NATURE AND EXTENT OF FARMER PARTICIPATION IN COCOA CERTIFICATION IN GHANA, WEST AFRICA

By

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A THESIS

Submitted to
Michigan State University
in partial fulfilment of the requirements
for the degree of

Community Sustainability – Master of Science

2016

ABSTRACT

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Certification of cocoa producers is an example of market-based mechanisms that promote sustainable agricultural practices. Such mechanisms would benefit from better understanding of circumstances underlining the participation of farmers in certification programs. This study examines farmer participation in and stakeholder assessment of cocoa certification in Ghana. It also assesses determinants of farmer participation. Data was collected from farmers and other stakeholders using a household survey, focus group discussions, and in-depth interviews. Descriptive and inferential statistics as well as a binary probit regression model were used to analyse and present the quantitative results. Coding of the qualitative data was used to analyse the results of the focus groups and in-depth interviews. The results reveal that the farmers are satisfied with how decisions related to cocoa certification are made and largely agree with those decisions and certification requirements. However, farmers' level of knowledge of certification as wells as their involvement in compliance inspections are not as expected. Important determinants of participation were: channel for implementation; farmer being a leader; age of farmer; and number of adult household members. Cost of membership registration, time for attending meetings, existing relationship with licensed buying companies, and inadequate information about certification were found to be important barriers to participation. Key implications of the findings include the need to intensify the campaign for certification to improve farmers' knowledge of the program. Also, innovative strategies to increase the efficiency of compliance inspections would potentially be beneficial.

ACKNOWLEDGEMENTS

My sincere appreciation goes to The MasterCard Foundation (MCF) for funding my Master's Degree through the MCF Scholars Program at Michigan State University (MSU). This study was sponsored by The Department of Community Sustainability (CSUS) at Michigan State University and was also supported by The MCF Scholars Program at MSU. I am grateful to my advisory committee for the guidance. I also thank my field enumerators Kenneth Quansah, Addo Kingsley, Francis Essandoh, and Vida Owusu Mensah for their hard work. I appreciate the assistance of staff of the Social Science and Statistics Unit (SSSU) of the Cocoa Research Institute of Ghana (CRIG). I thank Mr Frank Otchere, PhD Candidate at The University of North Carolina at Chapel Hill for all the technical assistance and support.

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KEY TO ABBREVIATIONS

CAPI	Computer Assisted Personal Interviews
CHED	Cocoa Health and Extension Division
CMC	Cocoa Marketing Company
COCOBOD	Ghana Cocoa Board
CRIG	Cocoa Research Institute of Ghana
CSPro	Census and Survey Processing System
DOI	Diffusion of Innovation
FLO	Fair Trade Labeling Organization
ICS	Internal Control System
IFOAM	International Federation of Organic Agricultural Movements
PPPs	Public Private Partnerships
QCC	Quality Control Company
SAN-RA	Sustainable Agricultural Network–Rainforest Alliance
TIB	Theory of Interpersonal Behavior
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UTZ	UTZ Certifie

INTRODUCTION

Similar to third-party certification programs across agriculture and food systems, certification of cocoa producers is a means to promote farmers' adoption of a comprehensive package of technical and institutional innovations recommended for sustainable cocoa production (TCC 2010; KPMG 2012). Certification programs are gaining recognition within the international development setting at a fast rate because, in many cases, they appear to address concerns about environmental and social issues associated with agricultural production (Saltiel, Bauder, & Palakovich 1994; Manda *et al.* 2015). In the case of cocoa certification, there are specific requirements intended to address issues such as: soil, water, forest and biodiversity management; integrated pests and diseases management and crop protection; health and safety practices (including waste management); and workers' right (including issues on child labor) (CA 2013; FLO 2014; Mahrizal *et al*. 2012; UTZ 2009).

An underlining principle of certification programs is that producers who participate in them typically incur extra costs (as compared to those of conventional producers) associated with adopting sustainable agricultural practices. Then these programs reward or compensate for producers for those increased costs via higher prices paid for certified produce/products and in some cases increased levels of outputs. In this way, market forces are used as part of a mechanism that determines and controls some of the negative externalities of traditional (non-certified) practices including those that are difficult to manage through regulations. The market for produce/products, in turn, benefits through increased product differentiation and creation of new market niches (Waldman & Kerr 2014; Lebel 2012; Mahrizal *et al.* 2012). Private companies and international development organizations are promoting the program with the

promise of price premium as an incentive for participation (KPMG 2012; Melisa & Don 2012; TCC 2012). While some features of cocoa certification in Ghana appear to be visible and uniform, it turns out that in practice there is a high degree of variability and mostly unsubstantiated claims about the program.

The features of certification programs can vary and be modified and as such there is the need for research to deepen our understanding of the contexts and design elements that can increase certification program implementation in smallholder production systems (Gockowski *et al.* 2013). Like other certification programs, cocoa certification is voluntary and certifies only groups of farmers who want to be certified. Thus understanding what goes into farmers' decisions to participate in such groups as well as the realities of their participation is very important (Van Herzele *et al.* 2013). There is a small body of literature on the topic of farmer participation in certification programs, including cocoa certification. This study aims to add to that literature by focusing on developing an understanding of the nature and extent of farmer participation in cocoa certification in Ghana. In order to achieve this objective, the study focused on the following specific research questions:

- In what ways and to what extent are farmers in Ghana engaged in the activities and processes of implementing cocoa certification?
- What are stakeholders' assessments of cocoa certification in Ghana**?**
- What are the factors that determine participation in cocoa certification in Ghana?

The next two chapters are structured as separate research papers/manuscripts. Following those chapters there is a chapter summarizing some conclusions and an appendix with detailed research-related information and documents.

CHAPTER 1
FARMER PARTICIPATION IN AND STAKEHOLDER ASSESSMENT OF COCOA CERTIFICATION PROGRAMS IN GHANA, WEST AFRICA

Introduction

Voluntary third-party certification of primary agricultural commodity producers is a recent strategy through which the market is used to promote the adoption of sustainable agricultural practices (Gonzalez & Nigh 2005; Auld 2010; Menozzi, Fioravanzi & Donati 2014; Tey *et al.* 2014;). A careful review of the history of voluntary third-party certification programs in developing countries reveals that they were originally used for plantation crops (Lebel 2012; Mahrizal *et al.* 2012). Obviously, there are major differences in plantation production systems and smallholder production systems that would have significant implications on how third-party certification would work in each case. Therefore, understanding the context of promoting the adoption of sustainable agricultural practices among smallholder farmers through third-party voluntary certification would enhance the assessment of such programs.

Empirical evidence on these contextual circumstances is however lacking. This lack of evidence explains why some conditions related to certification programs make it difficult to empirically link them with tangible benefits to farmers and society (Barham & Weber 2012; Elder, Zerriffi & Billon 2012). Issues regarding proliferation of certification standards and related multiple certifications, inadequate markets for certified produce, and difficulty in the management of price premiums are important in this regard (Auld 2010; Hainmueller, Hiscox & Tampe, 2011; Barham & Weber 2012). Another feature of certifying smallholders that makes a difference is the practice of group certifications. Carefully considering group certifications raises some questions that have barely been addressed.

This paper investigates some contextual conditions for implementing third-party certification programs that promote smallholders' adoption of sustainable agricultural practices. To achieve this, the paper examines the participation of farmers in cocoa certification in Ghana as well as stakeholder assessment of the program. Cocoa certification is an example of voluntary third-party certification schemes that promote the adoption of sustainable agricultural practices among smallholder cocoa farmers. Cocoa producers are certified after they have been verified as having adopted comprehensive packages of technical and institutional innovations recommended for sustainable cocoa production (TCC 2010; KPMG 2012).

Cocoa production in Ghana is important to the world cocoa economy as well as the Ghanaian economy (Smithers & Furman 2003; Ntiamoah & Afrane 2008; Quarmine *et al*. 2012; GSS 2013; Läderach *et al*. 2013). It is however confronted by some economic, social, and environmental issues that bring its sustainability into question (Ntiamoah & Afrane 2008; Kyei, Foli & Ankoh 2011; KPMG 2012; Melisa & Don 2012; Quarmine *et al*. 2012; TCC 2012; Darkwah & Verter 2014). For about a decade now, cocoa certification has been implemented in Ghana to promote sustainable cocoa production (KPMG 2012; Melisa & Don 2012; TCC 2012). The lack of empirical research on the contexts of implementing certification programs as mentioned above is very typical of the literature on cocoa certification. As a result, similar methodological and other limitations have made it difficult for research on cocoa certification to make conclusive statements on its impacts (Gockowski *et al.* 2013; KPMG 2012; Melisa & Don 2012; TCC 2012; and Verina *et al.* 2014).

The Concept of Cocoa Certification

Voluntary standards and certifications have evolved through several means since the 1920s and have been in several sectors including agricultural and food trade as a governance tool (Auld 2010; Herzfeld *et al.* 2011). For producer groups, standards and certifications are means of establishing acceptable production practices among members. They offer a bridge to the globalized commodity chain and its standardized quality attributes for consumers. Businesses along the commodity supply chain use standards and certifications to capture niches of producers and consumers in order to ensure consistent demand and supply (Lebel 2012; Mahrizal *et al.* 2012). Generally, certification schemes train farmers, get them verified by third-party auditors and then certify them by putting a label on their products to indicate adherence to sustainable agricultural practices. Businesses along the supply chain use these labels to trace certified products in order to make claims on them to the consumer. Consumers then pay some extra amount (usually referred to as price premium) on such products to support farmers' efforts in adopting sustainable agricultural practices (Elder *et al.* 2012 & 2013; Jena *et al.* 2012; Rueda & Lambin 2013).

Cocoa certification is a program that came as a result of initiatives by stakeholders within the cocoa economy to promote sustainable cocoa production (KPMG 2012; Melisa & Don 2012; TCC 2012). The program aims at alleviating the economic, social and environmental issues confronting sustainable cocoa production. Cocoa certification comprises a set of principles of sustainable cocoa production practices spelt out in codes of conduct of various certification schemes or standard bodies (KPMG 2012; TCC 2010). Cocoa is currently being certified in Ghana by Fair Trade Labeling Organization (FLO), UTZ Certified, Sustainable Agriculture

Network – Rainforest Alliance (SAN-RA), and International Federation of Organic Agricultural Movements (IFOAM) (KPMG 2012; Mahrizal *et al*. 2012; Melisa & Don 2012; TCC 2012 & 2015). In most cases, promoters of certification partner with licensed buying companies and use the existing structures of the licensed buying companies to organize farmers for group certifications. The group certifications are necessitated by the need to reduce transaction cost and information asymmetries as well as the need to consolidate verification responsibilities (Gockowski et al., 2013 and TCC, 2015).

A farmer organization seeking certification first has to indicate its interest and get registered. It then trains its members on the requirements detailed in the codes of conduct for the particular scheme it wants to certify with. Most of the changes that result from the implementation of the requirements happen at the farm level. The organization therefore conducts an internal audit through an Internal Control System (ICS) to check for its readiness for the certification. This is done by visiting farms of members and checking for the various control points in the codes of conduct. If the organization is convinced by the results of the internal audit, it invites an external auditor usually specified by the certification scheme to verify the group for certification. The work of the external auditor results in either approval for granting certification and or recommendations for improvements. Not all of the requirements are to be met before a group is certified, groups usually have a 3-year transitioning period. After certification, groups are verified every 3 years to ensure compliance. The licensed buying companies obtain price premiums through the liaisons with the standard bodies and pay them to farmers (Gockowski *et al.* 2013; KPMG 2012; Mahrizal *et al*. 2012; TCC 2015).

The State of Cocoa Certification

The share of certified cocoa has been increasing steadily since the introduction of the program. In 2009, certified cocoa was about 3% of world cocoa sales, this rose to 6% in 2010 and 30% in 2013. There are however issues of multiple certification as well as leakage (selling certified cocoa as conventional) that have the potential of affecting these figures (KPMG, 2012; and TCC, 2010, 2012, & 2015). Fairtrade International and Fairtrade Africa's report on West Africa for 2014 indicates that there are 11 certified producer organizations in Ghana with 95,900 farmers producing 45,800 metric tonnes of certified cocoa on 146,800 hectares of land. Information on the website of UTZ certified indicate that there are currently 16 producer groups certified in Ghana. SAN-RA had about 7,000 farmers with about 34,000 hectares of land as of 2011 (Melisa & Don, 2012). KPMG, 2012 reported market shares of 39%, 25%, 20% and 15% for FLO, UTZ, SAN-RA, and organic certified respectively. Table 1 below shows the amount of cocoa produced and sold as certified under FLO, UTZ and SAN-RA standards in 2009, 2011 and 2013.

Though the characteristics of the production process for certified cocoa production are not too different from the traditional process, the certification process alone comes with a lot of cost. This together with the small amounts of changes made in the production process and the costs associated with them means the gains in cocoa certification need to be able to offset such cost in order to get producers incentivized. Benefits to the producer in this sense depend on a sufficient and stable price premium and an increase in productivity (Waldman & Kerr 2014; Gockowski et al., 2013; and Mahrizal et al., 2012). These have been the bases for most of the impact assessment studies conducted on cocoa certification. Generally, certified cocoa attracts a price premium of $150 to $200 per tonne, which is about 10% of the price of cocoa. Varied

proportions of this amount (depending on certification scheme and producer group) go into direct payments and services to farmers, community development, and organization and administration. However, there does not seem to be a great impact of the premium on the actual income of farmers because of transaction costs and the fact that some certified cocoa beans end up being sold as conventional cocoa (KPMG, 2012; Mahrizal et al., 2012; and TCC, 2015).

Table 1.1: Trends in Production and Sale of Certified Cocoa (1000 Tonnes)

	2009	**2011**	**2013**
FLO			
Produced	65	124	176
Sold (%)	0 (0)	46 (37)	60 (34)
UTZ			
Produced	5	214	691
Sold (%)	0 (0)	43 (20)	297 (43)
SAN – RA			
Produced	13	98	571
Sold (%)	0 (0)	65 (66)	279 (49)
All			
Produced	**83**	**436**	**1438**
Sold (%)	**0 (0)**	**154 (35)**	**636 (44)**

Source: TCC 2015

Amidst methodological and other limitations, some evidence suggests that cocoa certification leads to increased productivity (with the exception of organic certification which is associated with a decline in productivity especially in the initial years), capacity building and community development. Specifically, better access to farm inputs, training, and credit as well as increases in yield, productivity and product quality have been identified at the farm level. Financial viability, strengthened organizational capacity, and improved political representativeness have been found at the group level. Improved livelihoods, improved labor conditions, efficient use of agrochemicals, improved management of natural resources, conservation and restoration of local

ecosystems and biodiversity, group involvement in productive infrastructure, and generation of local employment have also been seen at the community level (Gockowski et al., 2013; KPMG, 2012; Melisa & Don, 2012; TCC, 2012; and Verina et al., 2014). Despite these prospective gains from certification, there are also a number of difficulties that have been identified. Significant among them are the issues of discontent with premiums and pricing, credibility of auditing, functioning of farmer organizations, discrimination against 'non-certifiable farmers', persistence of gender inequality, leakage and high compliance cost (KPMG, 2012; and TCC, 2010, 2012 & 2015).

Methods

This section presents the methods employed in the study design, including the sampling of communities and participants, and data collection and analyses.

Study Design

The study was designed to cover farmers in communities where any of the three major certification schemes currently involved in cocoa certification (FLO, UTZ and SAN-RA) is operating exclusively. Cocoa certification is implemented in Ghana either through a farmer cooperative or a licensed buying company. Therefore, the study was also designed to cover farmers in communities where certification has been implemented through a farmer cooperative or a licensed buying company. This design allows for comparative data analysis across the schemes and implementation channels. During the study period, FLO, UTZ and SAN-RA standards had been implemented in a total of 39 cocoa districts in 5 out of the 6 cocoa growing regions of Ghana. Communities in the study are located across 5 cocoa districts in 4 regions.

There were 8 licensed buying companies, 15 farmer cooperatives and 2 licensed buying company-cum-farmer cooperatives involved in the implementation of certification and information was available for 6 of the licensed buying companies and the 15 farmer cooperatives.

Based on information from the 2010 population and housing census reports, the study was designed to cover farmers in communities with estimated number of households between 200 and 300. There is however one survey community that did not have this information in the census report. Again, in order to compare farmers participating in certification with non-certified farmers where necessary, the study was designed to include certified and non-certified farmers. Data collection was done in two phases: a qualitative phase of in-depth interviews and focus group discussions and a quantitative phase of a household survey. Details of the sampling framework and the geographical location of the study communities are presented and shown in Appendixes A and B respectively.

Sample and Sampling Techniques & Procedures

Farmers used for the study were selected from 6 communities, 2 each for FLO, UTZ and SAN-RA. The 2 communities for each standard consist of 1 in which implementation was through a licensed buying company and the other through a farmer cooperative implementation. A total of 16 in-depth interviews were conducted: 4 with Ghana cocoa board (COCOBOD) officials; 3 with officials of licensed buying companies; 4 with certification standard officials; 2 with capacity building organizations officials; 2 with officials of external auditing firms; and 1 with an official of an international development organization. A total of 56 farmers participated in 6 focus group

discussions, with 1 focus group discussion per community. There were 352 farmers selected for the household survey, with 30 certified and 30 non-certified farmers from each community (except one community which had only 22 certified farmers). With an 88.6% response rate, 312 (150 certified and 162 non-certified) of them were surveyed.

Officials for the in-depth interviews were selected purposively. Purposive sampling was also used to select communities. This was necessary to allow for selection of communities in which only one certification scheme has been implemented through either a licensed buying company or a farmer cooperative as well as communities that have between 200 and 300 households. Communities of such sizes are typically within well-defined geographic areas and this enhances efficient comprehensive household enumeration. Participants in the focus group discussions were also selected purposively based on availability and willingness while taking into account factors like gender, certification status, and social status (age, community leadership, migrant/native etc). Certified and non-certified farmers in the household survey were selected using stratified random sampling.

Officials for the in-depth interviews were identified through snowballing, starting with contacts obtained from the cocoa research institute of Ghana (CRIG). Information on cocoa districts in which the three certification standards had been implemented was obtained from in-depth interviews. Then 2 districts were selected per standard, 1 for each implementation channel. For each selected district, a list of communities in which certification had been implemented exclusively under a particular standard was generated. Information on the estimated number of households in the listed communities was obtained from districts 2010 population and housing

census reports. Upon arrival of the survey team in each selected community, there was an enumeration of all households in the community. The enumeration exercise collected information to identify cocoa farming households as well as certified and non-certified households. Then from strata of certified and non-certified households, a sample is selected for certified and non-certified households in each community.

Data Collection

Open-ended interview and discussion guides were used to conduct the in-depth interviews and focus group discussions. They covered issues on organizing farmers for certification, training of farmers, auditing and monitoring farmers for compliance, issuance of certificate, purchasing of certified cocoa beans, and distribution and management of premiums. The in-depth interviews were conducted in English while the focus group discussions were conducted in Twi. They were audio-recorded and transcribed in English. Through computer assisted personal interview (CAPI) programmed using the census and survey processing system (CSPro), a structured questionnaire was used to conduct the household survey. The questionnaire collected information on knowledge, participation and assessment of certification. Field interviewers were trained on the questionnaire and survey procedures in a four-day training and pretest program.

Variables and Measurement

Three items where used to examine farmers' knowledge of cocoa certification: farmers' general level of knowledge of the program, their awareness of main objectives of the program, and certified farmers' awareness of the standard they are certified with. Farmers' general level of knowledge was measured on a 3-point Likert scale of 1-very knowledgeable, 2-somewhat

knowledgeable, and 3-not knowledgeable at all. Farmers were asked to indicate their awareness of some main objectives of cocoa certification as well as the standards they are certified with. Farmers were also asked to indicate what they believe are objectives of certification.

Farmers' participation in certified farmer groups was examined in relation to only certified farmers. It was examined using the time lag between the implementation of certification in a community and individual farmer's participation in the program, farmers' engagement in certified farmer group decision-making, and their involvement in internal and external inspection. Time lag was measured with number of years. Farmers' engagement in decision-making was measured using typical mode for choosing certified farmer group leaders, percentage of farmers holding leadership positions in their farmer groups, percentage of group meetings held in the 12 months leading up to the survey that farmer attended, farmers' level of agreement that group decision-making engages all members, and their level of agreement with group decisions. Levels of agreement were measured on a scale of 1 – strongly agree to 5 – strongly disagree for decisions on specific topics. The topics were sale of certified beans and price premiums, membership payments and meetings, and internal and external inspection. Farmers' involvement in internal and external inspections was measured by asking farmers the last time they and their farms were inspected by internal and external auditors.

Farmers in the entire sample were asked to indicate (on a scale of 1 – strongly agree to 5 – strongly disagree) their level of agreement with some requirements and expected benefits of certification. The requirements were those regarding production, harvest and post-harvest practices; fertilization and crop protection; safety practices and workers' right (including child

labor issues); environmental and natural resources protection and waste management; and farmer organization. The benefits were improving access to inputs and services; increasing farm output and income; improving environmental conditions; improving social conditions; improving farm management and safety practices; and community infrastructure development. For the benefits, farmers were asked to indicate the extent to which they expected certification to result in such benefits as well as the extent to which they agree that certification has resulted in such benefits.

Data Analyses

Coding of the qualitative data was used to analyse the results of the focus groups and in-depth interviews. Descriptive statistics (percentages) were used to analyze all items under farmers' knowledge, modes of choosing group leaders, and farmers holding group leadership positions. Participation time lag, group meeting attendance, and levels of agreement with group decisions, certification requirements and expected benefits were analyzed with means. For participation time lag and group meeting attendance, one-way ANOVA was used to test the difference in means across the certification standards. Differences in mean scores for levels of agreement with group decisions across the certification standards were tested using the Kruskal-Wallis test. T-test was used to test the differences in mean scores for the levels of agreement with certification requirements and expected benefits for certified and non-certified farmers.

Results

This section presents the results of the study in two subsections: results from the in-depth interviews and focus group discussions, and results from the household survey. The first subsection focuses on findings regarding the structures and procedures for implementing

certification; the conduct of training and verifying/inspecting farmers for compliance; decision-making on price premiums and inspectors; and sustainability assessment of the program. The second subsection is focused on farmers' knowledge of cocoa certification, their participation in certified farmer groups and activities, and their assessment of certification requirements and expected benefits.

In-depth Interviews and Focus Group Discussions

Structures and Procedures for Implementing Certification

The regulatory body of Ghana's cocoa sector, COCOBOD manages cocoa certification through public-private partnerships (PPPs). Through these partnerships, COCOBOD, international development organizations, and private companies in and outside Ghana collaborate in organizing farmers and taking them through the processes certification. There is currently no single division or unit of the COCOBOD that is exclusively responsible for dealing with cocoa certification. However, the Cocoa Health and Extension Division (CHED), Cocoa Marketing Company (CMC), Quality Control Company (QCC) and Research, Monitoring and Evaluation are units and divisions of COCOBOD that are closely related to different aspects of cocoa certification by virtue of their work. COCOBOD has started a review of all certification manuals with an aim of putting together one comprehensive manual. Also, COCOBOD is reviewing market dynamics and PPPs to come up with a document to regulate cocoa certification. Training and sensitization of COCOBOD staff on cocoa certification is also ongoing. Recently, COCOBOD instituted a regulation to retain 20% of the price premiums on all certified cocoa beans.

Companies and organizations in the PPPs first assess the needs of communities to determine where to implement certification. Once a community is identified, officials of organizations and companies approach the leaders of the community to explain the concepts and objectives of the program. After community leaders' approval, there is community-wide sensitization. Cocoa farmers who are 18 years and over are then invited to join farmer groups to be taken through the processes of certification. These farmer groups are mainly farmer cooperative associations, groups associated with a licensed buying company, or a hybrid of the two. They are in some cases newly created and in other cases pre-existing for other purposes. They are mostly formed in a cluster of communities, with each community having a group of farmers. In the communities used for this study, interested farmers have to pay an average of about GH₵ 20[1] as one-time membership registration fee and attend meetings once or twice a month. The 2 FLO communities have farmer groups that have been certified for 2 and 5 years; the UTZ communities have groups certified for 2 and 3 years; and the SAN-RA communities have groups certified for 1 and 2 years.

Certified cocoa farmer groups are run on democratic principles with emphasis on transparency and awareness. An official of a certification standard puts it this way

> "*…you must have membership list, there must be leadership, there must be evidence that those elections are done according to democratic principles, transparency and stuffs like that, and then the membership must be aware as to what is it that they are signing onto, so there must be information some evidence that the people understand what [CERTIFICATION STANDARD] is about, what their responsibility in it would be, what their expectations of it should be at the basic level"* (IN020201).

[1] For the period of data collection US $1 was averagely GH₵ 3.96

Some officials mentioned that farmer groups organized under the cooperative system do better in this regard. As a result, they have stronger leadership and bargaining power and their members are well-informed and own group decisions.

Training and Compliance Verification

Once a certification project is established and groups of farmers are formed, training of farmers on certification requirement and objectives is done using the training-of-trainers (TOT) approach. Some farmers are selected from each group to be part of an internal control/management system (ICS/IMS) of the larger farmer cooperative or licensed buying company. These farmers are trained by capacity building organizations working with certification and they in turn train their colleague farmers in their respective communities under the supervision of the capacity building organization. This process of training is typically expected to last for a period of at least six months.

After the training, the ICS/IMS plans for internal and external inspection. Internal inspections should be conducted at least once a year and all farmers in the groups are supposed to be inspected during every internal inspection. These internal inspections should be very well documented. The following are quotes from a licensed buying company official and a certification standard official respectively on internal inspection:

> "*…the group administrator will select a number of internal inspectors this could be hired or could come from the same community or could come from the group who are train on internal inspections protocols. These inspectors will then go around doing inspection of*

each member's farms which hundred per cent of the farms must be internally inspected to meet the requirement" (IN020301).

"*So you do the internal inspection, you document it and then if and auditor comes, he will be able to identify that you are working with 1000 farmers this is their farm characteristics or farm profile*" (IN020101).

Internal inspections are done and corrective measures taken until the ICS/IMS is comfortable with the results and then an auditor is invited to conduct external inspection. In some cases the ICS/IMS first invites an auditor to do a pre-audit before the external inspection. Each group should be externally inspected at least once within a certification cycle, which takes 3 or 4 years. External inspections check the entire system of operation of the farmer groups (document review, farm visits, key personnel interviews). From each farmer group, some farmers are randomly selected for farm visits and other inspection activities. If external inspectors find nonconformities, they are expected to be corrected in what is termed "continuous improvement" before the farmer group can be certified. The importance of both internal and external inspections was echoed in the words of a private consultant who does auditing: "*Auditing forms one of the core pillars of certification scheme*" (IN050301). Inspection/auditing is the feature of certification that actually allows for claims to be made of certified beans as been produced with sustainable practices.

Deciding on Price Premiums and Inspectors

For price premiums, the focus was on decision-making regarding the amount paid and the distribution among various uses. It was revealed that price premiums are mainly negotiated

between local licensed buying companies and offshore cocoa buyers (mainly processors). This is typically done prior to the implementation of a particular certification project. In other words, licensed buying companies first establish contracts with external buyers for specified amounts of certified beans at specific price premiums before they implement a certification project in that regard. Once a licensed buying company successfully does this and receives the money for price premiums, the decision on how much to give to farmers lies solely within the powers of that licensed buying company. Typically, it is a licensed buying company that funds the cost of implementing the certification project (including the cases where implementation is done through a farmer cooperative). Therefore, the licensed buying company first deducts the cost of implementation and then decides how much to give to farmers.

How money to farmers is distributed largely depends on the structures of the certified farmer group. Typically, in the case of farmer cooperative-based groups, the bulk of money is paid to the group. Then the group leaders (popularly referred to as lead farmers) together with members decide on how much to be given to individual farmers as cash and how much to go into other uses, mostly purchase of inputs and community projects. In the case of licensed buying company-based groups, because the groups are seemingly inseparable from the licensed buying companies, the bulk of money to be given to farmers still gets to be in the possession of the licensed buying companies. They therefore decide (sometimes in consultation with lead farmers) on how much to go to individual farmers as cash and how much should go into other uses, still mostly inputs and community projects. One focus group participant had this to say:

> "*Our organization does not decide the amount of premium to be paid to farmers. All decisions regarding the amount to be paid are made by the officers from [licensed buying*

company]. They set the amount to be paid per bag of cocoa e.g., this year GH₵ 15.00 was paid as premium per bag of cocoa" (FG030701).

Regarding inspectors, the focus was to learn about who decides on the inspector. Internal inspectors are usually lead farmers who are chosen by the licensed buying company or farmer cooperative officials based on literacy and experience. According to a certification officer for one licensed buying company,

"*…the lead farmer should be somebody who can read and write and should know something about the work that he is doing, that is the farming, he should understand the code of conduct and the training that he is supposed to do. So basically we don't put emphasizes on certificate and those kind of things, is about readings, is about you understanding the code of conducts, is about you understanding the cocoa work*" (IN030101).

These internal inspectors typically inspect farmers outside of their communities of residence in order to avoid conflict of interest. Farmer groups working with SAN-RA and UTZ certifications get to choose from a number of accredited external inspectors (referred to as certification bodies – CBs or auditors). This is typically done in consultation with the licensed buying companies and other organizations involved. Private consultants employed and assigned by FLO-Cert, a member of the Fair trade group, externally inspect groups certified by FLO.

Sustainability Assessment

Focus group discussion and in-depth interview participants echoed two issues mentioned in literature as weaknesses and threats to certifications. The first issue has to do with the problem of

certified beans been sold as conventional. The survey data for instance shows that certified farmers on average sold 13% to 88% of their certified beans as conventional in the 12 months leading up to the survey. Majority of the certified farmers in the survey indicated that they sold their certified beans as conventional because of their relationships with licensed buying companies other than the licensed buying company designated to buy certified beans in their community. Other certified farmers indicated that sometimes purchasing clerks of designated licensed buying companies did not have money to pay for beans that were ready to be sold. The second issue is what some participants described as unhealthy competition between companies and organizations involved in certification, which results in the duplication of efforts and multiple certifications. An official of an international development organization involved in certification implementation had this to say:

> "*Certification I will always say is a good thing but the implementers should be careful, people are working for beans and not the message to the people who are suppose to receive and implement them for us all to benefit*" (IN050401).

Some issues were also revealed as threats to the sustainability of cocoa certification in Ghana. Farmers in the focus group discussions indicated that certified group members' lack of punctuality to meetings is not encouraging; sometimes there is discrimination against some members in the distribution of inputs to certified groups; and there is lack of frequent visits by certification officials. Farmers and officials expressed concern with lack of transparency and accountability on the part of lead farmers and some licensed buying companies. A private consultant that conducts external auditing/inspection said this:

> "*In my opinion, I think that most of these buying companies are into this program basically because of profit but not promoting sustainability of the program. Most of these licensed buying companies find it difficult in disclosing the cost incurred in preparing the grower groups so in terms of transparency, it has always being a problem for most of these licensed buying companies. Therefore, visibility has been a big problem. Yes I have witness an internal officer cheating. Some give recommendations that do not reflect with observations, field officers giving falsehood information's, and checklist not properly fill out. I have personally caught a project officer filling in forms for the farmers*" (IN050301).

Other issues revealed include paperwork being too much; inconsistent interpretation of some certification requirement among different stakeholders; and apathy on the part of farmers. Also, it was mentioned that because most third-party certifications were originally designed for plantation crops; it is difficult to implement some certification requirements. Some certification requirements are practicable only on a large scale but cocoa production is predominantly smallholder-based. Finally, some see the practice of making price premiums the major motivation message as a threat to the sustainability of the program. As a private consultant puts it: "*Technically, I think the communication that certification is for premium was a disaster. The biggest threat is the wrong communication that certification is for premium*" (IN050301). As indicated above, farmers end up selling very high proportions of their certified beans as conventional and do not receive price premiums for such beans. This erodes the benefits of price premium to farmers and reasonably explains why it is not a very good idea to have it as a major motivation.

These weaknesses and threats not withstanding, farmers and certification officials believe certification has several positive implications and there are measures that can be taken to even avert the weaknesses and threats. It is believed that certification is improving access to inputs; reducing the incidence of child labor; increasing cocoa outputs and incomes; and facilitating community developmental projects. Also, certification is considered a very good instrument for driving knowledge in farm management improvement much more than traditional extension is able to do. The practice of certifying farmers in groups also enhances compliance to some extent. This is because if a major non-compliance is identified for an individual farmer, it may affect the entire group's certification. Therefore, farmers sometimes assume the responsibility of enforcing compliance among colleagues. In moving forward, there are calls for more cooperation between companies and organizations involved to enhance database management and also reduce duplication of efforts. It is also important to pay attention to other sectors and aspects of the cocoa economy, especially marketing which is the backbone of certification. Majority of cocoa farmers are still not captured under certification and officials see this as an opportunity for the program to keep expanding.

Survey Results

Knowledge of Certification

The results as show in figure 1.1 below indicate that about 38% of farmers in the entire sample said they are very knowledgeable while about 39% and 22% respectively said they are somewhat knowledgeable and not knowledgeable at all. For certified farmers, 71% and 29% respectively said they are very knowledgeable and somewhat knowledgeable. For non-certified farmers, the

percentages are respectively about 7, 49 and 42 for very knowledgeable, somewhat knowledgeable and not knowledgeable at all.

The results for farmers' awareness of certification objectives are presented in table 1.2 below. It can be seen from the table that 5 out of the 8 objectives have at least 15% of farmers in the entire sample being aware of them. On top of the list is improving farmers' output and income, which 62% of the entire sample, 92% of certified farmers, and 33% of non-certified farmers are aware of. Next is improving working conditions of farm workers and this 46%, 61% and 33% of the entire sample, certified and non-certified farmers respectively are aware of. For the entire sample, certified and non-certified farmers respectively, 29%, 39% and 19% said they are aware that it is an objective of cocoa certification to eliminate child labor. The percentage of farmers who are aware that conserving/protecting natural resources is an objective of certification is 25 for the entire sample and 40 and 12 for certified and non-certified farmers respectively. Fifteen percent of the entire sample, 22% of certified farmers and 8% of non-certified farmers are aware that community infrastructure development is an objective of certification.

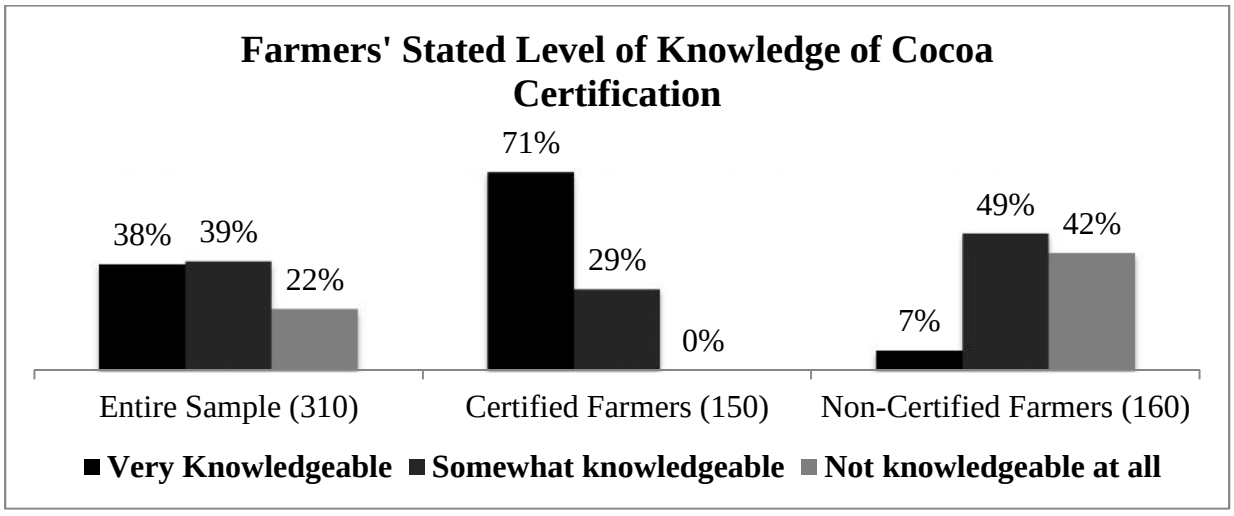

Figure 1.1: Farmers' Stated Level of Knowledge of Cocoa Certification

Table 1.2: Farmers' Awareness of the Main Objectives of Cocoa Certification

Main Objective	Farmers who are Aware (Percent)		
	Entire Sample	Certified Farmers	Non-certified Farmers
Improving farmers output and income	62	92	33
Improving working conditions of farm workers	46	61	33
Eliminating child labor	29	39	19
Conserving/protecting natural resources	25	40	12
Community infrastructure development	15	22	8
Improving access to inputs	8	4	12
General farmer education	4	3	7
Financial benefits of companies involved	4	4	4
N	312	150	162

Results of certified farmers' awareness of the name of the standards they are certified with are shown in figure 1.2 below. It can be seen from the figure that 30% of farmers certified with FLO know that it is FLO that certifies them. For UTZ certified farmers, 19% know that they are certified with UTZ and 24% of SAN-RA certified farmers know that they are certified with SAN-RA. For certified farmers in groups organized through licensed buying companies, 29% know the standards they are certified with. For certified farmers in groups organized through farmer cooperatives, 20% know the standard they are certified with.

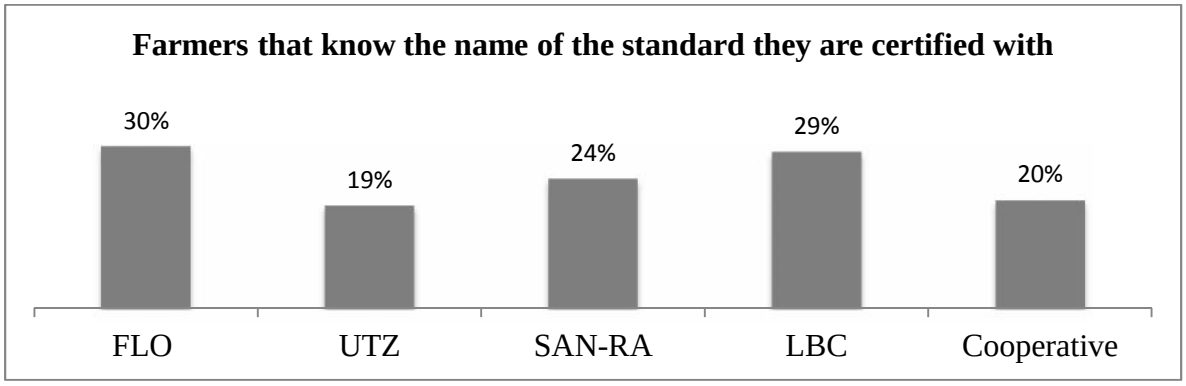

Figure 1.2: Farmers that know the name of the standard they are certified with

Participation in Certified Farmer Groups

Results for the time lag between the implementation of certification in a community and individual farmer's participation in the program are presented in table 1.3 below. The first part of the table has percentages of farmers in five categories of time while the second part has mean time lags. The 2nd to 4th columns contain the results for the certification standards and the last two columns are for the implementation channels. For the subsample of certified farmers, the mean time lag was about 0.76 years (about 9 months). As seen from the table, the mean time lag was 0.63 years (about 8 months) for FLO certified farmers, 1.30 years (about 14 months) for UTZ certified farmers, and 0.17 years (about 2 months) for SAN-RA certified farmers.

A one-way ANOVA (with F = 15.39 and p-value = 0.000) indicates that there are significant differences in the mean lag times for the different certification standards. However, the results of the ANOVA also showed that the variances for the different certification standards were not homogeneous (chi-square =21.43 and p-value = 0.000 for the Bartlett's test for equal variances). The differences in the variances might therefore explain why the means are also different. Also, the lag time for licensed buying company organized certified farmers is 0.8 years (about 10 months) and for farmer cooperative organized farmers it is 0.72 years (about 9 months). A t-test of means show no significant difference in the time lag for licensed buying company organized and farmer cooperative organized farmers.

Table 1.3: Time Lag between Implementation of Certification and Farmer Participation

Time Lag	Percentage of Farmers				
	Certification Standard			Implementation Channel	
	FLO	UTZ	SAN-RA	LBC	Cooperative
Within 1 year	48	20	83	32	56
After 1 year but less than 2 years	41	53	17	57	26
After 2 years but less than 3 years	11	18	0	11	12
After 3 years but less than 4 years	0	4	0	0	3
After 4 years	0	4	0	0	3
Mean time lag (number of years)	**0.63**	**1.20**	**0.17**	**0.80**	**0.72**
N	46	45	24	54	61

Note: LBC - licensed buying company

An average of about 69% of all certified farmers indicated that leaders of their group are typically chosen by vote of all members and 20% said that village leaders typically choose group leaders. Some of the remaining 11% said external agents typically choose leaders and some said leaders typically self-nominate. Across the 3 certification standards, an average of about 15% of the farmers hold leadership positions in their certified farmer groups. Certified farmers on average attended about 64% of meetings held by their certified farmers groups in the 12 months leading up to the survey. A one-way ANOVA revealed that there is no significant difference in the percentage of meetings attended across the certification standards.

Table 1.4 below presents the results of farmers' level of agreement with group decision-making. The first part of the table presents and compares the results across the certification standards and the second part does so across the implementation channels. The results show that, in general, farmers agree to a high extent that group members are engaged in making decisions. This is with the exception of decisions regarding inspection for the case of SAN-RA certified farmers and both implementation channels, where the mean scores approach neutral. All other topics have

mean scores of less than 2 across the certification standards as well as the implementation channels. However, it is important to mention that, the Kruskal-Wallis test indicated that there are significant differences between the mean scores for decisions regarding membership payments and meetings as well as internal and external inspections across the different standards. The test showed chi-squares of 9.611 and 10.97 and *p*-values of 0.008 and 0.004 for membership payments and meetings and inspections respectively. Again, for decisions regarding sale of certified beans and price premiums, there is a significant difference between the mean scores for licensed buying company organized farmers and farmers organized through farmer cooperative.

For farmers' level of agreement with group decisions, the results as shown in table 1.4 again indicate that across the certification standards farmers agree to a high extent with decisions regarding all the specific topics. Mean scores for all topics across all the standards are all below 2. The Kruskal-Wallis test indicated that there are no significant differences in the mean scores across the certification standards. Also, it is important to note that in all cases, farmers' levels of agreement with decisions are higher than their levels of agreement that members are engaged in decision-making (with the exception of decisions regarding membership payments and meetings for the case of FLO certified farmers and farmers organized through cooperative). Though in all cases farmers generally agree to a high extent as mentioned.

Table 1.4: Farmers' Level of Agreement with Decision-Making in Certified Farmer Groups (1 – strongly to 5 – strongly disagree)

Item	Mean Score (SD)		
	FLO	**UTZ**	**SAN-RA**
Members are engaged in decision-making regarding…			
Sale of certified beans and price premium	1.7 (1.0)	1.9 (1.1)	2.2 (1.5)
Membership payments and meetings	1.4 (0.6)**	1.5 (0.9)**	1.9 (1.0)**
Internal and external inspection	2.6 (1.5)**	1.9 (1.1)**	2.8 (1.3)**
Farmer agrees with group decisions regarding…			
Sale of certified beans and price premium	1.3 (0.7)	1.3 (0.5)	1.2 (0.4)
Membership payments and meetings	1.4 (0.8)	1.4 (0.8)	1.6 (0.9)
Internal and external inspection	1.9 (1.4)	1.7 (1.1)	1.8 (1.1)
N	53	47	49
	LBC (A)	**Coop. (B)**	**B-A (Std. Err.)**
Members are engaged in decision-making regarding…			
Sale of certified beans and price premium	1.8 (1.2)	2.1 (1.2)	-0.4* (0.2)
Membership payments and meetings	1.6 (0. 9)	1.5 (0.8)	0.1 (0.1)
Internal and external inspection	2.3 (1.4)	2.5 (1.4)	-0.1 (0.2)
Farmer agrees with group decisions regarding…			
Sale of certified beans and price premium	1.2 (0.5)	1.4 (0.6)	-0.1 (0.1)
Membership payments and meetings	1.4 (0.7)	1.5 (0.9)	-0.1 (0.1)
Internal and external inspection	1.9 (1.3)	1.8 (1.1)	0.1 (0.2)
N	79	71	150

Note: *** p<0.01, ** p<0.05, * p<0.1; LBC – Licensed Buying Company; Coop. – Farmer Cooperative

Regarding inspections, the results as shown in table 1.5 below indicate that 47%, 38% and 37% of farmers certified by FLO, UTZ and SAN-RA respectively have never been inspected by an internal auditor. For FLO, UTZ and SAN-RA certified, internal auditors respectively last inspected 44%, 46% and 39% of farmers within the last year. For external verification, it can be seen that 68%, 66% and 76% of FLO, UTZ and SAN-RA certified farmers have never been inspected. Also, external auditors last inspected 28%, 26% and 22% of FLO, UTZ and SAN-RA certified farmers respectively, within the last year.

Table 1.5: Internal Audit and External Verification for Compliance

Last Inspected	Percentage of Farmers					
	Internal Audit			External Verification		
	FLO	UTZ	SAN-RA	FLO	UTZ	SAN-RA
Never	47	38	37	68	66	76
Within 1 year	44	46	39	28	26	22
Within 3 years but more than 1 year ago	9	14	24	4	8	2
More than 3 years ago	0	2	0	0	0	0

Note: N (FLO)=53, N (UTZ)=47, N (SAN-RA)=50

Assessment of Certification Requirements and Expected Benefits

Table 1.6 presents results on farmers' level of agreement with certification requirements as well as expected and realized benefits. The second and third columns have the mean scores and standard deviations for certified and non-certified farmers and the last column has t-tests of the difference in the means and the standard errors. The results as shown in table 1.6 below indicate that both certified and non-certified farmers agree to some extent with all certification requirements, as all mean scores are less than 2. While all farmers generally agree with all certification requirements, t-tests of mean scores indicate that the levels of agreement of certified farmers are significantly higher than those of non-certified.

Regarding expected benefits of certification, certified farmers generally agree to some extent that they expected certification to be beneficial in those specific ways (mean scores below 2.5). However, for the expectation for community infrastructure development, they disagree to some extent (mean score 3.23). Non-certified farmers also agreed to some extent that they expected certification to improve environmental conditions and farm management and safety practices (mean scores of 2.46 and 2.43 respectively). Their levels of agreement are closer to neutral for the expectations for inputs and services, farm output and income, and social conditions. Similar

to certified farmers; non-certified farmers disagreed to some extent (mean score of 3.35) that they expected certification to bring community infrastructure development. Again, for all expected benefits except community infrastructure development, t-tests of mean scores indicate that certified farmers' level of agreement are significantly higher than non-certified farmers'.

For realized benefits of certification, the results show that both certified and non-certified farmers generally agree to some extent that certification has improved outputs and income, environmental and social conditions, and farm management and safety practices (with mean scores less than 2.2). For access to inputs and services, farmers' level of agreement is closer to neutral: 2.79 for certified farmers and 2.60 for non-certified farmers. Both certified and non-certified farmers disagree to a high extent that certification has brought some community infrastructure development (mean scores of 4.46 and 4.49). T-tests of mean scores indicate that, certified farmers' level of agreement are significantly higher than non-certified farmers' for benefits regarding outputs and income, environmental and social conditions, and farm management and safety practices. For inputs and services, certified farmers' level of agreement is significantly lower than that of non-certified farmers. There is no significant difference between the mean scores of certified and non-certified farmers for community infrastructure development.

It also interesting to note the differences between the levels of agreements for expected and realized benefits. With the exception of community infrastructure development, all the benefits have higher levels of agreement for realization than for expectation and this is the case for both certified and non-certified farmers. This means that per the judgment of farmers, certification has

been more beneficial in terms of the listed items than farmers actually expected it to be. It is also important to that for the case of infrastructure development it is rather the reverse: farmers expected certification to be more beneficial in terms of infrastructure development than it has been so far.

Table 1.6: Farmers' Assessment of Certification Requirements and Expected Benefits (1 – strongly to 5 – strongly disagree)

Item	Mean Score (SD)		B-A (Std. Err.
	Certified (A)	Non-certified (B)	
Certification requirements regarding…			
Safety practices and workers' rights	1.2 (0.4)	1.5 (0.7)	0.3 (0.1)***
Environmental and natural resource protection and waste management	1.2 (0.4)	1.5 (0.6)	0.3 (0.1)***
Production, harvest and post-harvest practices	1.2 (0.4)	1.6 (0.7)	0.3 (0.1) ***
Fertilization and crop protection	1.2 (0.3)	1.6 (0.8)	0.4 (0.1)***
Farmer organization	1.3 (0.7)	1.8 (1.2)	0.5 (0.1)***
Farmer expected certification to…			
Improved farm management and safety practices	1.9 (1.3)	2.4 (1.6)	0.6 (0.2)***
Improve environmental conditions	2.1 (1.6)	2.5 (1.7)	0.4 (0.2)*
Increase farm output and income	2.1 (1.3)	2.6 (1.8)	0.5 (0.2)***
Improve social conditions	2.2 (1.7)	2.6 (1.6)	0.4 (0.2)**
Improve access to inputs and services	2.4 (1.2)	2.8 (1.5)	0.4 (0.2)**
Bring community infrastructure development	3.2 (1.8)	3.4 (1.8)	0.1 (0.2)
Farmer believes certification has…			
Improved environmental conditions	1.4 (0.6)	1.9 (1.0)	0.5 (0.1)***
Improved farm management and safety practices	1.5 (0.7)	2.0 (0.9)	0.5 (0.1)***
Improved social conditions	1.6 (0.9)	2.1 (1.1)	0.5 (0.1)***
Increased farm output and income	1.8 (0.8)	2.2 (1.1)	0.4 (0.1)***
Improved Access to inputs and services	2.8 (0.6)	2.6 (0.9)	-0.2 (0.1)**
Brought community infrastructure development	4.5 (1.1)	4.5 (1.1)	0.03 (0.1)
N	150	160	310

Note: *** p<0.01, ** p<0.05, * p<0.1

Discussion

This section discusses the results presented above with focus on farmers' knowledge of certification, their participation in activities of certified groups, and stakeholder assessment of certification. The discussion draws on the results of the in-depth interviews and focus group discussions as well as the survey.

Farmers' Knowledge of Certification

Farmers' knowledge of certification is important for two main reasons. First, some of the objectives of the program and their respective requirements have very detailed information that demand high level of awareness and close attention. The fact that farmer groups have to undergo training for at least six months before they can be inspected and verified for certification speaks to this point. Second, certified farmer groups as seen from the in-depth interviews and focus group discussions, are to be run on democratic principles and this means to a large extent that farmers should know what they are signing up for. In these regards, two points from the survey results are worth noting: there is much room for improving farmers' knowledge of certification, and this need applies to certified and non-certified farmers alike.

It is not surprising to find certified farmers indicate knowing about certification and its objectives more than do non-certified farmers. This point becomes more relevant in the next chapter where lack of knowledge about certification comes up as one of the important barriers to participation. The focus here is rather on the fact that though certified farmers consider themselves more knowledgeable than non-certified farmers do, the level of knowledge over all is quite low. This

shows up more visibly when farmers' awareness of the objectives of the program as well as standards they are certified with is considered.

Even among certified farmers, as much as about 60% to 80% are not aware that issues like eliminating child labor, conserving/protecting natural resources, and community infrastructure development are objectives of the program. This should be of concern considering the fact that these are issues that feature quite prominently in the rhetoric of certification. Another result that raises concern is that across certification standards and implementation channels about 70% to 80% of certified farmers do not know the standards they are certified with. The question here is, if farmers do not know things as common as names of standards, then how can we be sure that they know what they sign up for in joining certified farmer groups and will be able to implement them?

Participation in Certified Farmer Groups

Generally, farmers' participation in decision-making and activities of certified groups raise little or no concerns except for inspections for compliance and how price premiums are distributed. For instance, the time lag between the implementation of certification in community and farmers' participation is not far from expected as majority of farmers join groups within 2 years of implementation. Also, farmers' participation in terms of choosing leaders of groups and attending group meetings is at levels that reflect what would be expected. Certified farmers also agree that they are engaged in groups' decision-making and also agree with decisions that certified groups work with. Decisions that are taking outside of the certified farmer groups (specifically, decisions on inspectors and amount of price premium) are also very reasonable.

Considering the nature of the market for cocoa beans and how premiums work, it is reasonable that the market determines the amount to be paid as price premium. However, as revealed in the results, the distribution of the price premiums do not seem to go according to what is stipulated in the codes of conduct of the standards.

According to the various codes of conduct, the net amount of money that certified groups are to receive as price premiums is to be distributed among various uses per the decision of the group members. However, from the focus group discussions and in-depth interviews, this is not found to be the case. In most cases, the licensed buying company in question solely takes every decision regarding price premiums. Though this might be considered as a smart way for the licensed buying companies to maximize the returns on their investments in the certification process, it is also a violation of the codes of conduct of certification. After licensed buying companies have deducted the costs they incur in the process of getting farmers certified, there is no reason for them to decide on what to do with the money that is supposed to go to the farmers. In the ideal situation, even the amount of money spent on the certification process, which gets deducted, should not be unknown to the membership of certified farmer groups.

The focus group discussion and in-depth interview results show that certified farmer groups are expected to conduct internal inspections of all members at least once a year and invite external auditors at least once in a certification cycle (which is 3 to 4 years for all standards). The survey results however show that on average, about 40% of certified farmers say they have never been inspected internally and about 70% say external auditors have never inspected them. The situation of external inspection does not raise much concern considering the fact that such

inspections are not expected to cover every farmer and there are also some farmer groups that are yet to exhaust the entire certification cycle of 3 to 4 years. The situation of internal inspection however calls for critical consideration. As very well established, compliance verification is very pivotal in the whole concept of certification and it is actually the major difference that certification makes in terms of getting farmers to adopt sustainable agricultural practices besides premiums. It is therefore disturbing to find that farmers are not being inspected as expected, especially considering the fact that certification is relatively new in the survey communities and the morale is expected to still be high in such situations.

Stakeholder Assessment of Certification

The results on farmers' assessment of the requirements and expected benefits of certification coupled with the results on sustainability assessment by other stakeholders point out two main things. First, the requirements and expectations of certification are largely acceptable and desirable. What this means is that farmers are likely do what is within their limits to make certification work. This may be what shows up in the results on how farmers participate in certified farmer groups as discussed above. It is important to point out that farmers' levels of agreement with requirements are even higher than with expectations. This means that it is reasonable to assume that farmers are not necessarily participating because of the expected benefits but that they are really committed to making changes to their farming practices.

The second point is that certification, as has been touted, has many prospects to impact the sustainability of cocoa production. Meanwhile, there are equally important reasons why the sustainability of the program itself should be of concern to stakeholders in the cocoa economy.

One such issue that demands emphasis is the sale of certified beans as conventional. As mentioned in the results, majority of certified farmers say they sell certified beans as conventional because of relationships they have with other licensed buying companies other than licensed buying companies that buy certified beans in their respective communities. This issue also shows up in chapter two below as an important reason why some farmers are not participating in certification. Meanwhile, the role of licensed buying companies in the implementation of certification is so critical that it is not easy to immediately prescribe possible remedies. However, a reasonable starting point could be a careful reconsideration of the role of licensed buying companies in the payment and distribution of price premiums. This is because of the close relation between selling certified beans to a designated licensed buying company and receiving price premium.

CHAPTER 2
DETERMINANTS OF FARMER PARTICIPATION IN COCOA CERTIFICATION PROGRAMS IN GHANA, WEST AFRICA

Introduction

Increasing agricultural productivity and sustainable development of an economy's agricultural sector are major drivers of beneficial structural transformation. Furthermore, they are strategies believed to enhance living standards as well as social and environmental conditions (Johnston & Mellor 1961; Antle & Diagana 2003; Kassie *et al.* 2013). Both sustainable agricultural development and increasing agricultural productivity are driven by technical and institutional innovations throughout the food and agricultural system (Staatz 1994). In Sub-Saharan Africa, traditional farming practices and geographical conditions have been confronting challenges to increase agricultural productivity and to become sustainable because of low soil fertility and high incidence of pests and diseases. It appears that conventional technological and institutional innovations meant to mitigate the effects of low soil fertility and deal with pests and diseases tend to pose social, environmental, and health risks (Saltiel, Bauder, & Palakovich 1994; Manda *et al.* 2015).

In response, several practices and technologies have been recommended to better address the apparent trade-offs between productivity and damage to society and the environment. Such practices and technologies are considered jointly as sustainable agricultural practices (Saltiel, Bauder, & Palakovich 1994; Tey *et al.* 2013). Sustainable agricultural practices, in general, share four key attributes or features: they conserve natural resources; do not degrade the environment; are technically appropriate; and are economically and socially acceptable or desirable (Kotile & Martin 2000; Kassie *et al.* 2013). Sustainable agricultural practices broadly include such

approaches as precision farming, enhanced nutrient management, and water-related management. Some specific examples of sustainable agricultural practices are conservation tillage, intercropping and crop rotation; the use of improved varieties or breeds; and the use of animal manure and organic fertilizer (Kassie *et al.* 2013; Tey *et al.* 2013; Manda *et al.* 2015). It has been observed that sustainable agricultural practices conserve and enhance natural resources, improve soil fertility, sequester carbon, and increase farm output and incomes (Kassie *et al.* 2013; Manda *et al.* 2015).

As a result, sustainable agricultural practices have become an increasingly important component of development policy because policymakers and development agencies appreciate sustainable agricultural practices ability to improve living standards as well as maintain or improve social and environmental conditions (Kotile & Martin 2000; Teklewold, Kassie & Shiferaw 2012; Tey *et al.* 2014). At first, sustainable agricultural practices were primarily promoted by public sector and non-governmental organizations (NGOs). Recently, they have captured the attention of agribusiness firms. Food industry organizations promote sustainable agricultural practices adoption through private and voluntary certification schemes. These certification programs enable the participating food industries/businesses to demonstrate corporate social responsibility, differentiate themselves from competitors, and meet retailer and consumer demands (Tey *et al.* 2014; Menozzi, Fioravanzi & Donati 2014).

Despite the claimed benefits of sustainable agricultural practices and their promotion in many parts of the developing world, their adoption and diffusion in Sub-Saharan Africa is only just beginning. This lag of sustainable agricultural practices adoption has been attributed to imperfect

information, input constraints, and market failures, among other reasons (Caviglia-Harris 2003; Kassie *et al.* 2013; Teklewold, Kassie & Shiferaw 2012). As a result, researchers and policy analysts have been keen to learn about how to design mechanisms to incentivize developing country farmers, especially in places like sub Saharan Africa, to adopt sustainable agricultural practices (Antle & Diagana 2003; Kassie *et al.* 2013).

There is limited empirical evidence on determinants of sustainable agricultural practices' adoption in developing countries (Manda *et al.* 2015). This gap is particularly apparent for situations where sustainable agricultural practices are promoted as part of private and voluntary certification schemes. As has been noted, many smallholder farmers do not have the means to implement required changes and therefore certification programs may appear to discriminate against such 'non-certifiable farmers' (González & Nigh 2005; KPMG 2012). A prime example of the use of private and voluntary certification schemes to promote sustainable agricultural practices among smallholder farmers is cocoa certification.

Certification of cocoa producers is a relatively new strategy to promote cocoa farmers' adoption of comprehensive packages of technical and institutional innovations recommended for sustainable cocoa production (TCC 2010; KPMG 2012). However, like sustainable agricultural practices in general, a dearth of empirical research has been undertaken to understand the characteristics of certified and non-certified cocoa farmers and the barriers to their participation in cocoa certification schemes. This paper focuses on identifying individual, household, farm, and certification program characteristics associated with farmers' participation in cocoa

certification programs in Ghana as well as barriers to farmer participation in cocoa certification programs.

Cocoa Production in Ghana

Ghana is a world leader in the quality of premium cocoa beans and the second largest producer of cocoa in the world (Smithers & Furman 2003; Ntiamoah & Afrane 2008; Quarmine *et al*. 2012; Läderach *et al*. 2013). Cocoa production employs about 60% of Ghana's agricultural labor force and contributed to about 2.2% to Ghana's Gross Domestic Product (GDP) and about 16.5% of its total export earnings in 2013 (Ntiamoah & Afrane 2008; GSS 2013). Due to its importance to the economy, the government has principally controlled the cocoa sector through the Ghana Cocoa Board (COCOBOD) since the 1930s. COCOBOD serves the cocoa economy mainly with research and development, quality control, subsidized farm inputs, agricultural extension, and the buying and exporting of Ghana's cocoa beans. The Structural Adjustment Program of the 1980s resulted in the liberalization of the buying of cocoa beans in Ghana and gave rise to the licensing of companies by COCOBOD to purchase cocoa from farmers. Since 2001, the responsibility of fixing producer prices shifted from COCOBOD to a multi-stakeholder producer price review committee (PPRC), comprising representatives from farmers, COCOBOD, Ministry of Food and Agriculture (MOFA), and recently haulers and licensed buying companies (Darkwah & Verter, 2014; KPMG, 2012; and Quarmine et al., 2012).

The demand for cocoa on the world market continues to rise with this increase predicted to continue (TCC, 2012). Increasingly, several issues continue to pose challenges to the sustainable production of cocoa in West Africa, where cocoa dominates agriculture activity (TCC, 2012).

Cocoa production in West Africa is predominantly (80 – 90%) an endeavor undertaken by smallholder farmers (below 3 hectares) (Darkwah & Verter, 2014; KPMG, 2012; Melisa & Don, 2012; and TCC, 2012). As such, these farmers face several economic, environmental, and social challenges. These problems are complex, interrelated, and have persisted over long periods of time. They include low earnings from cocoa farming attributed to low farm productivity and resulting low living standards for cocoa farmers; inadequate social and public services in cocoa growing communities; environmental degradation; unfair labor conditions; and the pervasive use of child labor in cocoa farming (Ntiamoah & Afrane 2008; Kyei, Foli & Ankoh 2011; KPMG 2012; Melisa & Don 2012; Quarmine *et al*. 2012; TCC 2012; Darkwah & Verter 2014). Ghana's cocoa production is less efficient than cocoa production in other West African countries (based on yield per unit area) (Kyei, Foli & Ankoh 2011).

Cocoa Certification Programs

Stakeholder initiatives for sustainable cocoa production and increasing consumer concerns resulted in increased interest in cocoa certification programs (KPMG 2012; Melisa & Don 2012; TCC 2012). The goals of certification of cocoa producers include promotion of good agricultural practices, healthy and safe production practices, workers' rights, and natural resource and biodiversity conservation. Certification programs are seen as appropriate means for participants to achieve sustainable cocoa production in ways that improve the livelihoods of cocoa farmers and their communities (TCC 2010; KPMG 2012). Currently, cocoa production is certified in Ghana by one of four internationally recognized organizations and their standards: Fair Trade Labeling Organization (FLO), UTZ-Certified (UTZ), Sustainable Agriculture Network – Rainforest Alliance (SAN-RA), and the International Federation of Organic Agricultural

Movements (IFOAM) (KPMG 2012; Mahrizal *et al*. 2012; Melisa & Don 2012; TCC 2012 & 2015).

The four certification standards (FLO, UTZ, SAN-RA, and IFOAM) share the general aim of promoting sustainable production of cocoa through sustainable agricultural practices, improving farmer livelihoods, and capacity building. However, each of these standards has strong affiliation with particular thematic areas. FLO is more concerned with trade relations; UTZ and SAN-RA are more focused on productivity issues; and IFOAM focuses more on food safety. The general requirements of the different certification schemes are similar in most ways (KPMG 2012; Mahrizal *et al*. 2012). What sets the different certification schemes apart lies not in the characteristics of the production process but rather in their certification approach and program requirements. Most of the elements required for certifiable production of cocoa predate the concept of certification. For instance, 50% of Ghanaian cocoa farmers do not use agrochemicals and are in essence *de facto* organic producers. These cocoa farmers in Ghana do not grow cocoa organically as a matter of choice but rather their circumstances necessitate it. Inorganic fertilizers, fungicides and other inputs are too expensive for these small-scale farmers and there is minimal opportunity to access credit for farming (Gockowski *et al*. 2013; Mahrizal *et al*. 2012).

Each certification scheme has its own code of conduct required for certification. These codes of conduct specify detailed requirements on sustainable agricultural practices, cocoa communities, natural resources and biodiversity management, effective implementation, product flow, social responsibilities, and internal control systems (ICSs). The certifying agent at either the producer

level or the group level checks specific details sometimes referred to as ‘control points’. For sustainable agricultural practices, certification standards specify what producers have to do regarding cocoa farm establishment and rehabilitation, cocoa farm maintenance, soil management and fertilization, integrated pest management and crop protection, harvesting, and post-harvest handling. For community and social responsibility issues, there are specifics on health and safety production practices, worker’s rights, accountable and transparent management structures, education, and first aid and emergency health care (CA 2013; FLO 2014; Mahrizal *et al*. 2012; UTZ 2009).

Under natural resources and biodiversity, issues regarding soil, water, and forest and biodiversity are specified. Specifics on organization, risk-based implementation and producer training are specified under effective implementation and there are also specific details on product flow control. Topics regarding management of ICSs, ICS staffs, internal standards and contracts, internal inspections and registration of producers, and record keeping are specified under ICSs. All of the specifications are based on the international labor organization (ILO) conventions and national standards on sustainable agricultural practices for cocoa production. For organic certification, producers are expected to follow all the requirements for FLO and cocoa should be grown on land that has been free of prohibited substances for three years prior to harvest before it can be certified (CA 2013; FLO 2014; Mahrizal *et al*. 2012; UTZ 2009).

As mentioned above, the different standards vary in some of their requirements because of the different thematic areas emphasized by each program. A recent report by KPMG on behalf of the International Cocoa Organization looked at the similarities and differences of cocoa certification

programs (KPMG, 2012). The KPMG report points out variations in characteristics such as: fees to certification organization, audits, price premium paid to the certified growers, distribution of price premiums to growers, biodiversity and climate change undertakings, waste disposal, and limits/bans on genetically modified organisms (GMOs). For fees paid to the certification organization, FLO only charges initial group fees and annual fees while SAN-RA and UTZ charge those fees per quantity of certified beans. FLO charges annual audit fees whether or not there was audit whiles SAN-RA and UTZ price annual audit fees according to the number of audits. FLO pays a fixed-price premium and audits groups' distribution and use of premiums. SAN-RA and UTZ pay price premiums to certified growers based on the market and do not audit the distribution and use of premiums by recipient groups (KPMG, 2012).

All the certification schemes use local and regional wage legislation or agreements except for SAN-RA, which uses wage guidelines and allows for deductions for housing and food provided to growers. FLO has no specific requirements regarding use of shade trees, while SAN-RA specifies shade tree requirements, plans for carbon emission and sequestration, as well as energy use guidelines. UTZ also has specific requirements on use of shade trees. FLO and SAN-RA have waste disposal and storage guidelines. FLO allows burning of waste if it is in accordance with local legislation but SAN-RA does not allow such burning under any circumstance. UTZ has no guidelines on waste disposal and storage except for specifying that waste storage and disposal areas should be in central locations. FLO says GMOs should not intentionally be used, SAN-RA says no GMOs may be used, and UTZ does not have any guidelines on GMOs since there are no GMOs for cocoa (KPMG, 2012).

In order to reduce transaction costs and information asymmetries as well as consolidate verification responsibilities, certification programs organize smallholder cocoa farmers into groups for certification. However, cocoa farmer groups/organizations are not well-developed and established in Ghana. For this reason, Ghanaian licensed buying companies have often assumed the role of implementing cocoa certification schemes and securing farmers' cocoa beans. The licensed buying companies buy the certified cocoa beans and pay price premiums through their liaisons with the standard bodies (Gockowski et al., 2013 and TCC, 2015).

In general, to become a certified cocoa producer, cocoa growers must adhere to the production, administrative and social standards promulgated by the particular certification standard. The processes for cocoa certification are similar across all of the schemes and typically focus on registration and training, compliance, and audit. Generally, the participating organizations and their members do not have to fulfil all of the certification requirements in the first year. There is usually a transitioning period of three or four years. The certification schemes typically have some specific requirements that need to be met before certification can be granted and other criteria that may be met over the transition period. Once a group is certified, there is generally adherence verification every 3 years to ensure compliance (Gockowski et al., 2013; KPMG, 2012; Mahrizal et al., 2012; and TCC, 2015).

Previous Studies of Participation in Sustainable Agricultural Practices Programs

Many studies of adoption of sustainable agricultural practices have been grounded on behavioural theories developed by rural sociologists and psychologists targeting improved dissemination of technical and institutional innovations developed to increase agricultural

productivity (Neill & Lee 2001; Padel 2001; Van Herzele et al. 2013; Tey *et al.* 2014). Previous studies have, to varying degrees, integrated the theory of diffusion of innovation (DOI), the theory of planned behaviour (TPB), the theory of interpersonal behaviour (TIB), the theory of reasoned action (TRA), the pest-believe theory, and the structuration theory (Smithers & Furman 2003; Tey *et al.* 2014). Most previous work has focused on adoption decision-making with a few studies looking at abandonment of adopted innovation (Neill & Lee 2001; Läpple 2010; Sahm et al. 2013).

In light of the previous research, this paper considers Ghanaian cocoa farmers' behavior from two perspectives. First, we consider farmers in the position of comparing the characteristics and perceived benefits of conventional agricultural production for cocoa with the characteristics and perceived benefits of growing cocoa using sustainable agricultural practices. We assume that farmers choose the production approach (conventional or sustainable agricultural practices) that maximizes their expected utility, conditional on their decision (Kassie *et al.* 2013). Second, we consider farmers as having some volitional control over their sustainable agricultural practices adoption decision. Some previous work suggests that a farmer's decision to adopt sustainable agricultural practices is influenced by what the farmer thinks of his/her capacity to adopt, the innovation costs and benefits, and consideration of societal norms (Martínez-García, Dorward, & Rehman 2013; Borges et al. 2014; Jorgensen & Martin 2015).

These perspectives of farmers' decision-making form the basis of previous studies' integration of multiple theoretical bases in sustainable agricultural practices adoption studies. Similar to the case of cocoa certification, the integration of Rogers' theory of DOI and Triandis' TIB was

successfully applied by Tel *et al.* (2014). It turned out that the theory of DOI was useful in understanding farmers' perceptions of the attributes of cocoa certification while use of the TIB accommodated the roles of social factors, emotions, and behavior (a function of intention, habitual responses, and situational constraints) (Tey *et al.* 2014). In line with the theory of DOI and TIB, six core sets of factors have been identified by empirical research as influential in farmers' decision-making regarding program participation. These factors include: 1) socio-economic factors, 2) agro-ecological factors, 3) institutional factors, 4) informational factors, 5) psychological factors, and 6) the nature and special qualities (attributes) of the program in question (Padel 2001; Smithers & Furman 2003; Tey *et al.* 2014).

Previous studies have measured program participation as a binary response variable and as a function of other varaibles that represent elements of the six core sets of factors (Neill & Lee 2001; Pietola & Lansink 2001; Sahm *et al*. 2013; Tey *et al.* 2014). "Participation" has typically been measured by respondents' actual participation/non-participation or by respondents' stated intentions/readiness/willingness to participate or not (Smithers & Furman 2003; Van Herzele et al. 2013; Aidoo & Fromm 2015; Meijer *et al*. 2015). The elements in the sets of socio-economic, agro-ecological, institutional, and informational factors in these studies are hypothesized to either impede or facilitate participation. The set of program attribute factors constitute a form of subjective evaluation, which is likely to yield participation when positive. Habitual psychological factors indicate established participation status while intentional psychological factors indicate the strength of the willingness to participate or continue participation (Tey *et al.* 2014).

In previous studies, socio-economic factors are usually considered at the household and individual (household head or main farmer) levels. Household characteristics considered typically include households' family labor availability (e.g. household size, number of adults, number of children) and households' dependence on the farming activity(s) concerned with the program (e.g. percentage of household income from activity, stability of income sources, non-farm income). Individual characteristics usually considered are principally those that indicate human capital (e.g. health, experience/age, education) and psychological factors (e.g. risk attitudes, perception of farming, profit orientation, environmental and social attitudes). Agro-ecological/farm characteristics considered usually are those related to the productivity or efficiency of the farm production process such as farm size, land tenure, source of farm labor, input use, and soil characteristics. Informational factors usually considered include contact with extension agents, use of information media, learning from others, and learning by doing (Feder, Just & Zilberman 1985; Neill & Lee 2001; Moser & Barrett 2006; Läpple & Rensburg 2011; Namome 2013).

As previous research demonstrates, these factors can be incorporated in a subjective utility model, where farmers are likely to participate when the subjective utility of participating is greater than that of non-participation. If a farmer produces an output (Y_c), under cocoa certification with (X_c) conditions, he derives a utility (U_c), which is a function of the conditions and outcomes of the certified cocoa production process: i.e. $U_c = f(X_c, Y_c)$. On the other hand, another farmer who produces an output (Y_{nc}) under conventional cocoa production would have her conditions of production (X_{nc}) that yield a utility (U_{nc}) as a function of her output and conditions: i.e. $U_{nc} = f(X_{nc}, Y_{nc})$ (Moser & Barrett 2006; Herzfeld & Jongeneel 2012; Dabbert,

Lippert, & Zorn 2014). Because producing certified cocoa means incurring some costs that are different from the costs of producing cocoa conventionally, farmers would typically consider what they have to invest in light of their expected outcome (Y_c) as a result of their investment. Whether or not a farmer decides to participate in a program depends on whether or not the expected outputs make sense in light of the cost of their inputs. Previous studies compare the differences in costs and outputs of alternative programs to understand adopters and non-adopters of alternative programs (Gedikoglu & McCann 2012).

Previous studies on sustainable agricultural practices programs have characterized participation in such programs as a static activity. This has however been criticized and some flaws have been identified. For example, some initial adopters might disadopt while some initial non-adopters might adopt eventually. Results from static conceptual models analysis can therefore be misleading, as they would yield biased coefficients if the participation process were incomplete. Also, some variables that are treated as independent variables in such static models do change over time. It is however impossible to control for such changes and how they affect participation over time (Feder & Umali 1993; Neill & Lee 2001; Moser & Barrett 2006).

These issues notwithstanding, the use of static models to analyse cross-sectional data in studying participation and adoption continues to dominate the literature because collecting panel data has proven to be expensive, especially in developing country contexts. Also, governments and other policy makers do not usually find *ex post* conclusions very useful. Furthermore, analysis of cross-sectional data has been useful in providing meaningful insights into the participation process. Static analysis of cross-sectional data helps to identify barriers to participation as well as

groups that find it difficult to participate. This then facilitates the design of appropriate interventions to ensure adequate participation to yield optimum results for programs (Moser & Barrett 2006). Another important issue regarding the study of the adoption of sustainable agricultural practices has to do with the fact that they usually come in the form of a package of different technical and institutional innovations. It is therefore important to consider the inter-relationships between the different components and their adoption decisions, especially when they can be adopted individually and their adoption decisions are not made exogenously. Otherwise, the influences of various factors on the adoption decisions may be under or over-estimated (Kassie *et al.* 2013).

Methods

This section presents the methods employed in designing the study, selecting communities and households for the study, collecting and analysing data, and estimating parameters.

Study Design and Setting

The study was designed to cover farmers in Ghana's cocoa growing communities where cocoa certification has been implemented under FLO, SAN-RA, or UTZ standard. In Ghana, cocoa certification is implemented either through a licensed buying company or a farmer cooperative. Therefore, the study was designed so that in half of the communities in the study certification implementation is through licensed buying companies and in the other half certification is implemented through farmer cooperatives. The communities in our study were purposely selected to be roughly the same size, with approximately 200 to 300 households, in the 2010 population and housing census, except for one community for which information on the number

of households was not available. Participants in the study included both certified and non-certified cocoa farmers.

Data collection was done in two phases; first were in-depth interviews and focus group discussions, and second was a household survey. At the time of field data collection, 8 licensed buying companies, 15 farmer cooperatives and 2 farmer-cooperatives-cum-licensed buying companies were implementing the FLO, SAN-RA, and UTZ standards in Ghana. Six of the licensed buying companies and the 15 farmer cooperatives were implementing cocoa certification in a total of 39 cocoa districts in 5 out of the 6 cocoa growing regions. The communities used for the study are located in 5 cocoa districts across 4 regions. Appendix A presents the number of districts, the number of communities in selected district, and the number of households in selected community for each certification standard and implementation channel. Appendix B is a map of Ghana showing the location of the study communities.

Sample, Sampling Techniques & Procedures, and Sample Weights

The study was conducted in 6 communities, 2 each for FLO, UTZ and SAN-RA. For each of the standards, 1 of the communities had certification implemented through a licensed buying company and 1 using farmer cooperative. In each community, a focus group discussion was conducted and a total of 56 cocoa farmers participated in these focus group discussions. Again, in each community, 30 certified and 30 non-certified farmers were sampled, with the exception of one community where only 22 certified farmers were enumerated and all of them included in the sample. This resulted in a total of 352 certified and non-certified farmers selected for the

household survey. A total of 312 households (150 and 162 certified and non-certified respectively) were interviewed, representing an 88.6% response rate.

Communities for the study were selected on purpose to ensure that each had only one certification standard implemented through a particular channel and approximately 200 to 300 households. Focus group discussion participants were also recruited on purpose based on their availability and willingness, gender, social status (age, leadership, migrant/native etc), and certification status. Stratified random sampling was used to select certified and non-certified households for the survey. In-depth interviews with officials working with cocoa certification helped to identify cocoa districts in which the various standards have been implemented. Two districts where then selected for each standard, 1 with implementation through licensed buying company and the other through farmer cooperative. Then 1 community was selected from each selected district. In each community, all households were enumerated and cocoa farming households were grouped into certified and non-certified. Households were then selected for the survey from the strata of certified and non-certified farmers.

Certified and non-certified households were not equally represented in the sample population. Selecting equal numbers from each category of households for the sample therefore resulted in unequal probabilities for certified and non-certified households. Sample weights were therefore calculated with detailed information from the enumeration of households and applied in the estimation of the probit regression model. Details of the calculation of sample weights are presented in Appendix C. the total number of cocoa farming households enumerated was know for each community as well as certified and non-certified households. Errors in the classification

of households during enumeration were tracked and corrected for. The corrected populations were used to obtain population proportions for certified and non-certified households. The proportions of certified and non-certified households in the sample were also calculation with information from the survey data. Weights were then obtained as a ratio of population proportions to sample proportions.

Data Collection

An open-ended discussion guide that included questions on the barriers to participation in cocoa certification was used to conduct the focus group discussions. Focus group discussions were conducted in Twi, audio recorded and transcribed in English. The household survey was conducted with the use of a structured questionnaire through computer assisted personal interviews (CAPI) programed with the survey and census processing system (CSPro). The instrument was designed to collect information on certification status, reasons for not joining certification as well as farm, farmer and household characteristics. A four-day training and pre-test program was organized to equip interviewers with the necessary skills, knowledge and instructions to help complete the survey as well as to refine the survey instrument.

Variables and Measurements

Sample Characteristics

Household income is the total amount of money a household received from all sources in the last 12 months leading up to the survey measured in Ghana Cedis. Household size is the total number of people in a farmer's household. Children in school indicate the percentage of household members 5 to 17 years old that are currently enrolled in school. Child education is the average

number of years of formal schooling completed per child. Child absenteeism is the number of days (out of 10) a child missed school in the last 2 weeks. Number of farms is the number of separate pieces of land a household has under cultivation; total farm size is the total amount of land (measured in acres) that a household has under cultivation; and cocoa farm share is the percentage of the total farm holdings the is planted with cocoa. Cocoa output is the amount of cocoa beans a household harvested in the last 12 months leading up to the survey. Potential output lost is the additional amount of cocoa beans a household could harvest if not for loses due to drought and flood, pests and diseases, and bush fire.

Regression Variables

Appendix D presents description and hypotheses of regression variables. Farmers' participation in cocoa certification was measured with a binary response of 1 and 0 for certified and non-certified farmers respectively. Certification standard was measured by whether a farmer's certified group is certified by FLO, UTZ or SAN-RA, and dummies were created for each standard. Implementation channel was measured by whether a farmer's certified group is organized through a licensed buying company or farmer cooperative, and dummies were created for each channel.

Gender is measured as dichotomy with 0 for female and 1 for male. Migrant indicates whether or not a farmer was born outside his/her community of residence and has 1 for migrants and 0 for non-migrants. Age is a farmer's age measured in completed years and age squared is a squared term of a farmer's age. Education indicates the number of years of formal schooling completed by a farmer. Leader indicates whether or not a farmer holds a leadership position in his/her

community; household member leader indicates if a farmer has at least a household member who holds a leadership position; and acquaintance leader indicates whether or not a farmer has at least an acquaintance that holds a leadership position. For all three variables, 1 is for the affirmative and 0 is otherwise.

Number of adults is the people in a farmer's household that are 18 years old and above and number of children indicates those that are from 5 to 17 years old. Income from cocoa indicates the percentage of a farmer's household's income in the 12 months leading up to the survey that was obtained from cocoa farming. Cocoa farm size is the total amount of land that a farmer's household had under cocoa cultivation at the time of the survey and it is measured in acres. Sharecropped measures the percentage of the total cocoa farmland that is cultivated under sharecropping arrangements. Hybrid cocoa variety measures the percentage of the number of a farmer's household's cocoa farms established, at least in part, with hybrid cocoa variety prior to the introduction of cocoa certification. Lining and pegging measures the percentage of the number of a farmer's household's cocoa farms established, at least in part, using lining and pegging prior to the introduction of cocoa certification.

Data Analysis and Estimation Model

Descriptive statistics were used to analyze and present data and results on sample characteristics, the barriers to farmer participation, as well as variables in the regression model. A binary probit regression model was used to estimate the effects of selected individual, household, and farm characteristics on whether or not a farmer is a member of a certified farmer group. The classical subjective utility maximization model motivates the regression model. Let's consider a latent

variable Y_i^*, which represents the utility behind a farmer's decision to join a certified farmer group. Y_i^* is a linear function of program characteristics as well as the farmer's individual, household and farm characteristics: $Y_i^* = \beta X_i + \varepsilon_i$, where X_i is a vector of program, individual, household and farm characteristics, β is a vector of regression coefficients and ε_i is a normally distributed error term. Y_i^* is not observed, but the outcome Y_i (which is the farmer's membership of a certified farmer group) is determined by the value of Y_i^* as follows: $Y_i = 1$ if $Y_i^* > 0$ and $Y_i = 0$ if $Y_i^* < 0$.

The probability that Y_i takes either 0 or 1 is expressed as follows:

$$\Pr ob(Y_i = 1) = \Pr ob(Y_i^* > 0) = \Pr ob(\beta X_i + \varepsilon_i > 0) = \Pr ob(\varepsilon_i > -\beta X_i)$$

$$= 1 - prob(\frac{\varepsilon_i}{\sigma} < -X_i \frac{\beta}{\sigma}) = 1 - \Phi(-X_i \frac{\beta}{\sigma}) = \Phi(X_i \frac{\beta}{\sigma})$$

Where Φ is the cumulative distribution function (CDF) for the standard normal distribution.

This implies that: $\Pr ob(Y_i = 0) = 1 - \Phi(X_i \frac{\beta}{\sigma})$. The parameters β and σ always appear together and cannot be reported separately. Only the ratios $\frac{\beta}{\sigma}$ appear in the regression results. These ratios are not the marginal effects. However, post-estimation prediction of the marginal effects was obtained with STATA.

Results

This section presents the findings of the study in three subsections. The first subsection presents selected household and farm characteristics with descriptive statistics and t-test of means. The second is on the determinants of participation and has descriptive statistics of the regression

variables and the binary probit regression estimates. The third subsection presents barriers to farmer participation with descriptive statistics and insights from the focus group discussions.

Characteristics of Survey Sample

Table 2.1 below presents selected household and farm characteristics for the certified and non-certified subsamples. The first part of the table presents means and standard deviations of some variables (2^{nd} and 3^{rd} columns for certified and non-certified households respectively) and t-tests of the differences in the means (4^{th} column). The second part of the table presents percentages of households in various categories of the remaining variables for the entire sample (2^{nd} column), certified subsample (3^{rd} column), and non-certified subsample (4^{th} column). In addition to the characteristics presented in table 2.1, Appendix E shows details of some housing characteristics of the survey sample.

Across the entire sample, household annual income in the last 12 months is averagely GH ₵ 8, 456 and has no significant difference between certified and non-certified households. The entire survey sample has a mean household size of 4.41 and it can be seen from the table that the difference between the means for certified (4.69) and non-certified (4.14) is statistically different from zero. An average of about 91% of children in households in the entire sample are in school and there is no significant difference between the means of these percentages for certified and non-certified households. A child in a household in the entire sample has on average completed about 6 years of formal schooling and again this does not matter whether the child is in a certified or non-certified household. Across the entire sample, a child in a household missed on average about half a day of school out of 10 school days in the last two weeks. Most children

missed school either because school was on vacation (50% to 59%), or they were disabled or ill (19% to 25%), or they are not interested in school (13% to 22%). It might be interesting to note that lack of interest in school as a reason for missing school days is 9% more in certified households. Also worthy of note is that work on household farm only accounts for 2% of reasons for absenteeism across households in the entire sample, 3% in the certified subsample and none in the non-certified subsample.

On average, a household cultivates about 2.3 pieces of farmland and there is a significant difference between the mean number of farms cultivated by certified (2.46) and non-certified households (2.14). The total size of cultivated farmland averages at about 10.5 acres for the entire sample and also has a significant difference between certified and non-certified households. Averagely, about 90% of a household's cultivated farmland is planted with cocoa and this is very similar for each category of households. A household on average harvested about 1084kg of cocoa beans in the last 12 months and this also has no significant difference between certified and non-certified households.

An average of about 406kg (about 437 and 376 for certified and non-certified households respectively with no significant difference) of potential cocoa output was lost to pest and diseases, drought and flood, and bush fire in the last 12 months. Regarding the status of cocoa output over the last 5 years, 37% of farmers (41% and 35% for the certified and non-certified subsamples respectively) believe that their households' cocoa output has been about the same. These percentages are similar for farmers who say their output has been increasing and in both

cases they are higher for certified farmers. However, 33% of non-certified farmers believe their output has been decreasing as compared to 17% of certified farmers.

Table 2.1: Selected Household and Farm Characteristics

Variable	Mean (SD)		B-A (Std. Err.)
	Certified Farmers (A)	Non-certified Farmers (B)	
Household Characteristics			
Household income (GH ₵)	7977 (6618)	8900 (12224)	924 (1126)
Household size	4.7 (2.3)	4.1 (2.3)	-0.6 (0.3)**
Children in school (%)	90.2 (23.7)	91.9 (21.1)	1.8 (3.1)
Child education (years)	6.0 (2.6)	5.5 (2.6)	-0.4 (0.4)
Child absenteeism (days/10)	0.4 (1.1)	0.5 (1.3)	0.1 (0.2)
Farm Characteristics			
Number of farms	2.5 (1.2)	2.1 (1.1)	-0.3 (0.1)**
Total farm size (acres)	11.6 (9.2)	9.6 (10.0)	-2.0 (1.1)*
Cocoa farm share (%)	90.4 (16.8)	88.1 (19.9)	-2.3 (2.1)
Cocoa output (kg)	1154 (1148)	1021 (1184)	-133 (132)
Potential output lost	437.2 (746.2)	376.4 (724.2)	-60.8 (85.2)
N	150	162	312
	Percentage		
	Entire Sample	Certified	Non-certified
Reason for Absenteeism (last 2 weeks)			
Vacation	55	50	59
Disability/Illness	22	19	25
Not interested in school	17	22	13
Cannot afford school	2	3	0
Family does not allow schooling	2	3	0
Work on household farm	2	3	0
Bad weather	2	0	3
Cocoa Output Status (last 5 years)			
About the same	37	41	35
Increasing	37	42	32
Decreasing	26	17	33
N	312	150	162

Note: *** p<0.01, ** p<0.05, * p<0.1

Determinants of Farmer Participation

Descriptive Statistics

Descriptive statistics of the independent variables in the binary probit regression model are presented in Appendix F. In accordance with the study design the sample is almost equally distributed among the three different certification standards as well as the two channels of implementation. The entire sample as well as the certified and non-certified subsamples each consists of approximately 78% male farmers. Less than a third of the farmers in the sample (26% - entire sample, 22% - certified subsample, and 30% - non-certified subsample) were born outside of their current community of residence. Approximately 27% of the farmers in the entire sample hold leadership positions in their communities, and this is 37% and 19% for the certified and non-certified subsamples respectively. About 8% of farmers have at least a member of their household being a community leader and approximately 44% have an acquaintance that is a community leader. The mean age is about 47 years and the average farmer has completed about 8 years of formal schooling.

On average there are about 2.5 adults and 1.5 children in a farmer's household. A household on average earned about 65% of its income in the 12 months leading up to the survey from cocoa. The average size of land a household has under cocoa production is 9.34 acres; about 98% of the number of cocoa farms a household cultivates are planted at least in part with hybrid cocoa varieties; averagely, 99.5% of the number of cocoa farms a household cultivates is planted at least in part using lining and pegging; and a household cultivates about 31% of its total cocoa farm holdings under sharecropping arrangements.

Regression Estimates

Table 2.2 below presents results of the binary probit regression of the determinants of participation. The first column of the table contains the explanatory variables, columns 2 and 3 have the regression coefficients and their respective robust standard errors, and the 4^{th} and 5^{th} columns have the average marginal effects and their respective robust standard errors. The presentation of the findings focuses on the average marginal effects in column 4. The number of observations, Wald Chi-square, and the Pseudo R^2 are presented at the bottom of the Table.

Certification Standard and Implementation Channel

As can be seen from table 2.2, the certification standard implemented in a farmer's community does not affect the probability of the farmer being certified. The results show that farmers in communities where certified farmer groups are organized through farmer cooperatives have lower probabilities of being certified. On average, the probability of a farmer in a community with cooperative-organized certified farmer group to be certified is about 0.08 less than a farmer in a community where the certified farmer group is organized through a licensed buying company. This is found to be significant at the 10% significance level.

Individual Characteristics

The regression estimates indicate that a farmer's gender, migration status, and years of education do not affect the probability of the farmer being certified. Also, whether or not a farmer has a household member or a close acquaintance that is a community leader does not affect the farmer's probability of being certified. There is however a significant and nonlinear relationship between the age of a farmer and the probability of the farmer being certified. On average, every

additional year to a farmer's age increases the probability of the farmer being certified by 0.026, (but at a decreasing rate) up to age 58 (inflection point), after which it starts to decrease. This effect is significant at the 1% significance level. Again, a farmer that holds a leadership position in his/her community has a significantly (at 10% significance level) higher probability of being certified than a farmer who is not a leader. On average, holding a leadership position increases a farmer's probability of being certified by 0.1.

Household and Farm Characteristics

The number of adults in a farmer's household has a significant effect (at the 10% significance level) on the farmer's probability of being certified. Every additional adult household member increases a farmer's probability of being certified by 0.035. The number of children in a farmer's household as well as the percentage of his household's income from cocoa farming does not significantly affect the probability of the farmer being certified. Also, none of the farm characteristics has a significant effect on a farmer's probability of being certified.

Barriers to Farmer Participation

Table 2.3 below presents the reasons why some farmers are not participating in cocoa certification. The reasons are presented for non-certified farmers who are willing to join the program as well as those who would not want to join the program at all. It can be seen from the table that there are four reasons mentioned by more than 10% of each group of non-certified farmers. First is the lack of adequate information about certification: 38% of non-certified farmers who are willing to be certified and 40% of non-certified farmers who are unwilling to be certified attributed their non-participation to the fact that they do not know enough about

certification. Second is that some farmers have no particular reason for not being certified (19% and 28% of willing and unwilling farmers respectively). Thirteen per cent of non-certified but willing farmers and 19% of unwilling farmers say they are not certified or would not want to be certified because they cannot afford to be certified or cannot meet certification requirements.

Table 2.2: Binary Logistic Estimates for Determinants of Participation

Variables	Coeff.	Robust Std. Err.	Average Marginal Effects	Robust Std. Err.
Certification standard (Base: FLO)				
SAN-RA	0.030	0.196	0.008	0.057
UTZ	0.103	0.178	0.030	0.052
Implementation channel (Base: LBC)				
Cooperative	-0.276*	0.152	-0.081*	0.044
Farmer Characteristics				
Male	-0.095	0.196	-0.028	0.057
Migrant	-0.265	0.181	-0.077	0.053
Age	0.089***	0.031	0.026***	0.009
Age^2	-0.001**	0.0003	-0.0002**	0.001
Education (years)	0.017	0.0184	0.005	0.005
Leader	0.343*	0.188	0.100*	0.054
Household member leader	0.131	0.276	0.038	0.081
Acquaintance leader	-0.089	0.158	-0.026	0.046
Household Characteristics				
Number of adults	0.120*	0.063	0.035*	0.018
Number of children	0.070	0.055	0.021	0.016
Cocoa Income (%)	0.005	0.003	0.001	0.001
Farm Characteristics				
Cocoa Farm Size	0.005	0.010	0.002	0.003
Sharecropped	0.0004	0.002	0.0001	0.001
Hybrid Cocoa Variety	-0.001	0.006	-0.0003	0.002
Lining & Pegging	0.007	0.015	0.002	0.004
N = 312	Wald chi^2 (18) = 40.13***		Pseudo R^2 = 0.1006	

Note: *** p<0.01, ** p<0.05, * p<0.1; LBC - licensed buying company

Eleven per cent of non-certified but willing farmers and 12% of unwilling farmers say they are not certified or would not want to be certified because they already sell their cocoa beans to other

licensed buying companies. One focus group discussion participant puts it this way; *"Some farmers have loyalty with certain purchasing clerks and do not want to trade with any other companies."* This is because certified farmers have to sell their beans to designated licensed buying companies in order to receive price premium.

Another barrier is the issue of loss of trust in interventions: mentioned by 4% and 35% of willing and unwilling farmers respectively. Based on insights from the focus group discussions, this issue relates closely with that of lack of adequate information. Farmers do not know enough about certification and who is promoting it in order to trust the program and this is why they have not joined or are unwilling to join. In one of the focus group discussions a farmer said, *"Others were also skeptical of the companies behind the farmers groups as result of unpleasant previous experiences they had"*. Some farmers are not participating or unwilling to participate because they do not know enough about certification in order to be convinced by its expected benefits. Other specific barriers mentioned include: delays in payment for beans sold as certified; lack of trust in leaders and members of farmer organization; dislike for purchasing clerk who buys certified beans; and certified farmer organizations being political or ethnocentric.

Table 2.3: Barriers to Farmer Participation in Cocoa Certification

Barriers to Participation	Farmers Willing to be Certified (%)	Farmers Unwilling to be Certified (%)
Lack of adequate information about certification	38	40
No reason	19	28
Cannot afford/meet certification/membership requirements	13	19
Sell to another buyer	11	12
Loss of trust in interventions	4	35
New in cocoa farming	11	-
Organization no longer accepting members	2	-
New in community	7	4
Cocoa farm not large enough	1	8
Don't own cocoa farm	1	8
Unwilling to practice certification requirements	-	9
N	90	68

Discussion

The results presented above are discussed in this section under similar headings as in the presentation of the results: determinants of participation (certification standard and implementation channel, individual characteristics, and household and farm characteristics) and barriers to participation.

Determinants of Participation

Certification Standard and Implementation Channel

In general, the aim of certifying cocoa producers is to promote the adoption of sustainable agricultural practices in order to ensure sustainable cocoa production. However, the FLO, SAN-RA and UTZ standards have strong affiliations with particular thematic areas in terms of requirements and expected benefits (KPMG 2012; and Mahrizal et al. 2012). As mentioned earlier under studies on sustainable agricultural practices adoption, the attributes of an innovation play key roles in its adoption. Because of this, the differences in the thematic areas of particular

interest to the different certification standards were expected to show up in the likelihood of farmers' participation. The result of the regression analysis however does not support this expectation. This finding may be explained by an assertion made in literature on cocoa certification. According to Gockowski *et al*. 2013 and Mahrizal *et al*. 2012, what sets the different certification standards apart in practice does not really lie in the characteristics of the production process but rather in the certification thereof. In other words, the different certification standards in practice promote the adoption of the same set of recommended practices and do not focus on particular ones in isolation.

Again, according to literature on sustainable agricultural practices adoption, the channel through which an innovation is communicated is important in determining the adoption of the innovation. This is what gives meaning to the finding that implementation channel significantly affects the probability of certification. In the case of this study, a reasonable explanation to this finding lies in the role of licensed buying companies in the promotion of certification. In both approaches to organizing farmers for certification, there is a specific licensed buying company involved in terms of purchase of certified beans. Meanwhile, in the cases where farmers are organized through a licensed buying company, the name of the licensed buying company and for that matter its business objectives are very prominent. This translates into making immediate material benefits of certification being relatively more important. It is therefore not surprising that in communities where certification is still relatively new (like in the study communities), organizing farmers through a licensed buying company has a positive effect on the probability of farmers being certified.

Individual Characteristics

The finding relating to the probability of being certified increasing with age may be explained by the assertion that older farmers usually have observed the production process well enough to know the optimal input mix (Neill & Lee 2001). In the case of cocoa certification, especially in the survey communities, this is important because the program is still young. Therefore it takes experience for a farmer to have quickly gone through the process of analysing the cost and benefits of certification and deciding to participate in the program.

The finding relating to the likelihood of being certified decreasing with age after age 58 may be explained by the assertion that experience yields conservativeness. Therefore, as farmers grow older and become more experienced, they become reluctant to try new practices. One issue that featured prominently in the focus group discussions – conservativeness - also supports this finding and assertion. In the focus group discussions, farmers said that those who are not participating in the program are farmers who do not want to leave the farming practices that they are used to. One farmer said, "*Some farmers see the conditions of the groups regarding best farming practices as cumbersome and want to stick to their old or conservative method of harvesting their cocoa."*

The finding that being a community leader positively affects the probability of being certified is important from two perspectives. First is that, some of the expected benefits of cocoa certification go beyond the farm family, particularly community infrastructure development, improvement in public health and safety, and improved management of natural resources. Some of these issues are reasonably likely to be of concern to community leaders prior to the

introduction of cocoa certification. It is therefore reasonable to expect a community leader to be more interested in contributing to the aims and objectives of the program. The second reason why the finding is important is that as custom demands, a common approach used in entering communities with cocoa certification is first introducing the program to community leaders. This means that community leaders would have firsthand information on the requirements and benefits of the program. This firsthand information might therefore be playing a role in the decision-making of farmers who are community leaders.

A third point that is worth discussing with regards to leaders being more likely to be certified has to do with elite capture. This is because of the reasonable assumption that a community leader is likely to be of a higher social class. However, data on household and housing characteristics presented under "Characteristics of Survey Sample" above and in Appendix E do not support this assumption. For instance, t-tests of means showed no significant differences between certified and non-certified households with regards household income, children education, and rooms per adult member. Furthermore, household size for instance has a significant difference but this is rather against the assumption of elite capture: certified households have more members and this is known to be uncharacteristic of elites. Though the results also show that certified households cultivate significantly more farms and have larger farm holdings, this is not easily attributable to they being elites.

Household and Farm Characteristics

From Hayami & Ruttan in Eicher & Staatz 1998, we know that agricultural technologies are designed to use more or less of an input(s). According to Feder, Just & Zilberman 1985 as well

as Neill & Lee 2001, a technology that uses more labor and less other inputs would be easily adopted by households that have more members who can work on the farm. The finding that the number of adult household members has a significant difference in a farmer's certification status may be explained by an earlier description of sustainable agricultural practices as being generally labor-intensive (Tey *et al.* 2014). Also, in the next part below, where the barriers to participation are discussed, time for attending meetings of certified farmer organizations is mentioned as one of the major reasons why some farmers are not certified or willing to be certified. This gives an important insight to why farmers in household with more adult members are more likely to be certified. Reasonably, more adult household members (and also significantly more household members as indicated earlier) increase the time endowment of the household and therefore reduce the opportunity cost of each member's time. This makes it easier for members to devote time to relatively less important uses such as attending farmer organization meetings.

Barriers to Participation

In Chapter 1, it was mentioned that farmers' knowledge of certification is low, and this assertion has been supported here as lack of adequate information has been found to be an important barrier to participation. Recall that one of the reasons attributed to community leaders having higher probabilities of being certified is the access to information about certification. Based on these related findings, it is important to mention that indeed information matters in farmer participation in cocoa certification. On the other hand, and in a related result, lost of trust in intervention programs is an important reason why some farmers are not willing to join certification. This could also be seen as reason why they are sceptical and would want to know much more about the program before making commitments.

With regard to affordability of certification/membership requirements, specific survey and focus group discussion responses indicate that it mainly has to do with the cost of membership registration and also time for attending meetings. Certified farmer groups charge an average of GH ₵20[2] as one-time membership registration fees, and most of them meet twice every month. Non-certified but willing farmers are mostly constrained by their inability to afford the registration fees. While unwilling farmers say they find program participation time consuming. Considering the cost of one-time member registration fees, it would be reasonable to assume that farmers who are not able to participate in certification because of this are most likely from very poor households. This assumption is however not supported by the data on grounds similar to those discussed above in relation to elite capture. The time constraint other hand supports the earlier discussion on the implications of labor endowments for participation in cocoa certification.

In both licensed buying company and farmer cooperative certification implementation, specific licensed buying companies are engaged in the purchase of certified cocoa beans. This means that in a community certified farmers must sell their beans to a particular licensed buying company in order to receive price premium. However, there is more than one licensed buying company in most of these communities. Prior to the introduction of certification, farmers had particular licensed buying company(s) they sold their beans to and this choice is typically informed by very important reasons. This is what makes it difficult for some farmers to join certified farmer organizations if the organization has arrangements with a licensed buying company other than their existing one.

[2] For the period of data collection US $1 was averagely GH ₵3.96

CONCLUSIONS AND IMPLICATIONS FOR POLICY AND RESEARCH

The aim of this study was to contribute to the understanding of contextual conditions for implementing certification programs that promote sustainable agricultural practices. Specifically, the study sought answers to questions regarding the ways and extents to which farmers are engaged in the activities and processes of cocoa certification; stakeholders' assessments of cocoa certification; and factors that determine participation in cocoa certification. Based on the results discussed in the two chapters above, the study draws the following conclusions and suggests their implications for policy and future research.

One conclusion is the fact that farmer knowledge of cocoa certification is inadequate and this besides undermining the expected democratic nature of farmers' participation is also a major reason why some farmers are not certified. It also shows up in the finding that community leaders are more likely to be certified. This calls for intensification in the advocacy for certification: all the objectives of the program and the associated costs and benefits to stakeholders need to be made more explicit in the campaigns to get cocoa farmers certified. Another one is that the results raise little or no concerns about how farmers get involved in certified farmer groups and identify with group and certification requirements and objectives. This means that if the flow of information about certification is better managed, there could be some guarantee that once farmers join certification, they would adopt practices promoted by the program.

Also, farmers are not engaged in inspections for compliance and decisions on price premium distribution as expected. These two are however very critical pillars of the program and need to

be considered carefully. Research on innovative ways to increase the efficiency of inspections as well as streamlining the role of licensed buying companies would be helpful in these regards. It is also a conclusion that all stakeholders favourably identify with the requirements, objectives and prospects of cocoa certification and this speaks positively to the sustainability of the program. Conditions that compel farmers to sell certified beans as conventional are however worth immediate attention as this continues to be a major challenge of the program. This issue was actually found to be another major reason why some farmers are not participating in the program. Again, learning about how to streamline the role of licensed buying companies would be helpful in this regard.

The study also concludes that the channel or approach used to organize farmers for certification has important implications on farmers' participation. It is important for research to explain how organizing farmers through licensed buying companies increase the probability of their participation. Such knowledge would enable better utilization of the opportunities embedded in that approach. Another conclusion of the study is that experience is a catalyst for as well as a hindrance to participation. Further research is however needed to show how experience plays out in these regards in order to inform policy on how to bring in the less and overly experienced.

The final conclusion of the study is that household labor endowment is important in determining farmer participation in cocoa certification. This may have significant implications from the perspective of structural transformation and the associated movement of labor within and between sectors of the economy. This calls for research to shed light on labor dynamics within the cocoa sector of Ghana.

APPENDICES

APPENDIX A:

SAMPLING FRAMEWORK

Table A.1: Sampling Framework

Certification Standard/ Implementation Channel	Districts	Communities in Selected District	Households in Selected Community (Census Report)	Households in Selected Community (Enumerated)
UTZ/LBC	22	21	247	204
UTZ/Farmer Cooperative	2	8	Unknown	201
FLO/LBC	1	29	371	341
FLO/Farmer Cooperative	7	34	282	273
SAN-RA/LBC	4	22	252	547
SAN-RA/Farmer Cooperative	3	34	265	210
Totals	**39**	**148**		**1776**

Note: LBC - licensed buying company

APPENDIX B:

LOCATION OF STUDY COMMUNITIES

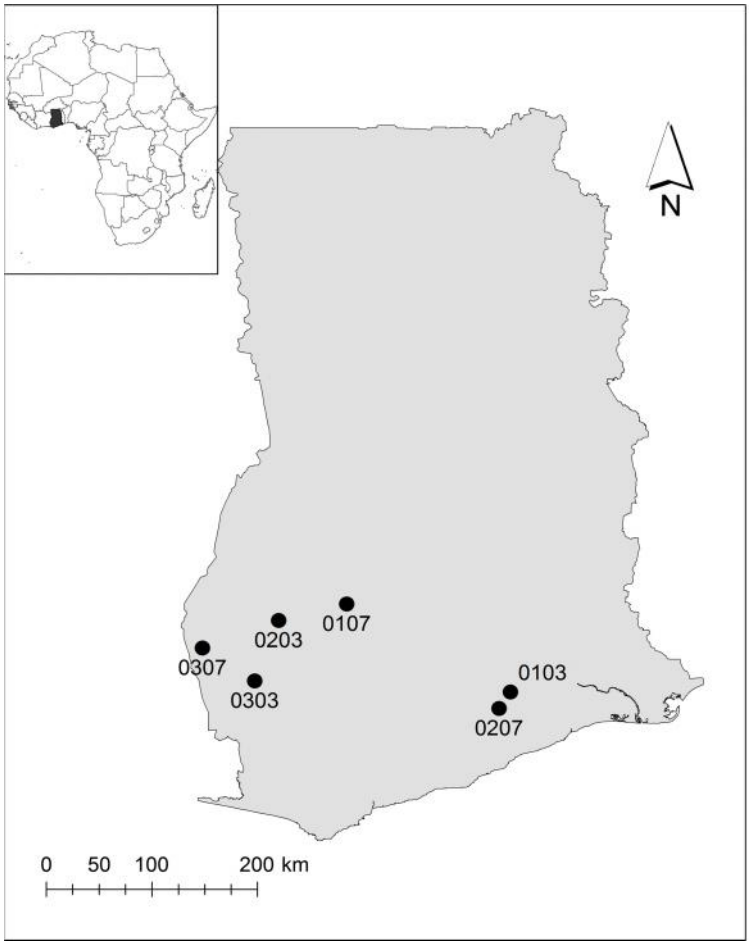

Figure B.1: Location of Study Communities

APPENDIX C:

DETAILS OF SAMPLE WEIGHT CALCULATION

Table C.1: Details of Sample Weight Calculation

Household Type	Enumerated Population	Corrected Population	Population Proportion	Survey Sample	Sample Proportion	Weight
Certified						
Community 0103	44	43.6941	0.3034312	26	0.5	0.6069
Community 0107	22	21.88486	0.2701835	21	0.42	0.6432
Community 0203	62	61.68278	0.268186	27	0.5192308	0.5165
Community 0207	37	36.88103	0.2394872	26	0.490566	0.4882
Community 0303	58	57.5387	0.3269244	26	0.4814815	0.6790
Community 0307	80	80.31853	0.1708905	24	0.4705882	0.3631
Non-Certified						
Community 0103	100	100.3059	0.6965688	26	0.5	1.3931
Community 0107	59	59.11514	0.7298166	29	0.58	1.2583
Community 0203	168	168.3172	0.731814	25	0.4807692	1.5222
Community 0207	117	117.119	0.7605128	27	0.509434	1.4929
Community 0303	118	118.4613	0.6730756	28	0.5185185	1.2981
Community 0307	390	389.6815	0.8291095	27	0.5294118	1.5661

APPENDIX D:

DESCRIPTION AND HYPOTHESES OF INDEPENDENT VARIABLES

Table D.1: Description and Hypotheses of Regression Variables

Variable	Description	Expected sign
Certification Status		
Certified	1 if farmer is a member of a certified farmer organization; 0 otherwise	
Certification standard	*Certification standard implemented in community*	
FLO	1 if FLO is implemented in community; 0 otherwise	?
SAN-RA	1 if SAN-RA is implemented in community; 0 otherwise	?
UTZ	1 if UTZ is implemented in community; 0 otherwise	?
Implementation Channel	*Channel used to organize farmers for certification in community*	
LBC	1 if LBC is used; 0 if farmer cooperative is used	?
Cooperative	1 if farmer cooperative is used; 0 if LBC is used	?
Farmer Characteristics		
Male	1 if farmer is male; 0 if farmer is female	- Or +
Migrant	1 if farmer was born outside of community; 0 otherwise	?
Leader	1 if farmer holds a leadership position in community; 0 otherwise	+1
Household member leader	1 if farmer's household member holds a leadership position in community; 0 otherwise	+1
Acquaintance leader	1 if farmer's close acquaintance holds a leadership position in community; 0 otherwise	+1
Age	Age of farmer in completed years	- Or +
Age^2	Farmer's age squared	- Or +
Education	Number of years of schooling completed by farmer	+1
Household Characteristics		
Number of Adults	Number of household members 18 years and older	- Or +
Number of Children	Number of household members 5 to 17 years old	-1
Cocoa income	Percentage of household income from cocoa in the 12 months leading up to the survey	- Or +
Farm Characteristics		
Cocoa farm size	Total land area (in acres) that household has under cocoa cultivation	- Or +
Hybrid cocoa variety	Percentage of the number of household cocoa farms established at least in part with hybrid cocoa variety prior to the introduction of cocoa certification	+1
Lining & Pegging	Percentage of the number of household cocoa farms established at least in part using lining and pegging prior to the introduction of cocoa certification	+1
Sharecropped	Percentage of total cocoa farm land sharecropped by household	-1

Note: LBC - licensed buying company

APPENDIX E:

HOUSING CHARACTERISTICS

Table E.1: Housing Characteristics

Variable	Frequency (Percentage)		
	Entire Sample	**Certified Farmers**	**Non-certified Farmers**
Source of drinking water (rainy season)			
Bore-hole/tube well	168 (54)	88 (59)	80 (49)
Rain water	103 (33)	44 (29)	59 (36)
River/stream	23 (7)	12 (8)	11 (7)
Pipe-borne outside house	12 (4)	4 (3)	8 (5)
Sachet water	5 (2)	2 (1)	3 (2)
Pipe-borne inside house	1 (0.3)	0	1 (0.6)
Well	0	0	0
Source of drinking water (dry season)			
Bore-hole/tube well	234 (75)	115 (77)	119 (73)
River/stream	45 (14)	20 (13)	25 (15)
Pipe-borne outside house	14 (4)	5 (3)	9 (6)
Sachet water	13 (4)	7 (5)	6 (4)
Well	5 (2)	3 (2)	2 (1)
Rain water	1 (0.3)	0	1 (0.6)
Pipe-borne inside house	0	0	0
Source of energy for lighting			
National grid	288 (92)	141 (94)	147 (91)
Dry cell/regular battery	21 (7)	6 (4)	15 (9)
Solar-powered batteries	3 (1)	3 (2)	0
Source of energy for cooking			
Firewood	283 (91)	139 (93)	144 (89)
Charcoal	21 (7)	10 (7)	11 (7)
Gas	6 (2)	0	6 (4)
Dung	1 (0.3)	1 (0.7)	0
Electricity	1 (0.3)	0	1 (0.6)
Dwelling roof material			
Corrugated iron sheets	305 (98)	147 (98)	158 (98)
Palm leave/raffia thatch	3 (1)	1 (0.7)	2 (1)
Cement/concrete	2 (0.6)	1 (0.7)	1 (0.6)
Asbestos/slate	2 (0.6)	1 (0.7)	1 (0.6)
Dwelling outer wall material			
Cement/concrete	269 (86)	132 (88)	137 (85)
Earth/mud/mud bricks	41 (13)	17 (12)	24 (15)
Wood	1 (0.3)	0	1 (0.6)
Burnt bricks	1 (0.3)	1 (0.7)	0
	Mean (Standard deviation)		
Rooms per adult HH member	1.18 (0.68)	1.16 (0.63)	1.2 (0.72)
N	312	150	162

APPENDIX F:

DESCRIPTIVE STATISTICS OF REGRESSION VARIABLES

Table F.1: Descriptive Statistics of Regression Variables

Variable	Frequency (Percentage)		
	Entire Sample	**Certified Farmers**	**Non-certified Farmers**
Certification standard			
FLO	105 (34)	53 (36)	52 (32)
SAN-RA	105 (34)	50 (32)	55 (34)
UTZ	102 (33)	47 (32)	55 (34)
Implementation channel			
LBC	158 (51)	79 (53)	75 (49)
Cooperative	154 (49)	71 (47)	79 (51)
Farmer Characteristics			
Male	243 (78)	117 (78)	126 (78)
Migrant	81 (26)	33 (22)	48 (30)
Leader	85 (27)	55 (37)	30 (19)
Household member leader	26 (8)	16 (11)	10 (6)
Acquaintance leader	138 (44)	66 (44)	72 (44)
	Mean (Standard deviation)		
Age	46.66 (13.85)	49.56 (12.60)	43.96 (14.45)
Age^2	2368.30 (1388.62)	2613.8 (1281.64)	2139.57 (1448.17)
Education (years)	8.15 (4.25)	8.43 (4.08)	7.90 (4.39)
Household Characteristics			
Number of Adults	2.50 (1.37)	2.78 (1.45)	2.25 (1.25)
Number of Children	1.51 (1.47)	1.6 (1.55)	1.42 (1.38)
Cocoa Income (%)	65.38 (26.17)	67.98 (25.12)	62.97 (26.95)
Farm Characteristics			
Cocoa Farm Size (acres)	9.34 (8.72)	10.52 (9.05)	8.24 (8.18)
Hybrid Cocoa Variety (%)	98 (12.39)	98.67 (9.13)	97.38 (14.64)
Lining Pegging (%)	99.50 (6.12)	99.78 (2.65)	99.23 (8.09)
Sharecropped (%)	30.57 (42.71)	28.28 (40.23)	32.69 (45.07)
N	312	150	162

APPENDIX G:

QUALITATIVE INTERVIEW AND DISCUSSION GUIDE

Nature and Extent of Farmer Participation in Cocoa Certification in Ghana

Qualitative Interview/Discussion Guide

In-depth Interviews

COCOBOD Officials

1. How does COCOBOD manage cocoa certification?
2. What is the current state of cocoa certification in Ghana?
3. Which division or affiliate of COCOBOD would have information on the current coverage of cocoa certification in Ghana?
4. What is the best means and approach to access such information?
5. Which division of COCOBOD would have statistics on communities?
6. What is the best means and approach to access such information?

Standard Bodies/Certification Officials and Licensed Buying Companies

1. Which farmer organizations do you work with?
2. Where are they located?
3. What are the sizes of their membership?
4. For how long have you being working with these organizations and when did you certify them?
5. How does an organization get to be certified by your standard?
6. What is your mode of operation?
7. How do you choose the organizations that you work with?
8. Which external auditors and licensed buying companies do you work with?
9. How much do you pay as price premium?
10. How do you decide how much to pay as price premium?
11. How is the price premium distributed?

12. Have you had any difficulties with price premiums? If yes, what are some of such difficulties?
13. How does your standard go about verification and compliance?
14. Have you had difficulties with verification and compliance? If yes, what are some of such difficulties?
15. How does your standard deal with the marking of certified cocoa beans?
16. Have you had difficulties with marketing of certified cocoa beans? If yes, what are some of such difficulties?

Focus Group Discussions

Organization and Membership

1. How many farmer organizations are in this community?
2. Are any of the farmer organization(s) certified?
3. What are the names of these farmer organizations and what are they commonly referred to?
4. When was/were the organization(s) formed?
5. How was/were the organization(s) formed?
6. What was/were the main motive(s) for forming the organization(s)?
7. What other reason(s) form the basis for the existence of the organization(s)?
8. Who qualifies to be a member of the organization(s)?
9. Why do farmers join this organization?
10. Are you organized at the national, regional, district or local level(s)?
11. How is the leadership of the organization(s) structured at each level(s)?
12. How many farmers are currently registered with the organization(s) at each level?

13. What kinds of information do you have on your members that you can share with me? (E.g. farm sizes, average yields, gender, age, location etc.)
14. How often are meetings held by the organization(s) at each level?
15. How are decisions typically made at each level of the organization(s)?

Affiliations

16. Which certification standard bodies, licensed buying companies, and external auditors do the organization(s) work with? Any special reasons for working with whom they work with?
17. For how many years have the organization(s) been working with the various entities and for how many years has this organization been certified?

Management

18. How do farmers and for that matter the organization really get certified?
19. How does your organization manage price premium (amount, distribution, uses etc.), who makes such decisions and how?
20. How does your organization manage verification and compliance (ICS, external auditing), who makes such decisions and how?
21. How do members of this organization sell their certified cocoa beans?

SWOT Analysis

22. What do you think are the strengths of cocoa certified?
23. What do you think are the weaknesses of cocoa certification?
24. What opportunities do you see in cocoa certification?
25. What are your assessments of cocoa certification so far, in terms of the expected benefits?

APPENDIX H:

HOUSEHOLD QUESTIONNAIRE

UNIQUE ID ☐☐☐☐☐☐☐☐☐☐

NATURE AND EXTENT OF FARMER PARTICIPATION IN COCOA CERTIFICATION IN GHANA

HOUSEHOLD QUESTIONNAIRE

July - August 2015

DEPARTMENT OF COMMUNITY SUSTAINABILITY
MICHIGAN STATE UNIVERSITY

Community Number	☐☐☐☐
Household Number	☐☐☐☐☐
Interviewer Number	☐☐
Completed Questionnaire Checked and	☐
Approved: ***Check if yes:***	☐☐ ☐☐ ☐☐☐☐
Date Approved: ***DD / MM / YYYY***	

UNIQUE ID | | | | | | | | | | |

INFORMATION SHEET

Community Name *(Circle one)*

1. Adarkwa
2. Anwiam
3. Asempaneye
4. Kwaboanta
5. Mafia
6. Besibema

Community Number | | | | |

Household Number *(Copy from listing and selection sheets)* | | | | | |

Interviewer Name *(Write Name)*

1. Addo Kingsley
2. Essandoh Francis
3. Owusu Mensah Vida
4. Quansah Kenneth
5. Ebenezer Offei Ansah

Interviewer Number | |

Was an interpreter used for this interview? *(Circle one)*

1. Yes
2. No

Interview Date *DD/MM/YYYY* | | | | | | | | | |

Interview Start Time *HH:MM* | | | | |

UNIQUE ID | | | | | | | | | | |

CONSENT FORM

Participant Name: _____

Interviewer Name: _____

Date: _____ Time_____

My name is [Researcher's name], a graduate student at Michigan State University. Are you at least 18 year old? [*If not, thank and terminate interview*].
You are being asked to voluntarily participate in a research study of cocoa certification in Ghana. The findings of this study will help form the basis for policy recommendations regarding the design of cocoa certification programs.

If you agree to participate, I will ask you some questions about cocoa certification programs and about your participation in such programs. I will also ask some questions on issues regarding your household and farm, farmer organization, and community. The interview will take approximately thirty to forty minutes of your time.

You should know that your identity and responses to questions will be kept confidential and your privacy will be protected to the maximum extent allowable by law. All reports and publications resulting from this interview will be written and shared using pseudonyms and code numbers. Only the researchers will have access to your responses and the data will be stored on a secure, password-protected computer and in offices at the Michigan State University with no identifying information linking them to you.

Your participation is voluntary and you may choose not to participate at all, refuse to answer certain questions, or stop the interview at any time without any consequences. It is also important for you to know that there are no right or wrong answers.

If you have any questions or concerns regarding your participation in this study, you may contact the researchers whose contact information is on the sheet I am handing you [hand Information Sheet to respondent]. If you feel your rights have been violated or you are dissatisfied with any aspect of the study, please contact Michigan State University's Human Research Protection Program using the contact information on the Information Sheet.

Do you have any questions? Yes No [*if yes, answer questions and proceed*]

You indicate your voluntary agreement to participate in this study by beginning the interview with me. May I begin? Yes No [*If no, thank and end*]

UNIQUE ID | | | | | | | | | | |

SECTION 1: ORGANIZATION AND CERTIFICATION

1. How knowledgeable are you of cocoa certification? *(Circle one)*

(1) Very knowledgeable
(2) Somewhat knowledgeable
(3) Not knowledgeable at all
(98) Don't know
(99) Refused to answer

2. What are the main issues of interest to cocoa certification? ***DO NOT PROMPT*** *(Circle all that apply)*

(a) Conserving/protecting natural resources
(b) Improving farmers output and income
(c) Eliminating child labor
(d) Improving working conditions of farm workers
(e) Community development
(f) Other (specify)_____
(98) Don't know
(99) Refused to answer

3. Have you ever been a member of any certified cocoa farmer organization(s)?

(1) Yes
(2) No ***(SKIP TO Q17)***
(98) Don't know
(99) Refused to answer

4. Are you currently a member of any certified cocoa farmer organization(s)?

(1) Yes ***(SKIP TO Q6)***
(2) No
(98) Don't know
(99) Refused to answer

5. Why did your leave the certified cocoa farmer organization? *(Circle all that apply)*

(a) Unwilling to practice certification requirements
(b) Inability to meet certification requirements
(c) Another reason (specify)_____
(98) Don't know
(99) Refused to answer

6. What is the name of the certified cocoa farmer organization you are/were a member of? *(Write name)*……

(98) Don't know
(99) Refused to answer

UNIQUE ID | | | | | | | | | | |

7. What certification standard is this organization certified/working with?

(1) Fairtrade
(2) UTZ
(3) Rainforest Alliance
(98) Don't know
(99) Refused to answer

8. For how many years have you been/were you a member of this organization? *(Write number, 98 = Don't know, 99 = Refused)* | | |

9. How are leaders typically chosen for this organization? *(Circle only one)*

(1) Appointed by external agent
(2) Appointed by village leaders
(3) Vote of all members
(4) Self-nominated
(5) Other (specify)_____
(98) Don't know
(99) Refused to answer

10. Do/did you hold any leadership position in this organization? *(Circle one)*

(1) Yes
(2) No
(98) Don't know
(99) Refused to answer

11. Roughly how many times does/did the organization hold meetings in a typical year? *(Write number, 98 = Don't know, 99 = Refused to answer)* | |

12. In the last 12 months of you membership, how many of these meetings have/did you attend(ed)?

(Write number, 98 = Don't know, 99 = Refused to answer) | |

13. When was the last time your farm was inspected by internal inspectors? *(Circle only one)*

(1) More than three years ago
(2) Within the last three years but more than a year ago
(3) Within the last year
(4) Never
(98) Don't know
(99) Refused to answer

14. When was the last time your farm was inspected by external auditors? *(Circle only one)*

(1) More than three years ago
(2) Within the last three years but more than a year ago
(3) Within the last year
(4) Never
(98) Don't know
(99) Refused to answer

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ISSUE	**15.** To what extent do/did you agree or disagree with decisions of the organization regarding **[ISSUE]**? *(Use Codes Below)*	**16.** To what extent do you agree or disagree that members of the organization are/were engaged in decision-making regarding **[ISSUE]**? *(Use Codes Below)* ***[SKIP TO Q 20]***
Amount paid as price premium		
Distribution of price premium among various uses		
Time of paying price premium		
Selling of certified cocoa beans		
Meetings (frequency, days, times, venue, duration etc.)		
Membership fees and other payments		
Internal inspection		
External auditing		
Requirements for cocoa certification		
Codes: Strongly Agree = 1 Somewhat Agree = 2 Neutral = 3 Somewhat Disagree = 4 Strongly Disagree = 5 97 = N/A 98 = Don't know 99 = Refused to answer		

17. Would you like to join a certified cocoa farmer organization?
(Circle only one)

(1) Yes
(2) No ***(SKIP TO Q 19)***
(98) Don't know
(99) Refused to answer

18. Why have you not joined a certified cocoa farmer organization?
(Circle all that apply)

(a) Cannot afford membership registration fee
(b) Organization no longer accepting members
(c) Another reason (specify)_____
(98) Don't know
(99) Refused to answer
[SKIP TO Q 20]

19. Why would you never join a certified cocoa farmer organization?
(Circle all that apply)

(a) Loss of trust in interventions
(b) Unwilling to practice certification requirements
(c) Inability to meet certification requirements
(d) Another reason (specify)_____
(98) Don't know
(99) Refused to answer

UNIQUE ID | | | | | | | | | | |

REQUIREMENTS	**20.** To what extent do you agree or disagree with **[REQUIREMENT]** as a requirement for cocoa certification? *(Use codes below)*	
Cocoa farm establishment and rehabilitation		
Farm management and maintenance		
Soil management and fertilization		
Integrated pest management and crop protection		
Harvest and post-harvest practices		
Safe and healthy farm practices		
Workers' rights, including child labor and informal workers		
Waste management		
Environment and natural resource protection		
Organization for implementation		
BENEFITS	**21.** To what extent to you agree or disagree that you expected cocoa certification to bring about **[BENEFIT]**? *(Use codes below)*	**22.** To what extent do you agree or disagree that cocoa certification has brought about **[BENEFIT]**? *(Use codes below)*
Improvement in farm management		
Improvement in awareness of environmental protection and farm environmental conditions		
Improvement in cocoa output		
Access to price premium and increase income		
Improvement in awareness of labor rights and conditions of workers and children		
Access to credit/financial assistance		
Improvement in knowledge of safety and healthy farm practices		
Access to farm inputs		
Community infrastructure development		
Access to market/buyer requested certification		
Access to extension services		

UNIQUE ID | | | | | | | | | | |

Codes:	***Strongly Agree = 1***	***Somewhat Agree = 2***	***Neutral = 3***	***Somewhat Disagree = 4***
	Strongly Disagree = 5	***97 = N/A***	***98 = Don't know***	***99 = Refused to answer***

UNIQUE ID ☐☐☐☐☐☐☐☐☐☐

SECTION 2: HOUSEHOLD WORK

PART A: HOUSEHOLD FARMING ☐☐

23. How many separate farm(s) does your household cultivate? *(Write number, 98 = Don't know, 99 = Refused to answer)*

Question	**Farm1**	**Farm2**	**Farm3**	**Farm4**	**Farm5**
Farm Number					
24. Do you own, rent or sharecrop this farm? *(Write Code)* *1.Own 2.Rent 3.Sharecrop 98 Don't know 99 Refused to answer*					
25. What is the size of this farm? *Number* ***Unit Codes*** *1.Acres 2.Poles 3.Ropes 4.Hectares 98 Don't know 99 Refused to answer* *Unit*	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐
26. What is the size of the part of this farm planted with cocoa? *Number* ***(SKIP TO NEXT FARM IF 0)*** *Unit (Use Codes in 25 Above)*	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐
27. How old is a typical cocoa tree on this farm? *Write Number of Years, 98= Don't know, 99 = Refused to answer*	☐☐	☐☐	☐☐	☐☐	☐☐
28. Are any of the cocoa trees on this farm of the hybrid variety? *1.Yes 2.No 98 Don't know 99 Refused to answer*	☐☐	☐☐	☐☐	☐☐	☐☐
29. Are the cocoa trees on this farm planted in rows, using lining and pegging? *1.Yes 2.No 98 Don't know 99 Refused to answer*	☐☐	☐☐	☐☐	☐☐	☐☐
30. How far is this farm from a water body? *Number* ***Unit Codes*** *1.Meters 2.Miles 3.Kilometers 97 N/A 98 Don't know 99 Refused to answer* *Unit*	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐
31. How far is this farm from a forest reserve/protected area? *Number* *Unit (Use Codes in 30 Above)*	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐	☐☐☐ ☐

UNIQUE ID | | | | | | | | | | |

32. In the last 12 months, how much cocoa did you harvest from all of your farms? *(Write number of bags, 98 = Don't know, 99 = Refused to answer)* | | | |

33. What amount of this total cocoa harvest was produced as certified cocoa? *(Write number of bags, 98 = Don't know, 99 = Refused to answer)* | | | |
(SKIP TO Q37 IF 0)

34. What amount of this certified cocoa did you sell as certified? | | | |
(Write number of bags, 98 = Don't know, 99 = Refused to answer)
(SKIP TO Q36 IF EQUAL TO Q 33)

35. Why did you sell some of your certified cocoa beans as conventional?
(Circle all that apply)

(a) Certified buyer rejected beans
(b) Certified buyer was not available
(c) Certified buyer did not have money
(d) Another reason (specify)_____
(98) Don't know
(99) Refused to answer

36. In the last 12 months, how much did you receive as price premium on your certified cocoa? *(Write Ghana Cedis for either per bag or in total, 98 = Don't know, 99 = Refused to answer)*

Per bag: | | | | *OR* *Total:* | | | |

37. In the last 12 months, did you lose some of your cocoa due to any of the following problems? *(Circle all that apply)*

(a) Pests and diseases
(b) Drought and flood
(c) Bush fire
(d) None ***(SKIP TO Q39 IF 'NONE')***
(98) Don't know
(99) Refused to answer

38. How much cocoa would you harvest if not for these loses? | | | |
(Write number of bags, 98 = Don't know, 99 = Refused to answer)

39. Over the last 5 years, has the output of your cocoa farm(s) been increasing, about the same or decreasing? *(Circle one)*

(1) Increasing
(2) About the same
(3) Decreasing
(98) Don't know
(99) Refused to answer

UNIQUE ID | | | | | | | | | | |

Activity	Family labor	Exchange labor	Hired labor	Caretaker
Clearing new fields for planting				
Planting crops				
Weeding				
Pruning				
Fertilizing and mulching				
Soil and water management				
Pests and diseases control				
Nursery operations				
Harvesting				
Post harvest activities				

40. In the last 12 months, roughly what proportion of the following farm activities was done by each of the following source of labor on your farm(s)? *(Write fraction e.g. 3/4, 97 = N/A, 98 = Don't know, 99 = Refused to answer)*

PART B: HOUSEHOLD INCOME

41. In the last 12 months, roughly how many Ghana Cedis did your household receive for **(SOURCE)?** *(Write Ghana Cedis, 98 = Don't know, 99 = Refused to answer)*

Source	Ghana Cedis (GH ₵)
Cocoa	
Other crops	
Paid employment	
Non-farm enterprise/business	
Livestock and animal products	
Hunting and gathering	
Palm wine	
Rent from houses you own	
Rent from equipment/animals you own	
Trading of non-agricultural goods (e.g. crafts, clothes etc.)	
Tourism	
Fishing	
Remittances	
Another source (specify)……..	

UNIQUE ID | | | | | | | | | | |

SECTION 3: HOUSEHOLD AND INDIVIDUAL CHARACTERISTICS

PART A: DEMOGRAPHICS

42. Name (*Write only common name*)	**43.** ID	**44.** Gender *1 = Male 2 = Female 98 = Don't know 99 = Refused to answer*	**45.** Age (*years) 98 = Don't know 99 = Refused to answer*	**46.** What is *(NAME'S)* relationship to the household head?	**47.** How many years of schooling has (*NAME*) completed? ***(SKIP TO 49 IF 0)*** *98 = Don't know 99 = Refused*	**48.** Is (*NAME*) currently enrolled in school? *Yes – 1* ***(SKIP 49)*** *No – 2*	**49.** What is the main reason why *(NAME)* is not enrolled in school? *(Use codes below)*	**50.** How many days of school did (*NAME*) miss in the last two weeks	**51.** What is the main reason why *(NAME)* missed school? *(Use codes below)*

UNIQUE ID | | | | | | | | | | |

Q 46: Relationship Codes	***Q 49 & 51: School enrolment and absent codes***
1……..Household head	1…….Disability/Illness
2……Spouse	2……...No School/School too far
3……...Child	3……..Cannot afford school
4……Step child	4……Family does not allow schooling
5……Niece/Nephew	5……..Not interested in school
6……..Grandchild	6…….Education not considered valuable
7……....Sibling	7……...School not safe
8…….Parent	8…….Learning a job
9…….In-law	9……Work on household farm
10……...Other relative	10……..Other household work
11……House help	11……..Work for pay outside household
12…….Non-relative	12……...Unpaid work outside household
	13…….Household chores
	14…….Competed School
	15……...Vacation
	16……..Teacher absent
	17……..Bad weather
	19……..Other reason (specify)
	97……..Not applicable
	98…….Don't Know
	99……....Refused to answer

PART B: INFRASTRUCTURE

	Rainy Season	**Dry Season**
52. What is your household's main source of drinking water? *(Use codes below)*	☐☐	☐☐
53. How many minutes does it take to go get water from this source and come back? *98 = Don't know, 99 = Refused to answer*	☐☐☐	☐☐☐
54. In the last 12 months, how many days, if any, was water not available? *(Write Number of Days, 98 = Don't know, 99 = Refused to answer)*	☐☐☐	☐☐☐
55. Roughly how much do you pay for water from this source monthly? *(Write Ghana Cedis, 98 = Don't know, 99 = Refused to answer)*	☐☐☐	☐☐☐
Water Source Codes *1. Pipe-borne inside house 2. Pipe-borne outside house 3. Tanker service 4. River/stream 5. Bore-hole/tube well 6. Well 7. Dug out/pond 8. Rain water 9. Another source (Specify)_____ 98. Don't know 99. Refused to answer*		

UNIQUE ID | | | | | | | | | | |

56. What is your household's primary source of energy for lighting? *(Circle only one)*

(1) National grid
(2) Generator
(3) Car battery
(4) Dry cell/regular batteries
(5) Wind-powered batteries
(6) Solar-powered batteries
(7) Kerosene
(8) Another source *(Specify)*_____
(98) Don't know
(99) Refused to answer

57. What is your household's primary source of energy for cooking? *(Circle only one)*

(1) Charcoal
(2) Firewood
(3) Dung
(4) Gas
(5) Electricity
(6) Kerosene
(7) Solar-powered stove
(8) Another source *(Specify)*_____
(98) Don't know
(99) Refused to answer

58. What material is the roof of your dwelling made of? *(Circle only one)*

(1) Palm leaves/raffia thatch
(2) Wood
(3) Corrugated iron sheets
(4) Cement/concrete
(5) Asbestos/slate
(6) Roofing tiles
(7) Mud bricks/earth
(8) Bamboo
(9) Another material *(Specify)*_____
(98) Don't know
(99) Refused to answer

59. What material is the outer wall of your dwelling made of? *(Circle only one)*

(1) Earth/mud/mud bricks
(2) Wood
(3) Stone
(4) Cement/concrete
(5) Burnt bricks
(6) Ceramic/tiles
(7) Another material *(Specify)*_____
(98) Don't know
(99) Refused to answer

60. How many separate rooms (including bathrooms and kitchens) are in your dwelling? *(Write Number, 98 = Don't know, 99 = Refused to answer)* ☐☐

PART C: INDIVIDUAL INFORMATION

61. *ID OF PERSON INTERVIEWED* ☐☐

62. Where were you born?

(1) This village/town ***(SKIP TO Q 64)***
(2) Another village/town in this district
(3) Another district in this region
(4) Another region
(5) Outside Ghana
(98) Don't know
(99) Refused to answer

63. For how many years have you lived in this community? ☐☐
(Write number, 98 = Don't know, 99 = Refused to answer)

64. For how many years have you been cultivating cocoa? ☐☐
(Write number, 98 = Don't know, 99 = Refused answer)

65. Do you hold any leadership position in this community? *(Circle)*

(1) Yes
(2) No
(98) Don't know
(99) Refused to answer

66. Does any member of your household hold any leadership position in this community? *(Circle)*

(1) Yes
(2) No
(98) Don't know
(99) Refused to answer

67. Does any close acquaintance of yours hold any leadership position in this community? *(Circle)*

(1) Yes
(2) No
(98) Don't know
(99) Refused answer

68. How much control do you believe individuals have over whether they succeed or fail in life? *(Read first 3 options aloud and circle only one)*

(1) A large amount of control
(2) Some control
(3) Very little control
(98) Don't know
(99) Refused to answer

69. Who should take responsibility for the development and success of this community? *(Read first 4 options aloud and circle only one)*

(1) Government
(2) Villagers
(3) Both equally
(4) Another external agents (e.g. NGOs)
(98) Don't know
(99) Refused to answer

70. Would you recommend that your children go into cocoa farming? *(Circle one)*

(1) Yes
(2) No ***(SKIP TO Q 72)***
(98) Don't know
(99) Refused to answer

71. Why would you recommend that your children go into cocoa farming?

(1) Stable source of income
(2) Important family property
(3) No better option
(4) Important for national economy
(5) Another reason *(specify)*_____
(98) Don't know
(99) Refused to answer

(END INTERVIEW)

72. Why would you not recommend that your children go into cocoa farming?

(1) Low income
(2) Low status
(3) Work too hard
(4) Better opportunities in other fields
(5) Not enough land
(6) Another reason *(Specify)*_____
(98) Don't know
(99) Refused to answer

(END INTERVIEW)

Interview End Time *HH:MM* ☐☐ ☐☐

THANK YOU VERY MUCH FOR THE INFORMATION YOU HAVE PROVIDED TO US. WE APPRECIATE YOU TAKING THE TIME TO PARTICIPATE IN THE STUDY.

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BIBLIOGRAPHY

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