 Maize beans coffee
2019
2020

How much revenue did you generate in the following years?
2018 Maize beans coffee
2019
2020

How much profit/loss did you make in the following years?
2018 Maize beans coffee
2019
2020

In the last one year did you do business in any other crop apart from maize, coffee and beans?
If yes, which crop/s?

Which trader primarily do you work with (Trader Name)?

3. What is your relationship with (Trader Name)?

1. Relative	
2. Friend	
3. Non-Relative	

For how long have you been operating as a village agent under (Trader-Name)? _____

Quality of relationship with traders

What business support or assistance have you received from traders to help you deliver production and market services to farmers after the CPMA ended? (Multiple response applicable)

TYPE OF SUPPORT/ASSISTANCE PROVIDED	SUPPORT/ASSISTED RECEIVED?		HOW MANY TRADERS?	HOW MANY TIMES IN THE PAST 12 MONTHS?
	YES	NO		
1. Assisted me to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	1	2		
2. Assisted me to access production loans	1	2		
3. Provided me with a cash advance to buy produce	1	2		
4. Supported me to set up agro input shop	1	2		
5. Helped me to access market information that enabled me to deliver production & Market services to farmers	1	2		
6. Helped me acquire quality control equipment (such as moisture meter, weighing scale, etc.) that I use to ensure quality for produce I buy	1	2		
7. Helped me access funds to acquire labour saving technologies or equipment*	1	2		
8. Assisted me to acquire genuine agro inputs for sale	1	2		
9. Trained /selected me to attend trainings that strengthened my capacity to transfer knowledge and skills to farmers	1	2		
10. Assisted me to acquire a mobile phone that I use to promote market information access to farmers	1	2		

*such as (Dryer, Electronic Spray Pumps, Mobile Shellers/thresher, Cleaner, Pruning Saws, Secateurs, Tarpaulins, Cribs, Silos, Minimum Tillage)

On the scale of 1 to 5, please rate your satisfaction level with the support/assistance you have received from the traders?

FORM OF SUPPORT RECEIVED	VERY DISSATISFIED	DISSATISFIED	NEUTRAL	SATISFIED	VERY SATISFIED
1. Assisted me to train and/or promote use of GAP & PHH to farmer	1	2	3	4	5
2. Assisted me to access production loans	1	2	3	4	5
3. Provided me with a cash advance to buy produce	1	2	3	4	5
4. Supported me to set up an agro input shop	1	2	3	4	5
5. Helped me to access market information that enabled me to deliver production & market services to farmers	1	2	3	4	5
6. Helped me acquire quality control equipment (such as moisture meter, weighing scale, etc.)	1	2	3	4	5
7. Helped me access funds to acquire labour saving technologies or equipment*	1	2	3	4	5
8. Assisted me to acquire genuine agro inputs for sale	1	2	3	4	5
9. Trained /selected me to attend trainings that strengthened my capacity to transfer knowledge and skills to farmers	1	2	3	4	5
10. Assisted me to acquire a mobile phone that I use to promote market information access to farmers	1	2	3	4	5
Others (Mention)					

*such as (Dryer, Electronic Spray Pumps, Mobile Shellers/thresher, Cleaner, Pruning Saws, Secateurs, Tarpaulins, Cribs, Silos, Minimum Tillage)

How many farmers are you working with in your area? _____
By crops-

Are you also working with the farmers who you did not work with when CPMA was there? Yes/No

CPMA project farmers-
What type of services did you provide to them?

TYPE OF SUPPORT/ASSISTANCE PROVIDED	SUPPORT/ASSISTED RECEIVED?		HOW MANY FARMERS?	HOW MANY TIMES IN THE PAST 12 MONTHS?
	YES	NO		
1. Assisted them to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	1	2		
2. Assisted them to access production loans	1	2		
3. Provided them with a cash advance to buy produce	1	2		
4. Supported them to set up an agro input shop	1	2		
5. Helped them to access market information that enabled me to deliver production & market services to farmers	1	2		
6. Helped them to acquire quality control equipment (such as moisture meter, weighing scale, etc.) that they can use to ensure quality for produce I buy	1	2		
7. Helped them to access funds to acquire labour saving technologies or equipment*	1	2		
8. Assisted them to acquire genuine agro inputs for sale	1	2		
9. Trained /selected them to attend trainings that strengthened their capacity to transfer knowledge and skills to farmers	1	2		
10. Assisted them to acquire a mobile phone that can be used to promote market information access	1	2		
11. Other (mention)				

Spillover:

Are you working with farmers in the CPM areas who did not participate in the Activity when CPMA was implemented but are participating now.

If Yes, What type of services did you provide to them?

TYPE OF SUPPORT/ASSISTANCE PROVIDED	SUPPORT/ASSISTED RECEIVED?		HOW MANY FARMERS?	HOW MANY TIMES IN THE PAST 12 MONTHS?
	YES	NO		
1. Assisted them to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	1	2		
2. Assisted them to access production loans	1	2		
3. Provided them with a cash advance to buy produce	1	2		
4. Supported them to set up an agro input shop	1	2		
5. Helped them to access market information that enabled me to deliver production & market services to farmers	1	2		
6. Helped them to acquire quality control equipment (such as moisture meter, weighing scale, etc.) that they can use to ensure quality for produce I buy	1	2		
7. Helped them to access funds to acquire labour saving technologies or equipment*	1	2		
8. Assisted them to acquire genuine agro inputs for sale	1	2		
9. Trained /selected them to attend trainings that strengthened their capacity to transfer knowledge and skills to farmers	1	2		
10. Assisted them to acquire a mobile phone that can be used to promote market information access	1	2		

Are you working with farmers in the non-CPM areas also?

If Yes, What type of services did you provide to them?

TYPE OF SUPPORT/ASSISTANCE PROVIDED	SUPPORT/ASSISTED RECEIVED?		HOW MANY FARMERS?	HOW MANY TIMES IN THE PAST 12 MONTHS?
	YES	NO		
1. Assisted them to train and/or promote use of good agricultural practices (GAP) and post-harvest handling (PHH) to farmers	1	2		
2. Assisted them to access production loans	1	2		
3. Provided them with a cash advance to buy produce	1	2		
4. Supported them to set up an agro input shop	1	2		
5. Helped them to access market information that enabled me to deliver production & market services to farmers	1	2		
6. Helped them to acquire quality control equipment (such as moisture meter, weighing scale, etc.) that they can use to ensure quality for produce I buy	1	2		
7. Helped them to access funds to acquire labour saving technologies or equipment*	1	2		
8. Assisted them to acquire genuine agro inputs for sale	1	2		
9. Trained /selected them to attend trainings that strengthened their capacity to transfer knowledge and skills to farmers	1	2		
10. Assisted them to acquire a mobile phone that can be used to promote market information access	1	2		

What is the trend in the number of farmers you work with after the program ended?

a. Remain the same
b. Decreasing
c. Increasing
d. Don't know

Do you charge farmers any fee for providing services to them? Yes/No

Since the CPMA program ended, what is the trend of adoption of Good Agricultural Practices?

a. Increasing
b. Decreasing
c. No change

Do you sell inputs to the farmers?
If yes, how many farmers on average did you sell inputs to in the last cropping season?

Have you ever acted in the role of a trader?

Shocks questions

Did you face any shock in the last cropping season? (put in a table, answer Y/N, if Y, how many times for each shock?)

- Climate: thunderstorms, flooding, landslides, heat/cold waves, drought, wildfires, climate variability
- Human induced: market failures, conflict, gender-based violence, crime/violence, fire, social exclusion/discrimination, population pressure, irregular migration, land/soil degradation
- Biological: diseases

How has it influenced you?
How did you cope with it?
Has the CPMA helped you cope with the shock?
In what ways did the CPMA help you cope with the shocks?

How has COVID-19 impacted your work?

g. Reduced travel/transport opportunity
h. Less demand for services
i. Less availability of produce for marketing
j. Other? _____

How are you coping with Covid-19?

How has the CPMA helped you to cope with Covid-19?

Farmers Survey

Informed Consent

My name is…… from Marifa Consulting. Maarifa Consulting is implementing a survey on behalf of the University of Notre Dame, in the US. USAID and its Feed the Future Uganda Commodity Production and Marketing Activity (CPMA) has commissioned the University of Notre Dame to carry out a survey with traders, Village Agents and farmers in order to develop and promote good practices and optimal behaviors in the production and marketing of maize, beans and coffee. You have been selected as one of the traders to be interviewed in this exercise. I would like to ask you some questions related to the production and marketing of maize/beal/coffee. Your privacy is important to us. Private information that directly identifies you, like your name, address and telephone, will not be

included in the information we share with anyone outside the study team. We may share information that indirectly identifies you, such as your village or district name, with the organization sponsoring this study or other researchers who will protect your information. When survey responses are shared with the public, no information will be included that can link you to the study. The information you provide will be useful for future planning, implementation and determining the performance of this activity being implemented within this area. Participation in this survey is voluntary and you can choose not to take part at any time.

If you have any questions, please feel free to contact… Sataro… in this phone number XXX

Respondent consented to be interviewed?

1. Yes	
2. No	

HOUSEHOLD IDENTIFICATION

Name of Respondent: _____

Age of Respondent: _____

Sex of the Respondent:

District: _____

Sub-county:_____

Village _____

What crops have you cultivated in the last cropping season?
1. Maize
2. Beans
3. Coffee

What is the quantity of crops in tons that you have sold in the following years? (for each crop)
2018
2019
2020

How much revenue did you generate in the following years? (for each crop)
2018
2019
2020

How much profit/loss did you make in the following years? (for each crop)

2018
2019
2020

In the last one year, did you grow any other crops apart from maize, coffee, and beans?
If yes, which crop/s?

VA/TRADER FARMER RELATIONSHIP

What is the name of the primary village agent with whom you have worked during the CPM program?

What is the name of the primary trader with whom you have worked during the CPM program?

How long have you worked or traded produce with (*VA-Name*)?

1. Less than 6 months	
2. 6 months-1 year	
3. 2-3 years	
4. More than 4 years	

Did you continue to work with ...*(VA-Name) even after the CPM program ended*? Y/N

Why or why not?

Did you work with any other Village Agents in the past 12 months?

If yes, how many?

INCREASED CROP PRODUCTIVITY

1) Have you received training in any good agricultural management practices in the last cropping season?

	Y	N	WHO PROVIDED TRAINING? (VA/TRADERS/GOVERNMENT EXTENSION WORKER/ OTHER (SPECIFY)	HOW MANY TIMES DID YOU RECEIVE?
1. Improved variety / seed use/seedlings				
2. Timely planting				
3. Proper spacing				
4. Timely weeding				
5. Timely Pruning/ Thinning/stacking				
6. Crop rotation				
7. Construction of bands				
8. Proper application of chemical fertilizer				
9. Organic farming /mulching				
10.Timely Herbicide application				
11.Timely Fungicide application				
12.Timely Insecticide application				
13.Timely harvesting				
14.Irrigation				
15.Farm planning/record keeping				
16.Others (Specify				

2) On the scale of 1 to 5, how would you rate the service of Village Agents in training or promoting good agricultural management practices?

Rate on a scale of 1 to 5 where the lowest score 1 is very poor and highest score 5 is very good.

VERY POOR	POOR	FAIR	GOOD	VERY GOOD
1	2	3	4	5

3) Did you pay the Village Agent or Trader for promoting or training you in good agricultural management practices? Y/N
   If yes, how much? _____(UGX)

4) Which good agricultural management practices have you ever used to improve crop production in your farm/garden? List them 1-15 in table 1
5) Which good agricultural management practices has the Village Agent promoted to you in the last 3 years? List them 1-15 in table 1
6) Of those good agricultural management practices you adopted, which ones have you continued to apply even in the last season? List them 1-15 in table 1
7) From whom do you purchase most of your farm inputs during each crop season?

(Farm inputs for the purpose of this study is specific to improved seeds/seedlings, fertilizers, herbicides and pesticides)

1.Village Agent (VA)	
2.Trader attached to Village Agent	
3.Stockist linked to the Trader/Village Agent	
4.Directly from Akorion Company	
5.Other Stockist in the local market	
6.Cooperative/farmer group	
7.Others (Specify)_____	

8) How would you rate on the scale of 1 to 5 the quality and price of inputs that the village agents sell compared to what other input/Agro dealer in the local markets sell?

Quality of input sold by VA: on a scale of 1 to 5 where 1 is very bad quality and 5 is very good quality; please select appropriately

VERY BAD QUALITY	BAD QUALITY	FAIR QUALITY	GOOD QUALITY	VERY GOOD QUALITY
1	2	3	4	5

Price of input charged by VA: on a scale of 1 to 5 where 1 is very Bad Quality and 5 is very good Quality; please select appropriately

VERY LOW PRICE	LOW PRICE	FAIR PRICE	HIGH PRICE	VERY HIGH PRICE
1	2	3	4	5

9) Apart from selling inputs and teaching you good agricultural management practices, what other crop production related services does the Village Agent in your area provide in the last cropping season?

	EMBEDDED SERVICES	13A). DOES THE VA PROVIDE THIS PRODUCTION SERVICE?		13B). HAS THE FARMER EVER ACCESSED THIS PRODUCTION SERVICE FROM THE VA IN THE LAST 3 YEARS?		13C). DID THE FARMER ACCESS AND PAID FOR THIS PRODUCTION SERVICE FROM THE VA IN THE LAST SEASON?		13D). ON A SCALE OF 1 TO 5 PLEASE RATE YOUR SATISFACTION ON THE QUALITY OF THE PRODUCTION SERVICE PROVIDED BY VA COMPARED TO OTHER SERVICES PROVIDERS?				
								VERY DISSATISFIED	DISSATISFIED	NEUTRAL	SATISFIED	VERY SATISFIED
A	Production related services	Yes	No	Yes	No	Yes	No					
1	Crop inspection	1	2	1	2	1	2	1	2	3	4	5
2	Ploughing services	1	2	1	2	1	2	1	2	3	4	5
3	Soil testing	1	2	1	2	1	2	1	2	3	4	5
4	Planting services	1	2	1	2	1	2	1	2	3	4	5
5	Weeding services	1	2	1	2	1	2	1	2	3	4	5
6	Spraying services –pesticides	1	2	1	2	1	2	1	2	3	4	5
7	Fertilizer/Herbicides application	1	2	1	2	1	2	1	2	3	4	5
8	Digital profiling agent	1	2	1	2	1	2	1	2	3	4	5
9	Seed multiplication	1	2	1	2	1	2	1	2	3	4	5
10	Pruning/staking of coffee	1	2	1	2	1	2	1	2	3	4	5
11	Irrigation services	1	2	1	2	1	2	1	2	3	4	5

10) What Post –harvest and market services does the Village Agent in your area provide in the last cropping season?

	IMBEDDED SERVICES	14A). DOES THE VA PROVIDE THIS POST-HARVEST AND MARKETING SERVICE?		14B). HAS THE FARMER EVER ACCESSED THIS POST-HARVEST AND MARKETING SERVICE FROM THE VA IN THE LAST 3 YEARS?		14C). DID THE FARMER ACCESS AND PAY FOR THIS POST-HARVEST AND MARKETING SERVICE FROM THE VA IN THE LAST SEASON?		14D). ON A SCALE OF 1 TO 5 PLEASE RATE YOUR SATISFACTION LEVEL ON THIS POST-HARVEST AND MARKETING SERVICE PROVIDED BY VA COMPARED TO OTHER SERVICES PROVIDERS				
B	Post - harvesting services	Yes	No	Yes	No	Yes	No	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
12	Harvesting services	1	2	1	2	1	2	1	2	3	4	5
13	Shelling/threshing services	1	2	1	2	1	2	1	2	3	4	5
14	Grain cleaning	1	2	1	2	1	2	1	2	3	4	5
15	Drying services	1	2	1	2	1	2	1	2	3	4	5
16	Coffee pulping	1	2	1	2	1	2	1	2	3	4	5
17	Storage and fumigation	1	2	1	2	1	2	1	2	3	4	5
C	Marketing and Rural services agent	1	2	1	2	1	2	1	2	3	4	5
18	Bulking services	1	2	1	2	1	2	1	2	3	4	5
20	E-payment services (Agric related transaction)	1	2	1	2	1	2	1	2	3	4	5

15) What is your **MAIN source** of agricultural market information?

Radio		Multiple response applicable
TV		
Media (print, mass, electronic)		
Fellow farmers/model farmer		
Gov't/NGO Extension workers		
Village Agent /trader		
Farmers group/association		
Mobile phone		
Internet		
Agricultural trade show		
Others (specify)_____		

16) To whom do you give priority as a buyer of your produce?

Village Agent	
Trader attached to Village Agent	
I bulk with the cooperative farmer group	
Schools/institutions within country	
Any local trader within country	
Any trader across Ugandan borders	

18) In the last season has the village agent or trader given credit or assisted you to get an agricultural loan from any financial institution to help you in crop production or during the Harvesting? Y/N

	b). If Yes what is the estimated credit amount?	
	From VA/trader	From Financial Institution
1. Yes		
2. No		

20) On the scale of 1 to 5, where lowest score 1 is unwilling and the highest score 5 very willing. Please rate your willingness to pay for services provided by the village agents?

A	PRODUCTION RELATED SERVICES	VERY UN-WILLING	UN-WILLING	NEITHER UN-WILLING NOR WILLING	WILLING	VERY WILLING
1	Crop inspection	1	2	3	4	5
2	Ploughing services	1	2	3	4	5
3	Soil testing	1	2	3	4	5
4	Planting services	1	2	3	4	5
5	Weeding services	1	2	3	4	5
6	Spraying services –pesticides	1	2	3	4	5
7	Fertilizer/Herbicides application	1	2	3	4	5
8	Digital profiling agent	1	2	3	4	5
9	Seed multiplication	1	2	3	4	5
10	Pruning/staking of coffee	1	2	3	4	5
11	Irrigation services	1	2	3	4	5
B	POST -HARVESTING SERVICES					
12	Harvesting services	1	2	3	4	5
13	Shelling/threshing services	1	2	3	4	5
14	Grain cleaning	1	2	3	4	5
14	Drying services	1	2	3	4	5
16	Coffee pulping	1	2	3	4	5
17	Storage and fumigation	1	2	3	4	5

C	MARKETING AND RURAL SERVICES AGENT	1	2	3	4	5
18	Bulking services	1	2	3	4	5
19	E-payment services (Agric related transaction)	1	2	3	4	5

21) Did you have any problem selling your produce to the VAs or in the market in the last cropping season? Y/N
If Yes, what was the problem? List all that applies after piloting (e.g. price was not competitive, there was no demand of this crop in the market, transportation was problem, my produce did not meet market quality, etc.)

Shocks questions
Did you face any shock in the last cropping season? (put in a table, answer Y/N, if Y, how many times for each shock?)

- Climate: thunderstorms, flooding, landslides, heat/cold waves, drought, wildfires, climate variability
- Human induced: market failures, conflict, gender-based violence, crime/violence, fire, social exclusion/discrimination, population pressure, irregular migration, land/soil degradation
- Biological: diseases

How has it influenced you?
How did you cope with it?
Has the CPMA helped you cope with the shock?
In what ways did the CPMA help you cope with the shocks?

24) How has the recent COVID-19 pandemic impacted your work?

k. Reduced travel/transport opportunity
l. Less demand for services
m. Less availability of produce for marketing
n. ???
o. Any other….

25) How are you coping with the onset of COVID-19?

26) Has the CPMA program helped you to cope with the pandemic?
In what ways?

27) Did you ever perform in the role of a VA?

28) Do you know any farmer/s who was promoted to village agent?

Qualitative Questions

Exporters

Currently, what crops are you dealing in?

1. Maize
2. Beans
3. Coffee

How many traders/VAs are you working with? How do you work with them (business arrangements)?

Do you have any specific geographic areas in which to operate? If yes, which ones and why did you choose to concentrate your business in these areas?

Did you expand your business (expanding the branches, working with more traders/VAs, including more crop variety, etc) after the program ended in 2018? If yes, where and how?

If you expanded your business outside of the CPMA area (including adding more traders/VAs and farmers), what was the reason for this expansion?

Did you experience any changes in the number of traders/VAs you worked with after ending the CPMA? If they are increasing, what is the reason? If they are decreasing, what is the reason? Any movement of farmers to VA's roles? Or, VAs to traders' roles?

What do you consider to be the major enablers and hindrances that you have encountered in supporting traders/Village Agents to deliver production and market services?
Major enablers - and why?
Major hindrances - and why?

How do you motivate your traders/Village Agent and Farmer?
Motivation for Village Agents -
Motivation for Traders-
Motivation for Farmers-

What trends have you observed in the production and marketing of major crops over the last three years? If they have increased, what is the reason? If they have decreased, what is the reason?

Do you think the CPM model is working as expected? If yes, why do you think so? If not, why is it so?

What are the ways you think that the CPM program effects can be sustainable?

What are the major issues working with VAs? And, why?

What were the major problems you encountered during the COVID pandemic? How did you solve the problems? How has the CPM program influenced your ability to tackle the problem?

Do you know other exporters who have entered into the maize, bean or coffee business after knowing about the CPMA activities? How many exporters? Why?

Do you know of exporters who were not part of the CPMA program but have adapted practices recommended by the CPMA program? How many? Why?

Do you think that the activities of the CPMA program were sustainable? Why and Why not? Are you still practicing what was emphasized by the CPMA activities? What type of practices are you practicing? Why? What about the relationships between different actors? Are you still maintaining them? Why and Why not?

For non-CPM Exporters:

Do you work with any traders and VAs in your business? If yes, how do you interact with them? What types of services do you provide to them and how do they support you in your business?

Are you aware of the Commodity Production and Marketing Activity (CPMA) and its approach for promoting the value chain of coffee, beans and maize in some parts of Uganda? If yes, what do you know about this project? How did you know about this?

In your business, is there any direct or indirect impact of the CPMA business model, especially working through VAs? If yes, how did you learn about their business model?

Whether you have adapted any practices of the CPMA program and what practices? Why?

Traders

Currently, what crops are you dealing in?

1. Maize
2. Beans
3. Coffee

How many VAs are you working with? How do you work with them (business arrangements)?

Do you have any specific geographic areas in which to operate? If yes, which ones and why did you choose to concentrate your business in these areas?

Did you expand your business (expanding the branches, working with more VAs, including more crop variety, etc) after the program ended in 2018? If yes, where and how?

If you expanded your business outside of the CPMA area (including adding more VAs and farmers), what was the reason for this expansion?

Did you experience any changes in the number of VAs you worked with after ending the CPMA? If they are increasing, what is the reason? If they are decreasing, what is the reason? Any movement of farmers to VA's roles? Or, VAs to traders' roles?

What do you consider to be the major enablers and hindrances that you have encountered in supporting Village Agents to deliver production and market services?
Major enablers - and why?
Major hindrances - and why?

How do you motivate your Village Agent and Farmer?
Motivation for Village Agents -
Motivation for Farmers -

What trends have you observed in the production and marketing of major crops over the last three years? If they have increased, what is the reason? If they have decreased, what is the reason?

Do you think the CPM model is working as expected? If yes, why do you think so? If not, why is it so?

What are the ways you think that the CPM program effects can be sustainable?

What are the major issues working with VAs? And, why?

What were the major problems you encountered during the COVID pandemic? How did you solve the problems? How has the CPM program influenced your ability to tackle the problem?

Do you know other traders who have entered into the maize, bean or coffee business after knowing about the CPMA activities? How many traders? Why?

Do you know of traders who were not part of the CPMA program but have adapted practices recommended by the CPMA program? How many traders? Why?

Do you know any traders who have promoted/expanded business as exporters? Was this type of vertical movement/growth encouraged by the CPMA program?

Do you know any VAs who have promoted/expanded business as traders? Was this type of vertical movement/growth encouraged by the CPMA program?

Do you think that the activities of the CPMA program were sustainable? Why and Why not? Are you still practicing what was emphasized by the CPMA activities? What type of practices are you practicing? Why?

What about the relationships between different actors? Are you still maintaining them? Why and Why not?

For non-CPM Traders:

Do you work with any VAs in your business? If yes, how do you interact with them? What types of services do you provide to them and how do they support you in your business?

Are you aware of the Commodity Production and Marketing Activity (CPMA) and its approach for promoting the value chain of coffee, beans and maize in some parts of Uganda? If yes, what do you know about this project? How did you know about this?

In your business, is there any direct or indirect impact of the CPMA business model, especially working through VAs? If yes, how did you learn about their business model?

Whether you have adapted any practices of the CPMA program and what practices? Why?

Village Agents

Currently, what crops are you dealing in?
1. Maize
2. Beans
3. Coffee

How many **traders** and **farmers** are you working with, and how do you interact with them (business arrangements)?

Are there specific areas in which you operate? If yes, which ones, and why did you choose to concentrate your business in these areas?

What specific services do you provide to farmers? How has the demand for the services changed over the last three years?

Did you expand your business after the program ended in 2018? If yes, where and how?

Have you seen any adoption of the CPMA business model (working through VAs to promote value chain) outside of CPMA areas? If yes, please share your experiences?

What factors have enabled or hindered you to train or promote good agricultural management practices to farmers?
Enabling factors -
Hindering factors -

Do you know other VA who have entered into the maize, bean or coffee business after knowing about the CPMA activities? How many VAs? Why?

Do you know of VAs who were not part of the CPMA program but have adapted practices recommended by the CPMA program? How many? Why?

Do you know any VAs who have promoted/expanded business as traders or exporters? Was this type of vertical movement/growth encouraged by the CPMA program?

Do you know any farmers who have promoted/expanded business as VAs? Was this type of vertical movement/growth encouraged by the CPMA program?

What factors have enabled or prevented you from providing production services to farmers?

What factors have enabled or prevented you from selling these inputs to farmers?

What factors have enabled or prevented you from promoting labor saving technologies to farmers?

What were the key factors that enabled or prevented your adoption of good agricultural management practices?

How are you coping with COVID-19?

How has the CPMA helped you to cope with COVID-19?

Do you think that the activities of the CPMA program were sustainable? Why and Why not?

Do you think that the activities of the CPMA program were sustainable? Why and Why not? Are you still practicing what was emphasized by the CPMA activities? What type of practices are you practicing? Why?

What about the relationships between different actors? Are you still maintaining them? Why and Why not?

Farmers

Are you currently working with any VAs for production and marketing of [your major crop]?

If yes, what types of services are you getting from them? How easy it is to get their services (reaching out to them, availability of their services based on your needs, their fee, etc.)?

After the CPMA activity ended in 2018, how do you rate your level of engagement with VAs and traders? If it is increasing, what is the reason? If it is decreasing, what is the reason?

Do you pay for the services you get from VAs? If yes, what type of services do you pay for and how much?

How do you get your input supplies for the crop production? Do you get any help from VAs to get those supplies?

For selling your products, do you work with VAs or traders promoted by CPMA? If yes, what are the benefits of working with these people? If not, who you sell your products to and why?

Compared to production and revenue you generate after selling the product, how has it been changing in the last three years--are you benefiting more or has your profit decreased? What are the reasons for this change?

What factors have encouraged or discouraged you from accessing production, post-harvest, or market services offered by the village agent in your area?
Encouraging Factors (what influenced you to access production, post-harvest and market service from the VA?)
Discouraging Factors (What prevented you from accessing production, post-harvest and market service from the VA?)

How are you coping with COVID-19?

How has the CPMA helped you to cope with COVID-19?

Do you know other farmers who have entered into the maize, bean or coffee business after knowing about the CPMA activities? How many farmers? Why?

Do you know of farmers who were not part of the CPMA program but have adapted practices recommended by the CPMA program? How many farmers? Why?

Do you know any farmers who have promoted/expanded business as VAs? Was this type of vertical movement/growth encouraged by the CPMA program?

Do you think that the activities of the CPMA program were sustainable? Why and Why not? Are you still practicing what was emphasized by the CPMA activities? What type of practices are you practicing? Why?

What about the relationships between different actors? Are you still maintaining them? Why and Why not?

Finalized Sep. 1, 2020

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APPENDIX 5: USAID ERIE: LONG TERM IMPACT EVALUATION OF USAID UGANDA FEED THE FUTURE CMP ACTIVITY

HEALTH AND SAFETY PROTOCOL FOR CONDUCTING FACE-TO-FACE FIELD WORK

NOVEMBER 2020

General Health and Safety Requirements

1. Public transportation (except single-user moto-taxis) will not be used for any project travel, including travel from Kampala to the Northern/Western regions or local travel once data collection begins
2. Teams will stay in separate hotels and travel in different vehicles, so if one team needs to enter isolation the other team can continue work.
3. All team members will carry a bottle of hand sanitizer and a box of new, disposable masks with them at all times.
4. All team members will carry educational materials with them at all times with information on preventing the spread of COVID-19.
5. All team members will wear their face mask at all times, and will wash their hands with hand sanitizer before each new interaction with a respondent.
6. At the beginning of each day of field work, each team member will refer to the list of COVID-19 symptoms and confirm that they do not have any of these symptoms.
7. All team members will maintain 2-meter social distancing during the entirety of all face-to-face interactions with respondents.
8. At the beginning of each face-to-face interaction with a respondent, team members will:
    a. provide the respondent with hand sanitizer and a new, disposable face mask
    b. inform the respondent that their face mask must be worn throughout the interaction
    c. ask the respondent if they are experiencing any common COVID-19 symptoms (list symptoms for respondent)
    d. Ask the respondent if they would like additional information on to prevent the spread of COVID-19 .

Requirements for One-on-One Interviews and Surveys

1. All interviews/ surveys will be conducted outside with at least 2 meters of social distancing.
2. Only one data collector will be allowed to visit a household.

Requirements for Focus Group Discussions

1. All FGDs will be conducted with 8 or less participants per group.
2. The team will ensure that FGDs are held within walkable distances for participants to make sure participants do not need to use public transportation.

3. FGDs will be conducted outside and chairs will be organized in a way that maintains 2-meter social distancing between participants.
4. FGD facilitators and QC consultants will provide picture evidence that all FGDs were conducted with appropriate physical distancing.

Requirements related to COVID-19 Exposure

1. At the beginning of each interview, FGD, and survey, each participant will be asked about COVID-19 symptoms. If any participant reports any COVID-19 symptoms, data collectors should:
    a. Inform the respondent that the face-to-face interview/survey will not take place (or that the respondent cannot participate in the FGD)
    b. Advise the respondent to avoid close contact with others and report their symptoms to their local health provider as soon as possible
    c. Report the incident to the team leaders.

2. If any team member (i) begins experiencing COVID-19 symptoms, (ii) was in close contact with someone experiencing COVID-19 symptoms, or (iii) was in close contact with someone who tested positive for COVID-19, the team member should immediately:
    a. Enter isolation and refrain from close contact with any other individuals
    b. Report the COVID-19 exposure to the team leader
    c. Work with the team leader to develop a list of individuals the team member has been in close contact with in the last 10 days
    d. If symptomatic, report their symptoms to a local health provider as soon as possible.

Requirements related to COVID-19 Exposure

1. Fever
2. Shortness of breath of difficulty breathing
3. Loss of taste or smell
4. Fatigue
5. New dry cough, not from a known condition
6. Painful sore throat, not from a known condition
7. Body aches and chills
8. Headache
9. Persistent congestion or runny nose, not from a known condition
10. Nausea or vomiting
11. Diarrhea (more than 3 loose stools in 24 hours)

Definition of Close Contact

"Close contact is defined as being within 6 feet for at least a period of 10 minutes to 30 minutes or more depending upon the exposure." (Center for Disease Control)