

Livelihood Interventions Under Department of Agriculture–Special Area for Agricultural Development (DA-SAAD) Program in Abra

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Abstract

This study assessed the implementation and effectiveness of livelihood interventions under the Department of Agriculture–Special Area for Agricultural Development (DA-SAAD) Program in seven geographically isolated and disadvantaged municipalities of Abra, Philippines. Guided by the Results-Based Monitoring and Evaluation Framework, Theory of Change, Program Logic Model, Sustainable Livelihoods Approach, and Stakeholder Perception Theory, the study employed a descriptive–correlational design involving 210 farmer-beneficiaries. Data were gathered using a validated, pilot-tested structured questionnaire and analyzed through descriptive and inferential statistics. Findings indicated that beneficiaries were predominantly middle-aged, married, and experienced farmers. Social preparation (mean = 4.22) and food production and livelihood support (mean = 4.32) were completely implemented, whereas marketing assistance and enterprise development (mean = 4.01) and program management (mean = 4.02) were substantially implemented. Socio-economic conditions were perceived as much improved (mean = 4.00), while productivity enhancement (mean = 4.10) and livelihood sustainability (mean = 4.07) demonstrated high effectiveness. The proportion of low-income beneficiaries decreased from 82.9% to 55.2%. Overall implementation was strongly associated with program effectiveness ($r = .708$, $p < .01$). Constraints were moderately serious (mean = 3.22), particularly inadequate farm inputs, insufficient training, limited technical assistance, and restricted market access. The study recommends improved input distribution, specialized training, enterprise development, market linkages, and institutional coordination. Its findings align with Sustainable Development Goals 1 (No Poverty), 2 (Zero Hunger), and 8 (Decent Work and Economic Growth) through their relevance to income improvement, food security, and productive livelihoods. The study supports economic, community, and institutional sustainability by informing strategies for beneficiary self-reliance, livelihood continuity, and more responsive agricultural program implementation.

Keywords: Agricultural Productivity, DA-SAAD Program, Farmer-Beneficiaries, Food Security, Geographically Isolated and Disadvantaged Areas, Livelihood Interventions, Livelihood Sustainability, Rural Poverty, Socio-Economic Improvement

1. Introduction

The Department of Agriculture's Special Area for Agricultural Development (DA-SAAD) Program is a government initiative designed to reduce rural poverty, strengthen food security, and improve agricultural livelihoods in geographically isolated and disadvantaged communities in the Philippines. Through agricultural inputs, technical assistance, institutional development, and enterprise support, the program seeks to improve the socio-economic conditions of marginalized farmers. However, its effectiveness depends not only on the delivery of assistance but also on the capacity of beneficiaries to sustain productive and income-generating activities. This study, titled "Livelihood Interventions Under the DA-SAAD Program in Abra," assesses the implementation and effectiveness of livelihood interventions among farmer-beneficiaries in selected Geographically Isolated and Disadvantaged Areas (GIDAs) of Abra. It examines beneficiary characteristics, intervention implementation, socio-economic outcomes, livelihood sustainability, and technical, financial, market, and institutional constraints to provide evidence for improving agricultural development programs.

The Department of Agriculture's Special Area for Agricultural Development (DA-SAAD) Program was implemented beginning in 2017 to address rural poverty, improve agricultural productivity, and strengthen food security among marginalized farming and fishing communities through livelihood assistance, agricultural inputs, and capacity-building interventions (Department of Agriculture [DA], 2022). In Abra, where mountainous terrain and limited market accessibility constrain agricultural development, the program provides production inputs, technical training, and institutional assistance to smallholder farmers and agrarian reform beneficiaries (DA-SAAD, 2024). These interventions aim to strengthen agricultural production and support farmers' participation in agricultural value chains through improved market linkages, stakeholder collaboration, and value-chain development initiatives (Philippine Council for Agriculture and Fisheries [PCAF], 2022). Agricultural livelihood interventions can strengthen household resilience through diversified production, improved farming practices, and market participation (Workie, 2023). Organizing farmers into cooperatives and associations also improves collective bargaining, resource accessibility, and participation in agricultural value chains (Zhang et al., 2024). Nevertheless, evaluations frequently emphasize program outputs and administrative compliance rather than beneficiaries' actual socio-economic improvements and long-term livelihood sustainability (Annor et al., 2025). The present study therefore evaluates DA-SAAD Phase 2 livelihood interventions implemented from 2023 to 2025 in Bucloc, Boliney, Daguioman, Luba, Licuan-Baay, Sallapadan, and Malibcong. It examines the extent of implementation of social preparation, food production and livelihood support, marketing assistance and enterprise development, and program management. It further assesses their effectiveness in improving farmers' income, agricultural productivity, and livelihood sustainability while identifying constraints affecting program outcomes.

Existing literature identifies demographic characteristics, agricultural experience, livelihood assistance, training, organizational participation, and institutional conditions as important considerations in evaluating agricultural interventions. The age profile of agricultural beneficiaries reflects the aging Philippine farming population. Atillo (2022) observes that agricultural program participants are predominantly 30–60 years old, while Velza et al. (2023) report an average farmer age of 50 years. National estimates place Filipino farmers between 55 and 59 years (SEARCA, 2023), compared with an average DA-SAAD beneficiary age of 51 years (DA, 2025). Middle-aged and older farmers also constitute the majority of participants in food production programs (Lillo et al., 2025). Limited youth participation is associated with inadequate land and capital access, migration, and unfavorable perceptions of agricultural profitability (Velza et al., 2023). This raises concerns about agricultural succession and future labor availability (Viloan, 2025; Viloan, 2025). Placencia et al. (2025) emphasize balancing farming experience, physical capacity, and managerial competence in beneficiary participation. Sex and civil status influence access to agricultural resources and household participation. Annor et al. (2025) identify relatively strong female participation in targeted agricultural programs, while Perena et al. (2026) observe narrower gender differences in livestock, poultry, and high-value crop production. Group-based extension initiatives can improve equitable access to resources (Annor et al., 2025). Nevertheless, agricultural leadership and land ownership remain predominantly male (Perena et al., 2026), with similar disparities observed among rural beneficiaries (Velza et al., 2023). Women participate more actively in selected livelihood activities, including food processing and backyard production (Lillo et al., 2025). DA-SAAD beneficiary records indicate substantial female representation (DA, 2025), supported by gender-responsive agricultural initiatives (PCAF, 2026). Gender-inclusive participation may strengthen resource management and enterprise operations (Annor et al., 2025; Placencia et al., 2025). Agricultural beneficiaries are also commonly married household heads who depend on family labor and shared household resources (Annor et al., 2025; Perena et al., 2026). This differs from broader population patterns (PSA, as cited in Cordero, 2023), although agricultural registration and regional studies similarly identify married farmers as the predominant group (DA, 2025; Velza et al., 2023). Household stability, access to family labor, and community attachment can support sustained agricultural participation (Roser, 2023; Placencia et al., 2025; Dargantes et al., 2022). Conversely, unmarried and widowed beneficiaries are more frequently represented in smaller livelihood projects (Lillo et al., 2025; Velza et al., 2023). Farming experience is another important consideration. Filipino farmers generally possess extensive agricultural experience (Lillo et al., 2025), which contributes to locally developed knowledge and adaptation strategies (Lustre, 2025). Studies identify substantial

farming experience among agricultural beneficiaries (Dargantes et al., 2022; Velza et al., 2023; Lillo et al., 2025). Experienced farmers may adopt livelihood projects using established production knowledge (DA, 2025), although prolonged reliance on traditional practices can create challenges in technological adaptation and generational succession (Dargantes et al., 2022). The type of livelihood assistance also influences intervention effectiveness. Diversified agricultural support, including crops, livestock, fisheries, postharvest facilities, and enterprise development, can reduce production risks and improve household resilience (Bureau of Fisheries and Aquatic Resources [BFAR], 2024; DA, 2026). Crop-livestock integration helps protect vulnerable households against climate-related production losses (Workie, 2023). However, production assistance alone is insufficient for sustained poverty reduction. Market linkages, value addition, and collective enterprise development are necessary to strengthen economic independence (ACIAR, 2025; BOI, 2025). The duration of program participation and access to training further affect livelihood development. Agricultural extension programs emphasize sustained engagement to support the transition from initial production assistance to enterprise independence (Encyclopedia of Agricultural Extension, 2026). DA-SAAD similarly promotes progressive capacity development and market participation (DA-SAAD, 2025; DA, 2026). Continuous technical and financial training strengthens production efficiency, bookkeeping, and enterprise management (Annor et al., 2025; DA, 2025). Organizational membership also improves access to agricultural services and collective resources (Zhang et al., 2024). Formal cooperatives can support enterprise growth (Avila et al., 2025), although registration requirements, capital contributions, and financial risks may limit participation (DA, 2026). Collective marketing and shared logistics can improve long-term economic viability (DA, 2025). Despite these opportunities, implementation constraints remain significant. Limited extension services, inadequate technical assistance, and insufficient adaptation of agricultural technologies to local conditions reduce program effectiveness (Annor et al., 2025; ACIAR, 2025). Inappropriate production technologies may increase vulnerability to environmental shocks (Workie, 2023), while inadequate postharvest infrastructure contributes to agricultural losses (World Bank, 2025; BOI, 2025). Sustained technical coaching and maintenance training are therefore necessary (Dargantes et al., 2022; Placencia et al., 2025). Financial constraints include limited credit access, inadequate operating capital, delayed input delivery, and weak financial management (World Bank, 2025; Workie, 2023; DA, 2026; Placencia et al., 2025). Insufficient reinvestment and cooperative capitalization further weaken enterprise continuity (ACIAR, 2025; Avila et al., 2025). High transportation costs also reduce agricultural profitability (Annor et al., 2025; BOI, 2025). Market-related constraints involve limited buyer connections, price uncertainty, high logistics costs, and inadequate product handling facilities (World Bank, 2025; ACIAR, 2025; BOI, 2025; Annor et al., 2025). Weak aggregation and postharvest systems restrict access to higher-value markets (Avila et al., 2025; Workie, 2023). Consequently, enterprise development and commercial management support are essential to maintaining market participation beyond government assistance (DA, 2026; Placencia et al., 2025). Institutional constraints include weak interagency coordination, procurement delays, inadequate organizational governance, and insufficient extension personnel (World Bank, 2025; DA, 2026; Avila et al., 2025; ACIAR, 2025; DA, 2025). Personnel turnover and inconsistent monitoring can weaken beneficiary trust and program continuity (Annor et al., 2025). Political and administrative changes may also disrupt the long-term support required for sustainable rural enterprises (Placencia et al., 2025; Workie, 2023).

At the local level, Abra's mountainous geography, limited infrastructure, and restricted market accessibility create challenges for agricultural productivity and livelihood development. The seven selected GIDA municipalities experience conditions that justify targeted agricultural assistance. DA-SAAD Phase 2 addresses these challenges through livelihood inputs, capability-building activities, institutional strengthening, and enterprise development intended to improve household income and agricultural sustainability. At the national level, the DA-SAAD Program supports Philippine efforts to reduce rural poverty and strengthen agricultural productivity. Its transition from primarily production-oriented assistance toward community-based enterprise development emphasizes value addition, market participation, and organizational self-reliance. The Department of Agriculture also commissioned a terminal evaluation and impact assessment of the SAAD Program covering its 2017–2022 implementation period. The assessment was designed to examine program achievements, intended outcomes, and sustainability concerns, emphasizing the importance of evaluating livelihood interventions beyond the initial delivery of agricultural assistance (Philippine Institute for Development Studies [PIDS], n.d.). However, the aging farming population, unequal access to resources, inadequate agricultural financing, and limited extension services continue to constrain sustainable agricultural development. At the broader international level, agricultural development literature emphasizes diversified livelihoods, institutional support, market integration, and climate resilience as important elements of rural poverty reduction. These concerns are particularly relevant to marginalized farming communities where limited infrastructure, financial resources, and market opportunities affect livelihood sustainability. Evaluating DA-SAAD interventions in Abra therefore provides localized evidence relevant to wider discussions on agricultural development, social protection, and sustainable rural livelihoods.

This study integrates the Results-Based Monitoring and Evaluation (RBME) Framework, Theory of Change (ToC), Program Logic Model, Sustainable Livelihoods Approach (SLA), and Stakeholder Perception Theory to examine the implementation and effectiveness of DA-SAAD livelihood interventions. The RBME Framework links program inputs, activities, outputs, outcomes, and impacts to measurable development objectives (Kusek &

Rist, 2004). As the primary evaluation framework, it guides the assessment of DA-SAAD interventions through implementation indicators and socio-economic outcomes. The Theory of Change explains the expected relationships between livelihood assistance, capacity building, institutional support, and sustainable agricultural development while recognizing external influences such as market conditions and environmental risks (Weiss, 1995; Rogers, 2008). The Program Logic Model establishes the relationship between available resources, implementation processes, and intended outcomes (McLaughlin & Jordan, 1999). It supports the study's Input–Process–Output (IPO) framework by organizing beneficiary characteristics, livelihood interventions, and implementation constraints as inputs; survey administration, data collection, and analysis as processes; and program effectiveness indicators and policy recommendations as outputs. The Sustainable Livelihoods Approach emphasizes human, financial, physical, natural, and social capital as foundations of livelihood resilience (DFID, 1999). It provides a basis for examining how differences in beneficiaries' resources, institutional access, and environmental conditions influence their capacity to sustain agricultural activities. Stakeholder Perception Theory complements these frameworks by recognizing the importance of beneficiaries' evaluations of program delivery, institutional performance, and intervention outcomes. Collectively, these frameworks guide the assessment of DA-SAAD implementation in social preparation, food production and livelihood support, marketing assistance and enterprise development, and program management. Effectiveness is examined through income improvement, productivity enhancement, and livelihood sustainability, while technical, financial, market, and institutional constraints are considered potential influences on program performance. The framework also supports examining relationships among beneficiary profiles, implementation levels, effectiveness, and the seriousness of encountered constraints.

Although agricultural development studies document the importance of livelihood diversification, technical assistance, financial resources, and market participation, existing program evaluations frequently emphasize administrative accomplishments and assistance delivered rather than beneficiary-level socio-economic outcomes. Limited attention to farmers' experiences, implementation constraints, and the sustainability of livelihood activities creates a need for a more comprehensive assessment of DA-SAAD interventions in geographically isolated communities. In Abra, the relationship between beneficiary characteristics, intervention implementation, and livelihood effectiveness requires closer examination. Geographic isolation, inadequate infrastructure, limited financial resources, and institutional challenges may influence the extent to which agricultural assistance produces sustained improvements in income and productivity. Evaluating these relationships can identify operational weaknesses and provide evidence for strengthening agricultural extension and enterprise development. Accordingly, this study aims to assess the effectiveness of DA-SAAD Phase 2 livelihood interventions among farmer-beneficiaries in selected GIDA municipalities of Abra. Specifically, it examines beneficiaries' demographic and agricultural profiles, including age, sex, civil status, farming experience, livelihood type, year of program entry, training participation, and organizational membership. It determines the implementation levels of social preparation, food production and livelihood support, marketing assistance and enterprise development, and program management. It also evaluates socio-economic improvements, income enhancement, livelihood productivity, sustainability, and the seriousness of technical, financial, market, and institutional constraints. Furthermore, the study investigates the relationships between beneficiary profiles and intervention implementation, beneficiary profiles and program effectiveness, implementation and effectiveness, and implementation and encountered constraints. The findings are intended to support evidence-based recommendations for improving DA-SAAD program delivery, beneficiary assistance, institutional coordination, and livelihood sustainability. The study covers farmer-beneficiaries in two selected barangays from each of the seven GIDA municipalities of Abra during the 2023–2025 implementation period. Its findings are context-specific and are intended to inform program improvements in similarly disadvantaged agricultural communities rather than provide broad statistical generalizations.

The study aligns with several Sustainable Development Goals through its focus on rural poverty reduction, food security, agricultural productivity, inclusive participation, and sustainable livelihood development. SDG 1 – No Poverty is directly relevant because DA-SAAD interventions aim to improve household income, strengthen livelihood opportunities, and reduce the economic vulnerability of marginalized farmers. Evaluating income improvement and livelihood sustainability provides evidence on the program's contribution to poverty reduction. SDG 2 – Zero Hunger aligns with the program's emphasis on agricultural production, food availability, diversified farming, and household food security. Assessing livelihood productivity and agricultural support helps determine how interventions contribute to more reliable food production. SDG 5 – Gender Equality is relevant because the study considers sex as a beneficiary characteristic and recognizes the importance of equitable participation in agricultural programs. Understanding participation patterns can support more inclusive access to livelihood assistance and agricultural resources. SDG 8 – Decent Work and Economic Growth relates to the development of productive agricultural livelihoods, income-generating activities, and community-based enterprises. The study evaluates whether government assistance strengthens economic opportunities and enables beneficiaries to sustain their enterprises. SDG 9 – Industry, Innovation and Infrastructure is applicable through the program's support for agricultural technologies, postharvest facilities, processing activities, and enterprise development. The study also examines infrastructure and technical constraints affecting productivity and market participation. SDG 12 –

Responsible Consumption and Production relates to improved agricultural resource utilization, diversified production, reduced postharvest losses, and sustainable enterprise management. Assessing these interventions can help identify practices that strengthen production efficiency and resource management. SDG 13 – Climate Action is relevant to the program's emphasis on diversified and climate-resilient agricultural livelihoods. Examining the sustainability of livelihood activities and environmental constraints can contribute to understanding farmers' capacity to withstand climate-related disruptions. SDG 17 – Partnerships for the Goals is reflected in the importance of coordination among government agencies, local government units, farmers' cooperatives and associations, agricultural extension providers, and other development stakeholders. The study's assessment of institutional challenges can inform improvements in collaboration and program implementation. These alignments represent the study's potential relevance to the SDGs; they do not constitute measured SDG achievements.

This study contributes to multidisciplinary sustainability by examining how agricultural livelihood interventions interact with socio-economic conditions, institutional capacity, technical assistance, environmental resilience, and community participation. Its findings are expected to provide evidence for improving the long-term effectiveness of government-supported agricultural development programs. In terms of socio-economic sustainability, the study evaluates whether DA-SAAD interventions improve household income, agricultural productivity, and the capacity of beneficiaries to maintain livelihood activities independently. These outcomes are important for reducing economic vulnerability and supporting the transition from subsistence farming to viable agricultural enterprises. For community and institutional sustainability, the study emphasizes the roles of farmers' organizations, cooperatives, local government units, and agricultural program implementers in sustaining livelihood interventions. Assessing organizational participation, implementation practices, and institutional constraints can help identify strategies for strengthening collective action, resource management, and program continuity. Regarding environmental and agricultural sustainability, the study recognizes the importance of diversified farming, appropriate agricultural technologies, and climate-resilient production practices. Examining the constraints affecting agricultural productivity and livelihood continuity can support better adaptation of interventions to local environmental and agro-ecological conditions. In relation to educational and technological sustainability, the study considers the contribution of agricultural training, technical assistance, and technology adoption to beneficiaries' productive capacities. Its findings may guide agricultural extension units and academic institutions in developing relevant training programs and strengthening the application of agricultural knowledge in disadvantaged communities. Finally, the study contributes to policy and governance sustainability by providing empirical evidence for DA-SAAD implementers, local government units, provincial and regional policymakers, and future researchers. Its findings may inform beneficiary targeting, resource allocation, monitoring, institutional coordination, and the development of more responsive agricultural livelihood policies. Overall, the study recognizes that sustainable rural development requires more than the distribution of agricultural resources. It depends on the effective integration of productive assistance, beneficiary capacity, institutional support, market opportunities, and long-term livelihood resilience. By examining these dimensions among DA-SAAD farmer-beneficiaries in Abra, the research seeks to contribute to more inclusive, evidence-based, and sustainable agricultural development.

2. Material and methods

2.1 Research Design

The study utilized a descriptive–correlational research design to evaluate DA-SAAD Phase 2 livelihood interventions. The descriptive component examined respondents' demographic and agricultural profiles, implementation levels, socio-economic improvements, livelihood effectiveness, and encountered constraints using frequencies, percentages, and weighted means. The correlational component investigated relationships between beneficiary characteristics, intervention implementation, program effectiveness, and operational constraints. Pearson's correlation coefficient, Chi-square tests, and t-tests were identified as statistical tools for examining associations between program delivery and outcomes, particularly income improvement, productivity enhancement, and livelihood sustainability.

2.2 Locale of the Study

The study was conducted in seven GIDA municipalities of Abra, Philippines, namely Bucloc, Boliney, Daguioman, Luba, Licuan-Baay, Sallapadan, and Malibcong. According to the Philippine Statistics Authority (PSA, 2024), poverty incidence among families in Abra decreased from 15.8% in 2021 to 9.4% in 2023. Despite this improvement, the province recorded approximately 5,600 poor families in 2023, underscoring the continued relevance of livelihood interventions aimed at strengthening agricultural productivity and household economic resilience. These municipalities were selected because of their geographic isolation, limited access to essential services, and agricultural development constraints. All seven municipalities participated in DA-SAAD Phase 2 interventions from 2023 to 2025, making them appropriate locations for assessing agricultural livelihood implementation, socio-economic improvements, and enterprise sustainability.

2.3 Respondents of the Study

The study population comprised 420 farmer-beneficiaries of DA-SAAD Phase 2 livelihood interventions across the seven selected municipalities. Eligible respondents were direct program beneficiaries who had received agricultural livelihood assistance and possessed firsthand knowledge of program implementation and outcomes. Their profiles included age, sex, civil status, farming experience, livelihood type, duration of program participation, training attendance, and organizational membership.

2.4 Sample and Sampling Procedure

The minimum sample size was determined using Slovin's formula at a 5% margin of error, yielding 205 respondents. The study included 210 farmer-beneficiaries, with 30 respondents allocated to each of the seven municipalities to ensure representation across the study areas. Respondents were identified from official DA-SAAD beneficiary lists provided by program implementers and Municipal Agriculture Offices (MAOs). The right-hand coverage method was systematically applied in selecting respondents from these lists, with participation restricted to direct DA-SAAD Phase 2 beneficiaries.

2.5 Research Instrument

A structured survey questionnaire consisting of five parts was used to assess the implementation, effectiveness, socio-economic outcomes, and constraints of DA-SAAD livelihood interventions. The first part gathered respondents' demographic and agricultural profiles, including age, sex, civil status, farming experience, livelihood type, program participation, training attendance, and organizational membership. The second part assessed intervention implementation through 20 items covering social preparation, food production and livelihood support, marketing assistance and enterprise development, and program management. The third part measured perceived socio-economic improvements in household income, resource accessibility, food consumption, living standards, and family welfare. The fourth part evaluated program effectiveness in terms of income improvement, agricultural productivity, and livelihood sustainability, including pre- and post-intervention income changes using Philippine Statistics Authority standards. The fifth part assessed implementation constraints involving delivery delays, input adequacy, technical assistance, market access, logistics, training, financial resources, and organizational capacity. The assessment components of the questionnaire employed a five-point Likert-type rating scale based on the measurement approach introduced by Likert (1932), allowing respondents to express their perceptions of program implementation, socio-economic improvements, livelihood effectiveness, and encountered constraints. The questionnaire underwent content validation by social sciences experts from Ilocos Sur Polytechnic State College (ISPSC), who evaluated its clarity, relevance, appropriateness, and alignment with the study objectives. It was subsequently pilot-tested among 10 respondents excluded from the final sample. Internal consistency was assessed using Cronbach's alpha for multi-point Likert-scale items and the Kuder-Richardson Formula 20 (KR-20) for dichotomous items (Bolarinwa, 2015). Both reliability tests yielded coefficients exceeding 0.70, supporting the instrument's reliability for data collection.

2.6 Data Gathering Procedure

Data collection was conducted in coordination with DA-SAAD Program implementers and the MAOs of the selected municipalities. Official beneficiary rosters were used to identify eligible respondents, and survey schedules were arranged before field administration. Respondents were selected using the right-hand coverage method to maintain consistency in the selection process. Before questionnaire administration, participants were informed of the study objectives, voluntary participation requirements, and confidentiality measures. Written informed consent was obtained from each respondent. The structured questionnaires were then administered directly to the selected farmer-beneficiaries following consistent data collection procedures across all study sites.

2.7 Data Analysis Techniques

Data were analyzed using descriptive and inferential statistical techniques. Frequencies and percentages described respondents' demographic and agricultural characteristics, while weighted means assessed intervention implementation, perceived socio-economic improvements, program effectiveness, and the seriousness of encountered constraints. The treatment of Likert-scale responses was informed by Boone and Boone (2012), who emphasized the importance of distinguishing individual Likert-type items from composite Likert scales when selecting appropriate descriptive and inferential statistical procedures. Mean scores were interpreted using predefined five-point Likert-scale intervals to maintain consistency and minimize interpretative bias (Subedi, 2016). For all four assessment domains, mean scores ranging from 4.21–5.00, 3.41–4.20, 2.61–3.40, 1.81–2.60, and 1.00–1.80 corresponded to progressively lower descriptive ratings. For implementation, these were interpreted as Completely Implemented, Substantially Implemented, Partially Implemented, Minimally Implemented, and Not Implemented, respectively. Socio-economic improvement ratings were Very Much Improved, Much Improved, Moderately Improved, Fairly Improved, and Not Improved at All. Effectiveness ratings were Very High, High, Moderate, Low, and Very Low, while constraint seriousness was classified as Very Serious, Serious, Moderately Serious, Slightly Serious, and Not Serious. Inferential analysis employed Pearson's correlation coefficient and independent-samples t-tests to examine relationships between respondents' profiles and intervention implementation, respondents' profiles and program effectiveness, implementation levels and

effectiveness, and implementation levels and the seriousness of encountered constraints. All hypotheses were tested at the 0.05 level of significance ($\alpha = 0.05$).

2.8 Ethical Considerations

The study observed established ethical standards for research involving human participants. Administrative approvals and coordination were secured from DA-SAAD Program implementers and the respective MAOs before data collection. Respondents were informed of the study objectives, voluntary participation, confidentiality measures, and their right to withdraw at any time without penalty. Written informed consent was obtained before questionnaire administration. All responses were treated confidentially and used exclusively for academic research. Personal identifying information was excluded from the final analytical dataset to protect respondents' anonymity and privacy.

3. Results and Discussion

3.1 Socio-Demographic and Agricultural Profiles of DA-SAAD Farmer-Beneficiaries

3.1.1 Age of Farmer-Beneficiaries

The respondents had a mean age of 50.6 years, with 72.8% ($n=153$) belonging to the 35–64 age group. The largest proportion was aged 45–54 years (30.0%), followed by 55–64 years (21.9%) and 35–44 years (20.9%). Those aged 65 years and above comprised 16.2%, while respondents aged 15–34 years accounted for only 11.0%, indicating a predominantly middle-aged and older beneficiary population. This age distribution is consistent with agricultural studies identifying mature farmers as the primary participants in livelihood programs (Velza et al., 2023; SEARCA, 2023; DA, 2025; Lillo et al., 2025). Although experienced farmers possess established agricultural knowledge, limited youth participation raises concerns about generational succession, agricultural labor availability, and long-term food security (Viloan, 2025; Viloan, 2025). Placencia et al. (2025) emphasize the importance of balancing farming experience, physical capacity, and managerial competence when selecting beneficiaries. From the perspective of Human Capital Theory, age and experience represent important attributes influencing productive capacity and livelihood development (Becker, 1964).

3.1.2 Sex Distribution of Farmer-Beneficiaries

The respondents consisted of 111 males (52.9%) and 99 females (47.1%), resulting in a male-to-female ratio of 1.12:1. This distribution indicates relatively balanced participation, with only a slight male majority compared with the national sex ratio of 1.03:1 reported by PSA (2022). The findings support studies indicating that targeted agricultural programs can promote balanced participation through inclusive beneficiary selection and group-based interventions (Annor et al., 2025; Perena et al., 2026; Annor et al., 2025). However, broader agricultural participation and resource ownership remain male-dominated (Perena et al., 2026; Velza et al., 2023), although women's involvement is greater in selected livelihood activities (Lillo et al., 2025). National beneficiary records also demonstrate variations in male and female participation across agricultural programs (DA, 2025). Gender-responsive agricultural initiatives (PCAF, 2026) and complementary household contributions to production and enterprise management (Placencia et al., 2025) highlight the importance of maintaining equitable access to livelihood assistance.

3.1.3 Civil Status of Farmer-Beneficiaries

Most respondents were married (82.4%, $n=173$), followed by single (10.5%, $n=22$), widowed (5.2%, $n=11$), and separated (1.9%, $n=4$) beneficiaries. This distribution indicates that DA-SAAD livelihood interventions primarily served married individuals involved in household-based agricultural production. The predominance of married beneficiaries corresponds with agricultural studies showing that farming activities commonly rely on household labor and shared family resources (Annor et al., 2025; Perena et al., 2026; DA, 2025; Velza et al., 2023). Although this differs from general population patterns (PSA, as cited in Cordero, 2023), it reflects the household-centered organization of agricultural livelihoods. Family labor, community attachment, and reduced migration may support continued participation in farming programs (Roser, 2023; Placencia et al., 2025; Dargantes et al., 2022), while smaller livelihood projects may provide opportunities for unmarried and widowed beneficiaries (Lillo et al., 2025; Velza et al., 2023).

3.1.4 Years of Farming Experience

The respondents had an average farming experience of 22.7 years. Most had farmed for 21 years or longer (59.5%, $n=125$), followed by those with 16–20 years (21.4%), 11–15 years (10.0%), 6–10 years (6.2%), and five years or less (2.9%). Overall, 80.9% had more than 15 years of agricultural experience, indicating substantial practical knowledge among beneficiaries. This finding reflects the extensive agricultural experience documented among Filipino smallholder farmers (Lillo et al., 2025; Dargantes et al., 2022; Velza et al., 2023; Lillo et al., 2025). Long-term farming experience strengthens familiarity with local production conditions and traditional adaptation practices (Lustre, 2025), potentially supporting the application of agricultural assistance (DA, 2025). However, Dargantes et al. (2022) also identify challenges in technological adaptation among established farmers, emphasizing the importance of appropriate extension support and agricultural succession planning.

3.1.5 Types of Livelihood Projects Supported by DA-SAAD

Crop production accounted for the largest proportion of supported livelihood projects (59.5%, n=125), followed by livestock production (21.4%, n=45) and poultry production (19.1%, n=40). No respondents reported participation in agri-enterprise development (0.0%). These findings indicate that livelihood assistance remained concentrated on primary agricultural production rather than processing or commercial enterprise activities. The distribution reflects the program's emphasis on food security, agricultural productivity, and livelihood diversification (BFAR, 2024; DA, 2026). Crop and livestock activities provide production opportunities and supplementary household resources, particularly in vulnerable farming communities (Workie, 2023). However, the absence of agri-enterprise participation indicates a gap between production assistance and the program's broader enterprise development objectives. Agricultural development literature emphasizes that processing, collective marketing, and value-chain integration are necessary to strengthen long-term economic independence (ACIAR, 2025; BOI, 2025).

3.1.6 Duration of Participation in the DA-SAAD Program

Respondents had participated in the program for an average of 3.72 years. The largest proportion had five years of participation (34.8%, n=73), followed by four years (24.3%), three years (21.4%), two years (17.6%), and one year (1.9%). Overall, 80.5% had participated for at least three years, indicating a predominantly established beneficiary population. Multi-year participation is consistent with agricultural extension approaches that emphasize sustained assistance, progressive capacity development, and eventual livelihood independence (EAE, 2026; DA-SAAD, 2025). Extended engagement allows beneficiaries to develop agricultural competencies and organizational capacity, although continued assistance without enterprise progression may encourage dependence on government support. Limited new enrollment may also restrict access among emerging farmers (Agricultural Systems Institute [ASI], 2026). The program's operational framework recognizes varying participation periods across production, institutional development, and enterprise activities (DA, 2026).

3.1.7 Participation in Agricultural Training

Most respondents (89.0%) had attended at least one training activity, with an average of 3.2 trainings per beneficiary. The largest group attended three to four trainings (44.7%, n=94), followed by one to two trainings (30.5%), five or more trainings (13.8%), and no training (11.0%). These findings indicate substantial participation in capacity-building activities, although a proportion of beneficiaries remained untrained. Repeated agricultural training strengthens technical knowledge, technology adoption, productivity, and household income (Cayabyab, 2023). However, participation may be limited by household responsibilities, employment demands, and accessibility barriers (Cayabyab, 2023). DA (2025) emphasizes that combining production training with financial literacy, bookkeeping, and enterprise management develops the competencies necessary for sustaining agricultural livelihoods beyond initial assistance.

3.1.8 Membership in Farmers' Organizations and Cooperatives

Most respondents belonged to farmers' organizations (74.3%, n=156), while 10.0% were cooperative members and 6.2% belonged to other organizations. Only 9.5% reported no organizational affiliation. Thus, 90.5% of beneficiaries participated in some form of community-based organization, although formal cooperative membership remained relatively limited. Organizational participation facilitates access to agricultural services, collective resources, training, and market opportunities (Cayabyab, 2023; Zhang et al., 2024; Zhang et al., 2024). Established associations also support efficient program delivery and community coordination (Agricultural Systems Institute, 2026). Nevertheless, unaffiliated farmers may encounter barriers to program participation (Cayabyab, 2023). Formal cooperatives offer additional opportunities for enterprise development but require organizational capacity, financial resources, and compliance with registration requirements (Avila et al., 2025; DA, 2026). Collective marketing and resource sharing can further strengthen livelihood sustainability (DA, 2025).

3.2 Level of Implementation of DA-SAAD Livelihood Interventions

3.2.1 Social Preparation

Social preparation achieved an overall mean score of 4.22, interpreted as Completely Implemented. Program orientation received the highest rating (4.32), followed by strengthening farmers' organizations (4.31) and technical guidance and follow-up support (4.30). Training-related knowledge and skills development (4.13) and beneficiary involvement in identifying livelihood needs (4.05) were rated Substantially Implemented. These findings indicate strong implementation of orientation, institutional strengthening, and extension assistance, with relatively lower ratings for participatory needs identification and capacity building. Social preparation is essential for aligning interventions with community priorities and strengthening beneficiary ownership (DA, 2024; Mula et al., 2024). Previous evaluations emphasize that effective targeting, institutional coordination, and continued support influence livelihood outcomes (Annor et al., 2025; Sesio and Eljera, 2024; Sesio and Eljera, 2024). Similar agricultural development experiences in Abra highlight the importance of organizational strengthening, localized assistance, and market integration (DA-SAAD, 2024; DAR, 2026; DA-SAAD, 2024; Benguet State University [BSU] & DA-SAAD, 2024).

3.2.2 Food Production and Livelihood Support

Food Production and Livelihood (FPL) Support obtained an overall mean score of 4.32, interpreted as Completely Implemented. Household food security received the highest rating (4.49), followed by improved farming practices (4.47). Adequacy of agricultural inputs and increased farm production both scored 4.24, while the suitability of inputs to local farming conditions received the lowest rating (4.16), interpreted as Substantially Implemented. The findings indicate that agricultural inputs and production assistance were perceived as beneficial to household food security and farming practices. This supports studies emphasizing the contribution of targeted input provision to agricultural productivity (Annor et al., 2025; Mula et al., 2024). However, the relatively lower suitability rating reinforces concerns about standardized procurement and mismatches between agricultural inputs and local conditions (Mamasao and Bandera, 2026; BSU and DA-SAAD, 2024). Site-specific production support remains important for maintaining agricultural productivity and the intended benefits of livelihood assistance (DA guidelines, 2025).

3.2.3 Marketing Assistance and Enterprise Development

Marketing Assistance and Enterprise Development (MAED) achieved an overall mean of 4.01, interpreted as Substantially Implemented. Facilitating access to markets received the highest rating (4.45), followed by improved ability to sell products at competitive prices (4.02), collective marketing activities (3.97), and buyer-market linkages (3.91). Training in product marketing and enterprise development received the lowest rating (3.70). These results indicate that market access was perceived as strongly implemented, although enterprise-related training and organized marketing required further strengthening. Market linkages and collective selling can improve farmgate prices and strengthen smallholder bargaining capacity (Annor et al., 2025; DA-SAAD, 2025; Mula et al., 2024). However, limited business management capabilities, transport infrastructure, postharvest facilities, and sustained institutional assistance may restrict the transition from production support to commercially viable enterprises (Mamasao and Bandera, 2026; Sesio and Eljera, 2024).

3.2.4 Program Management

Program management obtained an overall mean score of 4.02, interpreted as Substantially Implemented. Coordination with local government units received the highest rating (4.68), followed by extension staff responsiveness (4.07), administrative transparency (3.88), and monitoring and evaluation (3.87). Proper delivery of interventions received the lowest rating (3.60). The results suggest strong institutional coordination but comparatively weaker delivery management and monitoring processes. Coordination between government agencies and local institutions supports agricultural program implementation (Annor et al., 2025), while responsive extension services and regular monitoring strengthen beneficiary participation and technology adoption (Cayabyab, 2023; Cayabyab, 2023). Nevertheless, administrative delays and monitoring systems focused primarily on immediate outputs may weaken long-term program outcomes (Sesio and Eljera, 2024). Structured governance, resource management, and sustainability planning are therefore important components of effective program management (PMI, 2025).

3.3 Socio-Economic Improvements Among DA-SAAD Farmer-Beneficiaries

3.3.1 Household Income, Resource Access, and Family Welfare

The perceived socio-economic improvement of beneficiaries obtained an overall mean score of 4.00, interpreted as Much Improved. Household income recorded the highest rating (4.28, Very Much Improved), followed by family welfare (4.07), access to agricultural resources (3.97), household food consumption (3.95), and overall standard of living (3.74), all interpreted as Much Improved. These findings suggest that livelihood assistance was associated with improvements in household economic conditions and welfare, although broader living standards received a comparatively lower rating. Agricultural support programs can improve household income, food security, and access to essential resources (DA-SAAD, 2023; Annor et al., 2025). Training and productive resources also support agricultural improvements (Adefila et al., 2024; Mamasao & Bandera, 2026). Nevertheless, inadequate credit, market access, and infrastructure may limit sustained socio-economic advancement (Adefila et al., 2024).

3.4 Effectiveness of DA-SAAD Livelihood Interventions

3.4.1 Changes in Household Income Before and After Program Participation

Before intervention, 82.9% (n=174) of respondents belonged to the low-income category, earning less than ₱10,481 monthly. After intervention, this proportion declined to 55.2% (n=116), representing a 27.7-percentage-point decrease ($t=-8.93$, $p<0.0001$). The lower-middle-income group earning ₱10,481–₱20,962 increased from 16.2% to 41.4% ($t=+8.40$, $p<0.0001$), while the middle-income group earning ₱20,963–₱41,924 increased from 1.0% to 3.3% ($t=+2.26$, $p=0.0250$). No respondents reached the upper-income category exceeding ₱41,924. All reported changes were statistically significant at the 0.05 level. The income distribution indicates upward movement from the lowest income category toward lower-middle and middle-income classifications. Agricultural inputs, training, and market assistance can support improved earnings and profitability (J-PAL, 2025; J-PAL, 2025; Adefila et al., 2024; World Bank, 2023). However, limited landholdings, financial resources, transportation

access, and market integration may constrain further income advancement (Asian Development Bank [ADB], 2024; World Bank, 2023).

3.4.2 Enhancement of Farm and Livelihood Productivity

The effectiveness of DA-SAAD interventions in enhancing farm and livelihood productivity obtained an overall mean score of 4.10, interpreted as High. Additional income generated through livelihood participation received the highest rating (4.13), followed by improved market returns (4.11) and increased farming income (4.07). All indicators were rated High. These results indicate that beneficiaries perceived improvements in income generation and market returns from agricultural livelihood activities. Similar studies associate combined production inputs, training, and livelihood diversification with increased agricultural productivity and earnings (Kalogiannidis & Syndoukas, 2024; DA-SAAD, 2026; J-PAL, 2025). Nevertheless, productivity gains may differ by commodity type, while limited credit, asset maintenance, and market contracts can affect the continuity of benefits after government assistance ends (Kalogiannidis and Syndoukas, 2024; World Bank, 2023).

3.4.3 Sustainability of Livelihood and Enterprise Activities

Livelihood sustainability obtained an overall mean score of 4.07, interpreted as High. Continued community utilization of DA-SAAD technologies received the highest rating (4.26, Very High), followed by anticipated sustainability beyond program support (3.99) and the development of long-term livelihood opportunities (3.97), both rated High. The findings indicate favorable beneficiary perceptions of continued technology use and livelihood viability. Agricultural technologies supported by appropriate training and community organization can strengthen long-term productive capacity (DA, 2025; J-PAL, 2025). However, continued utilization does not automatically ensure enterprise survival, particularly when beneficiaries face equipment maintenance costs, insufficient working capital, and weak market access (Nomvula et al., 2023). Sustained technical and institutional support therefore remains important for maintaining livelihood activities beyond the initial intervention period.

3.5 Problems and Constraints Encountered by DA-SAAD Farmer-Beneficiaries

3.5.1 Technical, Financial, Market, and Institutional Constraints

The problems and constraints encountered by beneficiaries obtained an overall mean score of 3.22, interpreted as Moderately Serious. Inadequate farm inputs received the highest rating (3.41, Serious), followed by insufficient training and capacity building (3.39), lack of technical support (3.32), limited market access (3.30), transportation and logistics problems (3.28), delayed project support delivery (3.15), weak institutional support (3.02), and insufficient financial resources (2.90). Except for inadequate farm inputs, all constraints were rated Moderately Serious. The findings indicate that input adequacy, technical assistance, capacity building, and market accessibility remained important operational concerns. Agricultural development studies identify procurement delays, inadequate production resources, and transportation difficulties as persistent barriers to effective program implementation (Kalogiannidis & Syndoukas, 2024; Kalogiannidis & Syndoukas, 2024). However, sustainable livelihood development also requires reliable market demand, postharvest infrastructure, and reduced dependence on government assistance (J-PAL, 2025; DA, 2025). These findings emphasize the need to strengthen production support alongside technical and enterprise development services.

3.6 Relationships Between Beneficiary Characteristics and DA-SAAD Program Implementation

3.6.1 Socio-Demographic Characteristics and Implementation Levels

The correlation analysis revealed significant relationships between selected beneficiary characteristics and intervention implementation. Livelihood type was positively correlated with overall implementation ($r=.258$, $p<0.01$), particularly program management ($r=.352$, $p<0.01$), social preparation ($r=.207$, $p<0.01$), and food production and livelihood support ($r=.166$, $p<0.05$). Sex was significantly associated with overall implementation ($r=.208$, $p<0.01$), social preparation ($r=.235$, $p<0.01$), and marketing assistance ($r=.191$, $p<0.01$). Training attendance was positively associated with overall implementation ($r=.177$, $p<0.05$), particularly food production and livelihood support ($r=.219$, $p<0.01$), social preparation ($r=.153$, $p<0.05$), and marketing assistance ($r=.156$, $p<0.05$). Farming experience was significantly associated with program management ($r=.229$, $p<0.01$), while duration of participation was negatively correlated with marketing assistance ($r=-.157$, $p<0.05$). Age, civil status, and organizational membership showed no significant relationships with overall implementation. These findings indicate that livelihood type, sex, and training participation were associated with differences in perceived implementation. The variation across livelihood types suggests that agricultural interventions may require commodity-specific delivery arrangements, while the significant associations involving training reinforce the importance of beneficiary capacity development. The relationship between farming experience and program management suggests that established agricultural knowledge may influence beneficiaries' engagement with administrative processes. Conversely, the negative relationship between participation duration and marketing assistance highlights potential difficulties in sustaining enterprise-related support among longer-term beneficiaries. The absence of significant overall relationships for age, civil status, and organizational membership suggests that these characteristics were not statistically associated with overall implementation in the surveyed population.

3.7 Relationships Between Beneficiary Characteristics and DA-SAAD Livelihood Effectiveness

3.7.1 Socio-Demographic Characteristics and Program Effectiveness

The analysis identified significant positive correlations between livelihood type and overall effectiveness ($r=.214$, $p<0.01$), training attendance and overall effectiveness ($r=.239$, $p<0.01$), and sex and overall effectiveness ($r=.140$, $p<0.05$). Training attendance was positively associated with income improvement ($r=.276$, $p<0.01$), productivity enhancement ($r=.153$, $p<0.05$), and livelihood sustainability ($r=.177$, $p<0.05$). Livelihood type was significantly related to income improvement ($r=.166$, $p<0.05$), productivity ($r=.204$, $p<0.01$), and sustainability ($r=.178$, $p<0.01$). Sex was significantly correlated with income improvement ($r=.179$, $p<0.01$) and productivity ($r=.177$, $p<0.05$). Duration of participation was negatively correlated with livelihood sustainability ($r=-.222$, $p<0.01$). Age, civil status, farming experience, and organizational membership showed no significant relationships with overall effectiveness. The findings indicate that training participation and livelihood type were consistently associated with perceived program effectiveness. Training may strengthen beneficiaries' capacity to use agricultural inputs, improve production practices, and manage livelihood activities, while differences in commodity requirements and economic opportunities may influence outcomes across livelihood types. The significant relationship involving sex suggests variation in beneficiary experiences, although the correlation does not establish which sex experienced greater effectiveness without considering the coding of the variable. The negative association between participation duration and sustainability indicates that longer-term beneficiaries reported lower sustainability ratings, highlighting the importance of examining continued technical assistance, enterprise development, and post-intervention support. These relationships are associative and do not independently establish causation.

3.8 Relationship Between DA-SAAD Implementation and Livelihood Effectiveness

3.8.1 Implementation Components and Socio-Economic Outcomes

All implementation components demonstrated significant positive correlations with program effectiveness at the 0.01 significance level. Overall implementation was strongly associated with overall effectiveness ($r=.708$, $p<0.01$), productivity enhancement ($r=.671$, $p<0.01$), income improvement ($r=.568$, $p<0.01$), and livelihood sustainability ($r=.573$, $p<0.01$). Social preparation showed the strongest component-level relationship with overall effectiveness ($r=.626$, $p<0.01$), followed by marketing assistance and enterprise development ($r=.582$, $p<0.01$), food production and livelihood support ($r=.567$, $p<0.01$), and program management ($r=.456$, $p<0.01$). The findings indicate that higher perceived implementation levels were consistently associated with higher effectiveness ratings. The strong overall correlation suggests that the combined implementation of program components is closely related to beneficiaries' reported livelihood outcomes. Social preparation, marketing assistance, production support, and program management appear to serve complementary functions, with the strongest overall association observed when the implementation dimensions are considered collectively. This supports the study's integrated evaluation framework, which examines the relationship between program delivery and livelihood outcomes.

3.8.2 Social Preparation, Productivity, and Income Improvement

Social preparation demonstrated a strong positive correlation with productivity enhancement ($r=.637$, $p<0.01$), the highest component-specific coefficient. It was also significantly associated with income improvement ($r=.484$, $p<0.01$) and livelihood sustainability ($r=.484$, $p<0.01$). Marketing assistance and enterprise development showed the strongest component-specific relationship with income improvement ($r=.507$, $p<0.01$), followed by social preparation ($r=.484$, $p<0.01$) and livelihood support ($r=.466$, $p<0.01$). These findings suggest that community preparation, beneficiary organization, and capacity development are closely associated with improved agricultural productivity. Meanwhile, the comparatively strong relationship between marketing assistance and income improvement indicates the importance of market-related interventions in translating agricultural production into household earnings. The results support the integrated implementation of social preparation, production assistance, and market development rather than treating these activities as separate program functions.

3.8.3 Livelihood Support, Program Management, and Sustainability

Food production and livelihood support were significantly associated with productivity enhancement ($r=.559$, $p<0.01$), income improvement ($r=.466$, $p<0.01$), and livelihood sustainability ($r=.427$, $p<0.01$). Marketing assistance was positively correlated with productivity ($r=.509$, $p<0.01$) and sustainability ($r=.472$, $p<0.01$). Program management demonstrated significant correlations with productivity ($r=.435$, $p<0.01$), sustainability ($r=.415$, $p<0.01$), and income improvement ($r=.320$, $p<0.01$). The findings indicate that production assistance had its strongest association with productivity, while marketing assistance was related to income generation and livelihood continuity. Although program management exhibited comparatively lower correlations, its significant relationships with all effectiveness dimensions suggest that administrative coordination and monitoring remain relevant to program outcomes. Collectively, the results emphasize the importance of coordinating agricultural inputs, institutional preparation, market support, and management practices to strengthen livelihood effectiveness.

3.9 Relationship Between Implementation Levels and Encountered Constraints

3.9.1 Overall Implementation and Seriousness of Constraints

The analysis revealed a significant positive correlation between overall implementation and the seriousness of encountered constraints ($r=.538$, $p<0.01$). Among implementation components, social preparation had the strongest correlation with overall constraints ($r=.463$, $p<0.01$), followed by program management ($r=.449$, $p<0.01$), marketing assistance and enterprise development ($r=.400$, $p<0.01$), and food production and livelihood support ($r=.389$, $p<0.01$). These findings indicate that higher implementation ratings were associated with higher reported seriousness of operational constraints. This positive relationship may reflect the simultaneous experience of program activities and implementation difficulties, although the correlation does not establish that greater implementation caused more serious problems. The relatively strong associations involving social preparation and program management highlight the importance of considering resource availability, coordination, and operational conditions when evaluating program implementation.

3.9.2 Financial Resources and Market Accessibility

Limited market access ($r=.445$, $p<0.01$) and insufficient financial resources ($r=.425$, $p<0.01$) demonstrated the strongest overall correlations with implementation among the individual constraints. Limited market access was most strongly associated with program management ($r=.468$, $p<0.01$) and social preparation ($r=.377$, $p<0.01$). Insufficient financial resources were significantly correlated with social preparation ($r=.407$, $p<0.01$), marketing assistance ($r=.365$, $p<0.01$), program management ($r=.286$, $p<0.01$), and livelihood support ($r=.264$, $p<0.01$). The results indicate that financial limitations and market accessibility were closely associated with perceived program implementation. These relationships highlight the importance of adequate operating resources and market linkages in agricultural livelihood programs. Strengthening financing arrangements, collective marketing, and buyer connections may address the operational concerns identified by beneficiaries, particularly those involving community preparation and enterprise development.

3.9.3 Delivery Delays, Farm Inputs, and Transportation Constraints

Delayed support delivery was significantly correlated with overall implementation ($r=.381$, $p<0.01$), followed by transportation and logistics problems ($r=.339$, $p<0.01$) and inadequate farm inputs ($r=.314$, $p<0.01$). Delivery delays showed their strongest relationships with social preparation ($r=.388$, $p<0.01$) and marketing assistance ($r=.352$, $p<0.01$). Inadequate farm inputs were most strongly associated with program management ($r=.405$, $p<0.01$), while transportation difficulties were significantly related to marketing assistance ($r=.305$, $p<0.01$) and social preparation ($r=.296$, $p<0.01$). These findings indicate that resource distribution and logistical conditions were associated with implementation ratings across multiple program components. Delivery schedules, input adequacy, and transportation accessibility remain important operational considerations in geographically isolated agricultural communities. Improving procurement coordination, distribution procedures, and logistical support may help address the constraints identified by beneficiaries.

3.9.4 Capacity Building, Technical Assistance, and Institutional Support

Insufficient capacity building ($r=.195$, $p<0.01$), weak institutional support ($r=.232$, $p<0.01$), and lack of technical assistance ($r=.284$, $p<0.01$) demonstrated significant positive correlations with overall implementation. Insufficient capacity building was significantly associated with marketing assistance ($r=.299$, $p<0.01$) and social preparation ($r=.165$, $p<0.05$), but not with livelihood support ($r=.094$) or program management ($r=-.002$). Weak institutional support showed its strongest association with program management ($r=.315$, $p<0.01$).

4. Conclusion & Recommendations

The study concludes that the DA-SAAD Program in the geographically isolated and disadvantaged municipalities of Abra has substantially improved agricultural livelihoods, household income, productivity, food security, and socio-economic well-being among predominantly mature, experienced, and married farmer-beneficiaries. The program demonstrated high implementation levels, particularly in social preparation and food production and livelihood support, while marketing assistance, enterprise development, and program management showed areas requiring improvement. Significant upward movement in household income classifications and favorable productivity and sustainability outcomes indicate the program's contribution to rural livelihood development. Beneficiary characteristics, particularly sex, livelihood type, farming experience, and training participation, were significantly associated with implementation and effectiveness, while longer program participation was negatively associated with enterprise sustainability and marketing assistance. Despite these achievements, inadequate farm inputs, limited technical assistance, insufficient capacity building, and restricted market accessibility remain important constraints affecting program implementation and long-term livelihood sustainability.

It is recommended that DA-SAAD implementers strengthen livelihood interventions through specialized training in enterprise management, value addition, financial literacy, and climate-resilient agriculture suited to beneficiaries' experience and local conditions. Input distribution should be improved through localized distribution hubs, synchronized procurement schedules, and timely provision of adequate agricultural resources.

Postharvest infrastructure, collective marketing, institutional buyer linkages, and improved transportation and market facilities should be prioritized to enhance productivity and market accessibility. A structured program graduation framework and clear policy timelines should guide beneficiaries toward independent cooperative management, enterprise registration, and reduced dependence on government assistance. Program policies should promote women's participation in higher-value agricultural enterprises and leadership while aligning interventions with municipal agro-ecological conditions. Stronger collaboration among the Department of Agriculture, local government units, academic institutions, and farmers' organizations should support continuous technical assistance, effective monitoring, shared resource utilization, financial accessibility, and sustainable enterprise development.

The study identified several constraints affecting the implementation and sustainability of DA-SAAD livelihood interventions in the geographically isolated and disadvantaged municipalities of Abra. These included inadequate farm inputs, insufficient capacity-building activities, limited technical assistance, restricted market accessibility, and logistical difficulties affecting the timely delivery of agricultural resources. The study also identified challenges in transitioning long-term beneficiaries from government-supported livelihood activities toward independent and sustainable agricultural enterprises. These constraints affected program implementation, productivity, market participation, and long-term livelihood sustainability. The findings therefore reflect the operational challenges experienced by farmer-beneficiaries in the selected municipalities of Abra.

5. Compliance with ethical standards

The authors adhered to established ethical standards for research involving human participants. Prior to data collection, the authors secured administrative approvals and coordinated with DA-SAAD Program implementers and the respective Municipal Agriculture Offices. The authors ensured that all respondents were informed of the study objectives, voluntary nature of participation, confidentiality measures, and their right to withdraw at any time without penalty. Written informed consent was obtained from all participants before questionnaire administration. The authors maintained the confidentiality of all collected information, used the data exclusively for academic research, and excluded personal identifying information from the final analytical dataset to safeguard respondents' anonymity and privacy.

REFERENCES

- Adefila, A. O., Ajayi, O. O., Toromade, A. S., & Sam-Bulya, N. J. (2024). The impact of agricultural development on socioeconomic well being. *International Journal of Science and Research*. https://ijsra.net/sites/default/files/fulltext_pdf/IJSRA-2024-2120.pdf
- Agricultural Systems Institute. (2026). Farmer-scientists training program. <https://asi.cafs.uplb.edu.ph/fstp/>
- Annor, S. A., Centino, Z. M. H., Delima, G. A., Nuñez, L. B., & Sentino, M. N. V. (2025). Evaluating targeting efficiency in agricultural intervention programs: Evidence from the SAAD Program in the Philippines. *Journal of Visayas State University (ReSERDS)*. https://reserds.vsu.edu.ph/wp-content/uploads/2025/07/Vol9_1_2025_p1_Annor-et-al.pdf
- Asian Development Bank. (2024). Asia and the Pacific food security forum 2024. <https://www.adb.org/news/events/asia-pacific-food-security-forum-2024>
- Australian Center for International Agricultural Research. (2025). Agribusiness-led inclusive value chain development for smallholder farming systems in the Philippines (IVC Philippines). <https://www.aciar.gov.au/sites/default/files/2021-11/AGB-2018-196.pdf>
- Avila, E. C. B., Ogarte, N., Del Rosario, M. C. R., & Maleniz, J. (2025). Enhancing farmer engagement in cooperatives: Implications of awareness and interest. *Global Publication House International Journal of Business Management*. https://www.researchgate.net/publication/388043954_Enhancing_Farmer_Engagement_in_Cooperatives_Implications_of_Awareness_and_Interest
- Becker, G. S. (1964). Human capital: A theoretical and empirical analysis, with special reference to education. National Bureau of Economic Research (NBER). <https://www.nber.org/books-and-chapters/human-capital-theoretical-and-empirical-analysis-special-reference-education-first-edition>
- Benguet State University, & Department of Agriculture – Cordillera Administrative Region. (2022). Climate-resilient agriculture assessment, targeting and prioritization for the adaptation, and mitigation initiative in agriculture (AMIA) in the Cordillera Administrative Region, Philippines. ResearchGate. https://www.researchgate.net/publication/360430066_Climate_Resilient_Agriculture_Assessment_Targeting_and_Prioritization_for_the_Adaptation_and_Mitigation_Initiative_in_Agriculture_AMIA_in_the_Cordillera_Administrative_Region_Philippines

- Board of Investment. (2025). Industry roadmap in the Philippines from 2005–2025. <https://www.foi.gov.ph/agencies/boi/industry-roadmaps-in-the-philippines-from-2005-2025-boi205026619139/>
- Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *Nigerian Postgraduate Medical Journal*, 22(4), 195–201. <https://doi.org/10.4103/1117-1936.173959>
- Boone, H. N., & Boone, D. A. (2012). Analyzing Likert data. *Journal of Extension*. <https://commons.joe.org/joe/vol50/iss2/48/>
- Bureau of Fisheries and Aquatic Resources. (2024). SAAD Phase 2 social preparation guidelines. https://www.bfar.da.gov.ph/wp-content/uploads/2024/04/Social-Preparation-Guidelines-SAAD-Phase2_Final.pdf
- Cayabyab, B. A. G. (2023). Farmer's attrition and completion in the farmer-scientists training program. *AGRIS: International Information System for the Agricultural Science and Technology*. https://agris.fao.org/search/en/providers/122430/records/668dbd62b3930d7cdc08e28?utm_source=geminini
- Cordero, T. (2023). 4 out of 10 persons were never married — PSA. <https://www.gmanetwork.com/news/topstories/nation/861155/4-out-of-10-persons-were-never-married-psa/story/>
- Department of Agrarian Reform. (2026). DAR boosts Benguet coffee and cacao industry through VISTA Project. <https://www.dar.gov.ph/dar-central-news-jul-sep-2026-subroute/25411>
- Department of Agriculture. (2022). 2021 SAAD annual report. https://saad.da.gov.ph/saad-2021-annual-report_corrected-06222023/
- Department of Agriculture – Cordillera Administrative Region. (2022). Kabuhayan at Kaunlaran ng Kababayang Katutubo (4K) Program: Abra implementation report. <https://4ks.da.gov.ph/>
- Department of Agriculture – Special Area for Agricultural Development. (2024). Abra: Phase 2 implementation overview. <https://saad.da.gov.ph/phase-2/abra/>
- Department of Agriculture Memorandum. (2025). Cascading of SAAD Phase 2 food production and livelihood (FPL) guidelines. <https://saad.da.gov.ph/wp-content/uploads/pdf/1763512328-Signed-SAAD-FPL-guidelines.pdf>
- Department of Agriculture Regional Field Office 8. (2024). SAAD NPMO strengthens regional capacity in Eastern Visayas with MAED cascading. Bandilyo. <https://saad.da.gov.ph/wp-content/uploads/2025/07/april-june2024-compressed.pdf>
- Department of Agriculture–Special Area for Agricultural Development Program. (2023). SAAD annual report 2023. https://saad.da.gov.ph/wp-content/uploads/2025/02/AR-2023_V6-final-2.pdf
- Department of Agriculture-Special Area for Agricultural Development. (2025). DA-SAAD national technical report. National Program Management Office. https://saad.da.gov.ph/wp-content/uploads/2025/07/2024-DA-SAAD-TR-FINAL_revision-4.pdf
- Department of Agriculture-Special Area for Agricultural Development. (2026). DA-SAAD NorMin rolls out P42.8M in agri-livelihood projects for 2026. Special Area for Agricultural Development Program, Department of Agriculture. <https://saad.da.gov.ph/da-saad-normin-rolls-out-p42-8m-in-agri-livelihood-projects-for-2026/>
- Department of Agriculture. (2023). Department Order No. 6, Series of 2023: Implementing guidelines for SAAD Phase 2 (FY 2023–2028). <https://saad.da.gov.ph/phase-2/>
- Department of Agriculture. (2024). SAADvocacy. <https://saad.da.gov.ph/wp-content/uploads/2025/04/April-June-2024-print.pdf>
- Department of Agriculture. (2025). RSBSA list of registered farmers. <https://www.foi.gov.ph/agencies/da/rsbsa-list-of-registered-farmers-da-348618194554/>
- Department for International Development. (1999). Sustainable livelihoods guidance sheets. <https://www.livelihoodscentre.org/documents/114097690/114438878/Sustainable%2Blivelihoods%2Bguidance%2Bsheets.pdf>
- Encyclopedia of Agricultural Extension. (2026). Agricultural extension for smallholder farmers. <https://encyclopedia.pub/entry/11553>
- Jameel Poverty Action Lab. (2025). Increasing small-scale farmers' access to agricultural markets. J-PAL Policy Insight: Center for Effective Global Action. <https://www.povertyactionlab.org/policy-insight/increasing-small-scale-farmers-access-agricultural-markets>
- Kalogiannidis, S., & Syndoukas, D. (2024). The impact of agricultural extension services on farm output: A worldwide viewpoint. *Research on World Agricultural Economy*. <https://journals.nasspublishing.com/rwae/article/view/103925>
- Kusek, J. Z., & Rist, R. C. (2004). Ten steps to a results-based monitoring and evaluation system: A handbook for development practitioners. The World Bank. <https://openknowledge.worldbank.org/server/api/core/bitstreams/f87d81cf-54e9-5a35-ab9e-dc24fc61f85a/content>

- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*. https://legacy.voteview.com/pdf/Likert_1932.pdf
- Lillo, E. P., Diaz, G. G. G., Diaz, J. L. B., Mago, J. E., & Davirao, C. R. (2025). Socio-demographic profile of food farmers in Carcar City, Cebu, Philippines amid challenges and opportunities for agricultural development. *Asian Journal of Agriculture*. <https://smujo.id/aja/article/view/21110>
- Lustre, M. (2025). Determinants of hybrid rice technology adoption in Camarines Sur, Bicol Region, Philippines. ResearchGate. https://www.researchgate.net/publication/392696558_DETERMINANTS_OF_HYBRID_RICE_TECHNOLOGY_ADOPTION_IN_CAMARINES_SUR_BICOL_REGION_PHILIPPINES
- Mamasao, M. H., & Bandera, A. D. (2026). Production, processing and marketing of agriculture subsystems in the Philippines: A review. *World Journal of Advanced Research and Reviews*. https://wjarr.com/sites/default/files/fulltext_pdf/WJARR-2026-1073.pdf
- McLaughlin, J. A., & Jordan, G. B. (1999). Logic models: A tool for telling your program's performance story. *Evaluation and Program Planning*. <https://www.pmn.net/wp-content/uploads/logic-models-a-tool-for-telling-your-programs-performance-story.pdf>
- Mula, M. G., Mula, R. P., Rodriguez, C. M., Bantilan, M. C. S., Bayani, K. G., Galiste, E. D., Domingo, M. V. C., Baro, R. A., Nillo, R. G., Caccam, M. M., Prado, V. V., Pajarillo, R. M. C., & Vengazo, J. K. O. (2024). Agriculture and fishery production and livelihood interventions: A key towards improving farmers' and fishers' productivity and income. *Journal of Biodiversity and Environmental Sciences*, 25(3), 195–209. <http://www.innspub.net>
- Nomvula, T., Lungile, Z., & Bokamoso, S. T. (2023). The role of technology adoption in improving smallholder farmers' productivity and livelihoods. *International Journal of Agricultural Sciences*. <https://internationalscholarsjournals.org/articles/602511992112023>
- Perena, E. S., Gamba, M. P., & Dellomas, K. K. G. (2026). Gender dynamics in single and integrated farming in the municipality of Irosin, Sorsogon, Philippines. *United International Journal for Research & Technology*. <https://uijrt.com/articles/v7/i8/UIJRTV7I80007.pdf>
- Philippine Council for Agriculture and Fisheries. (2022, September 15). PH, Japan kick off project to improve vegetable value chain. <https://pcaf.da.gov.ph/index.php/2022/09/15/ph-japan-kick-off-project-to-improve-vegetable-value-chain/>
- Philippine Council for Agriculture and Fisheries. (2026). GESI Committee pushes for strengthened policy reforms, improved food security among A/F marginalized groups. <https://pcaf.da.gov.ph/index.php/2026/06/10/gesi-committee-pushes-for-strengthened-policy-reforms-improved-food-security-among-a-f-marginalized-groups/>
- Philippine Institute for Development Studies. (n.d.). Terminal evaluation cum impact assessment of the SAAD program. <https://pids.gov.ph/research/public/view?id=1534>
- Philippine Statistics Authority. (2022). Age and sex distribution in the Philippine population (2020 Census of Population and Housing). <https://psa.gov.ph/content/age-and-sex-distribution-philippine-population-2020-census-population-and-housing>
- Philippine Statistics Authority. (2024). 2023 full year poverty statistics in the Cordillera Administrative Region. PSA.
- Placencia, . G. P., Carbonell, A. K. E., Digal, L. N., & Balgos, C. Q. (2025). Factors influencing the technical efficiency of smallholder cacao farmers in Davao de Oro, Philippines. <http://searca.org/article?p=2552>
- Project Management Institute. (2025). Program management overview. PM Expert. <https://www.pmxpertinc.com/l/program-management-overview/>
- Rogers, P. J. (2008). Using programme theory to evaluate complicated and complex aspects of interventions. *Sage Journals*. <https://journals.sagepub.com/doi/10.1177/1356389007084674>
- Roser, M. (2023). Employment in agriculture. *OurWorldinData.org*. <https://ourworldindata.org/employment-in-agriculture>
- Sesio, E. A., & Eljera, J. A. (2024). Impact assessment of Special Areas for Agricultural Development (SAAD) projects on association beneficiaries in Taft, Eastern Samar. *Eastern Samar State University Research Journal*. <https://doi.org/10.5281/zenodo.13941126>
- Southeast Asian Regional Center for Graduate Study and Research. (2023). Aging farmers could add to food insecurity. <https://www.searca.org/press/aging-farmers-could-add-food-insecurity>
- Subedi, B. P. (2016). Using Likert-type scales in social science research: The debate on rules and principles. *International Journal of Contemporary Applied Sciences*. <https://ijcar.net/assets/pdf/Vol3-No2-February2016/02.pdf>
- Velza, J. F. P., Ibañez, R. Y., Jr., Clores, N., & Valler, D. L. (2023). Socio demographic characteristics and perceived constraints of the farmers to crop production in selected barangays of Cawayan, Masbate, Philippines. *International Research Journal of Science, Technology, Education & Management*. <https://ejournals.ph/article.php?id=24685>
- Viloan, M. E. (2025). Aging farms, shrinking fields: The Philippines' farming crisis. *Medium*. <https://medium.com/@b3nt3.lang/aging-farms-shrinking-fields-the-philippines-farming-crisis-91caf8876af7>

- Weiss, C. H., & Connell, J. P. (1995). Nothing as practical as good theory: Exploring theory-based evaluation for comprehensive community initiatives for children and families. Scirp. <https://www.scirp.org/reference/referencespapers?referenceid=202497>
- Workie, D. M. (2023). Livelihood diversification strategies and determinants by smallholder farmers in the highland areas of North Shewa, Ethiopia. *Journal of Agribusiness and Rural Development*. <https://www1.up.poznan.pl/jard/index.php/jard/article/view/703/1192>
- World Bank. (2023). Working with smallholders: A handbook for firms building sustainable supply chains. <https://openknowledge.worldbank.org/entities/publication/4bcb23d-3a14-4d0f-814f-bd876bb5f010>
- World Bank. (2025). Supporting rural transformation in the Philippines. <https://www.worldbank.org>
- Zhang, Y. Z., Mi, Y. S., & Liu, C. J. (2024). Farmer participation in cooperatives enhances productive services in village collectives: A subjective evaluation approach. *Frontiers in Sustainable Food Systems*. <https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2024.1442600/full>