Review of Socio-Economic Research and Development Studies 2025
Volume 9 No. 1, 1-20
https://reserds.vsu.edu.ph
Research Article

EVALUATING TARGETING EFFICIENCY IN AGRICULTURAL INTERVENTION PROGRAMS: EVIDENCE FROM THE SAAD PROGRAM IN THE PHILIPPINES

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This study evaluates the targeting efficiency of the Special Area for Agricultural Development (SAAD) program in the Philippines by identifying the socio-economic and institutional factors that influence access among rural farmers. As a government-led intervention, SAAD aims to reduce poverty and improve food security by prioritizing marginalized farmers in geographically isolated and disadvantaged areas. Utilizing a multistage sampling approach, the study surveyed 250 respondents, comprising both beneficiaries and non-beneficiaries, in Leyte Province, selected due to its high poverty incidence. A binary logistic regression model was applied to estimate the probability of program participation based on gender, poverty status, land tenure, institutional affiliation, and other household characteristics. The findings indicate that program access is significantly influenced by gender, landownership, multidimensional poverty status, and membership in farmer associations. Female and severely poor farmers were more likely to benefit from the program, suggesting that SAAD aligns with its pro-poor targeting mandate. Membership in farmer associations also emerged as a strong predictor of access, reinforcing the importance of social capital. Conversely, households with higher income from vegetable farming were less likely to be included, indicating a deliberate targeting away from relatively better-off farmers. These findings highlight the relative success of SAAD in reaching vulnerable groups while suggesting the need for improvements in program coverage, particularly for youth and non-affiliated farmers.

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Received: May 5, 2025 | Revised: May 22, 2025 | Accepted: May 28, 2025

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The study contributes to the literature on agricultural development by providing empirical evidence on beneficiary selection mechanisms and offering actionable insights for enhancing the equity and effectiveness of rural development interventions in the Philippines.

Keywords**:** Agricultural Intervention Program, Logistic regression, Targeting efficiency, Multidimensional Poverty, SAAD program

JEL Classification codes**:** Q18, O13, H43

1. INTRODUCTION

Agriculture is vital in reducing poverty, raising incomes, and improving food security for approximately 80% of the world's poor who live in rural areas and rely primarily on farming for their livelihoods (World Bank, 2024). It serves not only as a cornerstone of economic development but also as a pathway to social transformation, particularly in developing countries. Despite its potential, agriculture in these settings is predominantly characterized by small-scale farmers operating on less than five-acre plots. The sector's contribution to growth and poverty reduction is shaped by multiple challenges, including the marginalization of rural communities and persistent constraints in accessing basic services, modern technology, quality inputs, and markets (Trentinaglia et al., 2023).

To address these structural limitations, agricultural intervention programs have been widely adopted as tools to support inclusive rural development. Hossain et al. (2024) note that such interventions are designed to promote the uptake of targeted project components among farming households to improve their overall well-being. These programs are particularly critical in contexts where agriculture remains the dominant livelihood and where food insecurity and poverty are deeply entrenched. As Malabe et al. (2019) explain, agricultural intervention programs reflect a government's strategic efforts to stimulate agricultural growth, enhance food production, and improve the welfare of smallholder farmers, often through partnerships with key stakeholders. They are intended to complement broader agricultural policy and regulatory frameworks that aim to achieve national development goals. According to the FAO (2019), the success of these interventions depends on robust, evidence-based design and the active engagement of local actors, such as agricultural extension services.

While the intended goals of these programs are widely acknowledged, existing literature has focused on post-intervention results and produced mixed findings regarding their effectiveness, particularly in achieving food security outcomes. For instance, Bizikova et al. (2020) reviewed 73 single or multiple interventions and found positive, neutral, and even negative food security outcomes across interventions, reinforcing that program design may be more essential than the type of intervention. Additionally, a cross-country study analyzing 16 agricultural interventions found a 4% reduction in multidimensional poverty among beneficiaries, driven by improved access to education, health, and infrastructure (Hossain et al., 2024). This underscores the need for context-specific evaluations that examine how well these interventions reach their intended beneficiaries and whether their design aligns with the needs of marginalized rural populations. The success of these programs depends not only on the resources provided but also on how effectively they reach those who need them most. Weak targeting can result in resource misallocation and diminished program impact, often excluding vulnerable groups. Weak targeting mechanisms can exacerbate existing inequalities by excluding those most in need while allocating resources to less vulnerable groups. (Coady et al., 2004). Therefore, evaluating how well agricultural programs identify and serve their intended beneficiaries is critical for improving their effectiveness.

The Special Area for Agricultural Development (SAAD) program in the Philippines is one such initiative. Launched by the Department of Agriculture in 2017, SAAD aims to assist farmers in geographically isolated and disadvantaged areas by providing agricultural input, training, and livelihood support. It specifically targets the poorest of the poor Filipino farmers and fisherfolks (DA-SAAD, 2020). While the program's goals are well-aligned with national development objectives, there is limited empirical evidence assessing whether these vulnerable groups are benefiting from the intervention or how various socio-economic factors influence program participation.

This study seeks to fill that gap by examining the determinants of access to the SAAD program. It seeks to answer the question: What socio-economic factors influence access to SAAD program benefits among farming households? Using cross-sectional data from farmer households and estimating logit regression models, the paper analyzes whether program access is systematically associated with characteristics such as gender, poverty status, land ownership, and membership in farmer organizations. By evaluating the program's targeting efficiency, the findings aim to inform improvements in the design and delivery of agricultural interventions in the Philippines and similar rural development programs globally, potentially enhancing the effectiveness of agricultural policies and program design worldwide.

2. CONCEPTUAL FRAMEWORK

Figure 1 presents the conceptual framework for evaluating the targeting efficiency of the SAAD program. The model defines access to SAAD as the dependent variable and posits that it is shaped by a set of socioeconomic and institutional factors, including gender, land ownership, organizational membership, and access to services. Multidimensional poverty status serves as a moderating variable to assess whether the program effectively reaches its intended beneficiaries, severely poor households. This framework supports analysis of whether targeting aligns with poverty-based eligibility and highlights potential inclusion or exclusion errors.

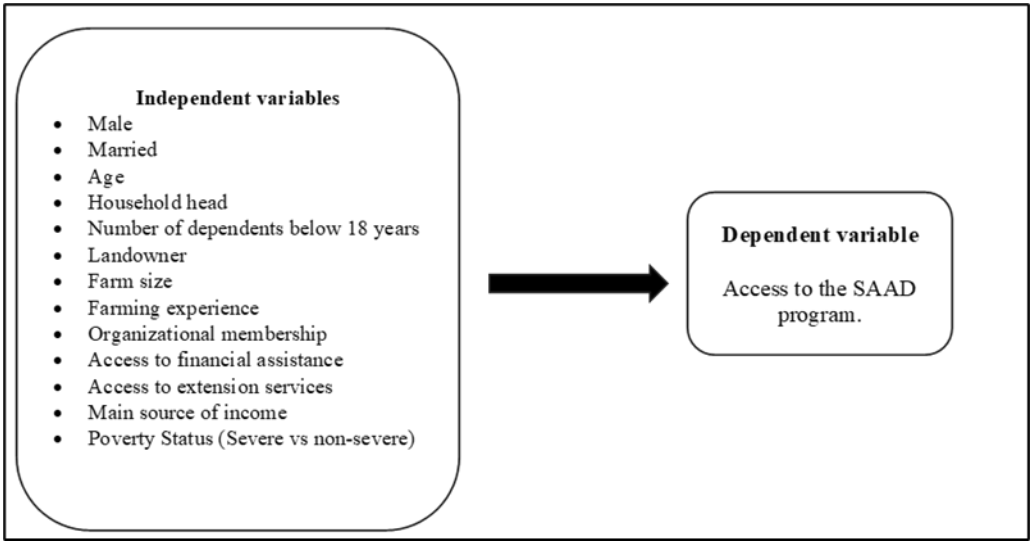

Figure 1. Conceptual Framework of the Study

3. METHODOLOGY

Study Area

This study was conducted in Leyte, one of the six provinces in the Eastern Visayas Region. Four municipalities in Leyte including Baybay, Abuyog, Hindang and Mahaplag were precisely selected due to their proximity. Leyte is the region's largest and oldest province, encompassing approximately 27% or 571,276 hectares of the total land area,

which amounts to 2,143,169 hectares (DENR RFO VIII, 2016). Within Eastern Visayas, the agricultural expanse spans 976,385 hectares, out of which 34% or 332,018 hectares pertains to the agricultural domain of Leyte province. Among the provinces within this region, Leyte displays the most substantial cropland coverage, with its crop-dedicated territory reaching 322,252 hectares, constituting 97% of its overall agricultural acreage.

According to the 2018 PSA Report, the primary crops cultivated in the province encompass rice, coconut, and corn. Their respective production volumes were reported as 486,878 metric tons (MT), 94,475 MT, and 48,300 MT. In the same year, Leyte province was incorporated into the group of five pre-existing regional provinces, all falling under the coverage of the Special Area for Agricultural Development (SAAD) Program initiated by the Department of Agriculture (DA). This program extended support for livelihood activities such as rice and corn production, vegetable cultivation, swine farming, and swine fattening to individual farmers and agricultural associations, spanning the period from 2018 to 2019.

Data Collection

This study relied on primary data collected via a semi-structured questionnaire that included both open-ended and closed-ended questions. A digital survey tool, specifically Kobocollect, was employed. The questionnaire aimed to gather information on farmers' demographic characteristics, farming practices, adopted livelihood interventions, production outputs, income levels, multidimensional poverty, household food consumption (HFIAS), and the perceived impacts of these livelihood interventions. The questionnaires were administered to respondents through face-to-face interviews, with data collection occurring from October 2024 to January 2025.

Sampling Technique

Potential respondents were identified using a multistage sampling approach. In the first stage, a list of SAAD program beneficiaries was obtained from the Department of Agriculture–SAAD Region 8 office. Leyte Province was purposively selected from the Eastern Visayas region, given its high poverty incidence of 47.1% based on the 2015 Philippine Statistics Authority (PSA) report. Of the ten municipalities in Leyte that benefitted from the SAAD program, four—Abuyog, Baybay, Mahaplag, and Hindang—were purposively selected based on their proximity.

To select non-beneficiaries while minimizing potential spillover effects, Abuyog was designated as the control site. In the remaining three municipalities—Baybay,

Mahaplag, and Hindang—six farmer associations comprising a total of 147 SAAD beneficiaries were identified. Members of these associations formed the sampling frame for the beneficiary group.

To determine the appropriate sample size, Slovin's formula was applied:

Slovin's formula is written as:

$$n = \frac{N}{1 + Ne^2}$$

where,

n - required sample size
N - population size
e - desired level of precision or margin of error

Given that the population of vegetable farmers (beneficiaries), N = 147 and e = *0.05,* the sample size is given by;

$$n = \frac{147}{1 + 147(0.05^2)}$$

$$n = \frac{147}{1.37}$$

$$n = 107.30$$

$$n \approx 107$$

Hence, the desired sample size for beneficiaries was 107, but due to dropouts during the period between program implementation and data collection, only 102 beneficiaries were successfully interviewed. To enable comparison, 107 non-beneficiaries were initially targeted; however, the final number of non-beneficiary respondents increased to 148 to account for potential attrition and nonresponse. In total, 250 respondents were interviewed for the study.

It is important to note that convenience sampling was used for the non-beneficiary group due to logistical constraints and accessibility. While practical, this approach introduces limitations, particularly potential selection bias, and therefore may limit the generalizability of findings related to non-beneficiaries.

Data Analysis

Descriptive analysis was used to analyze the socioeconomic characteristics of respondents, and the logistic regression model was used to identify the determinants of access to the SAAD program. These analyses were carried out using STATA 17. Five logistic regressions were carried out to assess the robustness of determinants or predictors across different specifications.

Table 1. Description of variables used in the study

Dependent Variable	**Definition**
SAAD beneficiary	Is a dummy variable 1 for farmers who were beneficiaries of the SAAD program and 0 if the farmer is not a beneficiary
Explanatory variables	
Age household head	The age of the respondent and is a continuous variable measured in years
Male	1 for male respondent and 0 for female respondent
Married	Reflects marital status, dummy variable 1 for married and 0 otherwise
Household head	Dummy variable 1 if farmer is the household head and 0 if otherwise
Education years	Educational status of the respondent measured in years
Number of children below 18 years	Measured as count reflecting number of children per household below age 18
Landowner	Land ownership, 1 if they own the farmland and 0 if otherwise
Farm area	Refers to the farm size measured in hectares
Years of farming	Experience in farming captured as the number of years farmers were in engaged in farming activities
Member of Farmer Association	Is a dummy variable 1 for if a farmer is a member of a farmer association or organization and 0 if otherwise.
Income from Vegetable farming	Reflects the logged annual income of the farmer from vegetable farming
Income from other source	Reflects the log of the annual income of the farmer from other sources other than vegetable farming
Financial Assistance	Is a dummy variable with 1 for if farmer has access to financial assistance and 0 if otherwise

Access to extension services	Is a dummy variable with 1 for if farmer has access to extension services on his/her farm and 0 if otherwise
Crop diversity	Reflect the number of vegetables that a farmer grows
Primary occupation	Dummy variable 1 if farming is the primary occupation and 0 if other wise
Main source of income	Dummy variable 1 if main income is from farming and 0 if other wise
Severe poverty	Dummy variable 1 if the farmer experiences severe multidimensional poverty and 0 if otherwise

4. RESULTS AND DISCUSSION

Socioeconomic Characteristics of Respondents

Table 2 presents the socio-economic profile of respondents. The analysis reveals that 59.6% of the sample was female, contrasting with national data, where 51.5% of the agricultural population is male (PSA, 2025). This suggests a growing recognition of women in agriculture, particularly in rural areas where farming remains the main source of livelihood. The increasing recognition of women may also reflect broader shifts toward gender inclusivity in agricultural labour, although the Philippine Commission on Women notes that much of women's agricultural work remains under recognized due to its categorization as household support rather than formal labour.

The average age of respondents was 50 years, which aligns with recent estimates by the Department of Agriculture (PCO, 2023), indicating a modest decrease from the previously reported average of 57 years. Despite this, the distribution remains skewed, with 50% classified as older adults, 47.6% as middle-aged, and only 2.4% falling in the youth category. This points to an aging agricultural workforce, consistent with national trends, and highlights a significant challenge for sectoral renewal and intergenerational succession in farming.

All respondents had some level of formal education, with 43.6% completing junior high school. Very few had attained tertiary education, consistent with PSA (2024), which found that most agricultural operators have completed only elementary or high school. Unlike PSA's operator-focused surveys, this study includes a broader respondent base, adding depth to the understanding of educational attainment among farming households.

Household demographics show an average of 4 members, with 1 dependent under 18 years. Although most respondents were women, only 9% of households were female-headed, significantly lower than the national average of 25% reported by the 2022 National Demographic and Health Survey (PSA and ICF, 2023). This suggests that male headship remains dominant in rural areas despite women's increasing role in agricultural labor.

Approximately 56.8% of respondents identified farming as their primary occupation, and 88.8% reported it as their main source of income. These figures emphasize the centrality of agriculture in sustaining rural livelihoods, corroborating FAO (2025) estimates that agriculture supports the livelihoods of 86% of the rural population.

However, the average farm size was only 0.47 hectares, and farmers cultivated 1.3 types of vegetables, underscoring the smallholder nature and low crop diversification typical of the region. The average farming experience was 20 years, indicating a relatively mature farming population with deep sector knowledge, though likely constrained by scale and resources.

The average annual income from vegetable farming was ₱43,271.52, slightly higher than the ₱41,138.44 earned from other sources. This suggests that while agriculture remains dominant, non-farm income remains essential, possibly to supplement farm earnings or buffer against production and market shocks.

Table 2. Socioeconomic characteristics of Respondents

Characteristics	**Frequency**	**Percentage (%)**
Sex		
Male	101	40.40
Female	149	59.60
Age		
15 to 29 years (younger age group)	6	2.40
30 to 49 years (middle age group)	119	47.60
50 years and above (older age group)	125	50.00
Household size		
5 or less	197	78.80
Greater than 5	53	21.20
Highest Educational Attainment		
No formal education	0	0.00
Elementary level	99	39.60
Junior High School	109	43.60
Senior High School	5	2.00

College or tertiary level	34	13.60
Vocational level	3	1.20
Marital status		
Married	189	75.60
Single	13	5.20
Divorced	7	2.80
Widowed	14	5.60
Live in	27	10.80
Household member category		
Head	120	48.00
Spouse/partner	127	50.80
Son/Daughter	2	0.80
Others	1	0.40
Primary Occupation		
Farming	142	56.80
Housewife/housekeeper	75	30.00
Agricultural worker	5	2.00
Non-Agricultural labor	20	8.00
Others	8	3.00
Main source of income		
On-farm	222	88.80
Off-farm	28	11.20

Source: (Survey data, 2024)

From Table 3, Access to key support services remains uneven. Only 21% of farmers had access to extension services, while 79% did not. This is a critical gap, as extension plays a vital role in disseminating modern farming practices. The DA (2023) attributes this gap to several factors, including the digitization of agriculture, limited mobility of extension officers, and weak monitoring systems at the LGU level.

Similarly, 70.8% of respondents reported no access to financial services, posing a serious constraint to investment in agricultural inputs, equipment, and technology. Among those with access, most relied on government programs, such as SAAD and the Agricultural Credit Policy Council (ACPC), consistent with Macaspac (2021) and PSA (2024), which identify the LGU as a major provider of in-kind credit assistance in rural areas.

In terms of collective organization, 51% of respondents were members of farmer associations. This near-equal distribution suggests that while associations are present,

they are not yet universal, and many farmers remain outside formal networks that can facilitate training, marketing, and access to programs. Notably, 41% of respondents were SAAD beneficiaries, indicating a considerable reach, though the majority were not covered, likely due to geographic targeting or eligibility constraints.

Land ownership was reported by 59.2% of respondents, significantly higher than the regional average of 17.6% in Eastern Visayas (PSA, 2024). This disparity suggests that land tenure security is stronger in the study sites, which may foster greater willingness to invest in land improvements and long-term farm productivity.

Table 3. Institutional Characteristics of Respondents

Characteristics	**Frequency**	**Percentage (%)**
Access to extension services		
Yes	52	20.80
No	198	79.20
Access to Financial Assistance		
Yes	73	29.20
No	177	70.80
Source of Financial Assistance		
Financial institutions		
Yes	14	22.58
No	48	77.42
Government programs		
Yes	53	85.48
No	9	14.52
Membership of Farmer		
Association	123	50.80
Yes	127	49.20
No		
Awareness of Climate change and		
its impact		
Yes	247	1.20
No	3	98.80
Beneficiary of SAAD		
Yes	102	40.80
No	148	59.20

Land tenure system		
Owned	148	59.20
Leased	2	0.80
Rented	87	34.80
Others	13	5.20

Source: Survey data, 2024

Table 4. Descriptive summary of variables

Variables	**Mean**	**Standard deviation**	**Min**	**Max**
Annual income from vegetable farming	43271.52	54181.35	0	300000
Annual income from other sources	41138.44	97318.01	0	1243200
Number of vegetables grown	1.324	.7190913	0	3
Number of dependents below 18 years	1.336	1.178414	0	5
Years of farming	19.888	14.0728	1	70
Farm size	.465214	.6474823	0	5
Age	49.748	11.93509	22	87
Household size	4.3	1.596306	1	10

Source: Survey data, 2024

Determinants of Access to the Special Area for Agricultural Development (SAAD) Program

Table 5 presents the results from five logit models that estimate the factors influencing farmers' participation in the SAAD program. The models progressively introduce additional covariates to assess the robustness of the predictors across different specifications.

The study consistently found a statistically significant negative relationship between being male and access to the intervention in all models. In Models 1 through 5, the coefficient for being male is negative and significant at either the 10% or 5% level (e.g., Model 1: $\beta = -1.394$, $p < 0.1$; Model 3: $\beta = -1.931$, $p < 0.05$). This indicates that female farmers were more likely to be selected for the intervention program. The findings of this study align with those of Anang and Asante (2020), who found that women were more likely to access government support services, particularly farm credit. However, in the same study, women were less likely to access the input subsidy, which contradicts the findings of this study. The findings of this study align with policy priorities that emphasize the importance of women in agricultural development, given their traditionally

disadvantaged position concerning resource access and decision-making. For instance, according to the FAO (2025), female farmers often encounter inequitable access to land, labour, and inputs due to social norms and biases in resource allocation. Policymakers may prioritize women to maximize program impacts, as closing gender gaps could increase agricultural output in developing countries. The SAAD program aimed to improve food security, and with women playing a crucial role in subsistence farming and food security, empowering women through targeted interventions not only enhances equity but also contributes to broader economic and social outcomes, such as hunger reduction and resilience to shocks like climate change (Nchanji et al., 2023; World Economic Forum, 2023).

Marital status is positively and significantly associated with access to the SAAD program across all relevant models ($p < 0.05$; $p < 0.01$), indicating that married individuals were more likely to be selected for the program compared to their non-married counterparts. This may reflect a perception among program implementers that married individuals represent more stable households or have greater resource needs, potentially enabling more effective utilization of SAAD inputs. Furthermore, the sample largely consists of mature farmers, which likely increases the proportion of married individuals. This demographic trend may partly explain the observed association between marital status and program access. As Bedi et al. (2023) emphasize, the choice of beneficiaries in poverty reduction initiatives significantly affects outcomes; notably, targeting both spouses can enhance agricultural productivity and improve overall household welfare.

Additionally, income from vegetable farming is negatively and significantly associated with program access ($p < 0.05$; $p < 0.1$), indicating that households with higher farm income were less likely to be selected. This contrasts with findings by Anang and Asante (2020), who reported that higher-income farmers were more likely to access government support services for agriculture, highlighting that such associations may be context-specific. In the case of SAAD, this pattern is consistent with the program's explicit focus on targeting the poorest of the poor. The exclusion of relatively wealthier households aligns with its pro-poor targeting objectives and reflects eligibility criteria designed to prioritize more vulnerable populations.

In support of this, the introduction of the variable "severely multidimensionally poor" in Model 3 reveals a strong positive association with program access ($\beta = 2.869$, $p < 0.05$), which remains significant in Models 4 and 5. This confirms that the intervention was more likely to reach severely poor households, validating the program's targeting efficiency and providing empirical support for its poverty-focused design.

Membership in a farmer association is a strong and consistent predictor of access across all models ($p < 0.01$), highlighting the role of collective action and institutional ties

in facilitating participation in government interventions. It emphasizes the importance of social capital in connecting farmers to support services. This reflects the SAAD program's design, which distributes inputs through organized farmer groups. These findings are consistent with existing literature. For instance, Aidoo et al. (2025) and Ogunleye et al. (2015) found that membership in farmer organizations is associated with a high probability of participating in agricultural intervention programs.

Contrary to expectations, landownership is negatively associated with access, with significant coefficients in all model specifications ($p < 0.01$). This suggests that landless or tenant farmers were more likely to benefit from the intervention, reflecting a deliberate effort to prioritize more vulnerable households. These findings diverge from those of Aidoo et al. (2025), who found that landowners were more likely to participate in agricultural interventions, given that land is a critical asset for eligibility and productive capacity. The SAAD program's approach appears to have successfully targeted land-poor or tenant farmers, a group often excluded from formal agricultural support systems. Notably, many beneficiaries operated on a shared community farm, which may have reduced land ownership as a barrier to participation.

Table 5. Results of the Logit Model

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Male	-1.394*	-1.461**	-1.931**	-1.670**	-1.309*
	(0.736)	(0.744)	(0.835)	(0.793)	(0.726)
Age of respondent	0.027	0.042*	0.035	0.037	0.044*
	(0.019)	(0.025)	(0.026)	(0.026)	(0.025)
Married	1.487***	1.431**	1.506***	1.570***	
	(0.545)	(0.558)	(0.576)	(0.575)	
Years of education	0.048	0.049	0.063	0.062	0.042
	(0.068)	(0.071)	(0.076)	(0.076)	(0.071)
Household size	0.151	-0.036	-0.085	-0.083	0.027
	(0.131)	(0.188)	(0.192)	(0.192)	(0.188)
Income from vegetable farming	-0.127**	-0.135**	-0.102	-0.107*	-0.082
	(0.058)	(0.061)	(0.063)	(0.063)	(0.060)
Income from other sources	-0.058	-0.052	-0.057	-0.061	-0.065
	(0.050)	(0.052)	(0.054)	(0.053)	(0.050)
Access to financial assistance	0.756	0.954	1.221	1.292*	1.141

	(0.662)	(0.681)	(0.748)	(0.753)	(0.709)
Member of farmer association/organization	2.276***	1.962***	2.055***	1.946***	1.973***
	(0.564)	(0.595)	(0.633)	(0.623)	(0.611)
Access to extension services	0.624	0.837	0.591	0.530	0.617
	(0.604)	(0.626)	(0.677)	(0.666)	(0.625)
Landowner	-2.652***	-2.472***	-2.706***	-2.684***	-2.540***
	(0.529)	(0.550)	(0.586)	(0.584)	(0.556)
Head of household	0.465	0.594	0.681	0.718	0.361
	(0.715)	(0.724)	(0.764)	(0.762)	(0.692)
Number of vegetable crops grown		0.562*	0.334	0.431	0.605*
		(0.316)	(0.341)	(0.330)	(0.326)
Years of farming		0.001	0.001	0.001	0.005
		(0.019)	(0.019)	(0.019)	(0.018)
Farm size(hectares)		-0.115	-0.178	-0.134	-0.020
		(0.335)	(0.401)	(0.390)	(0.395)
Number of children below 18 years		0.489*	0.404	0.443	0.359
		(0.296)	(0.303)	(0.301)	(0.287)
Multidimensionally poor(severe)			2.869**	2.624**	2.361*
			(1.350)	(1.290)	(1.213)
Primary occupation (Farming)			0.605		
			(0.591)		
Main source of income (farming)			-1.129	-0.911	-0.706
			(0.736)	(0.709)	(0.686)
Constant	-2.528	-3.956**	-2.651	-2.848	-2.956
	(1.731)	(1.927)	(2.208)	(2.191)	(2.146)
Log Likelihood	-75.637	-72.443	-68.986	-69.516	-73.567
ChiÂ²	186.788	193.176	200.089	199.030	190.927
Prob > ChiÂ²	0.000	0.000	0.000	0.000	0.000

DF Model	12.000	16.000	19.000	18.000	17.000
N	250.000	250.000	250.000	250.000	250.000
Pseudo RÂ²	0.553	0.571	0.592	0.589	0.565
Note:					
Standard errors in parentheses					
* p<0.1 ** p<0.05 *** p<0.01					
Dependent variable (treatment variable): Access to the SAAD intervention					

Source: Survey data, 2024

Other significant but inconsistent variables include the respondent's age, which exhibits a small yet significant positive effect in Models 2 and 5 ($p < 0.10$). This suggests that older farmers were more likely to access the intervention, which could partly be attributed to the generally older demographic of farmers. However, this finding contrasts with previous studies such as those by Aidoo et al. (2025) and Uloh et al. (2023), which indicated that older farmers often hold a negative attitude toward intervention programs, while younger farmers tend to show greater openness to innovation, higher energy levels and a greater propensity to adopt new practices. Access to financial assistance emerges as significant only in Model 4 ($p < 0.1$), suggesting that farmers with access to financial support are more likely to participate in intervention programs. This aligns with Aidoo et al. (2025), who found that access to credit facilitates farmers' involvement in agricultural programs, as financial resources enhance their ability to invest in essential inputs and technologies. Additionally, the number of vegetable crops grown is positively associated with program access in both Model 2 ($p < 0.1$) and Model 5 ($p < 0.1$), suggesting that production diversity may have influenced beneficiary selection. While direct evidence linking crop diversification to participation in agricultural interventions is limited, existing studies indicate that diversified farming practices can enhance farmers' resilience and economic sustainability. For instance, a study by Tripathy and Das (2020) found that crop diversification positively impacted the socio-economic life of tribal farmers in India's Eastern Ghats, leading to improved income and livelihood stability. The number of children under 18 years is marginally significant in Model 2 ($p < 0.1$), indicating that households with dependents were somewhat more likely to be selected. This may reflect the program's sensitivity to household vulnerability, as families with more dependents face greater economic strain. Irfan (2023) notes that a higher child dependency ratio is

associated with deeper poverty, which may explain why such households were prioritized under SAAD's pro-poor targeting framework.

These findings highlight that access to the SAAD intervention was systematically affected by observable household characteristics, particularly gender, poverty status, land access, and institutional affiliations. The results demonstrate that SAAD effectively targets vulnerable groups, such as women, land-poor individuals, and severely impoverished households, while institutional affiliations, such as farmer associations, play a crucial role in facilitating access. However, participation is also influenced by economic status and livelihood strategies, suggesting opportunities to refine targeting and delivery mechanisms.

5. DISCUSSION & CONCLUSION

This study examined the targeting efficiency of the SAAD program in Leyte Province by identifying the socioeconomic and institutional characteristics associated with program access. The findings indicate that the program largely succeeded in reaching its intended beneficiaries, particularly severely poor farmers and women, reflecting strong alignment with its pro-poor and gender-sensitive objectives. The consistent significance of farmer association membership highlights the importance of institutional affiliations in facilitating program access, while the exclusion of relatively better-off households suggests effective prioritization of vulnerable groups.

These results imply that agricultural interventions like SAAD can achieve meaningful inclusion when they incorporate multidimensional poverty indicators and leverage existing social structures. However, limited access to extension services and financial assistance, alongside the underrepresentation of youth, points to persistent structural barriers that may hinder the long-term inclusiveness and sustainability of such programs.

Based on the study's findings, the following policy recommendations are proposed to enhance the targeting efficiency and overall impact of agricultural intervention programs such as SAAD: 1) Given that association membership was a strong predictor of access, interventions should deepen collaboration with farmer groups and invest in capacity building while supporting the inclusion of marginalized farmers who may not yet be affiliated. 2) Severely poor farmers were more likely to access SAAD support. This affirms the value of multidimensional poverty indicators (beyond just income) in identifying vulnerable groups. SAAD and similar programs should institutionalize these measures in beneficiary screening to enhance equity and relevance.

3) The underrepresentation of youth among program beneficiaries signals the need for youth-specific incentives, training, and enterprise development programs to ensure intergenerational sustainability of agricultural livelihoods.

6. ACKNOWLEDGEMENTS

The authors would like to express their sincere gratitude to the Department of Agriculture officials, the municipalities' mayors, and the barangay captains for their support and cooperation. Special thanks go to the farmers who generously shared their time and experiences. The lead author also acknowledges the support received through the Graduate Teaching Assistantship Program of Visayas State University, which contributed to the completion of this study.

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