# Sustainable pathways: Exploring Farmers' Perceptions of Cocoa Certification Programme in South-West, Nigeria


## ABSTRACT

The significance of sustainable cocoa production has been widely studied using various methods and models, however the farmers' viewpoints on cocoa certification programme remained largely unexplored. This study attempt to examine the perceptions of farmers on certification programme towards sustainable cocoa production in the South-West, Nigeria. Multistage sampling procedure were used to collect primary data through the aid of well-structured questionnaire from three hundred and sixty (360) cocoa farmers (certified and non-certified) in Ondo, Osun and Ogun States. Descriptive statistics such frequency, mean and percentage as well as Independent T-test were used to analyse the data. The study revealed that majority (68.9%) of the respondents were male, and also married which implies that they have access to family labour. The main reason why non-certified cocoa farmers did not participate in the programme is due to inadequate awareness, while the major body creating awareness on cocoa certification are the exporters and the License buying agents. The study further revealed that promotion of good agricultural practices, provision of premium on cocoa beans sold, and access to market linkages were perceived and ranked highest among the certified farmers. While the major constraints identified with the programme are pest and disease, delay in premium payment, climate change, and inadequate storage facility. The results of the T-test revealed that there were significant differences between both the income and the output of certified cocoa farmers and that of non-certified cocoa farmers. The study therefore recommended that more awareness on cocoa certification programmes should be created not only by the cocoa Exporters and Licensed buying agents, but also by Government agencies and institutions, and policymakers should also work to ensure that certified farmers receive fair and competitive premium prices for their cocoa beans.



*Keywords: Sustainability, Cocoa, Certification, Development, Perceptions, Premium, Price*


## 1. INTRODUCTION

Cocoa sustainability is assuring that cocoa production remains an economically viable and environmentally sound choice for farmers [1]. It entails not just farmer earn an equitable income that can motivate them, and the future generation to continue cocoa cultivation; but also implementing responsible labour standards that do not violate child right: protecting the environment through good agricultural practices and resource management; and also, able to afford basic health and education needs for their families [2].

Certification is a tool for sustainability [3]. According to Ibnu, [4], agricultural crop certification has been defined as an extensive range of voluntary standards developed by third-party entities in which producers are independently assessed and certified against. These standards have been set up as means of incorporating economic, environmental, and social factors into global value chains [5].

Agricultural commodities certification programme gives farmers, and agricultural producers the option to participate and comply with particular requirements and standards that promote

sustainability [6]. It enables farmers to implement practices that complement their particular production systems and geographical contexts while remaining in compliance with the required criteria [7].

According to [8] continuous improvement such as encouraging farmers to adopt improved practices, technologies, or management systems over time is an essential part of a certification programme. Similarly, [9] posited that participating in a certification programme enables farmers to earn premium prices and access to niche markets for products that have been produced ethically and sustainably for the environment.

The significance of certification programme on cocoa production has been studied across the globe, using various measures and econometric approaches [10] However, the farmers' perceptions of this programme have not been thoroughly examined in Nigeria. Hence, this study provides empirical evidence on farmers' perceptions of Cocoa certification programme in South-West, Nigeria.

## 2. METHODOLOGY

### 2.1 Study Area

The study was carried out in South-West, Nigeria. The region is the major cocoa producing area in Nigeria [11].

Established in 1976, Ondo State is positioned within the coordinates of longitudes 4° 151' E and 6° 001' E of the Greenwich meridian, as well as latitudes 5° 451' N and 7° 451' N, situated to the north of the equator in the southwestern region of Nigeria. Encompassing an expanse of approximately 15,000 square kilometers, the state accommodates a population of 3,441,924 individuals, as recorded in the 2006 census. Agriculture serves as the cornerstone of Ondo State's economy, with its climate proving highly conducive to agrarian pursuits for its numerous residents

Osun state is endowed with both people and material resources. It is bounded by Ogun, Kwara, Oyo, Ondo, and Ekiti states in the south, north, west and east respectively. The state situated in the tropical rainforest and it lies within latitudes 6° and 9° N of the equator and approximately between longitudes 2° and 7° E of the Greenwich meridian. With a population of 3,423,535 according to the NPC's 2006 records, the state comprises 30 local government areas. Agriculture is undertaken at both commercial and subsistence levels. The state's primary export crop is cocoa, which holds a significant position as the second-largest cocoa producer after Ondo [12]. Other crops include yam, cocoa, and cassava.

Ogun State has a total land area of 16,409.26 square kilometres, it is bounded on the West by the Benin Republic, on the South by Lagos State and the Atlantic Ocean, on the East by Ondo State, and on the North by Oyo and Osun States. Geographically, it lies between Latitude 6.2°N and 7.8°N and Longitude 3.0°E and 5.0°E. Ogun is one of Nigeria's top cocoa producing states. [13]. The state's vast fertile land supports the growing of both food and cash crops, including cassava, rice, cocoa, kola nuts, yam, and rubber [14].

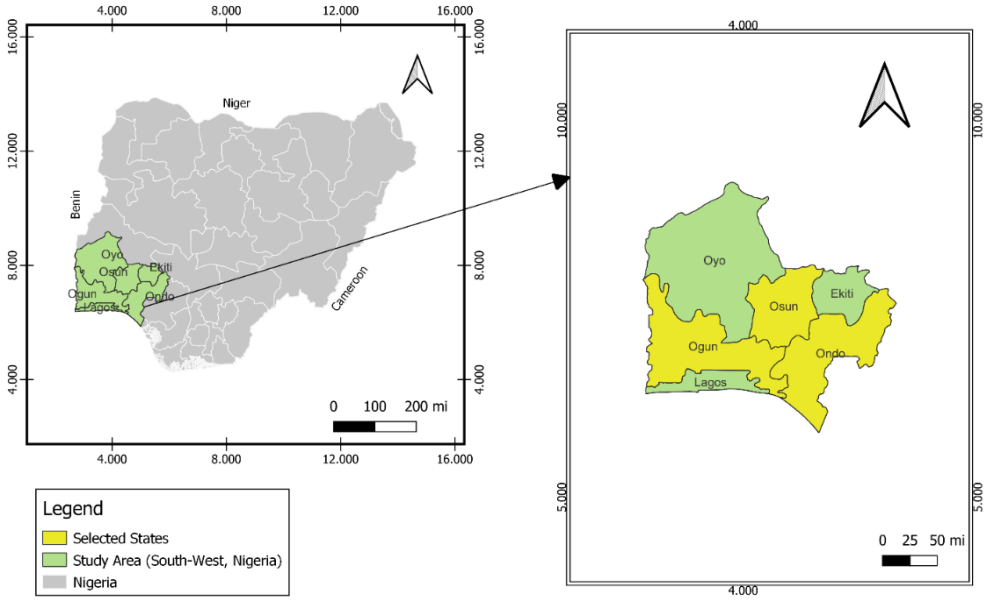


**Figure 1: Map of the study Area**

## 2.2 Sample and Sampling Procedures

Primary data was used for this study, and this was collected through direct interview with the use of well-structured questionnaire.

A multi-stage sampling procedure was also employed. At first stage, three states, namely Ondo, Ogun, and Osun, States were purposively sampled due to their high contributions to cocoa production in Nigeria, and also because of the present of cocoa certification programme in these states. The second stage involved purposive selection of the six Local Government Areas (LGAs) where cocoa certification programme is being implemented from the selected states. These LGAs are: Ijebu North, and Ijebu East LGAs (Ogun State), Idanre and Owo LGAs (Ondo State) and Ife South and Ife East LGAs (Osun state). At third stage, two communities were randomly sampled from each of the selected (LGAs). At final stage, 30 certified and non-certified farmers were randomly sampled from each community, and thereby making a total 360 sample size.

## 2.3 Data Analysis

### 2.3.1 Descriptive Statistics

The socio-economic characteristics of the respondents, and their perceptions on cocoa certification programme were examined by using descriptive statistics such as mean, percentage, and frequency distribution. Likewise, descriptive statistics was employed to identify constraints associated with cocoa certification programme.

### 2.3.2 Test of Hypothesis

Independent T-test was used to test the hypothesis of this study by comparing the income and output of certified farmers and non-certified farmers.

The T-test is given as:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

where;

t y= the t-statistic value to be calculated

x¯_1= Mean of the income of certified farmers

x¯_2= Mean of the income of non-certified farmers

n_1= Sample size of certified farmers

n_2=Sample size of non-certified farmers

S_1^2=Variance of the certified farmers

S_2^2=Variance of non-certified farmers

## 3. RESULTS AND DISCUSSION

### 3.1 Socioeconomics Characteristics

### 3.1.1 Sex

As shown in Table 1, the proportion of male to female in the total sample were 68.9% and 31.1% respectively. Out of the 190 certified cocoa farmers, about 66% of them are male while the remaining 34% are female. Also, 72% of the non-certified farmers are male while only 27.6% of them are female. The implication of this is that majority of cocoa farmers in the study area are male. This result agreed with the work of [15] that cocoa production is mostly dominated by male in the South-West, Nigeria.

**Table 1: Distribution of Respondents by Sex**

| | Certified farmers | | Non-certified farmers | | Total Sample | |
|---|---|---|---|---|---|---|
| **Sex** | **Frequency** | **Percent** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| Male | 125 | 65.8 | 123 | 72.4 | 248 | 68.9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Female | 65 | 34.2 | 47 | 27.6 | 112 | 31.1 |
| **Total** | **190** | **100.0** | **170** | **100.0** | **360** | **100.0** |

**Source: Field Survey Data, 2021**

### 3.1.2 Marital Status

Table 2 revealed that the majority (71%) of the total number of the respondents were married. Out of the 190 certified cocoa farmers, about 83 % of them were married and out of the 170 non-certified farmers about 58% of them were married. This implies that both certified and non-certified farmers are likely to have access to family labour because of marriage.

**Table 2: Distribution of Respondents by Marital Status**

| | **Certified farmers** | | **Non-certified farmers** | | **Total Sample** | |
|---|---|---|---|---|---|---|
| **Marital** | **Frequency** | **Percent** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| Single | 10 | 5.3 | 28 | 16.5 | 38 | 10.6 |
| Married | 158 | 83.2 | 98 | 57.6 | 256 | 71.1 |
| Separated | 8 | 4.2 | 13 | 7.6 | 21 | 5.8 |
| Widowed | 4 | 2.1 | 31 | 18.2 | 35 | 9.7 |
| Divorced | 10 | 5.3 | - | - | 10 | 2.8 |
| **Total** | **190** | **100.0** | **170** | **100.0** | **360** | **100.0** |

**Source: Field Survey Data, 2021**

### 3.1.3 Labour Source

Table 3 shows that usage of only hired labour is more prominent among certified farmers (59.5%) when compared with non-certified cocoa farmers (28.2%). However, usage of hired labour plus family labour is more prominent among non-certified farmers (45.3%) when compared with their counterpart certified farmers (23.2%). In addition, the table also revealed that certified farmers engage sharecroppers less than non-certified farmers. This could be attributed to the fact that the sharecroppers may not be willing to implement the certification standards on the farm.

**Table 3: Distribution of Respondents by Labour Usage**

| | **Certified farmers** | | **Non-certified farmers** | | **Total Sample** | |
|---|---|---|---|---|---|---|
| **Labour Source** | **Frequency** | **Percent** | **Frequency** | **Percent** | **Frequency** | **Percent** |

| | | | | | | |
|---|---|---|---|---|---|---|
| Family Labour | 27 | 14.2 | 24 | 14.1 | 51 | 14.2 |
| Hire Labour | 113 | 59.5 | 48 | 28.2 | 161 | 44.7 |
| Family and Hire | 44 | 23.2 | 77 | 45.3 | 121 | 33.6 |
| Crop Shearer | 6 | 3.2 | 21 | 12.4 | 27 | 7.5 |
| **Total** | **190** | **100.0** | **170** | **100.0** | **360** | **100.0** |

**Source: Field Survey Data, 2021**

### 3.1.4 Methods used to Determine Farm Size

Table 4 shows that usage Global Positioning system (GPS) to determine farm size is more prominent among certified farmers (5973.2%) when compared with non-certified cocoa farmers (10%). However, usage of rope is the major method for determining farm size among non-certified farmers (85.3%) when compared with their counterpart certified farmers (22.1%). The usage of title deed is not a common practice among the certified farmers and as well as the non-certified farmers. The prominence of GPS usage among the certified farmers can be attributed to the fact that cocoa certification standards requires that farm size should be determine by using GPS device.

**Table 4: Methods used to Determine Farm Size**

| | **Certified farmers** | | **Non-certified farmers** | | **Total Sample** | |
|---|---|---|---|---|---|---|
| **Member** | **Frequency** | **Percent** | **Frequency** | **Percentage** | **Frequency** | **Percent** |
| GPS | 139 | 73.2 | 17 | 10.0 | 156 | 43.3 |
| Title Deed | 2 | 1.1 | 8 | 4.70 | 10 | 2.8 |
| Rope | 42 | 22.1 | 145 | 85.3 | 187 | 51.9 |
| Other | 7 | 3.7 | 0 | 0 | 7 | 1.9 |
| **Total** | **190** | **100.0** | **170** | **100.0** | **360** | **100.** |

**Source: Field Survey Data, 2021**

### 3.1.5 Source of Cocoa Certification Awareness

Figure 2 revealed that majority (60%) of the cocoa certified farmers heard about about cocoa certification proramme through Licence Buyer agents (LBAs) and Exporters, 23% of them heard about it through Extension Agents, While Only 17% of them heard about the programme through their friends and lead farmers. This implies that that The LBAs and the exporters are the major bodies responsible for cocoa certification programme in the Nigeria.

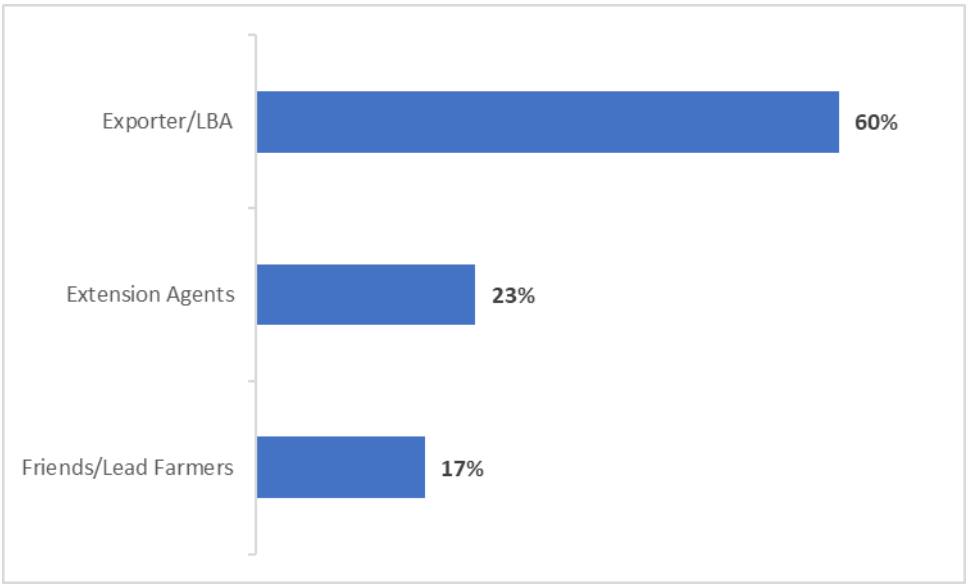


**Figure 2: Source of Cocoa Certification Awareness**
Source: Computed from Field Survey Data, 2021

### 3.1.6 Reason for not Participating in Cocoa Certification Programme

Figure 3 presents the reasons why the non-certified farmers are not participating in cocoa certification. Out of the 170 non-certified cocoa farmers, 50% did not participate in the certification programme because they are not aware, 34% are not convince enough to participate, while 17% said they don't have time to implement the certification standard requirement. This finding is in line with that of [16] who fine out that lack of adequate information about certification has a barrier to farmer participation in cocoa certification programme

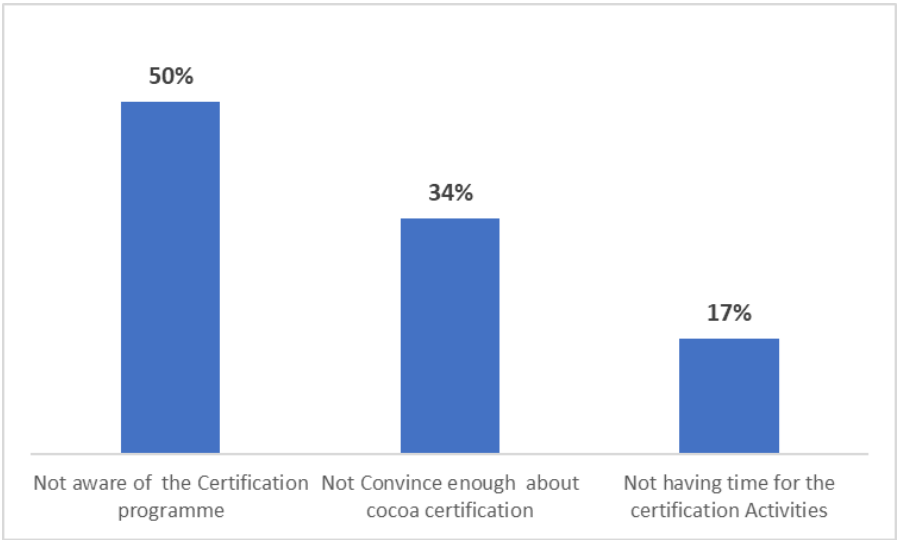


**Figure 3: Reasons for not participating in cocoa certification programming**
Source: Computed from Field Survey Data, 2021

### 3.2 Perception of cocoa certification programme

Table 5 shows the perception of cocoa framer about cocoa certification programme in the study area. promotion of good agricultural practices, provision of premium on cocoa beans sold, and access to market linkages were perceived and ranked highest with a mean of 4.66, 4.63 and 4.58 respectively. While reduction in environmental impact of cocoa production, promoting unity among farmers, and giving better price for cocoa beans were perceived and ranked lowest with a mean of 3.78, 4.07 and 4.12 respectively. This result support the findings of [17] in her study on the impact of fairtrade and other sustainability practices on cocoa farmers' income in Ecuador, where farmers agreed that the main perceived benefits of participating in a certification programme are the training they received, and learning of good agricultural practices to expand their knowledge of production.

**Table 5: Perception of Cocoa Certification Programme**

| Perception Statement | SD (%) | D (%) | U (%) | A (%) | SA (%) | Mean | Std. Dev. | Rank |
|---|---|---|---|---|---|---|---|---|
| It promotes good agricultural practices | 7.40 | 0.00 | 0.00 | 4.20 | 88.4 | 4.66 | 1.06 | 1 |
| It reduces environmental impact of cocoa production | 25.8 | 0.50 | 3.70 | 10.0 | 60.0 | 3.78 | 1.72 | 16 |
| It promotes quality of cocoa beans | 3.2 | 0.00 | 0.00 | 31.1 | 65.8 | 4.56 | 0.79 | 4 |
| It promotes good working condition | 0.00 | 0.00 | 3.20 | 37.9 | 58.9 | 4.56 | 0.56 | 4 |
| It improves volume / productivity | 0.00 | 0.00 | 0.00 | 46.8 | 53.2 | 4.53 | 0.50 | 7 |
| It gives access to market linkages | 0.00 | 0.5 | 1.60 | 37.4 | 60.5 | 4.58 | 0.56 | 3 |
| It promotes health and safety | 0.00 | 0.00 | 0.00 | 44.7 | 55.3 | 4.55 | 0.50 | 6 |
| It gives premium | 0.00 | 0.00 | 0.00 | 36.8 | 63.2 | 4.63 | 0.48 | 2 |
| It provides inputs and materials | 0.00 | 2.60 | 3.20 | 43.2 | 51.1 | 4.43 | 0.68 | 9 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| It encourages record keeping | 0.00 | 2.60 | 6.80 | 29.5 | 61.1 | 4.49 | 0.74 | 8 |
| It gives better price for cocoa beans | 0.00 | 6.80 | 13.7 | 40.0 | 39.5 | 4.12 | 0.89 | 14 |
| It encourages youths in Agriculture | 0.00 | 0.50 | 15.8 | 37.4 | 46.3 | 4.29 | 0.75 | 13 |
| It encourages women in Agriculture | 0.00 | 0.00 | 8.40 | 47.9 | 43.7 | 4.35 | 0.63 | 12 |
| It improves livelihood | 0.00 | 0.00 | 8.40 | 40.5 | 51.1 | 4.43 | 0.64 | 9 |
| It encourages adult education | 2.60 | 0.00 | 2.10 | 44.7 | 50.5 | 4.41 | 0.78 | 11 |
| It promotes unity among farmers | 7.40 | 1.10 | 15.8 | 28.4 | 47.4 | 4.07 | 1.16 | 15 |

Note: (SD= Strongly Disagree, D= Disagree, U= Undecided, A= Agree, SA= Strongly Agree

Source: Computed from Field Survey Data, 2021

### 3.3 Constraints associated with cocoa certification programme

Table 6 shows various constraints associated with cocoa certification in the South-West, Nigeria. Pest and Disease, Delay in premium payment, Climate Change, Inadequate storage facility were the major cocoa certification constraints identified by the farmers. Other constraints are; High cost of inputs Establishing farm in protected areas, Poor Road infrastructure, Compliance certification standards, Cocoa price Instability, Insecurities and Limited access to credit. These findings are in line with Awoyemi and [18] who find out that pest and disease are major constraints for sustainable cocoa production.

**Table 6: Constraints associated with cocoa certification programme**

| **Constraints** | **A (%)** | **B (%)** | **C (%)** | **D (%)** | **E (%)** | **Mean** | **Std. Dev.** | **Rank** |
|---|---|---|---|---|---|---|---|---|
| High cost of inputs | 44.8 | 4.8 | 27.9 | 20.6 | 1.1 | 3.71 | 1.27 | 7 |
| Access to improved planting material | 51.1 | 1.6 | 13.2 | 28.5 | 5.3 | 3.65 | 1.47 | 10 |
| Cheating by buyer (brokers) | 27.4 | 4.3 | 4.3 | 52.2 | 10.6 | 2.85 | 1.45 | 15 |
| Delays in payment on cocoa purchased | 26.4 | 40 | 6.4 | 20.6 | 5.8 | 3.6 | 1.25 | 11 |
| Establishing farm in protected areas | 53.2 | 13.7 | 3.2 | 25.3 | 4.3 | 3.86 | 1.41 | 6 |
| Insecurities | 18.5 | 23.2 | 5.3 | 45.3 | 5.3 | 3.23 | 2.33 | 14 |
| Inadequate storage facility | 57.9 | 15.8 | 3.7 | 20.6 | 1.6 | 4.08 | 1.27 | 4 |
| Climate Change | 67.9 | 2.2 | 5.3 | 20 | 3.7 | 4.1 | 1.39 | 3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Delay in premium payment | 50 | 29 | 4.3 | 15.8 | 1.1 | 4.12 | 1.13 | 2 |
| Poor road infrastructure | 49.5 | 12.2 | 3.2 | 26.9 | 6.9 | 3.69 | 1.49 | 9 |
| Limited access to credit | 51.6 | 2.7 | 4.3 | 35.3 | 4.8 | 3.6 | 1.52 | 12 |
| Pest and Disease | 71.1 | 6.4 | 3.2 | 7.4 | 11.6 | 4.17 | 1.46 | 1 |
| Low awareness on Cocoa Certification | 55.3 | 4.8 | 4.3 | 25.8 | 9.5 | 3.7 | 1.57 | 8 |
| Compliance certification standards | 36.4 | 4.8 | 12.7 | 43.7 | 1.1 | 3.3 | 1.39 | 13 |
| Cocoa price Instability | 58.5 | 11.6 | 9.5 | 19 | 1.6 | 4.07 | 1.26 | 5 |

Note (A= Critically Important, B= Very Important, C= Important, D= Slightly Important, E =Unimportant)

Source: Field Survey Data, 2021

**3.4 Test of Hypotheses**

The independent samples t-test was used to test whether there was a significant difference between certified farmers and non-certified farmers in terms of their output and income. The Levene's test for equality of variances was significant in both output and income. Table 7 shows statistically significant differences between the output and income of the certified farmers and non-certified farmers at ($p<0.01$). This means that the certified cocoa farmers had more output and income than the non-certified cocoa farmers. Hence, the null hypotheses are rejected.

**Table 7: Independent samples T-Test (Output/Income)**

| | Levene's Test for Equality of Variances | T-Test of Equality of Means | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Sig | t | Df | Sig(2-tailed) | Mean difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | F | | | | | | | Lower | Upper |
| Output | Equal variance assumed | 28.309 | -7.767 | 358 | 0.000 | -538.69 | 69.358 | -675.09 | -402.296 |
| | Equal variance not assumed | | -8.023 | 289.105 | 0.000 | -538.69 | 67.147 | -670.85 | -406.537 |
| Income | Equal variance assumed | 2.399 | -4.064 | 358 | 0.000 | -291049.3 | 71616.43 | -431891 | -150207.5 |
| | Equal variance not assumed | | -4.127 | 348.315 | 0.000 | -291049.3 | 70529.43 | -429766 | -152332.1 |

**Source: Field Survey Data, 202**

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## 4. CONCLUSION

Based on the findings, it can be concluded that certified cocoa farmers have positive perceptions towards cocoa certification programme, especially in terms of provision of premium on cocoa beans sold. The LBAs and the exporters are the major bodies providing awareness on cocoa certification programme to the cocoa farmers in the Nigeria. While the major reason for not participating in the cocoa certification programme by the non-certified farmers was due to lack of awareness. It is therefore recommended that more awareness should be created by government institutions so that more farmers can enjoy the sustainability benefits of cocoa certification programm in Nigeria

## COMPETING INTERESTS

Authors have declared that no competing interests exist

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