On the factors affecting the adoption of coffee farming in Alangalang, Leyte, Philippines: A descriptive-correlational approach

Glydel Joyce S. Lodero
Visayas State University, Visca, Baybay City, Leyte, Philippines
E-mail: elagumbay12201990@gmail.com

Jemboy M. Cadenas
Visayas State University, Visca, Baybay City, Leyte, Philippines
E-mail: leomarich_casinillo@yahoo.com

Donna V. Pagliawan
Visayas State University, Visca, Baybay City, Leyte, Philippines
E-mail: leomarichcasinillo02011990@gmail.com

Leomarich F. Casinillo*
Visayas State University, Visca, Baybay City, Leyte, Philippines
E-mail: leomarich.casinillo@g.msuiit.edu.ph

Melbert O. Hungo
Southern Leyte State University-Tomas Oppus, Philippines
E-mail: mhungo@southernleytestateu.edu.ph

*Corresponding Author

Received: *24/06/2025* ***Revised***: *25/07/2025* ***Accepted***: 31*/07/2025*

Abstract

This study aimed to analyze the factors affecting the adoption of coffee farming in the municipality of Alangalang, Leyte, Philippines. A total of 65 coffee farmers registered in the Local Government Unit served as respondents for this research. A structured survey questionnaire was used to collect data, which was then analyzed using descriptive statistics, and Spearman rank correlation. The findings revealed that the respondents were predominantly middle-aged females, most of whom had attained elementary to high school education and operated small to medium-sized farms. Four key categories of factors were identified: economic, environmental, institutional and social. Economic and institutional factors particularly access to subsidies and extension services were rated highly significant in influencing adoption. Major problems identified include lack of access to quality planting materials, limited government support, low farmgate prices, and inadequate training and extension services. These findings highlight the need for enhanced extension services, access to inputs, financial support, training, and infrastructure development to boost the adoption and sustainability of coffee farming in Alangalang, Leyte.

Keywords: Adoption, Coffee Farming, Support Services

Introduction

Coffee is produced by grinding and roasting the coffee plant beans (Kartika & Setiawan, 2020). It has been recognized as one of the world's most popular beverages and non-alcoholic beverages in international trade (Gois et al., 2023). It ranks as a crucial commercial crop and one of the most extensively traded commodities worldwide and stands

as the second most significant agricultural export product after cocoa (Naik et al., 2021). Being the fifth most imported agricultural product, the coffee industry demonstrates considerable potential for growth (Nagaveni et al., 2024). Coffee is a tropical evergreen shrub belonging to the Rubiaceous family, with major species including Arabica, Robusta, Liberica, and Excelsa. In the Philippines, Bukidnon is known for various coffee brands, while BARMM leads in national production, followed by Davao Region and Soccsksargen. Together, these regions contributed 71.8% of the country's coffee output (Luat et al., 2021). From April to June 2023, green coffee bean production rose by 1.8% compared to the previous year, while the total area planted with coffee slightly declined by 0.1%.

In recent years, the Philippine coffee industry has faced many challenges, such as shrinking coffee farms, low-quality beans due to poor farming methods, and low productivity, leaving farmers struggling to earn a fair income. Because of these issues, coffee production in the country has been declining for over ten years, even though local demand for coffee continues to grow (Habaradas & Mia, 2021). Hence, this study aims to analyze the factors affecting the adoption of coffee farming in Alangalang, Leyte. Coffee farming is a source of pride for the Alangalang. The terroir of the locality adds to the special flavor and smell of coffee beans. Though coffee is a key agricultural commodity with both national and worldwide relevance, there is a distinct lack of local studies concentrating on Alangalang coffee. This gap lives critical challenges, such as declining productivity, poor farming practices, resource limitations, and low adoption of coffee farming, largely unaddressed in the area.

Additionally, while the region holds potential for producing high-quality coffee with unique flavor profiles, there is limited research on the specific factors influencing farmers' adoption of coffee farming, socio-demographic, as well as the problems that farmers encountered. The lack of specific guidance for promoting market access, sustainability, and productivity limits the possible expansion of coffee production in the municipality even more. This study aims to close these gaps by means of a thorough investigation of the factors influencing the adoption of coffee farming in Alangalang, therefore providing useful suggestions to improve local farmers' capacity and help the growth of the local business. This study examines the factors influencing the adoption of coffee farming in Alangalang, Leyte, with a focus on the barangays of Binotong, Binongtoan, Bugho, Lourdes, Mudburon, San Francisco West, Santol and Tombo. For several of reasons, knowing the factors driving the adoption of coffee production in these places is absolutely vital. It seeks to offer insightful analysis on the present situation of coffee in Alangalang, Leyte, a developing industry with huge future prospects.

This study generally aimed to analyze the factors affecting the adoption of coffee farming in Alangalang, Leyte. Specifically, it aimed to: (1) describe the socio-demographic profile of the respondents; (2) determine the different factors influencing the adoption of coffee production; (3) analyze the relationship between socio-demographics and the factors affecting the adoption of coffee production; (4) determine the issues farmers face when producing coffee; and (5) recommend workable solutions to the current issues and encourage the growth of Alangalang, Leyte's coffee industry. The results of this study will provide baseline information for municipal coffee growers, therefore guiding their knowledge of the factors influencing their decision of method of cultivation. By means of these important elements, the research can direct farmers to improve their sustainability and output. Moreover, the findings of this research will help nearby producers by providing useful suggestions for overcoming resource constraints, enhancing farming methods, adjusting to market needs, and resolving issues in coffee output. The results can be used by policymakers

and agricultural extension services to create focused assistance programs including resource allocation plans and capacity building projects meant to boost coffee farming in Alangalang. Generally, this study helps the local coffee business, which has a good market in Ormoc City and a place for development in other regions. In line with sustainable economic objectives, the study supports income generating for farmers and agricultural development in the area by encouraging the expansion of the coffee industry.

Framework of the Study

The conceptual framework of this study demonstrates the interconnectedness between farmers' socio-demographics and the factors influencing their adoption of coffee farming—including economic, environmental, institutional, and social factors. These in turn affect farmers' decisions, which ultimately impact the productivity and sustainability of coffee farming in the municipality of Alangalang, Leyte, Philippines**.** In the context of this study, farmers' socio-demographic profiles (like age, education, farm size, and years in farming, etc.) influence how open they are to adopting coffee farming. These characteristics affect whether they are more likely to adopt early or late. The factors affecting adoption such as economic conditions, environmental aspects, institutional support, and social influences serve as external conditions that can either encourage or discourage adoption.

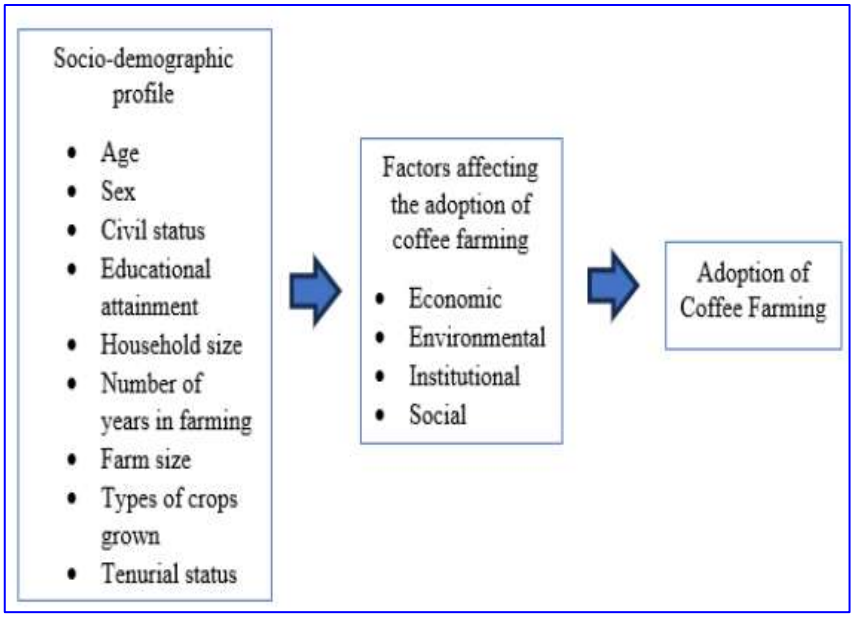

Figure 1: Conceptual framework of the study.

Methodology

Research Design

The aim of this study is to determine the factors affecting the adoption of coffee production among farmers; hence, the descriptive-correlational research design was employed. The goal of the said design is to describe the characteristics and nature of the variables of interest or phenomenon and examine the association between two or more variables without manipulation (Casinillo & Suarez, 2022). In that case, the study used descriptive statistical measures to summarize the collected data and employed correlational analysis as an inference in determining the significant relationship among variables.

Research Locale, Respondents, and Sampling Procedure

The study is set in Alangalang, Leyte, where agriculture is shifting from traditional farming to a modern, mechanized, and market-driven system. Backed by the DA, private-sector partners like Chen Yi Agventures, and VSU's educational expertise, Alangalang is becoming a key contributor to Leyte's rice granary. The coffee industry, established after Typhoon Yolanda in 2013, is gaining momentum. According to the Municipal Agriculture Office, local plantations have produced coffee since 2018, boosted by DA programs like the High-Value Crops Development Program and CFIDP. Alangalang now has 48.9 hectares of coffee land, showing its strong potential for coffee production. The study was conducted in various barangays in Alangalang, Leyte, namely Binongto-an, Binotong, Bugho, Lourdes, Mudboron, San Francisco West, Santol, and Tombo. These barangays are primarily agricultural communities where rice farming serves as the main livelihood. In addition to rice farming, some residents also engage in corn and vegetable farming to enhance food supply and economic stability. Other common sources of income include coconut farming (copra), production of native delicacies such as *kakanin*, vegetable vending, tuba production, and employment in government or skilled labor.

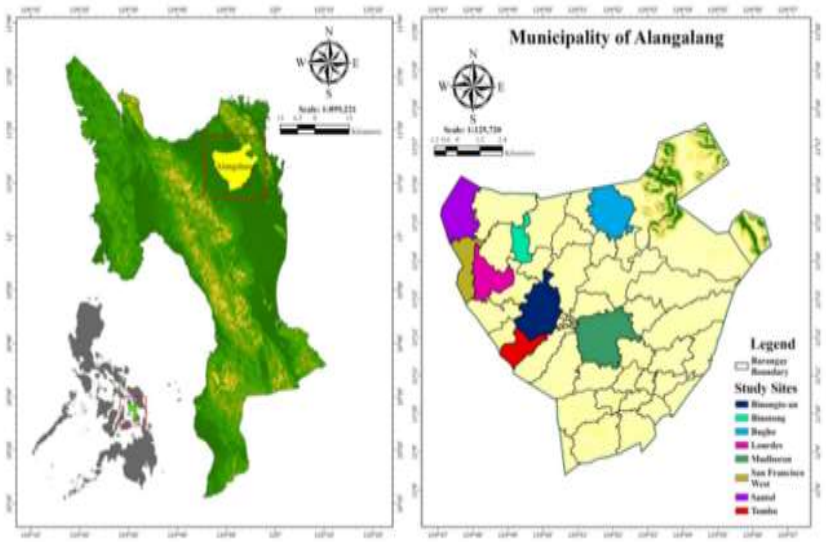

Figure 2: Location of the Study Site

This study employed complete enumeration, wherein all coffee farmers registered in the Local Government Unit in Alangalang, Leyte served as respondents. According to Maguire-Rajpaul et al., (2020), complete enumeration involves collecting data from every single member of a population, ensuring comprehensive coverage and eliminating the possibility of sampling bias. This approach also ensured that every coffee farmer's socio-demographic characteristic, factors in adopting coffee farming, and challenges were comprehensively captured.

Table 1: Geographical distribution of the respondents by barangay in Alangalang, Leyte.

Barangay	Number of respondents
Binotong	4
Binongtoan	7
Bugho	1
Lourdes	1
Mudboron	1
Santol	16
San Francisco West	21
Tombo	14
Total	**65**

Source: Authors' own construction (2025).

Research Ethics and Questionnaire, and Data Gathering

Prior to data collection, a formal request letter was sent to the Municipal Agriculture Office (MOA) to obtain the list of registered coffee farmers. Another request letter to conduct the study was sent to the respective barangays. The data was gathered through a researcher-made survey questionnaire, which was constructed in English and then translated into *the waray-waray* dialect. The survey questionnaire was divided into four sections including (a) the Socio-demographic profile of the farmers, (b) Different factors influencing the adoption of coffee production, (c) Problems encountered by farmers in the adoption of coffee production, (d) Recommended solutions to address the existing problem and promote the expansion of coffee production in Alangalang, Leyte. Before collecting data, the researcher first informed the respondents about Republic Act 10173, officially known as the Data Privacy Act of 2012, which is the Philippines' data privacy law. This law aimed to protect the fundamental human right of privacy and communication while ensuring the free flow of information to promote innovation and growth, and to secure and protect personal information in information and communication systems in both the government and private sectors. Throughout the interview process, the respondents' answers were recorded using a digital recorder with their permission. Recording the data using a digital recorder ensured the accuracy and completeness of the respondents' answers, allowing the researcher to capture details that might have been missed during note-taking. It also provided a reliable reference for verifying and analyzing responses during the data interpretation stage.

Data Analysis

The data were analyzed using descriptive statistics, including frequency distribution, percentages, means, and standard deviation to establish the socio-demographic characteristics of the respondents. A 4-point Likert scale was adopted based on the study of (Diro et al., 2022) to determine the factors influencing the adoption of coffee production, with the following categories: 1.00 - 1.75 (Not Significant), 1.76 - 2.50 (Slightly Significant), 2.51 - 3.25 (Moderately Significant), and 3.26 - 4.00 (Highly Significant). To evaluate the extent of the problems faced by coffee farmers, a 4-point Likert scale was utilized as well, categorized as: 1.00 - 1.75 (A problem), 1.76 - 2.50 (A problem but not serious), 2.51 - 3.25 (A serious problem), and 3.26 - 4.00 (A very serious problem). Spearman correlation was applied to analyze whether there is a significant relationship between the socio-demographic characteristics and the factors affecting farmers' decisions to adopt coffee production and tested at standard significance level.

Results and Discussion

Socio-Demographic Profile of the Respondents

The socio-demographic of all 65 coffee farmers in Alangalang, Leyte shown in Table 2 reveals that the majority are senior citizens (44.62%) with an average age of 56 years old. This indicates that coffee farming in the area is largely dominated by older individuals, a trend that reflects national data reported by the Philippine Statistics Authority, which stated that the average age of Filipino farmers is around 57 years old (Philippine Statistics Authority, 2023). A similar pattern was observed in Silang, Cavite, where the average age of farmers reached 62, raising concerns about the declining involvement of younger generations in agriculture (Castillo et al., 2024). Most of the respondents in Alangalang are female (73.85%) and married (83.08%), suggesting a female-involved and family-based farming structure. This finding is consistent with a study conducted in Sultan Kudarat that found women play an important role in the coffee value chain, particularly in post-harvest operations (Manalo IV et al., 2025).

Educational attainment is generally low, with 44.61% having reached only the elementary level. This trend is consistent with research in Balbalan, Kalinga, where a significant portion of coffee farmers had not completed high school, limiting their capacity to access government and training programs (Lappao & Castillo, 2023). Household sizes among respondents are fairly balanced, with small households (1–3 members) being slightly more common (36.92%). Similar household patterns were observed in various upland farming communities where limited family labor could impact productivity (Irawan, 2025). Interestingly, more than half of the respondents (55.38%) had been active in farming for less than three years, indicating the presence of relatively new coffee growers in the area. While not common in all areas, similar observations were made in training-focused barangays in Batangas and Kalinga, where land conversion and return migration introduced new, less-experienced farmers (Castro, 2020). The majority (53.85%) operate on farms smaller than 1 hectare, identifying them as smallholder farmers—an attribute common among coffee growers across the Philippines, as seen in Balbalan, where 71.43% farmed under 0.5 hectares (Purwanto et al., 2020).

Robusta is the most extensively farmed coffee variety (92.308%), owing to its aptitude for lowland climates and disease tolerance, as evidenced by research in Cavite and Sultan Kudarat. In terms of land tenure, nearly half are landowners (47.692%) while the rest are tenants (52.308%). This pattern mirrors the findings in Kalinga, where land access was a mix of ownership and tenancy (Castillo et al., 2024). Farming is the main source of income for the majority (66.154%), with limited alternative income sources reported by only 26.154% of respondents. This reliance on agriculture as the sole livelihood is also evident in similar upland farming communities, where coffee production is the primary source of sustenance (Irawan, 2025). The predominant occupation is farming (83.077%), further reinforcing their economic dependence on agriculture. Notably, most households (95.385%) fall below the poverty threshold of ₱10,957 per month, with an average monthly income of only ₱4,169.00. This income level is consistent with other findings across coffee-growing regions like Amadeo, Cavite, where small-scale coffee farmers earn between ₱5,000 and ₱20,000 annually (Castillo et al., 2024). Overall, these findings highlight the vulnerability of coffee farmers in Alangalang, Leyte, particularly in terms of age, education, land size, and economic stability. They underscore the urgent need for government support, training programs, and sustainable development initiatives aimed at empowering smallholder farmers and ensuring the long-term viability of the coffee industry.

Factors influencing the adoption of coffee production

Table 3 shows the analysis of economic factors. It reveals that their overall influence on coffee farming in Alangalang, Leyte is moderately significant. Among these, the availability of government subsidies or financial support emerges as the most critical factor. The moderately significant influence of economic, environmental, institutional, and social factors suggests that adoption is multifaceted and driven by more than just financial incentives. Understanding these dimensions implies that interventions must be holistic—addressing not just subsidies or inputs, but also community support, cultural traditions, and institutional trust. This aligns with the findings of Martiningsih et al., (2023), who emphasized the role of financial assistance in helping farmers access essential inputs and sustain their production, particularly given the challenges they face in accessing formal credit. Government support is therefore seen not only as a financial lifeline but also as a key enabler of productivity. Income generation is also seen as a strong motivator. The findings of Bracken et al., (2023) that coffee production still yields viable returns despite the negative effects of climate change and Prasetyo et al., (2022) that Robusta coffee farming may be effective even with small farm sizes support this. These data indicate that local farmers regard coffee farming as a useful source of income, emphasizing its significance in rural income profiles.

High market demand, while moderately significant in the study, may not be fully capitalized on by local farmers due to production and supply constraints. Qian et al., (2024) emphasize this gap, stating that while demand for coffee in the Philippines is increasing, local production remains insufficient, resulting in dependency on imports. This highlights a missing economic opportunity for smallholder farmers who could have benefited from better support and value chain integration. Low input costs, including seeds, fertilizer, and labor, were viewed as only slightly significant. This reflects findings by Wandeto (2023), which reported that labor and fertilizer make up the bulk of coffee production expenses, reducing the impact of input affordability on production decisions. Lastly, the availability of a stable coffee market was considered not significant by respondents, likely due to market volatility and the absence of assured pricing. Milgram (2021) observed similar challenges in Sultan Kudarat, where farmers struggled with market uncertainty and were unable to consistently access profitable outlets.

Table 2: Economic factors

Economic factors	Weighted Mean	Std. Deviation	Descriptive Rating
1. Income generation	3.415	1.014	Highly significant
2. Availability of government subsidies or financial support	3.785	0.649	Highly significant
3. High market demand	3.185	1.171	Moderately significant
4. Low input costs (seeds, fertilizer, pesticides, and labor influence production)	2.154	1.417	Slightly significant
5. Availability of a stable coffee market	1.6	0.898	Not significant
Average Weighted Mean	**2.828**	**0.602**	**Moderately significant**

Note: 1.00-1.75 (Not significant); 1.76-2.50 (Slightly significant); 2.51-3.25 (Moderately significant); 3.26-4.00 (Highly significant). Source: Authors' own calculation (2025).

The analysis of environmental factors reveals that their influence on coffee farming in Alangalang, Leyte ranges from slightly to moderately significant. Family or community tradition stands out as a key motivator, highlighting the role of generational knowledge and cultural ties in shaping farming practices. This is supported by Castillo et al., (2024), who found that in Cavite, traditional knowledge strongly influences coffee production decisions. Pest and disease resistance also received a moderately significant rating, indicating farmers' concern about environmental threats to crop health. Similar results were noted by

Cabangbang-Jaranilla et al., (2025), who concluded that maintaining coffee growing in Davao Oriental requires a high priority on pest management.

Meanwhile, climate, soil conditions, and water availability were rated as slightly significant, suggesting that although these natural factors matter, they are not major barriers to production. Bracken et al., (2023) found similar results in Benguet, where farm practices were more influential than soil or climate conditions. Topography was seen as not significant, likely due to the relatively even terrain in Alangalang, unlike in mountainous coffee-growing regions. Overall, these results emphasize the importance of cultural values and pest management in coffee farming. Strengthening these areas through extension services could enhance productivity, as also recommended by Rhiney et al., (2020).

Table 3: Environmental factors

Environmental factors	Weighted Mean	Std. Deviation	Descriptive Rating
1.Pest and disease resistance	3.123	0.96	Moderately significant
2.Influence of family or community tradition	3.215	1.244	Moderately significant
3.Favorable climate and soil condition	2.431	1.145	Slightly significant
4.Water Availability	2.508	1.062	Slightly significant
5.Topography	1.292	0.701	Not significant
Average Weighted Mean	**2.514**	**0.595**	**Moderately significant**

Note: 1.00-1.75 (Not significant); 1.76-2.50 (Slightly significant); 2.51-3.25 (Moderately significant); 3.26-4.00 (Highly significant).Source: Authors' own calculation (2025).

Table 4 shows the findings indicate that institutional factors have a moderately significant influence on coffee farming in Alangalang, Leyte. Among these, government support and access to extension services emerged as the most influential. This reflects the farmers' strong reliance on institutional support and technical guidance to enhance productivity and improve farming practices. This is consistent with the findings of Malinao (2022), who emphasized the importance of the Department of Agriculture's initiatives, such as nursery development and distribution of planting materials, in strengthening the Philippine coffee sector. Education and training were also recognized as important, suggesting that farmers value capacity-building and knowledge-sharing. This aligns with efforts by institutions like TESDA and Nestlé Philippines, which have partnered to offer training programs aimed at empowering farmers with sustainable coffee production techniques (Ihsaniyati et al., 2024).

Conversely, access to credit and market linkages were perceived as not significant by the respondents. This may imply that local farmers either lack formal engagement with credit institutions and broader markets or depend on informal networks for their financial and selling needs. According to Milgram (2021), many coffee farmers in the Philippines face similar challenges, as limited access to financing and unstable market channels remain persistent barriers to growth. Overall, the results underscore the need to strengthen extension services and government programs in the area. At the same time, there is an opportunity to enhance access to credit and build stronger market linkages, which could further support the economic sustainability of coffee farming in Alangalang.

Table 4: Institutional factors

Institutional factors	Weighted Mean	Std. Deviation	Descriptive Rating
1.Access to extension services	3.523	0.937	Highly significant
2.Government support	3.785	0.673	Highly significant
3.Access to extension services	3.523	0.937	Highly significant
4.Education and Training	3.246	0.884	Moderately significant
5.Market access and Linkages	1.462	0.812	Not significant
Average Weighted Mean	**2.631**	**0.479**	**Moderately significant**

Note: 1.00-1.75 (Not significant); 1.76-2.50 (Slightly significant); 2.51-3.25 (Moderately significant); 3.26-4.00 (Highly significant). Source: Authors' own calculation (2025).

Table 5 reveals that social factors exert a moderately significant influence on coffee farming in Alangalang, Leyte. Notably, participation in social groups, personal interest, and family support were perceived as highly significant. This suggests that farmers are strongly driven by their passion for coffee cultivation, the encouragement they receive from family members, and their engagement in farmer organizations. These social elements not only foster emotional and motivational support but also create avenues for knowledge-sharing and collaborative problem-solving. This finding is supported by Maspul and Almalki (2023), who emphasized that strong community involvement enhances the sustainability of coffee farming practices. Similarly, Fitriyah et al., (2025) found that participation in farmer groups and family support play critical roles in ensuring the continuity and success of coffee farms. Meanwhile, knowledge and awareness, along with community influence, were rated as moderately significant, indicating that while these factors contribute to farmers' decisions, they are secondary to more immediate social motivators like passion and organizational involvement. This aligns with the observations of Silvert et al., (2022), who noted that while informal community communication channels do facilitate the spread of agricultural knowledge, they often complement rather than lead farming engagement.

Interestingly, farming experience was rated as only slightly significant, suggesting that the length of time spent farming may not have a strong influence on current practices. Instead, the ability to adapt and stay connected through social networks and learning opportunities appears to be more impactful. This is consistent with Sutherland and Marchand (2021), who emphasized that experiential knowledge becomes more effective when reinforced by family and peer support systems. Overall, these findings underscore the critical role of social networks, farmer groups, and family support in sustaining coffee farming in Alangalang. Strengthening these structures, along with promoting community-based training and knowledge-sharing activities, could further enhance farmers' resilience, adaptability, and productivity in the coffee sector.

Table 5: Social factors.

Social factors	Weighted Mean	Std. Deviation	Descriptive Rating
1. Personal interest or passion	3.631	0.601	Highly significant
2. Family support	3.277	1.193	Highly significant
3. Participation in Social Groups (e.g., farmers associations)	3.862	0.527	Highly significant
4. Knowledge and Awareness	2.615	0.93	Moderately significant
5. Community influence	3.092	1.284	Moderately significant
6. Farming Experience	2.308	1.211	Slightly significant
Average Weighted Mean	**3.125**	**0.675**	**Moderately significant**

Note: 1.00-1.75 (Not significant); 1.76-2.50 (Slightly significant); 2.51-3.25 (Moderately significant); 3.26-4.00 (Highly significant).Source: Authors' own calculation (2025).

Relationship between socio-demographic and factors influencing the adoption of coffee production

The results of Spearman's rank correlation analysis show that various socio-demographic factors have differing degrees of influence on coffee farming practices in Alangalang, Leyte. Age, sex, and civil status do not demonstrate significant correlations with any of the four factors (economic, environmental, institutional, social), suggesting that these variables have minimal impact on the coffee farming experience in the region. This finding aligns with studies by Rigg et al., (2020), who also observed that factors such as age and gender are not strongly associated with farming practices and that farmers' decisions are often driven by more immediate practical factors. However, educational attainment is significantly correlated with economic factors (p-value= 0.001), indicating that farmers with higher education levels tend to place less emphasis on economic factors when making decisions. This may reflect a broader perspective among educated farmers who prioritize sustainable practices and long-term farm resilience over immediate economic gain. Flannery et al., (2024) noted that farmers with formal education are more likely to adopt sustainable and knowledge-based farming approaches, reducing reliance on short-term profit. Additionally, educational attainment is also significantly related to institutional factors (p-value=0.031), suggesting that better-educated farmers are more likely to access and benefit from institutional programs and government interventions. This observation is consistent with Prajapati et al., (2025), who found that education enhances farmers' capacity to engage with agricultural institutions, leading to improved adoption of technologies and increased participation in development initiatives.

The number of years in farming is significantly correlated with social factors (p-value= 0.011), implying that farmers with more experience tend to place greater value on community involvement and social networks. This supports the findings of Zhang et al., (2020), who emphasized the importance of peer and family support in shaping farmers' practices, as experienced farmers are more likely to rely on established social networks for knowledge sharing and collaboration. Farm size is also significantly correlated with both economic (p-value= 0.043) and social factors (p-value= 0.014), suggesting that larger farms prioritize economic considerations and are more involved in community organizations. This supports Scott and Richardson (2021), who found that farm size plays a critical role in determining the extent to which farmers are integrated into social networks, which, in turn, can influence their farming practices. Types of coffee grown show a significant positive correlation with institutional factors (p-value= 0.044), suggesting that farmers cultivating specific types of coffee are more likely to rely on or benefit from institutional support. This aligns with the work of Sekyi et al., (2023), who demonstrated that farmers growing specialized crops tend to engage more with institutions that offer technical assistance and resources.

Furthermore, tenurial status is significantly correlated with economic factors (p-value= 0.009), reinforcing the notion that secure land tenure plays a crucial role in a farmer's economic decision-making. This outcome is in line with research by Barbanente et al., (2024), who maintained that land tenure security allows farmers to participate in government programs and make larger farming investments. The marginal correlation between tenurial status and institutional factors (p-value= 0.051) suggests that land tenure may also influence farmers' access to institutional support, a finding that echoes the work of Abab et al., (2023), who observed that land tenure security influences farmers' engagement with institutional support programs. On the other hand, variables such as household size, main source of income, other sources of income, and estimated monthly income do not show significant correlations with any of the four factors, indicating that these socio-demographic characteristics do not significantly affect farmers' decisions or perceptions regarding coffee

farming. This is in line with Addai et al., (2022), who found that income levels and household size did not significantly impact the adoption of farming practices, suggesting that farmers' decisions are more influenced by other contextual factors, such as social networks and institutional support. Significant correlations between variables such as education, farm size, tenure, and adoption drivers indicate that personal and farm characteristics shape how farmers perceive and respond to opportunities and constraints (Casinillo, 2022; Casinillo, 2023). This implies that development programs must be customized according to these characteristics to increase adoption success.

Issues When Producing Coffee

The findings reveal that coffee farmers in Alangalang, Leyte face multiple challenges that hinder the adoption and sustainability of coffee farming, with financial constraints emerging as the most pressing issue. In particular, the lack of access to loans or financial assistance is viewed as a very serious problem. This result supports the findings of Soliwoda (2020), who emphasized that limited financial access restricts farmers' ability to invest in essential inputs and technologies necessary for improving farm productivity. While access to coffee technology is not broadly perceived as a major concern, specific issues such as the lack of modern farming tools and institutional support are considered serious problems. This finding is similar to Prajapati et al., (2025), who emphasized the relevance of institutional engagement and cooperative systems in increasing coffee producers' access to sustainable and modern developing practices.

Climate and environmental issues, though generally rated as not serious, still pose challenges particularly irregular rainfall and drought, which are viewed as serious problems. These findings are consistent with Gogoi et al., (2025), who found that weather difficulty in the Philippines had a major impact on farmers' cropping patterns and access to water, necessitating adaptive farm management practices. Pest and disease management is another key concern, with farmers reporting serious problems caused by pests such as coffee borers and diseases like coffee rust. The lack of knowledge in effectively addressing these threats further compounds the issue. This corresponds with Nasution et al., (2024), which stressed the need for biological pest control approaches and farmer education to reduce losses in coffee production.

Labor and human resource issues such as labor shortages, high labor costs, and a lack of trained farm workers are also perceived as serious problems. These findings suggest the need for investment in rural workforce training and agricultural extension services to improve labor efficiency and knowledge (Salzwedel, 2023). Lastly, marketing and distribution concerns are generally seen as not very serious, though limited access to markets or buyers is a notable concern. This is supported by the Philippine Coffee Industry Roadmap 2017–2022, which highlights the importance of improving infrastructure, market linkages, and post-harvest systems to strengthen the competitiveness of local coffee producers (Guimarães et al., 2020). Findings show that serious issues such as lack of financing, pest and disease outbreaks, labor shortages, and limited access to tools and markets persistently hinder productivity and sustainability. These challenges imply an urgent need for responsive support systems that not only address technical gaps but also structural barriers to growth.

Recommend workable solutions

The results show that the most highly prioritized solutions by coffee farmers in Alangalang, Leyte are the establishment of local technology hubs to provide access to modern coffee farming tools and training (100% agreement) and the conduct of training sessions to upskill local workers in modern farming techniques (100% agreement). This highlights the farmers' strong desire for improved knowledge, technical skills, and access to modern equipment. Following closely are workshops on Integrated Pest Management (IPM) and the establishment of cooperatives or partnerships to directly connect farmers with buyers,

both receiving 98.46% agreement, reflecting the farmers' need for better pest control strategies and improved market access. Providing government subsidies for essential inputs like fertilizer and pesticides is also seen as very important, with 96.92% agreement. Meanwhile, the distribution of pest- and disease-resistant coffee plant varieties garnered 86.15% support, indicating the need for more resilient crops. In contrast, solutions such as introducing irrigation facilities (33.85%), facilitating access to certified high-quality coffee planting materials (12.31%), and promoting soil conservation techniques (10.77%) received lower levels of agreement, suggesting these issues are recognized but are considered less urgent compared to technology access, training, financial support, and marketing improvements. Overall, the findings emphasize that farmers prioritize solutions that immediately enhance productivity, skills, and market connectivity over environmental or infrastructural interventions.

Conclusion

Farmers who receive technical training and have sufficient livelihood, and active women were more likely to adopt improved coffee production practices. Younger and more educated farmers were more open to adopting coffee farming compared to older and less educated farmers. There were major problems identified such as lack of government support, limited access to farm-to-market roads, pest and disease issues, and lack of quality planting materials. These barriers discourage expansion and long-term investment in coffee production, especially among smallholder farmers. Organized women-led organizations on environmental protection and provided training and livelihood programs on other fruit tree production. LGU has to develop extension programs that would empower the communities including women that support coffee farming such as marketing and processing. LGU has to develop extension programs that would encourage the youth to engage in fruit tree production not only limited to coffee but also include cacao, jackfruit, and rambutan to help make them more productive. With the anticipated increase in coffee production in the coming years, it is imperative to strengthen marketing support for local coffee growers. This can be achieved through comprehensive market research, the establishment of strong market linkages, and effective product consolidation strategies. These efforts will help position Alangalang as a leading hub for the coffee industry in region 8, boosting its competitiveness and visibility in both local and regional markets.

References

Abab, S. A., Senbeta, F., & Negash, T. T. (2023). The effect of land tenure institutional factors on small landholders' sustainable land management investment: evidence from the highlands of Ethiopia. *Sustainability*, *15*(12), 9150. https://doi.org/10.3390/su15129150

Addai, K. N., Temoso, O., & Ng'ombe, J. N. (2022). Participation in farmer organizations and adoption of farming technologies among rice farmers in Ghana. *International Journal of Social Economics*, *49*(4), 529-545. https://doi.org/10.1108/ijse-06-2021-0337

Barbanente, G., Liversage, H., Agwe, J. N., & Hamp, M. (2024). Tenure security and access to inclusive rural financial services for smallholder farmers: challenges and opportunities in rural development projects. *International Journal of Business and Globalisation*, *37*(3), 309-339. https://doi.org/10.1504/ijbg.2024.139817

Bracken, P., Burgess, P. J., & Girkin, N. T. (2023). Opportunities for enhancing the climate resilience of coffee production through improved crop, soil and water management. *Agroecology and Sustainable Food Systems*, *47*(8), 1125-1157. https://doi.org/10.1080/21683565.2023.2225438

Cabangbang-Jaranilla, J. T., Lacuesta-Jalotjot, T. E. J., Geronimo-Isidro, F., Gabayno-Laguatan, N. A., Figueroa-Jimenez, J. J., Limbo-Dizon, J. E., ... & Dagamac, N. H. A. (2025). Decreasing suitable coffee cultivation areas under climate change in the Philippines. *Regional Environmental Change*, *25*(2), 1-14. https://doi.org/10.1007/s10113-025-02398-6

Casinillo, L. F. (2022). Econometric analysis on rice farmers' income as influenced by extension agent's role. *Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 22*(4), 149-156.

Casinillo, L. F. (2023). Analyzing the influence of Farmer Field School (FFS) on the income of rice farmers using quantile regression. *Scientific Papers Series Management, Economic Engineering in Agriculture & Rural Development, 23*(4), 177-184.

Casinillo, L., & Suarez, M. (2022). Evaluating attributes, traits, and competencies of a school leader: A descriptive-correlational study. *Indonesian Journal of Social Research (IJSR), 4*(1), 40-53. https://doi.org/10.30997/ijsr.v4i1.186

Castillo, G., Torres, A., Crema, G., Magcawas, A., & Matel, L. (2024). Socio-economic status, farm practices, and technology needs of selected coffee producer organizations in the CALABARZON region, Philippines. *International Journal of Agricultural Technology*, *20*(5), 1797-1822.

Diro, S., Tesfaye, A., & Erko, B. (2022). Determinants of adoption of climate-smart agricultural technologies and practices in the coffee-based farming system of Ethiopia. *Agriculture & Food Security*, *11*(1), 1-14. https://doi.org/10.1186/s40066-022-00385-2

Fitriyah, A. T., Sheyoputri, A. C. A., & Ahmad, A. (2025). Sustainability Analysis of Coffee Farming Business Based On Economic, Social, And Technological Dimensions. *AGRARIS: Journal of Agribusiness and Rural Development Research*, *11*(1), 89-102. https://doi.org/10.18196/agraris.v11i1.548

Flannery, S., Keaveney, K., & Murphy, F. (2024). 'It's solely for the "Green Cert"': understanding young peoples' motivation for engaging in agricultural education. *The Journal of Agricultural Education and Extension*, *30*(1), 1-20. https://doi.org/10.1080/1389224x.2022.2138928

Gogoi, N., Pathak, B., Rehman, R., Upadhyaya, S., Mahanta, P., Borah, A., ... & Bhuyan, K. (2025). Rice yield responses to climate variability in Northeast India using machine

learning approach. *Theoretical and Applied Climatology*, *156*(4), 1-17. https://doi.org/10.1007/s00704-025-05452-9

Gois, T. C., Thomé, K. M., & Balogh, J. M. (2023). Behind a cup of coffee: International market structure and competitiveness. *Competitiveness Review: An International Business Journal*, *33*(5), 993-1009. https://doi.org/10.1108/cr-10-2021-0141

Guimarães, E. R., dos Santos, A. C., Leme, P. H. M. V., & da Silva Azevedo, A. (2020). Direct trade in the specialty coffee market: Contributions, limitations and new lines of research. *Revista Eletrônica de Negócios Internacionais: Internext*, *15*(3), 34-62. https://doi.org/10.18568/internext.v15i3.588

Habaradas, R. B., & Mia, I. B. R. (2021). Bote Central: creating a chain of happiness for Philippine coffee farmers. *International Journal of Business and Society*, *22*(2), 941-959. https://doi.org/10.33736/ijbs.3769.2021

Ihsaniyati, H., Sarwoprasodjo, S., Muljono, P., & Gandasari, D. (2024). Diversity of Knowledge-Sharing Behavior to Encourage the Practice of Robusta Coffee Red-Picking (Case Study of Temanggung Robusta Coffee Farmer, Indonesia). *Journal of Sustainable Agriculture*, *39*(1), 235-254. https://doi.org/10.20961/carakatani.v39i1.82647

Maspul, K. A., & Almalki, F. A. (2023). From Cafés to Collaborative Hubs: Empowering Communities and Transforming the Coffee Value Chain in Buraydah. *EKOMA: Jurnal Ekonomi, Manajemen, Akuntansi*, *3*(1), 179-206. https://doi.org/10.56799/ekoma.v3i1.2259

Milgram, B. L. (2021). Social entrepreneurship and Arabica coffee production in the Northern Philippines: Navigating opportunities and constraints. *Human Organization*, *80*(1), 72-82.

Nagaveni, M., Devegowda, S. R., Yadav, A., Kumar, P. P., & Kushwaha, S. (2024). Trends and trade directions in the production and export of coffee. *Indian Journal of Agricultural Marketing*, *38*(1), 128-140.

Purwanto, E., Santoso, H., Jelsma, I., Widayati, A., Nugroho, H. Y., & van Noordwijk, M. (2020). Agroforestry as policy option for forest-zone oil palm production in Indonesia. *Land*, *9*(12), 531. https://doi.org/10.3390/land9120531

Qian, J., Zeng, Y., Tang, X., & Hu, X. (2024). Empowering left-behind places in Southwest China: participation in coffee value chains as place-based development. *Cambridge Journal of Regions, Economy and Society*, *17*(2), 375-392. https://doi.org/10.1093/cjres/rsae006

Rhiney, K., Knudson, C., & Guido, Z. (2020). Cultivating crisis: Coffee, smallholder vulnerability, and the uneven sociomaterial consequences of the leaf rust epidemic in Jamaica. *Annals of the American Association of Geographers*, *111*(2), 440-458. https://doi.org/10.1080/24694452.2020.1775543

Zhang, A. J., Matous, P., & Tan, D. K. (2020). Forget opinion leaders: the role of social network brokers in the adoption of innovative farming practices in North-western Cambodia. *International Journal of Agricultural Sustainability*, *18*(4), 266-284. https://doi.org/10.1080/14735903.2020.1769808