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# THE INVISIBLE HANDS IN THE PRODUCTION OF GHANA'S PREMIUM COCOA: WOMEN AS KEY CONTRIBUTORS

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**Abstract:** *So often, what women do, especially in relation to productive work, is ignored by various researchers. This study tries to bring to light the extent to which women are contributing to the production of Ghana's premium cocoa, which is an envy all over the world. Cross-sectional data from 400 women cocoa farmers in Mampong and Tepa Cocoa Districts in the Ashanti Region of Ghana was taken. Data were collected through the use of structured questionnaires. Descriptive and inferential statistics such as percentages, means, standard deviations, frequencies, and multiple linear regression were used for the data analysis. Findings from the study showed that women cocoa farmers play an enormous role in the production of cocoa. They play roles in both the pre-harvest stage and the post-harvest stage. The results show that women in partnership with their spouses play a more active role in cocoa production than women who are sole owners. Marital status, farming experience, and educational level are the key factors influencing women's production roles. Again, marital status and pre-planting and harvesting activities influence women farmers' access to resources, privilege, power, and control. Women farmers in partnership with their spouses face the challenge of support from their husbands, while women operating as sole owners face the challenge of high labour costs. Results prove that women cocoa farmers must be massively supported by key stakeholders in the cocoa value chain in order to make them count.*

***Keywords:*** *Cocoa Farmers, Invisible Hands, Premium, Productive Roles, Women*
(JEL code: Q16)

## INTRODUCTION

The agricultural industry is the primary source of income for eighty percent of Ghana's rural population, making it the country's most important economic driver (Nyanteng and Seini, 2000). Ghana's cocoa industry is the country's primary cash crop and the country's second greatest source of foreign exchange earnings, behind gold. The sector is the backbone of Ghana's agriculture industry and serves as our primary cash crop (Huellen and Abubakar, 2021). When one thinks of cocoa, Ghana is the first country that springs to mind more than any other (Kolavalli and Vigneri, 2011).

According to Gyasi (2013), cocoa has been one of Ghana's primary exports for a long time. However, the cocoa industry in Ghana has not been an unqualified triumph up to this point. Ghana went from being one of the main producers of cocoa in the world to seeing a significant drop in production in the 1960s and 1970s, and the industry came perilously close to being completely wiped out in the early 1980s. After the implementation of reforms that affected the entire economy in the middle of the 1980s, output began to gradually improve, and the 1990s were the beginning of a rebound that resulted in production almost doubling between 2001 and 2003 (Vigneri and Kolavalli, 2017).

These highs and lows reveal some valuable lessons. In Ghana, various governments have relied on cocoa as a source of tax money. In doing so, Ghana's history provides a consistent illustration of a strategy practiced by many other African nations: taxing the nation's main export industry to support public expenditures. Cocoa has been used as a source of public revenue in Ghana by various administrations, including the colonial one (Kurantin and Osei-Hwedie, 2022; Gyasi, 2013; Arhinful, D.K., 2003). Revenue collection by the state have had a variety of consequences on output, depending on factors such as worldwide prices, marketing expenses, explicit taxes levied on the industry, and macroeconomic situations such as inflation, overvaluation of exchange rates, and inelasticity of cocoa supplies (Nash, 2005). It is abundantly evident that, in order to keep production incentives in place, there must be effective macroeconomic management, notably of inflation and currency rates. This is true regardless of the degree of extraction (Auty et al., 1998). The second issue is the requirement

that Ghana's cocoa price policy should arrive at a marketing arrangement that does not result in the extinction of the golden goose that lays the golden eggs (Roling et al., 2004).

Cocoa is often referred to as a "male crop" (Farnworth et al., 2013; Solidaridad, 2009). Although it is widely assumed that men predominate in this industry, women's contributions are frequently overlooked in favour of labour, and these individuals are rarely compensated for their efforts. There are three distinct categories of women involved in the cocoa industry: wives of cocoa farmers; women who own farmlands; and employees who are paid for their labour (Solidaridad, 2009). Women in Ghana contribute a significant portion of the labour to the country's cocoa industry. According to research conducted by Farnworth et al., (2013), female agricultural labour participation rates in Sub-Saharan Africa are the highest on average in the globe. Ghana's agricultural sector, which includes the cocoa industry, is primarily staffed by female workers (52% of the total workforce). Again, in the country of Ghana, the contributions that women make to the cocoa industry are enormous. They are involved in many aspects of the cocoa industry, including the preparation of land, the establishment of nurseries, planting, weeding, fermentation, drying, and sorting of cocoa beans (Barrientos, 2013; Solidaridad, 2009). Sadly, women in the cocoa industry who perform important roles are sometimes given little or no acknowledgement for their contributions. In some situations, their contributions are underestimated, and women are confined to the position of unpaid family labour or labour on an as-needed basis (Barrientos, 2013). Their male contemporaries and husbands view women as nothing more than a source of labour, and in most cocoa-producing regions, men marry more often in order to increase the amount of labour available on their plantations. A lot of research on agriculture in sub-Saharan Africa (Phiri et al, 2022; Mamun-Ur Rashid and Mustafa Emad, 2018; Ayodele et al., 2016; Kumase et al., 2010) has found that women are at a disadvantage compared to men when it comes to access to land, extension services, technologies, inputs, and market control of revenues.

In addition, a number of studies have come to the conclusion (typically couched in terms of gender) that the gender of cocoa farmers is an important factor that needs to be taken into consideration when doing research (Boserup, Tan, and Toulmin, 2013; Sall et al., 2000; Djoudi et al., 2016). The issue of gender inequality has been brought to light by both domestic and international non-governmental organisations. Many research on cocoa have small sample sizes or a low percentage of female respondents, which makes it challenging to draw clear conclusions about how gender differences may affect individual or family outcomes (Renzulli, Aldrich, and Moody, 2000; Pinquart and Sorensen, 2003; Oppenheimer, 2003). This is one of the reasons why it is difficult to draw firm conclusions about how gender differences which may affect outcomes for households (Oppenheimer, 2003). In the nations studied by Teal and Vigneri (2004), women made up 34% of our total respondents. This figure includes both women who live in families headed by men (20% of respondents) and women who self-reported being in charge of their own households (14% of respondents).

The several studies conducted to investigate the production of Ghana's cocoa often do not focus on the part that women play in the cocoa producing process (Nelson et al., 2013; Agbenyo, Jiang, and Ntim-Amo, 2022; Asara, 2015; Awudzi et al., 2022; Okoffo et al., 2016). Due to the fact that cocoa is considered to be a "male crop," a study such as this must receive the necessary attention in order to bridge the gap between research involving women. Even though most people think that men are more common in the business world, women often do work that goes unnoticed (Farnworth et al., 2013; Solidaridad, 2009).

In spite of the significant contributions that women have made to the cocoa industry in Ghana, they have received very little acknowledgment for their efforts (Barrientos, 2013; McCarthy, 2018). The failure to identify and recognize the crucial role that women play in the cocoa business has contributed significantly to the economic disparity that exists between women and their male counterparts in the sector (Black et al., 2019). The unequal distribution of power and prestige that results from the gendered division of labour is a universal phenomenon (Hartsock, 2017). Since males are responsible for the distribution of commodities and services as well as the management of rituals, their actions are the ones that are watched over the most carefully. This is because men have more influence over society. In the majority of societies, men have more opportunities to hold positions of public authority and influence than women do (Eagly et al., 2020). Despite the fact that women may often exercise great power in home settings and other nonpublic realms, their influence is constrained by the nature of these settings and domains. As long as the private sphere is based on its position in the public sphere, the final position of the domestic lady in the social order is contingent on the positions that her male relatives have in the market (Eckert and McConnell-Ginet, 2013; Gauthier, 2017). And the manner in which these men spend the money that they earn in the market is directly proportional to her capacity to wield power and influence in the private sphere.

During both the pre-harvest and harvest stages of the cocoa production process, women play an extremely important role. When the cocoa plant is young, it is typically women who are in charge of weeding the cocoa farms. As part of the harvesting process, women are also responsible for picking and carrying pods, removing the placenta during pod-breaking, fermenting, drying, and sorting cocoa beans (Barrientos, 2013). Once more, statutory and customary regulations have made it difficult for women to get access to property and other assets. Inheritance rights are not provided to men and women on an equal basis by the laws (Sophia, 2016). In addition, farmer support programmes, such as the provision of inputs, among other things, tend to focus more on male cocoa farmers than on female cocoa farmers (Amfo and Ali, 2020). Their contributions have received less attention in the existing body of research than their roles in household-related activities, and the care of subsistence crops in agriculture like maize, millet, guinea corn, cassava, yam, plantain, legumes, and vegetables (Farnworth et al., 2013; Raney et al., 2011; Duncan, 2004). As a result, there are enormous gender discrepancies in the cocoa industry.

This research focuses on the unique roles played by women in the cocoa production process in order to bridge this gap. The study specifically addressed the following objectives: assessed and compared the productive roles in cocoa production between women in partnership with their husbands and women with their personal cocoa farms, examined the relationship between the socio-economic characteristics of women cocoa farmers and their productive roles, investigated the effect of the productive role of women in cocoa farming on their access to resources and privilege, power, and control, and analysed the challenges that women face in cocoa production in the Ashanti region of Ghana.

## MATERIALS AND METHODS

The Mampong cocoa district is found within the Mampong Municipal Assembly, which is one of the forty-three (43) administrative districts in the Ashanti region. The Mampong Municipality is found between longitudes 00' 05W and 10' 30W and latitudes 60' 55N and 70' 30N. It has a land area of 2,345 km2. The municipality was previously part of the Sekyere West District but officially became a stand-alone municipality in 2007. The capital of the Mampong Municipality is Mampong, which is about 57km from Kumasi, the regional capital of the Ashanti region. The municipality is bounded to the south by Sekyere South District, to the east by Sekyere Central District, and to the north by Ejura Sekyedumase Municipal. The major towns in the municipality include Mampong, Asaam, Dadease, Krobo, Bosomkyekye, Yonso, Kofiase, Adidwan, Nkwanta, and Apaah. The majority (61%) of the settlements within the municipality are rural, while a minority (39%) of the settlements are urban. Agriculture is the major source of livelihood for the inhabitants. It employs about 67.3% of the entire municipality's work force. The next important sources of livelihood for the inhabitants are the service sector, commerce, production/manufacturing sector, and other income-generating activities employing 12.1%, 8.5%, 8.9%, and 3.2%, respectively (MoFEP, 2021).

According to the 2021 Population and Housing Census, the population status of the Mampong Municipality is 116,632, out of which 59,667 are females and 56,965 are males (GSS, 2021). Agriculturally, the municipality has a bimodal rainfall pattern and a mean annual rainfall of between 800mm and 1500 mm, which is fairly distributed. Dissemination of agricultural information among farmers in the municipality is mostly through contact farmer groups, individual farmer contacts, home and farm visits, and method demonstration. Maize, cassava, plantains, cocoyam, yam, cocoa, oil palm, mango, cashew, and citrus are the major crops grown in the municipality. Also, the municipality can boast of livestock production, including sheep, goats, cattle, poultry, and pigs.

The Tepa Cocoa District is located within the Ahafo Ano North Municipality of the Ashanti region of Ghana. Ahafo Ano North Municipality is one of the forty-three administrative districts in the Ashanti region. Until November 2007, the municipality was part of the Ahafo Ano District Council. Tepa serves as the capital town of the municipality. The municipality is bounded to the north by Tano North Municipal and Tano South Municipal, to the south by Atwima Mponua District, to the west by Asutifi South District, and to the east by Ahafo Ano South East District. The municipality lies at latitudes 6° 47' N and 7° 02' N and longitudes 2° 26' W and 2° 04' W. It has a land area of 593.7 km2. The municipality has a total population of 92,742, out of which the males are 46,753 and the females are 45,989 (GSS, 2021). Betiako, Anyinasuso, Asuhyiae, Akwasiase, Manfo, and Mabang are among the major towns in the municipality. Farming is the main source of livelihood for the people in the municipality, as about 83% of the total labour force relies on farming either directly or indirectly.

Alharahsheh and Pius (2020) asserted that research philosophy directs the adoption of an appropriate research design, methodology, and specific data collection techniques in a research exercise. Examples of research philosophies include positivism, interpretivism, pragmatism, and transformative thinking (Creswell & Creswell 2017). Each of these philosophies follows a unique approach to guiding a research study. For instance, positivism philosophy tackles a research study from a quantitative perspective, interpretivism philosophy tackles a research study from a qualitative perspective, transformative philosophy looks at a research study from both a political and social perspective, and finally, pragmatism philosophy combines the positions of both positivism and interpretivism (Creswell & Creswell, 2017).

The present study utilised purely the positivism philosophy, implying that the study took a quantitative approach, thus making inferences based on numerical values or data. The adoption of the positivism philosophy offered the researcher the chance to adopt an appropriate research design that is capable of ensuring the design of appropriate data collection and analysis tools. According to Peniel (2015), research design refers to the specific plan, structure, and strategy for undertaking a research exercise. It gives an overview of how research should be undertaken. There are different research designs, including quantitative, quantitative, and mixed-method research designs (Park and Park, 2016). A quantitative research design was used. This therefore means that quantitative data were obtained and analysed using different quantitative tools for the study. Quantitative design is defined as a technique that aims at understanding a particular phenomenon through the use of mathematical and/or statistical means (Park and Park, 2016). Quantitative research mostly deals with numerical data. That is, it is more associated with numbers. Lewis et al. (2009) opined that quantitative study enhances the precision of factor measurement as opposed to qualitative research design.

Population refers to the various units of interest from which a sample is usually selected (Babbie, 2007). The population of this study included all women cocoa farmers within the Mampong and Tepa cocoa districts. Sample size refers to the actual number of units or individuals selected from within a specified population. It is often impossible to gather information from the actual population, mainly due to time and resource constraints, among other factors; hence, it is appropriate and acceptable to select a part of the population to represent the entire population. For this study, the sample

size was obtained using Cochran's sample size determination formula since the total number of women in cocoa farming in the two districts is not known. The calculation of the sample size is given as follows:

$$n = \frac{Z^2 pq}{e^2}$$

where;
n = the sample size;
z = desired confidence level;
p = maximum variability;
q = 1-p and
e = desired level of precision (95%)

$$n = \frac{(1.96)^2(0.5)(0.5)}{(0.05)^2} = 385 \text{ farmers}$$

This gives the minimum sample size of 385, but rounded off to a total of 400 women cocoa farmers for the study, of which 200 are women farmers in partnership with their husbands or some other person in cocoa production, and another 200 are women who are sole owners of their cocoa farm.

Sampling refers to the process of selecting individuals from within the population (Turner, 2020). The current study adopted the multi-stage sampling method. Thus, at the first stage, a simple random sampling technique was used to select two cocoa districts, Mampong and Tepa. A simple random sample was again employed to select two operational areas from each of the two cocoa districts selected. Again, a simple random sampling technique was used to select one community from each of the four operational areas. Finally, a snowball sampling technique was further used to select respondents from within the selected communities. This sampling method was used because the researcher wanted to interview only women cocoa farmers who are either farming in partnership with their husbands or who own farms by themselves.

The study utilised two main data sources, namely primary and secondary data sources. Whereas the primary data were obtained from the field through a well-designed questionnaire, the secondary data were gathered mainly through the district's Cocoa Health and Extension Division (CHED) of COCOBOD as well as the review of relevant literature, including books, journal articles, and the internet. The secondary data were used to support the analysed primary data.

The tools used to collect data are essential to every research project (Hamilton and Finley, 2019). A structured questionnaire was employed as the data-gathering tool for this investigation. To increase the accuracy of the data, the respondents self-administered the questionnaire. The questionnaire was divided into two sections. The respondents' socio-economic backgrounds were covered in the first section, and questions especially aimed at addressing the various research goals were covered in the second section. Most of the questions had closed-ended responses.

A brief outline of the project was prepared by the researcher. A letter of introduction was also prepared and presented to the district cocoa officers of the two cocoa districts, Mampong and Tepa. The district extension coordinators of the two districts then scheduled meetings with the women cocoa farmers. At the community level, the chief farmers of the various cooperatives facilitated community entry for the researcher. The researcher conducted the research through surveys. The researcher then explained to the respondents the importance of their responses to the study and requested that they be honest in their answers. The researcher used snowball sampling; the chief farmers were asked to lead the researcher to women farmers in the cooperatives who either did the farming with their husbands or owned the farms themselves. This method of sampling was used in order to facilitate easy identification of the population. After the respondents answered the questionnaire, the data was collected and tallied for analysis.

**Table 1. Variables used for the Production roles for multiple and multivariate regression**

| Variable | Measurement | Symbol | Expected outcome | Source |
|---|---|---|---|---|
| Engagement in production activities (y) | Dependent variable (Continuous; 1=Never, 2= Sometimes, 3 = Always) | EPA | | |
| **Socio-economic characteristics** | | | | |
| Age (x1) | Years, natural logarithm | Fage | +/- | Bannor et al. (2021) |
| Educational qualification (x2) | Dummy; 1= Educated, 0= Not Educated | Edu | + | Keane et al. (2020) |
| Marital status (x3) | Dummy; 1 = married, 0 = single | MarSt | + | |
| Household size (x4) | Number of members, natural logarithm | HHsize | + | Mabe et al. (2020) |
| **Farm characteristic** | | | | |
| Farm size (x5) | Size of cocoa farm in acres, natural logarithm | Fsize | +/- | Danso-Abbeam et al. (2020) |
| Farming experience (x6) | Year in farming, natural logarithm | Fexp | + | Danso-Abbeam et al. (2020) |
| Access to resources (x7) | resources accessibility, natural logarithm | AccR | + | |
| Control (x8) | In charge of farm, natural logarithm | Ctrl | +/- | |
| Privilege (x9) | Opportunity, natural logarithm | Priv | +/- | |
| Power (x10) | Influence, natural logarithm | Pow | +/- | |

*Source: Authors' Construct, 2022*

The collected data were analysed with the aid of version 20 of the Statistical Package for Social Sciences (SPSS). In assessing the specific roles women play in cocoa production, descriptive statistics such as percentages, means, and frequencies were used. In examining the relationship between the socio-economic characteristics of women cocoa farmers and their productive roles, multiple regression was utilised, and finally, in analysing the challenges women face in cocoa production, descriptive statistics were employed.

Productive roles: This is the dependent variable. It represents the decision by women to participate in the production activities of cocoa in the study area (Oyekale, 2021). The sampled farmers were asked whether they played a role in the production of cocoa (i.e., from pre-planting to post-harvesting activities) or not. It was decided to model the women's role in production as a continuous variable, with the women farmers who have done so being treated as 1 = never, 2 = sometimes, and 3 = always. The activities measured included pre-planting (Mabe et al., 2020), planting (Pérez-Zuñiga et al., 2021), farm maintenance (Nyamekye and Dansoh, 2021), harvesting (Keane et al., 2020), and post-harvesting (Yaro et al., 2021).

Age: This variable represents the age of women. The woman's age is expressed in years. The age of women is likely to influence their productive roles in cocoa production (Ndubuaku & Asogwa, 2016). This is a continuous variable, and it is measured in years. The a priori expectation is positive.

Education: This variable describes whether or not the farmers have been educated or not. Education was modelled as a dichotomous variable where educated farmers (farmers who have received some level of education) were assigned 1 and not educated farmers were assigned 0 (Keane et al., 2020). Education in this study comprises a basic education level implying 9 or fewer years of primary formal education, a secondary education level implying 10–12 years of formal education, and a tertiary education level implying 13 or more years of formal education as his or her highest level of education attained (Keane et al., 2020). A farmer who has attained any or all of the above categorizations is said to be educated. The a priori expectation is positive.

Marital status: The marital status of women was measured as a dummy variable. That is, women who were married were treated as 1 and 0 for single or unmarried women. According to Bannor et al. (2021), the marital status of women significantly determines their respective roles in cocoa production. Thus, it is a prior expectation that the variable would positively affect women's productive roles.

Household size: The variable identified the size of the number of members living under the same roof. Thus, the expectation is that the size of the household will influence the productive roles of the women (Mabe et al., 2020). This is a continuous variable, and it is measured in years. The a priori expectation is either positive or negative.

Farm size: This variable describes the size of the respondents' farms sampled. Large farms would make it easier to realise the benefits of scale economies (Danso-Abbeam et al., 2020). Consequently, it is expected that productive roles and farm size are positively connected. The unit of measure for all the farms is acres. This is a continuous variable, and it is measured in years. The a priori expectation is positive.

Farm experience: This variable describes the experience of women in cocoa farming and its related activities. Having enough experience in cocoa production affects production roles (Danso-Abbeam et al., 2020). Consequently, it is expected that productive roles and farming experience are positively connected. This is a continuous variable, and it is measured in years. The a priori expectation is positive.

Access to resources: This was measured as the availability and accessibility of all necessary resources that aided in the production of cocoa by female cocoa farmers. Kassie et al. (2015) found that resources were necessary to assist farmers. This was measured as a continuous variable in the model with the expectation that it would be positive.

Control: The variable measured the ability of women to take charge of the production roles in cocoa production. A negative or positive expectation with a continuous measurement of the variable in the model.

Power: In the model, power was defined as the authority or influence gained by female cocoa farmers in production. The expectation is that women with authority will play a significant role in the production of cocoa. According to what the study predicted, there could be a negative or positive relationship between the variable and productive roles. It was measured as a continuous variable.

Privilege: In this study, privilege was measured as the opportunity to take part in productive roles. It is anticipated that privilege will positively correlate to the adoption of technologies, as asserted by Ahmed (2015) and vice versa by Mulwa et al. (2017). This was modelled as a continuous variable with a priori positive and negative expectations.

## RESULTS AND DISCUSSION

**Demographic Characteristics of Respondents**

**Table 2. Demographic Characteristics of Participants**

| | **Women in partnership** | | **Women as sole owners** | |
|---|---|---|---|---|
| **Variable** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| **Age** | | | | |
| 25 years or less | 7 | 3.5 | 3 | 1.5 |
| 26-35 years | 5 | 2.5 | 13 | 6.5 |
| 36-45 years | 36 | 18 | 21 | 10.5 |
| 46-55 years | 64 | 32 | 42 | 21 |
| Above 55 years | 88 | 44 | 121 | 60.5 |
| **Educational level of respondent** | | | | |
| No formal education | 51 | 25.5 | 48 | 24 |
| Primary school | 50 | 25 | 47 | 23.5 |
| Secondary school A/O level | 99 | 49.5 | 105 | 52.5 |

| | Women in partnership | | Women as sole owners | |
|---|---|---|---|---|
| **Variable** | **Frequency** | **Percent** | **Frequency** | **Percent** |
| **Marital status** | | | | |
| Divorced | 6 | 3 | 40 | 20 |
| Married | 149 | 74.5 | 49 | 24.5 |
| Separated | 5 | 2.5 | 13 | 6.5 |
| Single | 1 | 0.5 | 22 | 11 |
| Widowed | 39 | 19.5 | 76 | 38 |
| **Years of Cocoa Farming Experience** | | | | |
| 11-15 years | 55 | 27.5 | 51 | 25.5 |
| 16-20 years | 31 | 15.5 | 41 | 20.5 |
| 6-10 years | 62 | 31 | 66 | 33 |
| Less than 5 years | 23 | 11.5 | 23 | 11.5 |
| More than 20 years | 27 | 13.5 | 19 | 9.5 |

*Source: Field data, 2022*

This section presents the socioeconomic and demographic information of the participants in the study. Two categories of women respondents were studied, including those who are sole owners of their cocoa farms and those who are in partnership with their husbands in cocoa cultivation. Table 2 displays the findings on the characteristics of the respondents categorised according to whether the respondent is a sole owner of the cocoa farm or is in partnership.

For those women in partnership with their husbands, the study revealed that the majority of them, representing 44%, are over 55 years old; 32% are between the ages of 46–55 years; 18% of the respondents indicated that they are between the ages of 36–45 years; 2% of the respondents show the ages of 26–35 years; and finally, the remaining 3.5% were 25 years or less. The educational level of the respondents was also inquired about, and the findings show that the majority of the respondents have secondary school or A/O level education, which was 49%; 25% of the respondents also indicated they have primary school level education; and lastly, 25.5% of the respondents have no formal education.

The results further indicated that 74.5%, which represents the majority of the females who are in partnership with their husbands, were married; also, 19.5% of the respondents were widowed; 3% were divorced; 2.5% were married but separated; and 0.5% of the respondents, which is very negligible, were single. The study also collected information related to the years of experience in the farming of cocoa, and the result indicated that 31%, representing the majority of the respondents, have been working on the cocoa farm for less than 5 years; 27% of the respondents have been working on the cocoa farm for 11–15 years; followed by 15.5% of the respondents who have 6–10 years' experience on the cocoa farm; 13.5% of the respondents have more than 20 years' experience on the cocoa farm; 11.5% of the farmers show less than 5 years; and lastly, 1% of the respondents have 1% of the cocoa farm.

For those women respondents who owned and operated their farms, it was found that 60% of them were over the age of 55, 21% were between the ages of 46 and 55, 10.5% were between the ages of 36 and 45, 60% were between the ages of 26 and 35, and 1.5% were 25 or younger. Furthermore, in relation to their educational attainments, the result shows that 52.5% of the respondents have secondary school/A/O' qualification; 23.5% of them indicated having primary school qualification; and lastly, 24% of the students have no formal education. For marital status, the results show that 24.5% of the sole owners were married; 6.5% were married and separated; 20% of the respondents were divorced; 11% of the respondents were single; and 38% of the respondents were widowed. On how long these respondents have been working as cocoa farmers, the result shows that 33%, representing the majority, have 6–10 years' experience in cocoa farming, followed by 25.5% who have 11–15 years' experience in cocoa farming; 20.5% have also worked for 16–20 years in the cocoa farm; 11.5% have worked for less than 5 years in the cocoa farm; and finally, 9.5% have worked for more than 20 years in the cocoa farm.

**Comparison in the Productive Roles between Women in Partnership with Their Husbands and Women with Their Personal Cocoa Farms in Cocoa Production**

**Table 3. Roles Played by Women in Cocoa Production**

| | Women in Partnership | | | | Women as Sole Owners | | | |
|---|---|---|---|---|---|---|---|---|
| **ACTIVITIES** | **Never (1)** | **Sometimes (2)** | **Always (3)** | **Mean score** | **Never (1)** | **Sometimes (2)** | **Always (3)** | **Mean score** |
| **PRE-PLANTING ACTIVITIES** | | | | **1.89** | | | | **1.40** |
| Inspection of land | 61% | 13% | 26% | 1.99 | 67% | 10% | 23% | 1.56 |
| Negotiations | 68% | 10% | 22% | 1.83 | 76% | 8% | 17% | 1.41 |
| Making of payments | 67% | 12% | 21% | 1.82 | 81% | 8% | 12% | 1.31 |
| Registration of land | 71% | 12% | 17% | 1.70 | 81% | 7% | 12% | 1.31 |
| Land Clearing | 37% | 40% | 23% | 2.32 | 41% | 30% | 28% | 1.87 |
| Felling and Chopping of trees | 69% | 16% | 15% | 1.66 | 73% | 21% | 7% | 1.34 |
| Burning | 17% | 62% | 21% | 2.61 | 36% | 25% | 40% | 2.04 |
| De-stumping | 64% | 22% | 14% | 1.71 | 71% | 21% | 9% | 1.38 |
| Pegs Cutting/ Carrying | 72% | 12% | 16% | 1.68 | 90% | 2% | 8% | 1.18 |
| Lining and Pegging | 76% | 10% | 14% | 1.59 | 91% | 2% | 7% | 1.15 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **PLANTING** | | | | **3.40** | | | | **2.60** |
| Preparation of Seedlings | 13% | 56% | 30% | 2.90 | 25% | 34% | 41% | 2.16 |
| Carrying of Seedlings | 1% | 50% | 48% | 3.41 | 14% | 9% | 78% | 2.64 |
| Planting of Seedlings | 0% | 33% | 67% | 3.63 | 10% | 6% | 83% | 2.73 |
| Sowing at Stake | 2% | 27% | 72% | 3.66 | 5% | 3% | 92% | 2.87 |
| **FARM MAINTENANCE** | | | | **2.60** | | | | **1.96** |
| Weeding | 1% | 41% | 58% | 3.48 | 13% | 25% | 62% | 2.49 |
| Thinning | 8% | 77% | 15% | 2.51 | 30% | 44% | 26% | 1.96 |
| Removal of Diseases Pores | 5% | 72% | 24% | 2.84 | 17% | 33% | 50% | 2.34 |
| Mistletoe Control | 43% | 45% | 13% | 1.98 | 60% | 25% | 15% | 1.55 |
| Carrying Water for Spraying | 1% | 18% | 81% | 3.76 | 11% | 7% | 82% | 2.72 |
| Spraying/ application of pesticides | 70% | 17% | 13% | 1.63 | 91% | 6% | 3% | 1.13 |
| Applying of Fertilizer | 36% | 50% | 14% | 2.04 | 56% | 32% | 11% | 1.55 |
| **HARVESTING** | | | | **3.22** | | | | **2.51** |
| Plucking of Pods | 9% | 69% | 22% | 2.78 | 17% | 37% | 45% | 2.28 |
| Gathering | 1% | 65% | 34% | 3.22 | 14% | 18% | 68% | 2.54 |
| Heaping of Pods | 1% | 59% | 40% | 3.33 | 13% | 18% | 68% | 2.55 |
| Pod Breaking | 2% | 53% | 45% | 3.38 | 14% | 17% | 68% | 2.54 |
| Scooping of Cocoa Beans | 0% | 50% | 50% | 3.45 | 13% | 16% | 70% | 2.57 |
| Fermentation | 1% | 64% | 35% | 3.17 | 11% | 22% | 67% | 2.56 |
| **POST-HARVESTING** | | | | **2.99** | | | | **2.50** |
| Carting of fermented beans to drying area | 0% | 57% | 43% | 3.24 | 12% | 26% | 62% | 2.50 |
| Drying and sorting of beans | 0% | 28% | 72% | 3.70 | 11% | 10% | 79% | 2.68 |
| Carting of dry beans for sale | 49% | 30% | 21% | 2.05 | 20% | 28% | 52% | 2.32 |

*Source: Field data, 2022*

The results are presented in Table 3 and segregated into two categories for the respective respondent types. To measure the productive roles that women play, the study adopted five main productive functions played in cocoa production, which include pre-planting activities, planting, farm maintenance, harvesting, and after-harvesting. The data for this objective was obtained from responses to a three-point Likert scale for both women in partnerships and a scale for sole owners, where the research participants indicated their level of participation in the various specified farming-related activities.

First of all, the table shows results for women farmers who partnered with their spouses. The result showed that, for pre-planting activities, these women play a medium role. The majority of them never take part in land negotiation, with a mean score of 1.83, and the majority never take part in the making of payments on the land, with a mean score of 1.82. Again, the majority of this category of women never participate when it comes to the registration of land, with a mean score of (1.7). Also, women who engage in cocoa production with their husbands are very often involved in the clearing of the land, with a mean score of 2.32. The results suggest that few of them sometimes help in felling and chopping trees on the farm, with a mean score of 1.66. The results, however, indicate that these women take a greater part in the burning of the weeds on the farm, with a mean score of 2.61, but participate less in the de-stumping, lining, and pegging of cocoa trees, with mean scores of 1.71, 1.59, and 1.68, respectively. Another productive function is planting. The period of planting shows that women have great participation in the preparation of seedlings, carrying of seedlings, planting of seedlings, and sowing at stake, with mean scores of 2.90, 3.41, 3.63, and 3.66, respectively. Furthermore, during farm maintenance, these women participate more in weeding, thinning, diseased plant removal, carrying water for spraying, and fertiliser application, with respective mean scores of 3.48, 2.51, 2.84, 3.76, and 2.04. It was found that for pesticide spraying/application and mistletoe control, these women participated less, with mean scores of 1.63 and 1.98, respectively. During harvesting, women, in partnership with their husbands, play a greater role in the plucking of pods, gathering, heaping of pods, pod breaking, scooping of cocoa beans, and fermentation, as seen by the mean scores of 2.78, 3.22, 3.33, 3.38, 3.45, and 3.20, respectively. Lastly, after the harvesting, the women play a greater role in the carting of fermented beans to the drying area and the drying and sorting of beans, with respective mean scores of 3.25 and 3.17. However, it was found that there was low participation in the carting of dry beans for sale, with a mean score of 2.05.

Secondly, the table shows results for women farmers who operated their own cocoa farms. The results indicate that with respect to pre-planting activities, sole owners play a medium role in inspection of land with a mean score of 1.56, and have less participation in negotiations, making of payments, and registration of land with respective mean scores of 1.41, 1.31, and 1.31. This lower participation in pre-planting activities could be attributed to the fact that the land belonged to women, and as such, they are less likely to participate in any functions associated with acquisition. Moreover, the results reveal sole owners have medium participation in land clearing, with a mean of 1.87. However, the result shows that they participate less in the felling and chopping of trees, burning, de-stumping, peg cutting, lining, and pegging, with mean scores of 1.35, 2.01, 1.39, 1.21, and 1.16, respectively. Further inquiry revealed that the majority of these women who own their cocoa land actually use hired labour to perform the above land preparation functions. This could be attributed to the labor-intensive processes of growing cocoa, which does not easily lend itself to mechanisation (Skalidou, 2020). The result further shows that when it comes to planting, women who have their own cocoa farm have greater participation in the preparation of seedlings, carrying of seedlings, planting of seedlings, and sowing at stake, with mean scores of 2.16, 2.64,

**Table 4. Independent Samples Test**

| | Levene's Test for Equality of Variance | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | F | Sig. | t | df | Sig (2 tailed) | Mean difference | Std. error difference | 95% confidence interval of difference | |
| | | | | | | | | Lower | Upper |
| Women in Partnership | 11.475 | 0.001 | 1.912 | 59 | 0.061 | 0.351 | 0.184 | -0.016 | 0.718 |
| Sole Owners | 0.071 | 0.710 | 0.172 | 69 | 0.864 | 0.024 | 0.137 | -0.250 | 0.297 |

*Source: Field data, 2022*

2.73, and 2.87, respectively. The results reveal that during the maintenance of the farm land, women who owned their own cocoa farms played many roles, like weeding, removing disease pores, and carrying water for spraying, with mean scores of 2.49, 2.34, and 2.72, respectively. However, it is found that they participate less in thinning, controlled mistletoe, spraying, and application of pesticides and fertiliser, with respective mean scores of 1.96, 1.55, 1.13, and 1.55. The result also reveals that when it comes to the harvesting of cocoa beans, women who own cocoa farms play greater roles in the plucking of pods, gathering, heaping of pods, pod breaking, scooping of cocoa beans, and fermentation, with mean scores of 2.28, 2.54, 2.55, 2.54, 2.57, and 2.56. Likewise, the results reveal that when it comes to post-harvest activities, women who own their lands play a greater role in the carting of fermented beans to the drying area, the drying and sorting of beans, and the carting of dry beans for sale, with mean scores of 2.50, 2.68, and 2.32, respectively.

Overall, the outcome of the respective roles played by the two categories of women suggests that women in partnership are more involved in cocoa production roles than their counterparts, who are sole owners of their cocoa farms. While this might appear counterintuitive, this finding could be attributed to the use of hired labour by sole owners to carry out most of their farming operations. According to Spangler and Christie (2020), the roles of women in agricultural production responsibility and decision-making increase as males are withdrawn from the household, especially through migration. The work of Pattnaik and Lahiri-Dutt (2020) also lends credence to this assertion. Thus, according to their study, women are supposed to play greater roles in their farm operations if they are sole owners of their farms. But as the outcome of this study suggests, women may translate this autonomy into taking decisions that see them utilise hired labour to engage in their cocoa production.

It is also observed from the study that the roles of the women tend to increase as they approach harvesting and after harvesting. This observation is consistent with the study by Bulkis et al. (2020), where they found that between males and females, females allocated more hours to harvesting and post-harvesting activities than males. One other finding of this study is the relatively higher roles of women in partnerships in post-harvest activities such as drying and sorting of beans and carting of dry beans for sale. But according to Barrientos and Bobie (2016), while there are certain activities predominantly executed by males, such as selling to local buyers, when a woman owns her farm, she is the one responsible for selling her beans. Thus, this current study is inconsistent with their findings.

A further independent sample t-test was done to compare the two categories of ownership. The output indicates that the mean for women in partnerships is 0.351 and for sole owners is 0.024. Looking in the standard error section, it can be seen that they are not exactly equal, but they are close enough to assume equal variances. The p-value for women in partnership is 0.001, which is less than the standard significance level of 0.05 and indicates that it is statistically significant. The p-value for the sole owner is 0.710, which is greater than the standard significance level of 0.05 and indicates that it is statistically insignificant. With these, it can be said that women in

**Socio-Economic Characteristics of Women Cocoa Farmers and their Productive Roles**

**Table 5. Regression estimate on socio-demographic factors and productive roles**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | Coeff. | Std. Err. | Beta | | |
| Constant | .100 | .104 | | .963 | .336 |
| Age | .001 | .002 | -.021 | -.538 | .591 |
| Education | .802 | .047 | .798 | 17.22 | .000* |
| Marital status | .033 | .055 | -028 | -.606 | .032** |
| Household size | -.002 | .006 | -.012 | -.297 | .001*** |
| Experience in farming | -.002 | .002 | -.037 | -.943 | .767 |
| Farm size (acres) | .000 | .005 | -.004 | -.094 | .351 |

*Note: ***, **, * denotes significant level at 1%, 5% and 10%*
*F: 67.744; Sig: 0.000; R2=.614; Adjusted R2=.605*

*Source: Field data, 2022*

partnership are significantly better than sole owners and that women in partnership play an active role in cocoa production than women who are sole owners.

The "F statistic" is an ANOVA result. The disparity between the within variance and the between-group variance may be seen in the ratio of 67.744. The findings had a significant value (p = 0.000), demonstrating that socio-demographic parameters predicted the productive roles played by women in producing cocoa. From the result, marital status is significant at the 1.0% level, and the relationship is positive. This indicates that as marital status increases, there will be a relative increase in women's productive roles in cocoa production. A further explanation for this is that married women are more likely to get involved in the productive roles of cocoa production as compared to unmarried or single women. Married women have social responsibilities to take care of and therefore would like to engage in productive roles as an alternative livelihood strategy. Unmarried women, on the other hand, would always prefer to go into other businesses due to how tedious farm activities are and thus would be unwilling to engage in any productive roles.

Education level also showed significance, with a 1% level of confidence and a favourable association. This suggests that a rise in the proportion of female cocoa growers will result in a rise in the roles they play in terms of production. Women with higher education or some other type of formal education are more likely to play active roles in the production of cocoa. Women who have a background in education are more likely than women without a history of education to use agronomic technologies. There is a chance that these women will attempt to apply this technology to their own cocoa plantations in an effort to boost yield and income. Thus, even though there is still a need for labour participation, the willingness to participate in productive activities is necessary to ensure that proper agronomic practices are used on the farm. The results are consistent with those of Azumah and Adzawla (2017), who discovered that knowledge of the protocols for using the urea deep insertion technique also requires some level of education. In a similar vein, Danso-Abbeam and Baiyegunhi (2017) came to the same conclusion, noting that education raises farmers' understanding of new technology and expands their productive responsibilities.

Other factors, like age, farm size, household size, and agricultural experience, were statistically insignificant at the 10% probability level, according to Table 5. This proved that a cocoa woman's age has no bearing on the productive functions she plays in the production of cocoa. Furthermore, women's productive duties are unaffected by the size of the farm and home. Women's involvement in cocoa production is not influenced by their experiences in cocoa cultivation. Since the researcher had already anticipated all of this, we reject the null hypothesis that these characteristics have an impact on how productive female cocoa growers are in the study region.

This result concurs with the study by Kassie et al. (2015), which suggested that the lack of land can induce agricultural intensification through the adoption of improved technologies and therefore less productive roles among cocoa farmers. In relation to farm size not predicting female farmers' productive roles in cocoa farming, however, the results are at odds with those of research by Bezu et al. (2014) and Danso-Abbeam and Baiyegunhi (2017), which revealed that farm size was important and had a favourable impact on the adoption of new technologies and increased productive roles in cocoa production. It is contrary to the current finding that Kassie et al. (2013) and Teklewold et al. (2013) found an association between household size and the use of better technology to increase productive roles in producing cocoa.

Additionally, contrary to Simtowe, Asfaw, and Abate (2016) and Danso-Abbeam and Baiyegunhi (2017), who found a positive and substantial association between a farmer's age and the productive roles played in cocoa production, the study's findings were inconclusive. Denkyirah et al. (2016) discovered a negative correlation between age and pesticide adoption. The study concluded that prior agricultural experience was not significant. Azumah, Tindjina, Obanyi, and Wood (2017) and Ahmed (2016) likewise concluded that experience was unnecessary to explain the productive responsibilities played by farmers. However, experience considerably and favourably influenced farmers' adoption of climate-savvy coping techniques as productive roles in Northern Ghana, according to Azumah, Donkoh, and Ansah (2017).

**Effect of the Productive Role of Women in Cocoa Farming on their Access to Resources, Privilege, Power and Control**

**Table 6. Regression estimate on predictors of Women Cocoa Farmers on their Access to Resources, Privilege, Power and Control**

| Estimates | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | Coefficient | Std. Error | Beta | | |
| (Constant) | .459 | .430 | -.052 | 1.069 | .290 |
| Age | -.002 | .003 | .135 | -.863 | .392 |
| Marital status | .233 | .106 | .084 | 2.197 | .033** |
| Household size | .019 | .014 | -.009 | 1.334 | .188 |
| Farm experience | -.001 | .005 | .005 | -.153 | .879 |
| Farm size | .001 | .013 | -.063 | .071 | .944 |
| Planting | -.094 | .094 | .112 | -1.002 | .321 |
| Farm maintenance | .125 | .112 | .223 | 1.122 | .267 |
| Harvesting | .287 | .111 | .039 | 2.578 | .013*** |
| Post-harvesting | .048 | .116 | .658 | .410 | .684 |
| Pre-planting | .452 | .065 | -.004 | 6.927 | .000*** |

*Note: ***, **, * denotes significant value at 1%, 5%, and 10%*
*F: 25.825; Sig: 0.000; R2=.832; Adjusted R2=.800*

*Source: Field data, 2022*

The F-statistic had a positive coefficient and was statistically significant at the 1% confidence level. The disparity between the within variance and the between-group variance

may be seen in the ratio of 25.825. This indicates that access to resources, privilege, power, and control as dependent variables are predicted by the socio-demographic parameters and productive roles of women in cocoa farming.

The results in Table 6 indicated that 3 out of the 4 explanatory variables were significant at the 1% and 5% alpha levels, respectively. Marital status was significant (p = 0.033) and positive for access to resources, privilege, power, and control. This implies that the marital status of women in cocoa farming influences their access to resources, privileges, control, and power. Also, an R-square of 0.832 (i.e., 83.2%) indicates the goodness of fit of the study model. An R-square > 50.0% can be termed a good model for regression analysis.

Table 6 indicates that married women are likely to get access to resources, privilege, power, and control over cocoa production as compared to unmarried women. This is because unmarried women will prefer to focus more on their businesses than engage in farming activities. However, most married women are likely to inherit some farmland from their spouse, giving them the opportunity to venture into cocoa production. According to Nyantakyi-Frimpong (2019), men owned the majority of the land, while women had access to land through their fathers, spouses, and sons. Indeed, Doss et al. (2015) and Kieran et al. (2015) found that the proportion of women who own land in Sub-Saharan Africa (SSA) is quite low. Highly single women have been found to be more autonomous and to favour having individual property rights, which allows them to buy their own land. Married women rely heavily on and feel a special emotional connection to family properties.

This result, however, conflicts with Nyantakyi's (2019) claim that owning land in Ghana places one in a respectable socioeconomic stratum. Hence, a person is respected and recognised more the more land they own. The inference is that although women often hold some authority and tend to own more land in matrilineal communities, they transfer ownership to their husbands due to what Adegbite and Machethe (2020) described as socio-cultural norms. Their power appears to be ineffective and surface-level as a result. In matrilineal communities, men eventually tend to own more land, but they are unable to pass on their family's land to their offspring. In Ghana, access to land is typically through familial ties, share cropping agreements, rentals, skin or stool sales, or outright purchases.

Harvesting had a positive coefficient and was significant at the 1% alpha level, indicating that as harvesting activities increase, it will result in an increase in women's access to resources, privilege, power, and control. With a lot of harvesting activities to be carried out on cocoa farms, women are likely to be included. Thus, they are likely to have control and power over these activities on the farm, which might influence their access to resources positively. This will also provide an avenue for women to learn about and adopt new agronomic technologies. The feminist political ecology (FPE) hypothesis postulates that access to, control over, and mediation of access for others are governed by people's relative power inside their families. Limiting and restricting tactics are part of access and control. Disparate power according to age and gender may have an impact on this.

In addition to taking inspiration from feminist post-structural perspectives, FPE highlights the idea of a home as a complex unit rather than a single cooperative, unsophisticated entity engaged in production and consumption. Gengenbach et al. (2018) viewpoint differs from the conventional unitary one in that it views households as having more complexity. According to the FPE paradigm, women have different interests in terms of having access to and control over productive resources (Nyantakyi-Frimpong, 2019). According to Gengenbach et al. (2018), FPE emphasises the disparate access to and control over resources that already exist from a more intersectional perspective that recognises inequality between men and women inside households.

Further, at a 1% confidence level, pre-planting activities were significant and had a positive relationship. This implies that a relative increase in pre-planting activities will lead to an increase in women's access to resources, privilege, control, and power, and vice versa. Women who are involved in pre-planting activities are more likely to adopt new technologies for cocoa production. Hence, this is likely to affect their access to resources and privileges over other farm inputs for production. This group of women is also more likely to have complete control and power over their farms than women who do not participate in pre-planting activities. According to a study by Kassie et al. (2020), women make up between 49 and 60 percent of the working force in both Western and Eastern Kenya. Women, on the other hand, have less control over domestic work. A phenomenon, according to Kabeer (2015), is caused by long-standing disparities in the paid jobs of women; nonetheless, in order to maintain their marriages, women contribute more to the unpaid labour on farms. Because of the current patriarchal bias inside households, women can only make decisions about the use of family labor. Chant and Brickell (2013) identified unfair intra-household power relations as a contributing factor in this phenomenon.

**The Challenges Women Face in Cocoa Production**

**Table 7. Challenges of Women in Partnership with their Husbands in Cocoa Production**

| Female Farmer in Partnerships | | | Personal Cocoa Farms | | |
|---|---|---|---|---|---|
| **Challenge** | **Mean** | **Std. Dev** | **Challenge** | **Mean** | **Std. Dev** |
| Limited participation in training (extension services) | 1.87 | 1.240 | Limited access to cocoa market (reliance on intermediaries and lower prices) | 1.26 | .629 |
| Limited access information | 1.96 | 1.267 | Limited access to training (extension services) | 1.25 | .591 |
| Limited access to farming income | 3.42 | 1.188 | Limited access to information | 1.27 | .615 |
| Limited Financial Support from spouse in the household | 3.08 | 1.052 | Limited access to land | 1.94 | .980 |

| | | | | | |
|---|---|---|---|---|---|
| Do you face issues like Inadequate finance without any support from your spouse | 3.31 | 1.065 | Limited access to credit facilities | 2.39 | .885 |
| Do you lack support from spouse when it comes to your children's school fees despite constant reminders | 2.57 | 1.290 | Limited access to cooperative membership decision-making bodies | 1.66 | .779 |
| | | | Do you owe individuals and/or institutions (bank, schools, etc.) for which you are unable to pay despite constant reminders? | 1.32 | .632 |
| | | | High cost of transportation Standardization | 2.16 | .875 |
| | | | Fluctuating price of farm produce | 1.76 | .932 |
| | | | Inadequate access to agrochemical | 2.31 | .909 |
| | | | Lack access to machine to help in the farm | 2.36 | .879 |
| | | | High cost of labour | 2.67 | .673 |
| | | | Inadequate processing facilities | 2.21 | .965 |
| | | | Inadequate storage | 2.17 | .966 |
| | | | Incidence of pest | 2.35 | .856 |

*Source: Field data, 2022*

Table 7 presents a descriptive analysis of the challenges women who partner with their husbands to cultivate their farms face in cocoa production. The result reveals that the majority of the these women rarely agree that they have limited opportunities in participation in training (extension services) with a mean score of 1.87; the majority of the respondents expressed that they regularly have limited access to information with a mean score of 1.96; again, the majority of the women demonstrated that there was limited financial support from their spouse in the household with a mean score of 3.08; most of the respondents said they do face issues like inadequate finance without any support from their spouses with a mean score of 3.31; most of the respondents said they do lack support for their children's school fees despite constant reminders with a mean mark of 2.57.

Table 7 also presents a descriptive analysis of the challenges women with personal cocoa farms face in cocoa production. The result indicates that most of the women rarely have limited access to the cocoa market, with a mean mark of 1.26. Again, majority of the respondent said they rarely have limited access to training with mean of 1.25; most of the respondents express that they rarely have limited access to information with a mean score of 1.27; majority of the respondent also express that they rarely have limited access to land with mean score of 1.94; majority of the respondent said they have limited access to credit facilities with mean mark of 2.39; most of the respondent express that they rarely have limited access to cooperative membership decision-making bodies with mean mark of 1.66; majority of the women farmers express that they rarely owe individuals and/or institutions (bank, schools, etc.) for which you are unable to pay despite constant reminders with a mean score of 1.32; majority of the respondent express that there is high cost of transportation with mean mark of 2.16; most of the respondents express that rarely do they experience fluctuating price of farm produce with mean mark of 1.76; most of the respondents expressed that there exist Inadequate access to agrochemicals with a score of 2.31; lack of access to machines to help in the farm with a mean score of 2.36; high cost of labour with a mean score of 2.67; inadequate processing facilities with a mean score of 2.21; inadequate storage with a mean score of 2.17; and incidence of pests with a mean score of 2.35. The findings in this study corroborate the study by Adegbite and Machethe (2020), who identified such challenges as the high cost of agricultural labour and productive inputs as contributory drivers to increasing gaps in gender-related financial inclusion.

## CONCLUSION

While prominently featured in the production of one of the country's highest foreign currency-earning commodities for the economy, women have often not been accorded the deserving recognition for their roles in cocoa production. In recent times, however, increasing attention has been drawn to this misrepresentation, and efforts are being made not only to showcase the roles of women but also to offer women the necessary support to increase their relevance in cocoa production. To this end, this study was conducted to investigate the role of women in the production of Ghana's cocoa in the Ashanti Region. Findings from the study showed that women cocoa farmers play an enormous role in the production of cocoa. They play roles in both the pre-harvest stage and the post-harvest stage. The results show that women in partnership with their spouses play a more active role in cocoa production than women who are sole owners. Marital status, farming experience, and educational level are the key factors influencing women farmers' production roles. Again, marital status and pre-planting and harvesting activities influence women farmers' access to resources, privilege, power, and control. Women farmers in partnership with their spouses face the challenge of support from their husbands, while women operating as sole owners face the challenge of high labour costs.

The study recommends that the government and institutions in charge of regulating the cocoa sector formulate policies supporting more women in the cocoa production communities to venture more into cocoa production. This will serve as a form of motivation for these women to be able to earn more on their own, which will raise their economic and social wellbeing. This is especially true for those women farmers who are sole owners of their farms. The study found that there was limited access to credit facilities for women farm-

ers. So, the study recommends that the right steps be taken to get credit facilities ready for these farmers so that they can be more productive in cocoa production. The study also discovered that because agrochemicals are difficult to obtain and shipping them is costly, the various authorities should ensure that obtaining them is simple and quick. The study discovered high labour costs, insufficient processing facilities, insufficient storage, and pest infestations as common challenges among women cocoa farmers. These are problems that need a lot of attention from the government and its agencies, like the Food and Agriculture Ministry (MoFA) and COCOBOD. Therefore, the study recommends that the above authorities look into those issues and set out policies and programmes to address these shortfalls in order to encourage more women to venture into cocoa production, where they can engage and thrive. Results show that in order to make a difference, key stakeholders in the cocoa value chain must massively support women cocoa farmers.

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