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DRIVERS OF KNOWLEDGE, ATTITUDE, PRACTICE, ASPIRATION AND PERCEPTIONS OF SUSTAINABLE AGRICULTURE STANDARD: EVIDENCE FROM CERTIFIED COCOA FARMERS IN GHANA

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ABSTRACT

The study's objective was to assess the drivers of certified cocoa farmers' knowledge, attitude, practice, aspiration and perception of sustainable agriculture standard (SAS) by the Rainforest Alliance Cocoa Certification Program (RACCP) in Ghana. Using a survey design, a sample size of 400 certified cocoa farmers was selected using the multistage sampling technique. Data was analysed using mean, standard deviation, frequency, percentage, perception index and ordered logit model with STATA and Microsoft Excel 2016. Certified cocoa farmers agreed to the extension teaching methods used, the protocol, and the benefits of SAS but were neutral towards the payment of the premium. The respondents had a high level of knowledge, a positive attitude, a high level of practice and a high level of aspiration for SAS. Years of schooling, extension contact, credit access, support from Licensed Buying Companies (LBC) and farming experience were the socio-economic drivers of farmers' knowledge, attitude, practice, aspiration and perception at varying significant levels. The study recommends broader consultation on premium prices by LBCs in the cocoa certification industry.

KEY WORDS

Certification, cocoa farmers, extension teaching methods, perception, premium, rainforest alliance, sustainable agriculture standard.

Certification of cocoa is a procedure to evaluate the adherence of cocoa farmers to the standards defined by a given organization. It is founded on cocoa farmers agreeing to follow certain guidelines to boost production levels. Both private organizations and governments develop and implement these norms (Latruffe and Nauges, 2014). Examples of cocoa certification schemes in Ghana include: UTZ Certified, Fairtrade, Rainforest Alliance and Organic (Paschall and Seville, 2012).

To increase sustainable agriculture, certification requires the implementation of socially and ecologically responsible production processes. It can improve farmers' skills, productivity, and knowledge as well as the safe storage and handling of chemical inputs. Additionally, certification is a useful tool for assisting farmers in organising themselves as a group and making joint plans. Through certification, the landscape's trees, water, and soil fertility are all maintained (Ansah *et al*., 2020). Certification organizations can satisfy consumer needs by making purchases from well-known communities where they can monitor their influence and be certain that training and measures to end child labour are being made. Traceability provided by certification makes it simpler to manage and monitor a supply chain (Herman *et al*., 2020; Paschall and Seville, 2012). Certification activities are rapidly acquiring traction in the intercontinental development community because they address environmental and social concerns related to agronomical production in many circumstances (Manda *et al*., 2016).

The Rainforest Alliance Cocoa Certification Program (RACCP) promotes the Sustainable Agriculture Standard (SAS). The standards seek to preserve forests, enhance farming and forest community livelihoods, advance farmers' human rights, and assist them in reducing and adjusting to climate disasters. To be certified, a farmer must follow stringent conditions that are closely monitored by an independent third party. Better farm management, farming methods, healthy and safe working conditions, the abolition of child labour, and environmental protection are among these requirements (www.rainforest-alliance.org). Regardless of the premise that not all cocoa grown under certification ultimately ends up being sold as certified, at least a third, possibly even more than half, of all global cocoa, is produced under a certification label. The Rainforest Alliance is the largest cocoa certifier and has more market power (Fountain and Hütz-Adams, 2020).

In order to comprehend these sustainable practices and also aid in determining the various awareness level within a group of farmers or a community, perception-based researches are critical (Abid *et al*., 2015). It is widely acknowledged that perception is a prerequisite for adapting to sustainable practices. It is one of the elements that can impact a farmer's decision to adapt to these practices or not, as it influences how farmers manage their agricultural activities (Maddison, 2007). Perception is also influenced by situational and personal circumstances (Faqih, 2020) as well as the socio-economic characteristics of farmers (Essougong *et al*., 2020).

The KAPA theory divides the process of human behaviour change into four steps: acquiring knowledge, generating attitude/beliefs, forming practices and aspirations (Xie *et al.,* 2017). Farmers' knowledge of sustainable practices is frequently influenced by their recourse to information. They learn about sustainable practices through regular farmer training, which helps them improve their skills (Baumgart-Getz *et al*., 2012; Altalb *et al*., 2015; Lambrecht *et al*., 2016). According to Bowonder and Yadav (2005), rural farmers' access to knowledge is critical to increasing output and evaluation capability (Prokopy *et al*., 2008). Farmers' awareness (i.e., of present certification methods) improves with access to information (Lambrecht *et al*., 2016).

The impact of attitude on knowledge is a reflection of an individual's practice in adopting an innovation (Kimmel, 2012). Attitudes have an impact on judgments, behaviour, and what can be selectively remembered. Farmers' opinions have had a significant impact on their adoption decisions (Gerbi and Megerssa, 2020). What an individual views as true or false shapes his or her attitude. In agriculture, an individual farmer's decision-making process allows for the evaluation and formulation of acceptable or unacceptable attitudes regarding agricultural technology. Although it might not constantly be capable of measuring the processes of belief generation, attitudes can be seen through the decisions people make (Willock *et al*., 1999).

Practice is defined as a deliberate action that is also of high quality, i.e., practice denotes doing anything well. As a result, practice is linked to willingness and competence to execute (Vesala and Pyysiainen, 2008). Farmers' capability to embrace and respond to agroecological technologies can help them increase food security, productivity, and resilience (van den Berg *et al*., 2020). Low productivity, inadequate farm management and planting of low-yielding varieties (Vanlauwe *et al*., 2017), deforestation, and environmental degradation (Uribe-Leitz and Ruf, 2019) have all posed great challenges to the cocoa sector. As a result, farmers must practice SAS intensively to combat this threat.

Ambitions or aspirations of rural poor people are increasingly being recognised as an important part of individual welfare. Individuals with elevated aspirations imagine and indulge in forward-looking behaviour (Kosec and Mo, 2017; Dalton *et al*., 2016). Aspirations are much more focused on future fulfilment (Ray, 2006; Tanguy *et al*., 2014). Hopes or goals to accomplish something can be referred to as aspirations. Personal convictions, social expectations, educational and other life chances, and limits are all examples of aspirations (Anyidoho *et al*., 2012). They are multifaceted, socially rooted, and multidimensional (Appadurai, 2004). They may serve as a compliment or a replacement for one another. Anyidoho *et al*., (2012) established two major approaches to aspiration conceptualisation. The first is aspirational conceptions, which encapsulate some aspects of realism: thus, what

individuals would imagine attaining. Aspirations remain separate from expectations based on the fact that they are hopes and dreams. They are formed through social interaction, life experiences, personality, awareness, perceptions, reasoning, and judgment (Ramesh *et al*., 2018), and they vary considerably between one community and/or farmer to the other (Appadurai, 2004). However, there is no solitary exterior or inner factor that influences the development of aspiration (Nandi and Nedumaran, 2021).

According to Musemakweri (2007), the biggest barriers to increasing acceptance of technologies are generally low perceptions of new technologies, a negative attitude, and a lack of sufficient knowledge. This is evident as Fountain and Hütz-Adams (2020) reported that the significance of certification requirements has been slipping. The adoption of technologies is prompted by farmers' positive viewpoints of contemporary agricultural initiatives (Ndambiri *et al*., 2014).

Even though there exists ample scientific literature on the outcomes of cocoa certification (Aidoo and Fromm, 2015; Brako et al., 2021; Iddrisu *et al*., 2020; Ansah *et al*., 2020; Famuyiwa *et al.,* 2018; Dompreh *et al.,* 2021), there are gaps in the literature regarding the drivers of knowledge, attitude, practice, and aspiration (KAPA) and perceptions. To increase farmers' awareness and productivity toward sustainable practices, it is necessary to specifically study their practice, preferences, behaviours, and attitudes to innovation (Gerbi and Megerssa, 2020). It is on the premise of the forgoing discussions that the study was undertaken to assess the drivers of certified cocoa farmers' perception, knowledge, attitude, practices and aspirations.

METHODS OF RESEARCH

The research was carried out in Sefwi Wiawso Municipal. The Municipality lies within latitudes 60N and 60300N and longitudes 20450W and 20150W. It has a total area of 994 km^2. The Municipality shares borders with Bibiani Anhwiaso Bekwai Municipal to the east, Bodi District to the west, Asunafo South District in the Ahafo Region to the north, and Aowin Municipal to the south. According to the 2021 population and housing census, the Municipality's population is 151,220, comprising 75,315 females & 75,905 males. The majority part of the municipality is undulating, with elevations ranging from 152.4m - to 510m above sea height (www.ghanadistricts.com).

The population for this study comprised all (8,658) Rainforest Alliance (RA)-certified cocoa farmers in the Sefwi Wiawso Municipality. These individuals were selected because they could provide the necessary information (only certified cocoa farmers). The sample size was determined using the Yamane (1967) approach outlined as: $n = N / [1 + (e)^2]$, where: n = sample size required; N = sampling frame (8,658), e = margin of error (5%). From the calculation, the study's sample size was 382; however, it was adjusted to 400.

A multistage sampling technique was employed. In the first stage, the purposive sample technique was used to choose the Region and Municipal since cocoa certification has been implemented in the area for over eight years. In the second stage, cluster sampling was employed to group the towns into spatial clusters, thus, Penakrom, Nsawora, Asawinso, and Tanoso and all the clusters were selected. Simple random sampling was used in the third stage to select the communities and finally, the 400 farmers proportional to the total farmers. Fifteen percent of the total communities (i.e., 11 communities), were selected from the Municipal. These are: Kwasiaddaekrom-46, Odumasi-28, Medina- 41, Asiekrom-29, Ayisakrom-45, Gyatokrom-40, Ahokwa- 54, Baakonka- 18, Kwamebour-31, Kessekrom- 46, Anwhiam- 22.

A structured questionnaire was used to collect primary data from the respondents. The questionnaire responses were coded and then entered into a computer. The data was analysed using the computer tools, STATA and Microsoft Excel 2016. Using mean, frequency, standard deviation, and percentage, demographic parameters were examined. The perception index (Antwi *et al.*, 2022) and KAPA index (Islam and Islam, 2020; Das *et al*., 2019) were adapted to analyse farmers' perceptions and KAPA respectively.

Farmers were required to reply to the perception statements on four theme categories (benefits of the SAS, the protocol, extension teaching methods and premium). From strongly agree (5) to strongly disagree (1), a five-point Likert scale was employed to score carefully formulated perceptual statements. The perception index was calculated as:

$$P.\ I = \frac{\sum W \cdot M}{N_{ps}},\ W.M = (1*n_{sd} + 2*n_d + 3*n_e + 4*n_a + 5*n_{sa})/N$$

Where: P. I = overall perception index, W.M = weighted mean, n = number of respondents for each agreement (i.e., strongly disagree to strongly agree), N = Number of respondents, N_{ps} = number of perception statements, n_{sd} = strongly disagree, n_d = disagree, $_{ne}$ = neutral, n_a = agree, and n_{sa}= strongly agree.

Knowledge of SAS was measured by awarding 3 marks to each question. A correct response was awarded 3, a partially correct response 2, and 1 for a wrong answer. The method below was used to calculate a comparison between the specific knowledge statements linked to RACCP; TKS= $(N_1 \times 3) + (N_2 \times 2) + (N_3 \times 1)$. The following method was used to calculate the knowledge index; KI = $\frac{TKS}{PHs}$, where; KI = Knowledge Index, TKS= Total Knowledge Score, PHs = Possible highest score, N_3 = Number of correct responses, N_2 = Number of partially correct responses, and N_3 = Number of wrong responses. The selected knowledge statements were ranked using the index computed. A farmer's overall score was calculated by adding together their scores for the 9 statements. A farmer's knowledge score on SAS may range from 9 to 27, with 9 denoting low knowledge and 27 denoting the highest knowledge. The respondents were then grouped according to three equal segments from the possible minimum to maximum scores on the grounds of their knowledge marks into low knowledge (9-14), medium knowledge (15-20) and high knowledge (>20) (Islam and Islam, 2020).

Farmers' attitude toward the SAS was assessed based on their level of agreement (Jha, 2009). Their attitude was measured using Likert's ranking scale from agree, neutral to disagree which was denoted by the numbers 3, 2, and 1 accordingly. The method below was used to calculate a comparison between the specific attitudes statements linked to RACCP. TKS= $(N_1 \times 3) + (N_2 \times 2) + (N_3 \times 1)$. The succeeding method was used to calculate the attitude index; AI = $\frac{TAS}{PHs}$, where; AI = Attitude Index, TAS= Total Attitude Score, PHs = Possible Highest score, N_3 = Number respondents who agree, N_2= Number respondents who are neutral, N_1= Number respondents who disagree. The selected attitude statements were ranked using the index computed. The possible range for a farmer's attitude toward SAS is from 9 to 27, with 9 denoting the least favourable attitude and 27 denoting the most favourable one. By adding together all of the results against the nine assertions, the attitude marks of a farmer were calculated. The farmers were divided into three attitude categories depending on their total attitude score: unfavourable (9-14), moderately favourable (15–20), and highly favourable (>20) (Islam and Islam, 2020).

Practice of SAS was measured by using a three-point Likert scale to rate carefully constructed practice statements from always (with a weight of 3), sometimes (with a weight of 2), and never (with a weight of 1). To make a comparison between the specific practice statements linked to RACCP the method below was used. TPS= $(N_1 \times 3) + (N_2 \times 2) + (N_3 \times 1)$. The following method was used to calculate the extent of each particular practice; P I = $\frac{TPS}{PHs}$, where; PI = Practice Index, TPS= Total Practice Score, PHs = Possible Highest score, N_3= Number of farmers always practicing, N_2= Number of farmers who sometimes practice, N_1= Number of farmers who never practiced. The selected practices were ranked using the index computed. Respondent's practice scores were calculated by adding up all of the scores they got for the nine statements. The practice mark may span from 9 to 27 where 9 represents the low practice and 27 signifies the highest level of practice. According to their practice marks, the respondents were divided into three equal practice groups: low practice (9-14), moderate practice (15–20), and high practice (21–27) (Islam and Islam, 2020).

Farmer's aspiration was measured using a three-point Likert scale from agree, neutral to disagree which was assigned the numbers 3, 2, and 1 accordingly. The method below was used to calculate a comparison between the specific aspiration statements linked to farmers' aspiration TAS= $(N_1 \times 3) + (N_2 \times 2) + (N_3 \times 1)$. The method below was used to calculate the aspiration index; AI = $\frac{TAS}{PHs}$, where; AI = Aspiration Index, TAS= Total Aspiration score, PHs = Possible highest score, N_3 = Number of respondents who agree, N_2 = Number of neutral respondents, N_1 = Number of respondents who disagree. The selected aspiration statements were ranked using the index computed. Respondents' aspiration scores were calculated by adding up all of the scores they got for the nine aspiration statements. The aspiration mark may span from 9 to 27 where 9 represents low aspiration and 27 signifies the highest aspiration. According to their aspiration marks, the respondents were divided into three equal aspiration groups: low aspiration (9-14), moderate aspiration (15–20), and high aspiration (20–27) (Islam and Islam, 2020).

An analytical framework that goes above the use of binary decision models is required for measuring farmers' KAPA and perceptions. Since farmers' KAPA and perceptions were measured as ordinal data, the ordered logit model is the most suitable for analysis (Greene, 2002). Following Mustapha *et al*., (2016) the model was estimated as:

$$y_i = x_i\beta + \varepsilon_i \qquad (1)$$

Where: y_i is the precise but covertly explained variable; x_i is the vector of explanatory variables, β is the vector of regression coefficients which we wish to estimate and ε_i is the error term such that ε_i is identically and independently distributed as N (0; 1). Further suppose that while we cannot observe y*, we instead can only observe the categories of response:

$$y = \begin{cases} 0 \; if \; y^* \leq 0, \\ 1 \; if \; 0 < y^* \leq \mu_1 \\ 2 \; if \; \mu_1 < y^* \leq \mu_2 \end{cases} \qquad (2)$$

Then the ordered logit technique will use the observations on y, which are a form of censored data on y^*, to fit the parameter vector β.

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$$y = \beta_o+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7 X_7+\beta_8X_8+\beta_9X_9+\beta_{10} X_{10}+\beta_{11}X_{11} \quad (3)$$

Table 1 – Explanation of independent variables

Variable	Measurement	a-prior expectation
Gender (X_1)	1=male, 0=female	+/-
Age of Farmer (X_2)	Continuous (years)	+
Marital Status (X_3)	1=married, 0=otherwise	+/-
Household Size (X_4)	Continuous	+
Farm Size (X_5)	Continuous (acres)	+
Farming Experience (X_6)	Continuous (years)	+
Years of Schooling (X_7)	Continuous (years)	+
Extension Contact (X_8)	Dummy (1=yes, 0=no)	+
Land Ownership (X_9)	1=own land, 0=otherwise	+
Participation in Off-farm Income Generating Activities (X_{10})	Dummy (1=yes, 0=no)	+
Access to Credit (X_{11})	Dummy (1=yes, 0=no)	+
LBC Support (X_{12})	Dummy (1=yes, 0=no)	+

RESULTS AND DISCUSSION

From table 2, the study revealed that the average age of the farmers was 48.60 years. This indicates that the certified cocoa farmers in the municipality are aged and may have a

relatively high level of expertise in cocoa farming. The finding agrees with that of Denkyirah *et al*., (2017) who also showed most cocoa farmers are aged. The average family size of 6.74 that was found in this study is consistent with Denkyirah *et al*., (2017), who also reported the average family size of cocoa farmers to be seven (7). Larger families may offer the necessary labour, but they may also be unfavourable if the majority of family members are of school-going age (Danso-Abbeam *et al.,* 2012). Respondents' farms varied in size from one acre to twenty acres (Mean=5.71), agreeing with the findings of Oluyole and Sanusi (2009) and Agbongiarhuoyi *et al*., (2013) who found the mean farm size cultivated by majority of cocoa farmers to be five (5) acres.

The mean age of cocoa farms cultivated by the cocoa farmers was 18.30years. According to Essougong *et al*., (2020), 43% and 49% of farmers in the humid forest and transition zone respectively have farms that are younger than 21 years. The farmers interviewed have been farming for an average of 23.59 years. The average farming experience of cocoa farmers, according to Essougong *et al*., (2020), is 17 years, which is less than the finding of this study. On the other hand, Danso-Abbeam *et al*., (2012) indicated that most cocoa farmers (79%) possess more than ten years of experience while Ogunleye and Oladeji (2007) indicate that working in cocoa cultivation for more than five years is sufficient to gain all the necessary experience. Consequently, it can be deduced that the majority of the sampled farmers had a lot of experience. According to the cocoa farmers, the mean number of years of schooling was around five (5) years. This figure is a little lower than that reported by Iddrisu *et al*., (2020) who claimed the mean number of years spent in school was 6 years. On average, a farmer had been visited 3.52 times in a year, higher than 1 extension visit per farmer in a year as discovered by Essougong *et al*., (2020).

More than half of the cocoa farmers (56.75%) participated in other off-farm income generating activities. These were trading, teaching, driving and artisanry while 43.25% of them did not do off-farm activities. Hainmueller *et al*., (2011) rather showed that a lower percentage (40%) of Ghanaian cocoa farmers work in other jobs. Farmers who had access to credit were made up of 83.50% while those who did not have access to credit were 16.50%. The Licensed Buying Companies (LBC) did not provide inputs to the majority of the farmers (62.5%). Only 37.5% of the farmers received inputs from the LBC. Fertilizers and pesticides are examples of these inputs. There were 225 men (56.25%) and 175 women (43.75%) among the 400 farmers sampled. Wongnaa *et al*., (2021) showed similar results where 57% and 43% of cocoa farmers were men and women respectively. The male domination is not surprising, given that men control the majority of cocoa production activities.

Table 2 – Demographic characteristics of farmers

Continuous Variables	Mean	Std. Dev	Min	Max
Age of Farmer	48.60	11.98	21	78
Household Size	6.74	3.13	1	20
Farm Size	5.71	3.45	1	20
Age of Cocoa Farm	18.30	6.85	2	36
Farming Experience	23.59	11.01	1	60
Years of Schooling	5.14	2.48	0	15
Extension Contact	3.52	1.41	1	6
Discrete Variables	Category	Frequency	Percent	
Participation in Off-farm Income Generating Activities	Yes	227	56.75	
	No	173	43.25	
Access to Credit	Yes	334	83.50	
	No	66	16.50	
LBC Support	Yes	150	37.50	
	No	250	62.50	
Sex of Farmer	Male	225	56.25	
	Female	175	43.75	

Source: Field Data, 2022.

The descriptive statistics on farmers' perceptions of the extension teaching methods used are presented in Table 3. In table 3, "topics treated are relevant to farmers' needs" had the highest mean (Mean = 4.33 and SD = 0.52) and the perception statement with the least

mean score was “the teaching methods help me to understand the standard” (Mean = 4.17 and SD = 0.62). Generally, farmers agreed to the statements on teaching methods used (Perception Index = 4.25). The perception index is an indication that farmers perceive how information on Sustainable Agriculture Standards is disseminated to be apt. This is capable of giving them the confidence to embrace the standards. Yahaya and Badiru (2002) disclosed that farmers answered positively to information that they could apply to their peculiar farming and they showed a seeming want for the programs. The perceived advantage attributed to a communication provider is a critical factor in the diffusion of technologies (Bolfe, 2020).

The descriptive statistics on farmers’ perceptions of the SAS protocol are presented in Table 3. The statement with the highest mean was “requirements in the protocol are easy to understand” (Mean = 4.19 and SD = 0.58). The perception statement with the least mean score was “implementation does not require a lot of time” (Mean = 3.76 and SD = 1.03). Generally, farmers agreed to statements on the protocol (Perception Index = 3.96). This means that farmers had a favorable perception of the SAS protocol. This could be an indication that farmers will be ready to utilise the contents in SAS to better their farming practice and standard of living.

The descriptive statistics on farmers’ perceptions of premium payment are presented in Table 3. The statement with the highest mean was “premium payment through extension agent is good” (Mean = 3.72 and SD =1.03). This was followed by “premium amount covers the expense of certification” (Mean = 3.41 and SD = 1.10) and then, “time of premium payment is good” (Mean = 3.21 and SD = 1.37). The perception index of 3.45 signifies the farmers were generally neutral on premium. Premium prices could offset the negative effects of the cocoa sector’s current information asymmetries (Quarmine *et al*., 2012).

The descriptive statistics on farmers’ perceptions of the benefits of SAS are presented in Table 3. The highest perception statement by the farmers was it “increases productivity” (Mean=4048, SD=0.66) and “does not permit children below 18 years to work on the cocoa farm” (Mean=4048, SD=0.66). Opposing this finding, Karalliyadda and Kazunari (2020) reported that certified organic farming gave low yields per the farmers' assertion. Farmers perceived that “RACCP ensures the sustainability of the cocoa sub-sector” (Mean=4.26, SD=0.63). This does not agree with the findings of Eghe *et al*., (2014) who reported that most cocoa farmers were undecided on the statement certification will ensure the sustainability of cocoa sub-sector. Respondents agree that SAS “encourages timely weeding of the cocoa farm” (Mean = 4.25 and SD = 0.53). This is consistent with Eghe *et al*., (2014) who also reported that the majority of the respondents strongly agreed that timely weeding of the cocoa farm is good for certification. Respondents indicated that SAS “encourages the payment of premium” (Mean = 4.24 and SD = 0.53). This does not agree with the findings of Eghe *et al*., (2014) who reported that most of the farmers were undecided when asked whether cocoa certification encourages payment of premiums. Respondents agreed that SAS “helps to enhance the quality of cocoa beans” (Mean=4.23, SD=0.60), which is unswerving with the findings of Eghe *et al*., (2014) who established that a greater number of the farmers agreed with the fact that certification enhances the quality of beans. The least perception was that SAS “can help improve the price of cocoa” (Mean=3.85, SD=1.07). This opposes the findings of Eghe *et al*., (2014) who reported that most of the farmers were undecided when they were asked if certification of beans improves prices of cocoa.

Generally, farmers agreed with the assertions on the benefits of SAS (Perception Index = 4.26). This implies that farmers have a positive perception of the standards. A favorable attitude toward a subject is quite likely to be accompanied by a positive feeling or disposition toward the subject (Ani and Baba, 2010). Additionally, these farmers agreed to all the perception statements. This presents good news to stakeholders, particularly the rainforest alliance and LBCs, assisting farmers in their efforts to adopt and comply with SAS. Stakeholders only need to encourage farmers to adopt techniques spelt out in SAS that will help in increasing cocoa productivity while limiting land encroachment (Nyamekye and Dansoh, 2021).

The study sought to ascertain the drivers of farmers’ perception of SAS. From table 4, years of schooling ($P \leq 10\%$), extension contact ($P \leq 1\%$), credit access ($P \leq 1\%$) and LBC

support (P≤1%) were the socio-economic factors that had a statistically significant effect on farmers' perception of SAS. Thus, an additional year in school is likely to move farmers' perception from a lower to a higher level. The finding is supported by Tatlidil *et al*., (2009) who found education to have a positive significant influence on farmers' perceptions. Frequent extension contact and more access to credit are likely to move farmers' perception from a lower to a higher level. Rana *et al*., (2017) agrees that education can have a positive influence on farmers' perceptions. However, receiving support from LBC i.e., fertilizers and insecticides are likely to move farmers' perception from a higher to a lower level.

Table 3 – Perception of farmers on SAS

Teaching Methods	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean	Std. Dev.
Topics treated are relevant to farmers' needs	0	0	11 (2.75)	248 (62.00)	141 (35.25)	4.33	0.52
The method is adult-centered	0	0	17 (4.25)	240 (60.00)	142 (35.75)	4.30	0.55
I can easily explain what I have learned to other farmers	0	4 (1.00)	25 (6.25)	250 (62.50)	121 (30.25)	4.21	0.60
The extension teaching methods help me to understand the standard	1 (0.25)	6 (1.50)	24 (6.00)	263 (65.75)	106 (26.50)	4.17	0.62
Perception Index: 4.25							
SAS protocol	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean Score	Std. Dev.
Requirements are easy to understand	0	3 (0.75)	23 (5.75)	254 (63.50)	120 (30.00)	4.19	0.58
Requirements are easy to implement	0	21 (5.25)	62 (15.50)	231 (57.75)	86 (21.50)	3.93	0.76
Implementation does not require a lot of time	14 (3.50)	41 (10.25)	63 (15.75)	190 (47.50)	92 (23.00)	3.76	1.03
Perception Index: 3.96							
Premium	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean Score	Std. Dev.
Premium payment through an extension agent is good	9 (2.25)	59 (14.75)	51 (12.75)	197 (49.25)	84 (21.00)	3.72	1.03
The premium amount covers the expense of certification	19 (4.75)	79 (19.75)	78 (19.50)	166 (41.50)	58 (14.50)	3.41	1.10
The time of premium payment is good	63 (15.75)	82 (20.50)	31 (7.75)	156 (39.00)	68 (17)	3.21	1.37
Perception Index: 3.45							
Benefits	SD F (%)	D F (%)	N F (%)	A F (%)	SA F (%)	Mean Score	Std. Dev.
Increases productivity	3 (0.75)	3 (0.75)	11 (2.75)	166 (41.50)	217 (54.25)	4.48	0.66
Does not permit children below 18 years to work on the cocoa farm	3 (0.75)	3 (0.75)	10 (2.50)	169 (42.25)	215 (53.75)	4.48	0.66
Ensure sustainability of cocoa sub-sector	1 (0.25)	6 (1.50)	16 (4.00)	243 (60.75)	134 (33.50)	4.26	0.63
Encourages timely weeding of cocoa farm	2 (0.50)	0	7 (1.75)	280 (70.00)	111 (27.75)	4.25	0.53
Encourages payment of premium	1 (0.25)	1 (0.25)	8 (2.00)	271 (67.75)	119 (29.75)	4.24	0.53
Enhances quality of beans	2 (0.50)	4 (1.00)	13 (3.25)	263 (65.75)	118 (29.50)	4.23	0.60
Improves prices of cocoa	9 (2.25)	57 (14.25)	39 (9.75)	175 (43.75)	120 (30.00)	3.85	1.07
Perception Index: 4.26							

Source: Field Data, 2022.
NB: SD = Strongly disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly agree, F=Frequency.

Table 4 – Socio-economic determinants of farmer's perception of SAS

Variables	Coef.	Std Err.	t-value	p-value	[95% Conf.	Interval]
Gender	0.11	0.14	0.82	0.41	-0.15	0.38
Age of Farmer	0.00	0.01	0.38	0.70	-0.01	0.01
Marital Status	-0.13	0.16	-0.80	0.43	-0.45	0.19
Size of Household	-0.02	0.02	-0.79	0.43	-0.06	0.02
Farm Size	0.00	0.02	-0.10	0.92	-0.04	0.04
Farming Experience	0.01	0.01	0.74	0.46	-0.01	0.02
Years of schooling	0.02*	0.01	1.66	0.10	0.00	0.05
Extension Contact	0.13***	0.05	2.83	0.01	0.04	0.22
Land Ownership	0.15	0.18	0.82	0.41	-0.21	0.51
Credit Access	0.52***	0.16	3.24	0.00	0.20	0.83
Participation in off-farm income-generating activities	-0.09	0.14	-0.65	0.52	-0.35	0.18
LBC Support	-0.83***	0.13	-6.26	0.00	-1.09	-0.57
Constant	-0.67	0.42	.b	.b	-1.49	0.14
Constant	0.34	0.41	.b	.b	-0.47	1.15
Mean dependent var		2.53	SD dependent var			0.68
Pseudo r-squared		0.10	Number of obs			400
Chi-square		71.47	Prob > chi^2			0.00
Akaike crit. (AIC)		656.70	Bayesian crit. (BIC)			712.58

Source: Authors' Computation, 2022
*NB: ***p≤0.01, **p≤0.05, *p≤0.1.*

Based on the farmers' responses in table 5, the statement ranked 1st was "I know that creating a riparian buffer protects water bodies" with a TKS of 1135 and KI of 94.58%. The least (9th) statement "I know that cocoa beans absorb moisture" had a TKS of 983 and PI of 81.92%. "I know that planting shade trees are good for the cocoa trees" (TKS= 1132 and KI= 94.33%) and I know that pruning reduces diseases and pests attack (TKS= 1129 and KI= 94.08%) ranked 2nd and 3rd respectively. The mean knowledge index, 90% which is close to

100% indicates that farmers have a relatively high knowledge of SAS. This is not surprising as Assis and Mohd (2011) reported that the majority of the farmers in their study were knowledgeable about pruning and planting resistant plant varieties.

Table 5 – Farmers' knowledge of SAS

Knowledge Statements	Extent of Knowledge			TKS	KI (%)	Rank
	Wrong Answer (1)	Partially Correct Answer (2)	Correct Answer (3)			
I know that creating a riparian buffer protects water bodies	4 x (1)	57 x (2)	339 x (3)	1135	94.58	1st
I know that planting shade trees are good for the cocoa trees	8 x (1)	52 x (2)	340 x (3)	1132	94.33	2nd
I know that pruning reduces diseases and pests attack	2 x (1)	67 x (2)	331 x (3)	1129	94.08	3rd
I know when to apply agrochemical	2 x (1)	79 x (2)	319 x (3)	1117	93.08	4th
I know that certified and uncertified cocoa beans are not mixed	16 x (1)	97 x (2)	287 x (3)	1071	89.25	5th
I know that agrochemicals are stored in a locked storage facility	49 x (1)	49 x (2)	302 x (3)	1053	87.75	6th
I know that surplus chemicals are disposed of by diluting them with water and spreading it evenly on the treated area	33 x (1)	82 x (2)	285 x (3)	1052	87.67	7th
I know that cocoa seedlings that are resistant to pests and diseases should be selected.	37 x (1)	78 x (2)	285 x (3)	1048	87.33	8th
I know that cocoa beans absorb moisture	64 x (1)	89 x (2)	247 x (3)	983	81.92	9th
Mean: 90						

Source: Field Data, 2022.

From table 6, it can be said “properly fermented cocoa beans will improve the aroma and quality” and “wearing protective clothing matters during spraying” ranked 1st (TAS =1187 and A1= 98.92%) whiles “cocoa pods plugged from the farm should not be used for planting” was the least (9th) ranked (TAS= 1015 and A1= 84.58%). The mean attitude index, 94.97% which is close to 100% indicates that farmers have a positive attitude towards SAS. The finding is supported by Frimpong-Manso *et al*., (2022), who claimed that cocoa growers had a positive attitude toward their farming activities, especially, pruning and fermenting.

Table 6 – Farmers’ attitude towards SAS

Attitude Statements	Extent of Attitude			TAS	AI (%)	Rank
	Disagree (1)	Neutral (2)	Agree (3)			
Properly fermented cocoa beans will improve the aroma and quality	0 x (1)	26 x (2)	387 x (3)	1187	98.92	1st
Wearing protective clothing matters during spraying	0 x (1)	26 x (2)	387 x (3)	1187	98.92	1st
Open burning causes damage to the environment	3 x (1)	20 x (2)	387 x (3)	1184	98.67	3rd
Agrochemicals should not be stored together with food	7 x (1)	20 x (2)	383 x (3)	1176	98.00	4th
Empty containers of a used chemical should not be washed and reused at home	10 x (1)	22 x (2)	379 x (3)	1169	97.42	5th
Pruning cocoa trees will increase production	6 x (1)	38 x (2)	375 x (3)	1169	97.42	5th
Mixing certified and uncertified cocoa compromises certification	5 x (1)	146 x (2)	322 x (3)	1117	93.08	7th
Planting randomly does not increase yield	42 x (1)	126 x (2)	295 x (3)	1053	87.75	8th
Cocoa pods plugged from a farm should not be used for planting	80 x (1)	50 x (2)	295 x (3)	1015	84.58	9th
Mean: 94.97						

Source: Field Data, 2022.

From table 7, it can be said “I store cocoa beans away from food and chemicals” was ranked 1st by the farmers (TPS=1181 and PI=98.42%) while “I burn in an incinerator” obtained the least (9th) scores (TPS=719 and PI=59.92%). The mean practice index, 84.44% which is close to 100% indicates that generally, farmers agreed to the practice statements. Based on the results it can be said that farmers are sufficiently implementing SAS. This finding is particularly insightful, considering that ineffective practices tend to reduce the impact of innovation on the yield of cocoa (Baah *et al*., 2011).

Table 7 – Farmers' practice of SAS

Practice Statements	Extent of Practice			TPS	PI (%)	Rank
	Never (1)	Sometimes (2)	Always (3)			
I store cocoa beans away from food and chemicals	7 x (1)	5 x (2)	388 x (3)	1181	98.42	1st
I maintain shade trees of different species on the farm	10 x (1)	14 x (2)	376 x (3)	1166	97.17	2nd
I ferment cocoa beans within 6-7 days	21 x (1)	5 x (2)	374 x (3)	1153	96.08	3rd
Calendar spraying is not adhered to	89 x (1)	18 x (2)	293 x (3)	1004	83.67	4th
I plant hybrid cocoa seedlings	95 x (1)	10 x (2)	295 x (3)	1000	83.33	5th
I plant cocoa at a distance of 3m* 3m	94 x (1)	27 x (2)	279 x (3)	985	82.08	6th
I prune my farm regularly	104 x (1)	8 x (2)	288 x (3)	984	82	7th
I allow only trained persons to apply agrochemicals on my farm	124 x (1)	25 x (2)	251 x (3)	927	77.25	8th
I burn waste in an incinerator	199 x (1)	83 x (2)	118 x (3)	719	59.92	9th
Mean: 84.44						

Source: Field Data, 2022.

From table 8, it can be said that most of the farmers aspire for “a yearly increase in premium price” (TAS=1114 and AI=92.83%) whiles the aspiration to “have access to incinerator” was the lowest (TAS=930 and AI=77.50%). The mean aspiration index, 86.06% which is close to 100% implies that most of the respondents agreed with the aspiration statements. People’s aspirations play a significant effect on their life choices, as well as how they think and feel about themselves (Schaefer and Meece, 2009). Farmers are more likely to be mobilised around the goal of rural development if activities are focused on their individual needs, wishes, and aspirations as aspirations are one of the psychological elements that influence farmers’ decisions in their future activities (Chinchmalatpure and Tekale, 2019). Hence high aspiration can positively influence farmers’ embrace of SAS.

Table 8 – Farmer's aspiration for SAS

Aspiration Statements	Extent of Aspiration			TAS	AI (%)	Rank
	Disagree (1)	Neutral (2)	Agree (3)			
I wish the premium price is increased yearly	17 x (1)	52 x (2)	331 x (3)	1114	92.83	1st
I wish access to extension services could be improved	6 x (1)	98 x (2)	296 x (3)	1090	90.83	2nd
I wish to increase farm productivity	9 x (1)	94 x (2)	297 x (3)	1088	90.67	3rd
I wish I could get an agrochemical storage facility	21 x (1)	75 x (2)	304 x (3)	1083	90.25	4th
I wish to have access to shade trees	19 x (1)	129 x (2)	252 x (3)	1033	86.08	5th
I wish to have access to cocoa seedlings	29 x (1)	148 x (2)	223 x (3)	994	82.83	6th
I wish to have access to skilled pruning gangs	50 x (1)	109 x (2)	241 x (3)	991	82.58	7th
I wish to have access to trained spraying teams	47 x (1)	135 x (2)	218 x (3)	971	80.92	8th
I wish to have access to an incinerator	95 x (1)	80 x (2)	225 x (3)	930	77.50	9th
Mean: 86.06						

Source: Field Data, 2022.

Table 9 shows the frequency and percentages of farmers belonging to each of the categories for knowledge, attitude, practice, aspiration and perceptions. From table 9, the majority i.e., 73%, 63.75%, 65.25%, 64% and 63.75% of the farmers respectively had a relatively high level of knowledge, attitude, practice, aspiration and perception of SAS. The implication is that they are satisfied with the SAS. Eghe *et al*., (2014) agrees that if cocoa growers lack enough knowledge about certification, their ability to uphold and maintain production will suffer. Famuyiwa *et al.*, (2017) reported that farmers in Nigeria had low knowledge, positive attitude and a low level of practice of cocoa certification.

Table 10 shows the socio-economic determinants of farmers’ knowledge of SAS. From the results, years of schooling ($p \leq 5\%$), extension contact ($p \leq 5\%$) and credit access ($p \leq 1\%$) had a significant positive effect on farmers’ knowledge. LBS support ($p \leq 5\%$) had a significant negative effect on farmers’ knowledge. This implies that a unit increase in school is likely to

move farmers' knowledge from a lower to a higher level. Farmers with more extension contact are likely to fall in a higher knowledge level compared to those who have less extension contact. The results agree with Das *et al*., (2019) and Islam and Islam (2020) who found extension contact and agricultural training to be positively associated with farmers' knowledge. Farmers who have access to credit are likely to fall in a higher knowledge compared to those with no access to credit. However, getting support from LBC is likely to move knowledge levels from a higher to a lower level.

Table 9 – Distribution of farmers according to their KAPA and perceptions

Attribute	Categories (Scores)	Frequency	Percentage
Knowledge	Low (<14)	61	15.25
	Moderate (15-20)	47	11.75
	High (21-27)	292	73.00
Attitude	Low (<14)	70	17.50
	Moderate (15-20)	75	18.75
	High (21-27)	255	63.75
Practice	Low (<14)	88	22.00
	Moderate (15-20)	51	12.75
	High (21-27)	261	65.25
Aspiration	Low (<14)	90	22.50
	Moderate (15-20)	53	13.25
	High (21-27)	257	64.25
Perceptions	Low (<2.4)	43	10.75
	Moderate (2.5-3.4)	102	25.50
	High (3.5-5)	255	63.75

Source: Field Survey, 2022.

Table 10 – Socio-economic determinants of farmers' knowledge

Variables	Coef.	Std Err.	t-value	p-value	[95% Conf. Interval]	
Gender	0.18	0.15	1.19	0.23	-0.13	0.46
Age of Farmer	0.00	0.01	-0.04	0.96	-0.01	0.01
Marital Status	-0.24	0.18	-1.34	0.18	-0.59	0.11
Size of Household	-0.01	0.02	-0.42	0.67	-0.05	0.03
Farm Size	0.02	0.02	0.94	0.35	-0.02	0.06
Farming Experience	-0.00	0.01	-0.53	0.60	-0.18	0.01
Years of schooling	0.02**	0.02	0.97	0.03	-0.02	0.05
Extension Contact	0.11**	0.05	2.33	0.02	0.02	0.21
Land Ownership	0.16	0.20	0.81	0.42	-0.23	0.56
Credit Access	0.60***	0.17	3.60	0.00	0.28	0.93
Participation in off-farm income-generating activities	-0.07	0.15	-0.49	0.63	-0.36	0.22
LBC Support	-0.83**	0.14	-5.79	0.00	-1.12	-0.55
Constant	-0.61	0.46	.b	.b	-1.51	0.28
Constant	-0.15	0.46	.b	.b	-1.04	0.75
Mean dependent var	2.58		SD dependent var			0.75
Pseudo r-squared	0.11		Number of obs			400
Chi-square	67.04		Prob > chi^2			0.00
Akaike crit. (AIC)	574.91		Bayesian crit. (BIC)			630.79

Source: Authors Computation, 2022.
*NB: ***p<0.01, **p<0.05, *p<0.1.*

Table 11 shows the socio-economic determinants of farmers' attitude towards SAS. From the results, farming experience (p<5%), years of schooling (p<10%), extension contact (p<5%), and credit access (p<1%) have a positive effect on farmers' attitude. LBC support (p<1%) has a negative effect on farmers' attitudes. Additional years in school and farming moves farmers' attitude from lower to a higher level (negative to positive). The result agrees with Shams et al., (2017) who reported that attitude is significantly affected by farming experience. Patidar and Patidar (2015), Patel (2017) and Shibia (2010) reported that farmers' educational background had a significant effect on their attitudes. Aspiration levels are likely to move from a lower to a higher level for farmers with extension contact and access to credit. Farmers who receive support from LBC (i.e., fertilizers and insecticides) are less likely to fall to a higher aspiration level.

Table 11 – Socio-economic determinants of farmers' attitude

Variables	Coef.	Std Err.	t-value	p-value	[95% Conf.	Interval]
Gender	0.09	0.14	0.65	0.52	-0.18	0.35
Age of Farmer	0.00	0.01	0.41	0.68	-0.01	0.01
Marital Status	-0.02	0.16	-0.12	0.91	-0.34	0.30
Size of Household	-0.02	0.02	-0.74	0.46	-0.06	0.03
Farm Size	-0.03	0.02	-1.46	0.14	-0.07	0.01
Farming Experience	0.02**	0.01	2.49	0.01	0.00	0.03
Years of schooling	0.02*	0.01	1.66	0.10	-0.00	0.05
Extension Contact	0.09**	0.05	1.96	0.05	0.00	0.18
Land Ownership	0.11	0.19	0.57	0.57	-0.26	0.47
Credit Access	0.62***	0.16	3.85	0.00	0.30	0.93
Participation in off-farm income-generating activities	-0.07	0.14	-0.55	0.58	-0.34	0.19
LBC Support	-0.80***	0.13	-5.98	0.00	-1.06	-0.54
Constant	-0.18	0.41	.b	.b	-0.99	0.63
Constant	0.49	0.41	.b	.b	-0.33	1.30
Mean dependent var	2.46		SD dependent var			0.78
Pseudo r-squared	0.10		Number of obs			400
Chi-square	72.24		Prob > chi^2			0.00
Akaike crit. (AIC)	680.47		Bayesian crit. (BIC)			736.35

Source: Authors computation, 2022
*NB: ***p≤0.01, **p≤0.05, *p≤0.1*

Table 12 – Socio-economic determinants of farmers' practice

Variables	Coef.	Std Err.	t-value	p-value	[95% Conf.	Interval]
Gender	0.15	0.14	1.10	0.27	-0.12	0.43
Age of Farmer	0.00	0.06	0.48	0.63	-0.01	0.01
Marital Status	-0.17	0.17	-1.00	0.32	-0.49	0.16
Size of Household	-0.01	0.02	-0.34	0.74	-0.05	0.04
Farm Size	0.01	0.02	0.29	0.77	-0.03	0.05
Farming Experience	0.01	.007	1.00	0.31	-0.01	0.02
Years of schooling	0.03*	.015	1.69	0.09	-0.00	0.05
Extension Contact	0.13***	.047	2.70	0.01	0.04	0.22
Land Ownership	0.12	.189	0.61	0.54	-.255	0.49
Credit Access	0.73***	.166	4.40	0.00	0.40	1.05
Participation in off-farm income-generating activities	-0.02	.14	-0.12	0.90	-0.29	0.26
LBC Support	-0.80***	0.137	-5.87	0.00	-1.07	-0.54
Constant	0.22	0.43	.b	.b	-0.62	1.07
Constant	0.67	0.43	.b	.b	-0.18	1.51
Mean dependent var	2.43		SD dependent var			0.83
Pseudo r-squared	0.11		Number of obs			400
Chi-square	75.74		Prob > chi^2			0.00
Akaike crit. (AIC)	651.70		Bayesian crit. (BIC)			707.58

Source: Authors Computation, 2022.
*NB: ***p≤0.01, **p≤0.05, *p≤0.1.*

Table 13 – Socio-economic determinants of farmer's aspiration

Variables	Coef.	Std Err.	t-value	p-value	[95% Conf.	Interval]
Gender	0.12	0.14	0.88	0.38	-0.15	0.39
Age of Farmer	0.00	0.01	0.38	0.70	-0.01	0.01
Marital Status	0.01	0.17	0.07	0.94	-0.31	0.34
Size of Household	-0.01	0.02	-0.40	0.69	-0.05	0.03
Farm Size	-0.02	0.02	-0.81	0.42	-0.06	0.02
Farming Experience	0.01**	0.01	1.93	0.05	0.00	0.03
Years of schooling	0.28	0.01	1.24	0.22	-0.01	0.05
Extension Contact	0.08*	0.05	1.69	0.09	-0.01	0.17
Land Ownership	0.05	0.19	0.28	0.78	-0.32	0.42
Credit Access	0.71***	0.16	4.34	0.00	0.39	1.04
Participation in off-farm income-generating activities	-0.02	0.14	-0.16	0.87	-0.29	0.25
LBC Support	-0.78***	0.14	-5.80	0.00	-1.05	-0.52
Constant	0.11	0.42	.b	.b	-0.71	0.93
Constant	0.56	0.42	.b	.b	-0.27	1.38
Mean dependent var	2.42		SD dependent var			0.83
Pseudo r-squared	0.10		Number of obs			400
Chi-square	71.14		Prob > chi^2			0.00
Akaike crit. (AIC)	667.70		Bayesian crit. (BIC)			722.87

Source: Authors Computation, 2022.
*NB: ***p<0.01, **p<0.05, *p<0.1.*

Table 12 shows the socio-economic determinants of farmers' practice of SAS. From the results, years of schooling ($p \leq 10\%$), extension contact ($p \leq 1\%$), credit access ($p \leq 1\%$) and LBC support ($p \leq 1\%$) are the determinants of farmers' practice of SAS. An additional year in school is likely to move farmer practice from a lower to a higher level. Practices of farmers who have access to extension and credit are likely to move from a lower to a higher level. The finding is supported by Rana *et al*., (2017) who reported that extension media access and education had a significant influence on farmers' practice. Getting support, in terms of fertilizers and insecticides from LBC is likely to move farmers' practice from a higher to a lower level.

Table 13 shows the socio-economic determinants of farmers' aspirations towards SAS. From the results, farming experience ($p \leq 5\%$), extension contact ($p \leq 10\%$), credit access ($p \leq 1\%$) and LBC support ($p \leq 1\%$). An increase in the number of years of farming is likely to move farmers' aspirations from a lower to a higher level. Farmers who have extension contact and access to credit are likely to have a higher aspiration. Assisting farmers with fertilizers and insecticides is likely to move farmers' aspirations from a higher level to a lower level. Farmers' aspirations may impact the agricultural inputs and financing opportunities they choose, perhaps leading to higher output (Nandi and Nedumaran, 2021).

CONCLUSION

Farmers generally agreed to three (3) of the thematic areas on their perceptions; teaching methods used, protocol (SAS) and benefits of the program. However, they were neutral towards the premium statements. The study observed that farmers had a relatively high level of knowledge, a positive attitude, high level of practice and aspiration towards the SAS. Farmers' knowledge was found to be influenced by years of schooling, extension contact, credit access and LBC support. Farmers' attitude was influenced by farming experience, years of schooling, extension contact, access to credit and LBC support. Farmers' practice was influenced by years of schooling, extension contact, credit access and LBC support. Farming experience, extension contact, credit access and LBC support were the determinants of farmers' aspirations. These results emphasize the importance of farmers' perceptions, knowledge, attitudes, practices and aspirations of cocoa certification programs in Ghana.

Consequently, efforts should be intensified to improve literacy levels and extension contact among cocoa farmers by the Ghana Cocoa Board and other Non-Governmental Organizations. This will be instrumental in enhancing farmers' KAPA. An enhanced KAPA is likely to translate in higher productivity and income. Considering that farmers' lower dependence on LBC for farm inputs such as fertilizers and insecticides actually improved their KAPA, this means that farmers have a desire to be independent of such support. Hence, upscale education on commercialization of cocoa farming will encourage farmers make necessary independent investments in their farms and reap the appropriate returns. In addition, it is necessary to facilitate increased access to credit facilities (financial assistance) for cocoa farmers to improve their KAPA. Furthermore, the study recommends a broader consultation on premium prices by all relevant stakeholders in the cocoa certification industry.

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