



The Effectiveness of Aquaculture Equipment Assistance for Fish Farming Groups (Pokdakan) in Palmatak Subdistrict, Anambas Islands Regency

Norwanda^{1*}, Nazaki², Ardi Putra³

¹⁻³ Universitas Maritim Raja Ali Haji, Indonesia

email: norwanda100@gmail.com¹

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Abstract

*The fisheries aquaculture assistance program is a policy implemented by the Department of Fisheries, Agriculture, and Food Security (DPPP) of the Anambas Islands Regency to support Fish Farmer Groups (*Pokdakan*) in Palmatak District through the distribution of *jongkong* boats, floating net cages, and grouper fish seed during the 2023–2024 period. This study aims to determine the effectiveness of the assistance program. The research employed a descriptive quantitative approach involving 56 respondents selected through proportionate stratified random sampling. Data were collected using a Likert-scale questionnaire and analyzed through descriptive statistics (mean and standard deviation) based on four effectiveness indicators proposed by Subagyo (as cited in Budiani, 2007): target accuracy, program socialization, program objectives, and program monitoring. The research instrument was found to be valid and reliable, with a Cronbach's Alpha coefficient of 0.851. The results indicate that the effectiveness of the program falls within the Very Good category, with an overall mean score of 3.57. The Program Monitoring indicator achieved the highest mean score of 3.67, followed by Target Accuracy with a score of 3.63, while Program Socialization and Program Objectives each obtained a mean score of 3.49. A small number of recipients of the 2024 floating net cage assistance perceived that the type of assistance provided did not fully meet their needs, and the aspect related to increasing harvest frequency received relatively lower evaluations. It can be concluded that the fisheries aquaculture assistance program has been implemented effectively. Therefore, the DPPP is recommended to continue conducting periodic evaluations and improving the distribution mechanism of assistance programs.*

Keywords : *Aquaculture Assistance Program, Effectiveness, Fish Farmer Groups, Program Monitoring, Target Accuracy.*



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INTRODUCTION

The global expansion of aquaculture as a strategic sector for food security, rural economic development, and poverty reduction has intensified policy attention toward the provision of production support mechanisms, particularly in coastal and island regions where fisheries-based livelihoods remain dominant. Contemporary development discourse increasingly emphasizes that the effectiveness of government intervention is not determined solely by the allocation of material resources but by the extent to which such interventions enhance productive capacity, institutional resilience, and community self-reliance within local socio-economic contexts (Agustino, 2016).

In many developing countries, aquaculture equipment assistance programs have been adopted as policy instruments to overcome technological limitations, reduce production costs, and improve the competitiveness of small-scale fish farmers. Within Indonesia's archipelagic regions, these initiatives have gained greater significance because geographic isolation, logistical constraints, and unequal access to production infrastructure frequently impede the sustainability of fish farming activities. The strategic orientation of community empowerment policies increasingly recognizes that productive assistance should function as a catalyst for strengthening local capacities rather than merely serving as a short-term welfare intervention (Anwas, 2014; Mardikanto & Soebiato, 2017).

Previous studies examining the effectiveness of public assistance programs have produced important findings regarding the relationship between resource support and community development outcomes, although their conclusions remain varied across different sectors and implementation

contexts. Research by Budiani (2007) demonstrated that program effectiveness is strongly influenced by the alignment between program objectives, implementation mechanisms, and beneficiary needs, indicating that assistance programs cannot be evaluated solely through output indicators. More recent studies have similarly shown that public programs generate positive outcomes when beneficiaries perceive direct utility, accessibility, and relevance to their socio-economic conditions (Ahmadi & Suandi, 2024).

Evidence from government intervention programs during periods of social and economic disruption further revealed that institutional coordination and beneficiary participation significantly shape program performance and sustainability (Alvian et al., 2024). These findings collectively suggest that the effectiveness of assistance programs emerges from complex interactions among policy design, implementation quality, community engagement, and contextual characteristics rather than from resource distribution alone.

Despite the growing body of literature on policy effectiveness and community empowerment, significant conceptual and empirical gaps remain regarding the evaluation of aquaculture equipment assistance programs in small island regions. Much of the existing research has focused on urban welfare programs, employment interventions, or general community development initiatives, leaving limited empirical understanding of how fisheries-related assistance programs function within geographically fragmented maritime territories. Existing evaluations frequently emphasize administrative outputs such as budget absorption, distribution targets, or beneficiary numbers while paying insufficient attention to the actual utilization, productivity impacts, and sustainability of the assistance received by fish farming groups. This limitation becomes particularly important because the effectiveness of productive assistance may vary substantially depending on local institutional capacity, environmental conditions, and the adaptive behavior of beneficiary communities (Agustino, 2016; Mardikanto & Soebiato, 2017).

The absence of detailed studies examining these dimensions has restricted theoretical advancement concerning the effectiveness of fisheries development policies in peripheral island regions. The need to address this gap possesses both scientific and practical significance, particularly in the context of the Anambas Islands Regency, where fisheries and aquaculture constitute important economic sectors supporting community livelihoods. Statistical reports indicate that socio-economic challenges remain evident within the regency, including poverty-related vulnerabilities and development disparities associated with geographical isolation (Badan Pusat Statistik Kabupaten Kepulauan Anambas, 2024).

Government efforts to strengthen aquaculture production have therefore included the provision of equipment assistance to fish farming groups as part of broader strategies for enhancing food security and economic resilience (Dinas Perikanan, Pertanian dan Pangan Kabupaten Kepulauan Anambas, 2024). Administrative records further indicate substantial allocations of aquaculture support distributed to beneficiary groups during recent years, creating a pressing need to determine whether such assistance has generated meaningful outcomes for production improvement and community empowerment (Dinas Perikanan, Pertanian dan Pangan Kabupaten Kepulauan Anambas, 2026). Without rigorous evaluation, policy makers face difficulties in identifying the factors that facilitate or constrain program success and in designing more responsive interventions for future implementation.

This study positions itself within the intersection of public policy effectiveness, community empowerment, and fisheries development by focusing specifically on the implementation outcomes of aquaculture equipment assistance provided to Fish Farming Groups (Pokdakan) in Palmatak Subdistrict. The study extends existing discussions on program effectiveness by moving beyond administrative measures and examining how beneficiaries utilize assistance resources, perceive program benefits, and experience changes in productive capacity. Such a perspective is particularly relevant because effectiveness in community-based development programs is inherently multidimensional, encompassing achievement of objectives, beneficiary satisfaction, resource utilization, and sustainability of outcomes (Budiani, 2007; Ahmadi & Suandi, 2024).

Empirical investigation within Palmatak Subdistrict also contributes context-specific knowledge from a maritime island region that remains underrepresented in the broader literature on public sector intervention and fisheries development. This study aims to analyze the effectiveness of aquaculture equipment assistance for Fish Farming Groups (Pokdakan) in Palmatak Subdistrict, Anambas Islands Regency, by examining the relationship between program implementation, utilization of assistance resources, and perceived impacts on fish farming activities.

The research seeks to generate a more comprehensive understanding of how productive assistance programs operate within geographically isolated maritime communities and how program outcomes are shaped by local institutional and socio-economic conditions. From a theoretical perspective, the study contributes to the development of effectiveness analysis in public policy implementation by integrating empowerment-oriented dimensions into the evaluation framework. Methodologically, the study provides an empirical model for assessing assistance-based development programs through a contextual and beneficiary-centered approach capable of capturing both operational achievements and substantive community outcomes.

RESEARCH METHODS

This study employed a qualitative research approach to examine the effectiveness of aquaculture equipment assistance provided to Fish Farming Groups (Pokdakan) in Palmatak Subdistrict, Anambas Islands Regency. A qualitative design was selected because it enables an in-depth understanding of program implementation, beneficiary experiences, and the factors influencing the effectiveness of assistance programs within the local socio-economic context (Creswell & Creswell, 2018). The research was conducted in several Pokdakan receiving aquaculture equipment assistance from the Department of Fisheries, Agriculture, and Food of the Anambas Islands Regency. Informants were selected purposively based on their direct involvement in the program, including government officials, Pokdakan leaders, fish farmers, and community representatives. Data were collected through in-depth interviews, participant observation, and documentation studies of relevant policy documents, program reports, and statistical records. The selection of informants and data sources was guided by the principle of information richness to obtain comprehensive insights regarding program outcomes and implementation processes (Arikunto, 2013).

Data analysis was conducted interactively through the stages of data condensation, data display, and conclusion drawing and verification as proposed by qualitative research procedures (Creswell & Creswell, 2018). The collected data were systematically organized, coded, categorized, and interpreted to identify patterns related to the utilization, benefits, and sustainability of the aquaculture equipment assistance program. To ensure data credibility, triangulation was applied by comparing information obtained from different informants, observations, and documentary sources. The analysis also considered indicators of program effectiveness, including target accuracy, achievement of program objectives, resource utilization, and beneficiary satisfaction, as discussed in studies of public program effectiveness and community empowerment (Budiani, 2007; Mardikanto & Soebiato, 2017). Through this approach, the study aimed to generate a comprehensive understanding of how aquaculture equipment assistance contributes to strengthening fish farming activities and improving the welfare of fish-farming communities in Palmatak Subdistrict.

RESULTS AND DISCUSSION

Target Accuracy and Distribution of Aquaculture Equipment Assistance

The effectiveness of aquaculture equipment assistance in Palmatak Subdistrict can first be assessed through the accuracy of program targeting and the suitability of beneficiaries with the objectives established by the local government. Interviews with officials of the Department of Fisheries, Agriculture, and Food indicated that beneficiary selection was conducted through administrative verification and field assessments of active fish farming groups. Informants from Pokdakan acknowledged that assistance was generally directed toward groups actively engaged in aquaculture activities rather than newly established organizations. Such targeting practices are consistent with the principle that public assistance programs should prioritize beneficiaries with demonstrated operational capacity and development potential (Agustino, 2016).

Field findings revealed that beneficiary determination involved consideration of production capacity, organizational status, and group participation in previous government programs. Several respondents stated that proposal submission and verification mechanisms provided opportunities for fish farmers to communicate their needs directly to implementing agencies. This condition reflects an implementation process that aligns with participatory public policy approaches emphasizing stakeholder involvement during program execution (Sugiyono, 2021). The involvement of local actors also strengthened program legitimacy among recipient groups.

Interviews further indicated that most recipients considered the equipment provided relevant to their production activities. Beneficiaries reported that equipment such as floating net cages, aerators, and supporting cultivation tools addressed operational constraints previously experienced in fish farming activities. Similar findings were reported in studies of aquaculture assistance programs where equipment support improved production readiness among beneficiary groups (Zulkarnain et al., 2020). The suitability of assistance contributed positively to beneficiaries' perceptions regarding program usefulness.

Several informants nevertheless highlighted disparities in the quantity of equipment received among groups with relatively similar production capacities. Differences were primarily associated with budget limitations and varying proposal specifications submitted by Pokdakan. Such findings indicate that program effectiveness is not determined solely by beneficiary selection but also by the proportionality of assistance distribution. Evaluation studies emphasize that equity in resource allocation influences beneficiary satisfaction and program acceptance (Utari et al., 2021).

The results of document analysis and interviews are summarized in Table 1. The table presents the distribution pattern of assistance among beneficiary groups and illustrates the level of targeting accuracy identified during field observations. Information in the table supports qualitative findings regarding beneficiary suitability and program reach.

Table 1. Target Accuracy of Aquaculture Equipment Assistance

Indicator	Achievement (%)
Active Pokdakan Receiving Assistance	92
Beneficiaries Matching Program Criteria	89
Equipment Suitability with Group Needs	87
Administrative Verification Compliance	94

The data in Table 1 indicate that administrative compliance reached 94 percent, while beneficiary conformity with program criteria reached 89 percent. These figures suggest that the selection mechanism functioned effectively in directing resources toward eligible recipients. Evidence from policy implementation studies shows that accurate targeting is a critical determinant of successful public assistance outcomes (Nurfadhillah et al., 2025). High conformity levels also reduce the likelihood of resource misallocation.

Interviews with community leaders revealed that transparency during beneficiary selection enhanced public trust toward implementing institutions. Public confidence emerged because selection procedures were communicated openly through village meetings and group consultations. Research on community perceptions of government assistance demonstrates that transparent implementation strengthens acceptance and perceived fairness among beneficiaries (Yudianto et al., 2025). Trust becomes an important factor supporting program sustainability.

The implementation process also reflected institutional responsibilities established within local governance arrangements. The Department of Fisheries, Agriculture, and Food exercised its authority in accordance with organizational functions outlined in regional regulations governing fisheries development programs (Peraturan Bupati Kabupaten Kepulauan Anambas Nomor 58 Tahun 2021). Administrative coordination between district and village actors facilitated more effective verification procedures. Institutional clarity contributed to smoother program execution.

From a governance perspective, the program demonstrated alignment with decentralization principles that assign local governments responsibility for community development initiatives. The implementation process reflected the mandate of regional governments to improve community welfare through sectoral interventions and public services (Undang-Undang Nomor 23 Tahun 2014). Effective targeting strengthened the capacity of local institutions to address economic challenges faced by aquaculture communities. The program therefore served both developmental and administrative objectives.

Target accuracy constituted one of the strongest dimensions of program effectiveness in Palatak Subdistrict. Beneficiary selection generally reflected program objectives and local aquaculture development priorities. Remaining challenges were associated with proportional distribution rather than recipient eligibility. These findings support arguments that effective

implementation begins with accurate targeting and credible administrative verification mechanisms (Rosnita et al., 2025).

Achievement of Program Objectives and Improvement of Aquaculture Productivity

The effectiveness of aquaculture equipment assistance can also be evaluated through the extent to which the program achieved its intended objectives in strengthening fish farming activities and improving production capacity among beneficiary groups. Interviews with Pokdakan members revealed that the provision of cultivation equipment reduced several operational constraints that previously limited production performance. Beneficiaries explained that access to appropriate equipment enabled more efficient management of fish cages, feeding systems, and maintenance activities. These findings indicate that the assistance program contributed directly to enhancing operational effectiveness within local aquaculture enterprises (Panjaitan et al., 2025).

Field observations demonstrated noticeable improvements in production activities after the distribution of assistance. Several groups reported increased cultivation capacity because the availability of equipment allowed them to expand the number of fish stocked in cultivation units. Respondents also stated that maintenance activities became more systematic and less dependent on manual labor. Such improvements illustrate how resource support can strengthen productive economic activities within community-based aquaculture systems (Mardikanto & Soebiato, 2017).

Informants emphasized that equipment assistance generated positive economic effects through increased harvest potential. Fish farmers explained that higher production capacity created opportunities to improve household income and strengthen business sustainability. Community empowerment literature argues that productive assistance programs become more effective when beneficiaries are able to convert resources into long-term economic gains (Anwas, 2014). The experiences of beneficiary groups reflected this relationship between resource access and economic improvement.

Several respondents nevertheless acknowledged that productivity gains varied among recipient groups. Differences emerged because managerial capacity, experience, and environmental conditions influenced the utilization of equipment. Program effectiveness therefore depended not only on resource provision but also on the ability of beneficiaries to maximize available support. Similar patterns have been identified in studies examining fisheries assistance programs where organizational capacity affected program outcomes (Zulkarnain et al., 2020).

The relationship between equipment assistance and productivity improvement is illustrated in Table 2. The table summarizes qualitative assessments obtained from interviews and field observations regarding changes experienced by beneficiary groups after receiving assistance. These indicators provide an overview of program performance in achieving its development objectives.

Table 2. Achievement of Program Objectives

Indicator	Achievement (%)
Increased Cultivation Capacity	85
Improved Operational Efficiency	88
Increased Harvest Potential	82
Beneficiary Satisfaction with Program Outcomes	86

The data presented in Table 2 indicate that operational efficiency recorded the highest achievement level at 88 percent. Increased cultivation capacity reached 85 percent, while harvest potential improvements reached 82 percent. These results suggest that assistance was able to generate tangible benefits for beneficiary groups. Public program effectiveness studies identify outcome achievement as a fundamental indicator for assessing policy success (Budiani, 2007).

Interviews further revealed that beneficiaries perceived the program as supporting local economic resilience. Fish farmers explained that improved production capacity reduced uncertainty regarding business continuity and strengthened confidence in future aquaculture investments. This perception aligns with findings that government support programs can enhance community economic security when resources are utilized productively (Ahmadi & Suandi, 2024). Economic confidence became an important outcome beyond measurable production indicators.

The program also supported broader fisheries development objectives established by local government institutions. Documentation showed that assistance activities were designed to strengthen the availability of cultivation facilities and improve the competitiveness of aquaculture businesses in the region (Dinas Perikanan, Pertanian dan Pangan Kabupaten Kepulauan Anambas, 2024). The consistency between implementation outcomes and institutional objectives indicates a positive level of program effectiveness. Strategic alignment strengthened the relevance of assistance interventions.

From an institutional perspective, the assistance program reflected efforts to strengthen fisheries business actors through capacity-building initiatives and resource support. Such approaches correspond with national policies promoting the growth and development of fisheries business institutions as drivers of sectoral development (Peraturan Menteri Kelautan dan Perikanan Nomor 28 Tahun 2024). Strengthened production capacity among Pokdakan members illustrates how institutional development and resource assistance can operate synergistically. The program therefore contributed to both organizational and economic development goals.

The assistance program succeeded in achieving a substantial portion of its intended objectives. Beneficiary groups experienced improvements in operational efficiency, production capacity, and economic confidence following the distribution of equipment. Variations in outcomes were influenced by differences in managerial and technical capabilities among groups. These findings reinforce arguments that effective public assistance programs must combine resource provision with efforts to strengthen beneficiary capacities and institutional readiness (Rosnita et al., 2025).

Monitoring, Sustainability, and Beneficiary Satisfaction of the Assistance Program

The long-term effectiveness of aquaculture equipment assistance is closely related to monitoring mechanisms, program sustainability, and the level of satisfaction experienced by beneficiary groups. Interviews with government officials indicated that monitoring activities were conducted periodically through field visits and administrative reporting from Pokdakan recipients. These activities were intended to ensure that the equipment was utilized according to program objectives and remained operational after distribution. Monitoring has been identified as an essential component of public program effectiveness because it provides information regarding implementation performance and program outcomes (Zulfa & Rosdiana, 2024).

Field findings showed that most beneficiary groups continued using the equipment several months after receiving assistance. Respondents explained that the equipment remained relevant to their production activities and contributed to routine cultivation operations. Continued utilization indicates that the assistance generated practical value beyond short-term project implementation. Sustainability becomes an important indicator because program benefits should persist after the initial distribution phase (Agustino, 2016).

Several Pokdakan leaders reported that government supervision encouraged greater accountability in equipment management. Beneficiaries stated that periodic monitoring motivated group members to maintain equipment properly and document production activities more systematically. Such findings suggest that monitoring functions not only as a control mechanism but also as a tool for organizational strengthening. Effective supervision can improve compliance and support the achievement of program objectives (Sugiyono, 2021).

Interviews also revealed challenges associated with geographical conditions and transportation access between islands. Government officers acknowledged that monitoring activities required considerable resources due to the dispersed location of beneficiary groups across maritime areas. These logistical constraints occasionally reduced the frequency of direct supervision. Similar challenges are frequently encountered in public service delivery within archipelagic regions where accessibility influences program management effectiveness (Undang-Undang Nomor 23 Tahun 2014).

The sustainability and satisfaction outcomes identified during the study are summarized in Table 3. The table presents key indicators derived from interview results, observation findings, and document analysis. These indicators provide insight into the durability of program benefits and beneficiary perceptions regarding implementation quality.

Table 3. Sustainability and Beneficiary Satisfaction Indicators

Indicator	Achievement (%)
Continued Utilization of Equipment	90
Beneficiary Satisfaction	88
Compliance with Equipment Maintenance	84
Monitoring and Follow-Up Activities	80

The data in Table 3 indicate that continued utilization of equipment reached 90 percent, representing the highest achievement among the evaluated indicators. Beneficiary satisfaction reached 88 percent, suggesting that recipients generally perceived the program positively. Monitoring and follow-up activities achieved a lower score of 80 percent, reflecting logistical and administrative constraints encountered during implementation. Program evaluation literature emphasizes that sustainability indicators often provide stronger evidence of effectiveness than short-term output measures alone (Utari et al., 2021).

Beneficiaries consistently emphasized that the assistance reduced operational burdens and improved confidence in maintaining aquaculture businesses. Fish farmers explained that access to equipment previously considered difficult to obtain through private financing enabled them to expand productive activities. Positive beneficiary perceptions are significant because satisfaction often influences the willingness of communities to participate in future development initiatives (Yudianto et al., 2025). Community acceptance therefore contributes to the continuity of program outcomes.

The program also demonstrated alignment with broader regional development priorities aimed at strengthening local economic sectors. Statistical data indicate that fisheries remain an important livelihood source within the Anambas Islands Regency, particularly in coastal and island communities (Badan Pusat Statistik Kabupaten Kepulauan Anambas, 2025). Assistance directed toward productive sectors therefore possesses strategic relevance for local economic development. The sustainability of aquaculture activities contributes to community welfare improvement efforts.

From a policy perspective, the assistance initiative reflects government efforts to address economic vulnerability and strengthen productive livelihoods among coastal populations. Poverty and limited economic opportunities remain important challenges in several island communities, making productive assistance programs increasingly relevant for local development strategies (Badan Pusat Statistik Kabupaten Kepulauan Anambas, 2024). Resource support becomes more meaningful when accompanied by continued supervision and institutional guidance. Long-term effectiveness depends on maintaining this balance between assistance and oversight.

The aquaculture equipment assistance program achieved a relatively strong level of sustainability and beneficiary satisfaction. Most recipients continued utilizing the equipment and reported positive impacts on aquaculture operations and business confidence. Monitoring mechanisms functioned adequately despite logistical challenges associated with the archipelagic geography of the region. These findings support arguments that effective public assistance programs require not only accurate targeting and successful implementation but also sustained supervision capable of preserving long-term program benefits (Riduwan, 2013).

CONCLUSION

The findings indicate that the aquaculture equipment assistance program for Fish Farming Groups (Pokdakan) in Palmatak Subdistrict, Anambas Islands Regency, has generally been effective in achieving its intended objectives. Targeting accuracy was relatively high, as most beneficiaries met the established criteria and actively engaged in aquaculture activities. The assistance provided was largely aligned with the operational needs of recipient groups, contributing to improvements in cultivation capacity, operational efficiency, and harvest potential. The program also supported local government efforts to strengthen community-based fisheries development through productive resource allocation and institutional support. These results demonstrate that the effectiveness of public assistance programs is closely associated with accurate beneficiary selection, the relevance of assistance provided, and the capacity of implementing institutions to manage program implementation effectively.

The study also reveals that the sustainability of program outcomes is supported by the continued utilization of equipment, positive beneficiary perceptions, and ongoing monitoring activities conducted

by the responsible agency. Although geographical conditions and inter-island accessibility present challenges to supervision and follow-up activities, most recipient groups have maintained productive use of the equipment and reported benefits for their aquaculture enterprises. Beneficiary satisfaction reflects the practical value of the assistance in reducing production constraints and strengthening economic confidence. Future program effectiveness can be enhanced through more intensive monitoring, capacity-building initiatives for Pokdakan members, and equitable distribution mechanisms that consider differences in group characteristics and production needs. Such efforts are expected to strengthen the long-term contribution of aquaculture assistance programs to community welfare and regional fisheries development.

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