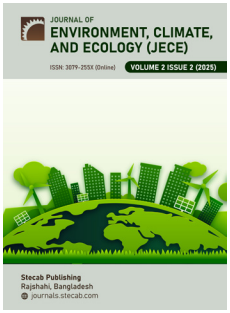

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Research Article

Determinants of Household Participation in Coconut (*Cocos nucifera*) Farming: Evidence from Rural Ghana

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About Article

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ABSTRACT

The complexity of household decision-making in agricultural production involves multiple interacting factors, including demographic characteristics, socioeconomic status, institutional access, and environmental conditions. The coconut palm (*Cocos nucifera*), locally known as "kube" in Akan, thrives in Ghana's coastal and forest transitional zones, offering multiple economic opportunities through its diverse product applications, including coconut water, copra, coconut oil, and coir fiber. Despite its economic potential, coconut farming adoption remains heterogeneous across Ghanaian rural communities, with participation rates varying significantly between and within regions. This research was conducted in the Lower Manya Kobo District (LMKD) of Ghana. The study used a mixed-methods approach, which integrated both quantitative and qualitative data collection methods. A logistic regression analysis was conducted to examine the key factors influencing respondents' willingness to adopt coconut farming as an alternative livelihood in the Lower Manya Krobo District. A total of 150 respondents were used for the study. Primary data collection involved the use of structured questionnaires, in-depth interviews, and focus group discussions. Logistic regression analysis identified access to land as the most influential predictor, with an odds ratio of 2.8 ($p = 0.0095$), indicating that respondents with secure land tenure were nearly three times more likely to consider coconut farming. Financial resources also played a critical role, with an odds ratio of 1.9 ($p = 0.0462$). Access to agricultural extension services was similarly significant (odds ratio = 1.7, $p = 0.0487$), emphasizing the importance of technical guidance for farmers. There is a need to enhance the capacity and reach of agricultural extension services, particularly in remote areas. Extension officers should be trained to provide specialized support in coconut cultivation, including pest management, agroforestry techniques, and market linkages.

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1. INTRODUCTION

Ghana's agricultural sector remains a cornerstone of the national economy, employing approximately 44% of the labor force and contributing 18.3% to the country's Gross Domestic Product (Ghana Statistical Service, 2021). Within this sector, coconut farming has emerged as a significant cash crop with substantial potential for improving rural livelihoods and contributing to agricultural diversification strategies. The coconut palm (*Cocos nucifera*), locally known as "kube" in Akan, thrives in Ghana's coastal and forest transitional zones, offering multiple economic opportunities through its diverse product applications, including coconut water, copra, coconut oil, and coir fiber (Osei-Ampadu *et al.*, 2019). Despite its economic potential, coconut farming adoption remains heterogeneous across Ghanaian rural communities, with participation rates varying significantly between and within regions. Understanding the underlying factors that influence household decisions to participate in coconut farming is crucial for developing targeted agricultural policies and interventions that can enhance rural incomes and food security (Adjei-Nsiah & Sakyi-Dawson, 2012). The complexity of household decision-making in agricultural production involves multiple interacting factors, including demographic characteristics, socioeconomic status, institutional access, and environmental conditions. The significance of coconut farming extends beyond individual household benefits to encompass broader development outcomes, including rural employment generation, foreign exchange earnings, and environmental sustainability through carbon sequestration (Fosu-Mensah *et al.*, 2020). Ghana's National Coconut Development Strategy aims to increase coconut production from 400 million nuts annually to 2.5 billion nuts by 2030, highlighting the crop's strategic importance in national agricultural development planning (Ministry of Food and Agriculture, 2018).

Ghana's coconut sector has received increasing policy attention following the recognition of its potential contribution to rural development and export earnings. The country's coconut production is concentrated in the coastal regions, particularly the Central, Western, and Greater Accra regions, where climatic conditions favour coconut cultivation (Osei-Ampadu *et al.*, 2019). Current challenges facing Ghana's coconut sector include aging palm stands, limited access to improved varieties, inadequate processing facilities, and weak market linkages (Ministry of Food and Agriculture, 2018). These constraints limit the sector's potential contribution to rural livelihoods and national economic development, highlighting the importance of understanding participation determinants to inform targeted interventions.

Despite coconut farming's recognized potential, participation rates among rural households remain suboptimal, with many suitable areas underutilized for coconut cultivation. Previous studies on agricultural adoption in Ghana have primarily focused on food crops and traditional cash crops like cocoa and coffee, leaving a significant knowledge gap regarding the specific determinants of coconut farming participation (Danso-Abbeam *et al.*, 2018). This knowledge deficit hampers the development of effective policies and programs to promote coconut farming adoption and optimize its contribution to rural development. Furthermore, existing research on coconut farming in West Africa has been predominantly descriptive, lacking rigorous empirical analysis of the factors influencing household participation decisions. The heterogeneous nature of coconut farming adoption across different ecological zones and socioeconomic contexts in Ghana necessitates a comprehensive understanding of the underlying determinants to inform targeted interventions (Egyir *et al.*, 2018). While existing literature provides valuable insights into agricultural participation and coconut production in Ghana, limited research has specifically examined household-level determinants of coconut farming participation. Most studies have focused on productivity, efficiency, or broad agricultural participation without considering the unique characteristics of coconut cultivation. This study fills this gap by providing empirical evidence on factors influencing household decisions to participate in coconut farming.

Extensive research on agricultural technology and crop adoption has identified several consistent determinants of farmer participation across different contexts. Age of household head has shown mixed effects, with some studies finding negative relationships due to risk aversion and limited planning horizons among older farmers (Feder *et al.*, 1985), while others report positive effects reflecting experience and established networks (Knowler & Bradshaw, 2007). Education consistently emerges as a positive determinant of agricultural innovation adoption, with formal education enhancing farmers' ability to acquire, process, and utilize new information effectively (Weir & Knight, 2004). Household size typically shows positive effects on adoption, reflecting increased labor availability and risk diversification capacity, though this relationship may vary depending on the labor intensity of the specific agricultural activity (Pender & Gebremedhin, 2007).

2. LITERATURE REVIEW

Coconut (*Cocos nucifera*) farming represents a significant component of Ghana's agricultural economy, particularly in coastal and semi-coastal regions where climatic conditions favor its cultivation. As a perennial crop with multiple economic uses ranging from food products to industrial applications, coconut farming offers substantial potential for rural household income diversification and poverty alleviation. However, household participation in coconut farming varies considerably across rural communities, influenced by a complex interplay of socioeconomic, institutional, and environmental factors. Understanding these determinants is crucial for developing targeted agricultural policies and interventions that can enhance coconut production and improve rural livelihoods in Ghana.

The conceptual framework for this study aims to understand the ddeterminants of hhousehold participation in Coconut farming from Rural Ghana. The framework identifies key input variables (independent factors), processes, and output variables (dependent factors), showing how they interact to influence the adoption and impact of coconut farming. Input Variables (Independent Factors):

- *Socio-demographic characteristics:* Age, gender, education, household size.
- *Economic factors:* Access to credit, land ownership, income levels, and market access.

• *Institutional factors:* Agricultural extension services, training programs, and access to technology.

• *Environmental factors:* Soil quality, water availability, and climate conditions.

• *Social capital:* Peer influence, community support, and cooperative memberships

Age and education of household heads emerge as consistent predictors of coconut farming participation across multiple studies. Danso-Abbeam *et al.* (2018) found that younger household heads were more likely to participate in coconut farming in Ghana's Central Region, suggesting that the long-term nature of coconut cultivation appeals more to farmers with longer planning horizons. However, Martey *et al.* (2021) reported mixed results regarding age effects, noting that while younger farmers may be more willing to adopt new practices, older farmers often possess accumulated knowledge and resources that facilitate coconut cultivation. Educational attainment consistently shows positive associations with coconut farming participation. Awunyo-Vitor *et al.* (2016) demonstrated that formal education enhances farmers' ability to access information about improved coconut varieties, cultivation techniques, and market opportunities. Their study of smallholder farmers in Northern Ghana revealed that each additional year of formal education increased the probability of coconut adoption by 3.2%. Gender dynamics play a crucial role in participation decisions, though patterns vary across regions. Doss (2001) noted that women's participation in tree crop cultivation often depends on land tenure arrangements and cultural norms regarding women's control over perennial crops. In Ghana's context, Amanor (2010) found that coconut farming participation among women was higher in matrilineal communities where women had stronger land rights compared to patrilineal areas.

Land ownership and access represent fundamental determinants of coconut farming participation. Coconut cultivation requires long-term secure access to land, making formal or customary ownership crucial. Goldstein and Udry (2008) analyzed land tenure systems in Ghana and found that households with stronger land rights were significantly more likely to invest in perennial crops like coconuts. Their research revealed that the probability of coconut planting increased by 45% when households had formal land titles compared to those with only customary use rights. Labor endowments, particularly family labor availability, significantly influence participation decisions. Coconut farming has distinct labor patterns, with intensive periods during establishment and harvesting but relatively low labor requirements during intermediate years. Adjognon *et al.* (2017) found that households with larger family sizes were more likely to participate in coconut farming, as family labor could be allocated across different crop activities while maintaining coconut plantations.

Financial capital constraints represent major barriers to coconut farming participation. The initial investment requirements for land preparation, seedling acquisition, and maintenance during the pre-productive period create substantial financial barriers for resource-poor households. Asante *et al.* (2014) estimated that establishing one hectare of coconut plantation in Ghana required initial investments of GHS 2,400-3,200, representing 40-60% of average annual household incomes in rural areas.

Agricultural extension services play a crucial role in disseminating information about improved coconut cultivation practices and market opportunities. Krishnan and Patnam (2014) demonstrated that access to extension services significantly increased adoption of improved agricultural technologies among smallholder farmers in Ghana. In the coconut sector specifically, extension support helps farmers navigate the complex decisions regarding variety selection, spacing, intercropping, and pest management. Ragasa and Mazunda (2018) analyzed the effectiveness of different extension approaches in promoting coconut farming adoption. Their study revealed that farmer-to-farmer extension networks were particularly effective for coconut farming, as experienced coconut farmers could provide practical insights about long-term management practices that conventional extension agents might lack.

Access to credit emerges as a critical determinant of coconut farming participation across multiple studies. The long gestation period before coconut palms become productive creates cash flow challenges that formal credit can help address. Anang *et al.* (2020) analyzed credit constraints among smallholder farmers in Ghana's Western Region and found that access to formal credit increased the probability of coconut farming participation by 28%. However, traditional banking institutions often view coconut farming as high-risk due to its long payback period and vulnerability to environmental shocks. This has led to the development of alternative financing mechanisms. Addai *et al.* (2018) examined the role of microfinance institutions in supporting coconut farming in Ghana, finding that group-based lending schemes were more effective than individual loans in facilitating participation among smallholder farmers. Coconut palms have specific climatic requirements that constrain where commercial cultivation is viable. Optimal conditions include temperatures between 27-32°C, annual rainfall of 1,500-2,500mm, and relative humidity above 60%. In Ghana, these conditions are primarily found in coastal and semi-coastal regions, creating geographic patterns in participation rates. Climate change represents an emerging factor influencing coconut farming decisions. Rising temperatures, changing rainfall patterns, and increased frequency of extreme weather events affect the long-term viability of coconut cultivation. Boansi (2017) analyzed climate impacts on tree crop production in Ghana and found that projected temperature increases could reduce suitable areas for coconut cultivation by 15-20% by 2050. Soil characteristics significantly influence coconut farming suitability and productivity. Well-drained sandy loam soils with good organic matter content are optimal for coconut cultivation. Poor drainage, high salinity, or extremely sandy soils can constrain productivity and influence household decisions about crop choice. Topographic factors also matter, with coconut palms performing better on relatively flat terrain that facilitates mechanization and reduces erosion risks. Steep slopes or areas prone to flooding may discourage coconut farming participation even in otherwise suitable climatic zones.

3. METHODOLOGY

3.1. Study area

This research was conducted in The Lower Manya Kobo District

(LMKD) of Ghana. It is one of the 26 administrative districts in the Eastern Region of Ghana. The district is strategically located at the Eastern corner of the Eastern Region of Ghana and it lies between latitudes 6.05N and 6.30N and longitudes 0o08W and 0.20W with an altitude of 457.5m above sea level. The district is bounded on the North-west by Upper Manya Krobo District, North-east by Asuogyaman District, South-east by North Tongu District and South by Yilo and Dangme West District. The LMKD | covers an area of 304.4 square kilometers, with a population density of 293.2 persons per square kilometer. The people of Lower Manya Krobo District are mainly farmers, employing about 60% of the labor force, whilst the remaining 40% are into petty trading, commerce and transport service. Cereal (Maize) is the most common agricultural product found in the Municipality together with, cassava, pepper, pineapple, watermelon, sweet potatoes, plantain, yam, cocoyam, okra, tomatoes and others. A section of the population especially the men folk also earn their living through fishing on the Volta Lake which lies at the North- Eastern part of the Municipality. Also, the District is endowed with large tract of arable land suitable for cultivation of Mango, Oil Palm, Maize, Cassava, roots vegetable, Plantain and yam. It is also endowed with natural resources like limestone and historical tourist attractions. Some of the natural attractions include the Volta Lake and Krobo hills. This natural phenomenon provides a cool and serene atmosphere for good relaxation and recreational activity especially tourism.

3.2. Research design & data collection

The study used a mixed-methods approach which integrated both quantitative and qualitative data collection methods to comprehensively address the study's objective. Data were gathered from both primary and secondary sources to meet the study's objectives. Primary data collection involved the use of structured questionnaires, in-depth interviews, and focus group discussions. Structured questionnaires are commonly employed in agricultural research as they enable the systematic collection of quantitative data, ensuring comparability and facilitating statistical analysis (Bryman, 2016). The questionnaire developed for this research was divided into sections covering socio-demographic characteristics, perceptions of coconut cultivation as an alternative livelihood, and factors influencing willingness to engage in coconut farming. Secondary data were sourced from relevant literature, government reports, and prior studies on coconut farming and agricultural practices in rural Ghana. This provided a contextual understanding of the agricultural landscape and informed the analysis of the study's primary data (Creswell & Plano Clark, 2017). The combination of primary and secondary data allowed for a more comprehensive exploration of the study objectives.

3.3 Data analysis and sampling procedure

A logistic regression analysis was conducted to examine the key factors influencing respondents' willingness to adopt coconut farming as an alternative livelihood in the Lower Manya Krobo District. A total of 150 respondents were targeted for the study. The sample size was determined based on the overall population size, the study's objectives, and the available resources. Larger sample sizes are generally desirable in social science research as they enhance statistical power and allow for more precise estimates, but resource constraints and feasibility must also be considered (Fowler, 2014). The selected respondents were drawn from the district's farming population, including both adopters and non-adopters of coconut farming. This stratification allowed for meaningful comparisons between different groups in terms of their perceptions of coconut farming and the factors influencing their willingness to adopt the practice (Etikan *et al.*, 2016). A stratified random sampling technique was employed to ensure the sample represented the broader population of the Lower Manya Krobo District. Stratified sampling is particularly useful when the population is heterogeneous, as it allows the researcher to divide the population into distinct subgroups, or strata, based on relevant characteristics such as age, gender, and farming status (adopters and non-adopters of coconut farming) (Kumar, 2014). This method ensures that all relevant categories are adequately represented, which helps to minimize sampling bias and improve the generalizability of the study findings (Creswell, 2014).

4. RESULTS AND DISCUSSION

4.1. Background characteristics of respondents

The respondents in the study reflect a diverse demographic profile, which provides critical insights into their perceptions and willingness to engage in coconut cultivation. In the subsections following, the socio-demographic characteristics of the respondents, including age, gender, household size, and education level, are highlighted.

4.1.1. Age distribution

The largest group of respondents falls within the 31-40 age range (33%), followed by the 41-50 group (25%) (Figure 4.1). Smaller proportions are seen among the 18-30 group (20%), while the 51-60 group makes up 11%, and those aged 61 and above account for 11% of the sample.

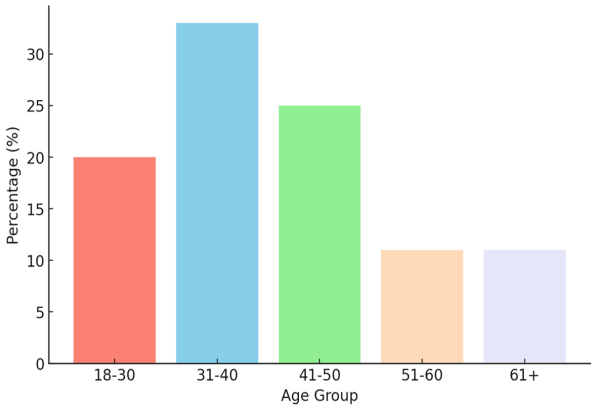

Figure 1. Age distribution of respondents

Younger respondents, particularly those aged 18-40, are generally more receptive to adopting new agricultural practices like coconut farming. This is likely due to their longer investment horizon and greater willingness to take risks. In contrast, older farmers (50+ years), who typically have smaller households

and higher levels of tertiary education, may be more hesitant to adopt new practices. This is often due to concerns about the physical labor required and the perceived risks associated with shifting to new crops at this stage of their farming careers.

4.2. Gender distribution by age of respondents

A slight male dominance is evident across age groups, with men comprising 55-80% of respondents in each category (Figure 4.2). Male representation increases with age, particularly in the 51-60 and 61+ categories, where males make up 70% and 80%, respectively. This gender skew suggests that men may have more access to land and resources, facilitating their engagement in coconut farming, while traditional gender roles may limit women's involvement, especially in older households.

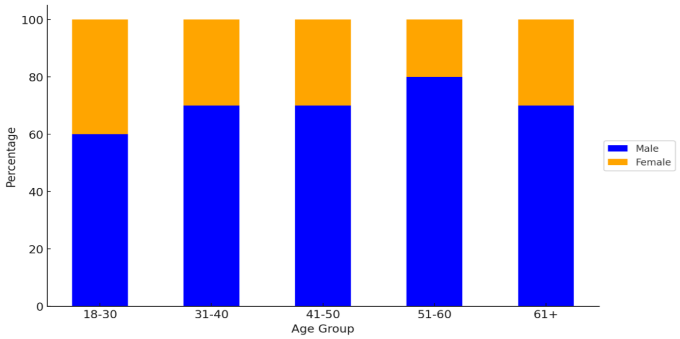

Figure 2. Gender distribution by age of respondents

4.3. Education level of respondents

The community exhibits significant generational differences in education, with younger respondents having higher formal education than older individuals. Among the 18-30 age group, 60% have secondary education and 30% have tertiary education, positioning them to adopt modern farming practices (Figure 3). In the 31-40 group, 50% have tertiary education, though 20% with only primary education may face barriers in accessing technical knowledge. For the 41-50 group, 50% have secondary education, but only 20% have tertiary education, limiting more technical engagement. The 51-60 group shows 60% with primary education, while only 10% have tertiary education, indicating reliance on traditional methods. The 61+ group is mostly educated at the primary level (70%), with only 10% having a tertiary education. The disparity suggests younger farmers are better equipped for modern coconut farming, necessitating technical training and simplified interventions for older, less-educated farmers to enhance their participation.

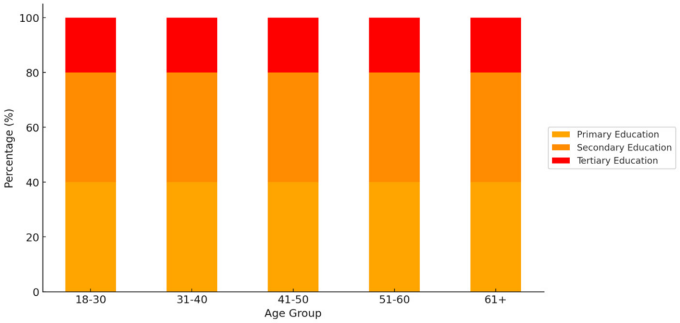

Figure 3. Education levels of respondents

4.4. Factors that determines households to engage in coconut farming

4.4.1. Factors identified by general respondents

A logistic regression analysis was conducted to examine the key factors influencing respondents' willingness to adopt coconut farming as an alternative livelihood in the Lower Manya Krobo District.

Table 1. Results of factors influencing willingness to engage

Factor	Coefficient (β)	Odds Ratio	p-value
Access to Land	1.0292	2.8	0.0095
Access to Financial Resources	0.6419	1.9	0.0462
Access to Extension Services	0.5306	1.7	0.0487
Level of Education	0.4055	1.5	0.0953
Perceived Profitability	0.5878	1.8	0.0510
Household Size	0.2023	1.2	0.1574
Age	-0.1048	0.9	0.2856
Gender	-0.3371	0.7	0.1978
Farm size	0.1429	1.2	0.1231
Farming experience (years)	-0.0734	0.9	0.3385

Source: Field survey 2024

Model goodness-of-fit measures

- Model Goodness-of-Fit Measures
- Number of Respondents: 150
- Log Likelihood: -92.3057
- Likelihood Ratio Test: $\chi^2 = 21.56$, p-value = 0.0002
- Pseudo R^2 (Nagelkerke): 0.1825

The logistic regression model includes all tested variables, with Access to Land, Access to Financial Resources, and Access to Extension Services emerging as statistically significant predictors of willingness to adopt coconut farming ($p < 0.05$). Level of Education and Perceived Profitability are marginally significant, with p-values slightly above the threshold, suggesting a potential positive association with adoption. Other variables, including Household Size, Age, Gender, Farm Size, and Farming Experience, did not reach statistical significance ($p > 0.05$), indicating they have a weaker or non-significant association with the dependent variable. For example, the coefficient for Age is negative, suggesting a slight inverse association with adoption, but this effect is not statistically meaningful ($p = 0.2856$). Similarly, Gender shows a non-significant odds ratio of 0.7, suggesting no substantial effect on adoption decisions. The goodness-of-fit metrics reinforce the model's validity, with a significant likelihood ratio test ($\chi^2 = 21.56$, $p = 0.0002$), and the pseudo-R^2 (Nagelkerke) of 0.1825 indicates that the model explains a meaningful portion of the variation in willingness to adopt coconut farming, though there is room for additional factors to improve explanatory power

4.4.2. Access to land

Access to land emerged as the most significant predictor of

willingness to engage in coconut farming ($p < 0.01$, odds ratio = 2.8). Respondents with secure land access were nearly three times more likely to adopt coconut farming compared to those without secure land access. This strong association between land ownership and willingness to farm coconut suggests that land tenure security plays a critical role in decision-making for long-term agricultural investments like coconut farming (Agyare, 2024).

Coconut farming, as a perennial crop requiring several years to reach maturity, necessitates secure land tenure. Farmers need the assurance of continuous and undisputed land access over an extended period. This finding aligns with existing literature on agricultural development, where access to land has consistently been identified as a major determinant in farmers' decisions to adopt new or alternative crops (Antwi-Agyei *et al.*, 2022). Osei-Tutu *et al.* (2022) observed that land tenure insecurity in parts of Ghana limits smallholder farmers' willingness to invest in long-term farming projects, such as tree crops, due to uncertainties surrounding land ownership and the potential for displacement or disputes.

In summary, secure land tenure is crucial for encouraging farmers to engage in coconut farming. The need for continuous land access underpins the viability of investing in long-term crops. This insight underscores the importance of addressing land tenure issues to facilitate the adoption of sustainable agricultural practices and enhance farmers' resilience against climate and economic shocks (Osei-Tutu *et al.*, 2022; Antwi-Agyei *et al.*, 2022).

4.4.3. Access to financial resources

Access to financial resources, including credit or loans, emerged as the second most significant factor influencing respondents' willingness to adopt coconut farming ($p < 0.05$, odds ratio = 1.9). Respondents with access to financial resources were nearly twice as likely to view coconut farming as a viable livelihood compared to those without financial access. This underscores the critical role of financial liquidity in facilitating the transition to coconut farming (Agyare, 2024). Establishing a coconut farm requires substantial upfront investment in seedlings, farm inputs such as fertilizers and pesticides, and labor, especially during the initial stages when farmers do not see immediate returns on their investments. Local agricultural cooperatives play a key role in bridging this financial gap for farmers. Representatives from cooperatives provide essential support by offering farmers access to microloans and input credit. These financial products, which are more flexible and tailored to the needs of smallholder farmers, allow members to access the capital required to invest in coconut farming. One cooperative leader explained: "*We negotiate better credit terms with financial institutions and provide guarantees for our members, making it easier for them to secure loans for coconut farming*" (Agyare, 2024).

Cooperative unions also facilitate collective purchasing of farm inputs such as fertilizers, pesticides, and seedlings, helping to reduce individual costs. Additionally, cooperatives often act as intermediaries between farmers and microfinance institutions, advocating for more accessible loan conditions tailored to smallholders. The importance of financial access is supported by existing studies on agricultural adoption. Danso-Abbeam *et al.* (2020) demonstrated that smallholder farmers with access to microcredit and input loans are more likely to adopt new agricultural technologies and crops, as these financial mechanisms mitigate the risk burden associated with such investments.

4.4.4. Access to agricultural extension services.

Access to agricultural extension services also significantly influenced respondents' willingness to engage in coconut farming ($p < 0.05$, odds ratio = 1.7). Respondents who received technical support and guidance from agricultural extension officers were 1.7 times more likely to adopt coconut farming compared to those who did not have access to such services. Agricultural extension services play a crucial role in facilitating the dissemination of knowledge and best practices related to farming techniques, pest and disease management, and the use of inputs.

4.4.5. Level of education

Higher education levels were positively associated with a willingness to adopt coconut farming, though this factor was less influential than access to land or financial resources ($p < 0.1$, odds ratio = 1.5). Respondents with higher levels of education (secondary and tertiary) were more likely to consider coconut farming as a viable option compared to those with only primary or no formal education. Educated respondents are more likely to have access to information regarding market trends, the environmental sustainability of coconut farming, and the long-term profitability of such ventures. Their better understanding of the economic and environmental benefits of coconut farming allows them to make more informed decisions.

4.4.6. Perceived profitability

The perceived profitability of coconut farming was another significant factor influencing willingness to adopt ($p < 0.05$, odds ratio = 1.8). Respondents who believed that coconut farming would be financially rewarding were more likely to express a willingness to engage in it. This finding highlights the importance of economic considerations in shaping farmers' decisions to adopt new agricultural practices. Coconut farming offers multiple revenue streams from various products, including coconut oil, water, husk, and copra, all of which have growing local and international demand. Respondents who were aware of these opportunities were more inclined to adopt coconut farming, recognizing its potential for generating higher income compared to traditional crops. This aligns with global trends, where farmers are more likely to adopt new crops when they perceive a clear economic benefit. Studies such as those by Bhat *et al.* (2022) have noted that profitability is a key motivator in farmers' willingness to invest in crops that require longer-term commitment, like coconut.

4.5. Key factors identified by key respondents

The qualitative data collected through focus group discussions and in-depth interviews with farmers and key stakeholders provided a richer understanding of the factors that influence the willingness to engage in coconut farming in the Lower

Manya Krobo District. Several key themes emerged, including land tenure and ownership and knowledge gaps.

4.5.1. Land tenure and ownership

The issue of land tenure security, particularly for women and younger farmers, emerged as a key concern. Traditional land ownership systems in the district, controlled by family elders, chiefs, or community leaders, leave these groups at a disadvantage, hindering their ability to secure land for long-term investments like coconut farming. Many participants highlighted the patriarchal nature of land ownership, where men, especially family heads, make land decisions, forcing women to seek permission to farm, a process fraught with uncertainty. This aligns with research, such as Doss *et al.* (2018), which points to women's limited land access as a major barrier to agricultural development. Secure land tenure is essential for investment in crops like coconut, which require long-term commitment. Addressing these tenure issues is critical for fostering broader adoption of coconut farming, especially among women and young farmers.

4.5.2. Knowledge gaps and extension services

A key theme from the discussions was the knowledge gaps regarding the technical aspects of coconut cultivation, such as soil management, pest control, and efficient harvesting. Many farmers, particularly those in remote areas, lacked access to agricultural extension services, which limited their ability to adopt coconut farming. While farmers near towns had some access to extension officers, those in remote areas faced uncertainty and reluctance to adopt coconut farming without the necessary knowledge. This aligns with research showing that access to extension services significantly increases the adoption of new farming practices (Agyemang *et al.*, 2019). Respondents highlighted the need for training in pest management and soil fertility to help mitigate the risks associated with coconut farming, especially given its long cultivation cycle. Without such support, farmers in remote areas are hesitant to invest in coconut farming.

5. CONCLUSION

The study concludes that several key factors influence households' determination to engage in coconut farming. Access to secure land tenure stands out as a critical determinant, given the long-term investment required for coconut trees. Financial resources, particularly access to credit, are also essential, as establishing a coconut farm involves high upfront costs. Access to agricultural extension services plays an important role by providing technical guidance, which further supports the adoption of coconut farming. Perceived profitability and educational background also influence willingness, emphasizing the need for financial, technical, and educational support to promote engagement in coconut cultivation. Also, Quantitative analysis supported these findings, highlighting key factors that significantly influenced willingness to adopt coconut farming. Logistic regression analysis identified access to land as the most influential predictor, with an odds ratio of 2.8 ($p = 0.0095$), indicating that respondents with secure land tenure were nearly three times more likely to consider coconut farming. Financial resources also played a critical role, with an odds ratio of 1.9 ($p = 0.0462$), as the high initial investment in coconut farming requires financial liquidity. Access to agricultural extension services was similarly significant (odds ratio = 1.7, $p = 0.0487$), emphasizing the importance of technical guidance for farmers. Perceived profitability had a near-significant impact (odds ratio = 1.8, $p = 0.0510$), suggesting that respondents who viewed coconut farming as financially rewarding were more inclined to adopt it.

RECOMMENDATIONS

Based on the findings, the following recommendations were made: The government and relevant stakeholders should implement policies that promote secure land tenure for smallholder farmers. There is a need to enhance the capacity and reach of agricultural extension services, particularly in remote areas. Extension officers should be trained to provide specialized support in coconut cultivation, including pest management, agroforestry techniques, and market linkages. Financial institutions should develop financial products, such as low-interest loans and input credits, to support farmers interested in coconut cultivation. Government subsidies or grants for small-scale farmers could also reduce the high initial costs associated with coconut farming.

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