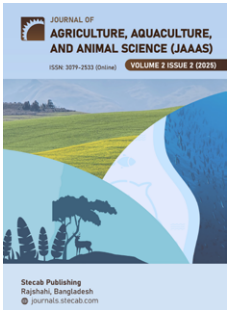

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Research Article

Bridging Policy and Practice: Organic Agriculture Program Implementation in Selected Local Government Units of Northern Mindanao, Philippines

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About Article

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ABSTRACT

This study evaluates the extent of implementation of the Organic Agriculture (OA) Program in the selected local governments in Northern Mindanao Philippines, focusing on six core components: institutional development and strengthening with results-based monitoring and evaluation, research and development, extension and capacity building, production and post-production support, market development, and regulatory services. The study employed both quantitative and qualitative approaches in analyzing the gathered data. The quantitative design employed mean and standard deviation as statistical tools. In contrast, the qualitative design was limited to document analysis of readily available administrative reports from the LGUs' participants in Northern Mindanao, Philippines. Some key findings include the need to strengthen partnerships for marketing and consolidating organic products through the provision of dedicated market spaces for these products in public markets. The research and development component revealed moderate execution and limited participation from both farmers and implementers. In addition, though extension networks emerged as a relative strength, robust local research network remains a gap. Overall, the program demonstrates adequate institutional support and extension services but requires enhanced research and development collaboration, as well as stronger market integration, to fully realize its potential for sustainable organic agriculture development.

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1. INTRODUCTION

Organic Agriculture farming is one of the best ways to farm that is good for the environment and does not use synthetic chemicals or other substances on purpose. It emphasizes the importance of biodiversity and natural processes in enhancing agricultural production and making the ecosystem more resilient. The Food and Agriculture Organization (FAO) defines a holistic production management system that promotes and enhances agro-ecosystem health, biodiversity, biological cycles, and soil biological activity. It involves the cultivation of producing crops, raising livestock, poultry, and fish utilizing inputs and practices that have no harmful effects on the soil, the surrounding ecosystem, and human health. The importance of organic agriculture became more evident in the 1970s with the introduction of modern farming technologies. According to Ritchie (2019), food production and post-farm processes are key contributors to greenhouse gas (GHG) emissions. Food production accounts for 26% of the total GHG emissions, with 27% attributed to crop production, highlighting its significant role in driving climate change. With the adverse effects of chemical-based agriculture, some health advocates pushed to reinvent traditional agriculture to OA. According to the more recent consolidated report from the Department of Agriculture, the Northern Mindanao Region has about four hundred forty-one thousand hectares (441,000 has.) devoted to agriculture. Of this agricultural land, about twelve thousand seven hundred eighty-six hectares (12,786.67 has) or 34.49% are currently devoted to organic agriculture, of which the Province of Misamis Occidental contributes the largest share among the provinces.

In the Philippines, Local Government Units (LGUs) began participating in the OA movement in the 20th century. It transitioned to Integrated Pest Management (IPM), which the government introduced to minimize the utilization of chemical pesticides for crops that were proven to have relatively increased crop production at a lesser cost. The shift toward sustainable farming was further reinforced by the key policies of the Agriculture and Fisheries Modernization Act in 1997 and the implementation of Good Agricultural Practices in 2005. These efforts have paved the way for Republic Act No. 10068 (RA 10068), otherwise known as the "Organic Agriculture Act of 2010", which institutionalized organic farming in the Philippines. The said law was enacted to promote the adoption and development of OA in the Philippines by establishing a national policy that supports ecologically sound and technically feasible farming systems. In December 2020, due to issues with regulation, market access, and institutional support, RA 10068 was amended by Republic Act No. 11511 to address these pressing needs. This change aims to enhance the legal framework for OA, aligning it with the industry's needs and the increasing demand for sustainable practices. The amended law explicitly mandates the creation of the National Organic Agriculture Program (NOAP), which serves as the primary framework for implementing the country's organic agriculture policies and the comprehensive plan for advancing OA practices. One of the significant contributions of RA 11511 is the formal recognition of Participatory Guarantee Systems (PGS) as an alternative, community-based certification system, making organic certification more accessible, especially for small-scale farmers.

Specifically, for the LGUs, the local agriculture office (LOA) is responsible for planning and implementing the OA program. The responsible office primarily oversees the program, which is led by an OA coordinator or focal person and four Agricultural Extension Officers (AEOs) from the Crops Section. The crops section head and the field operations division head oversee the team and are also involved in implementing the OA program. In order to effectively implement the OA program, each LGU through the LOA shall formulate an organic agriculture road map which, among others, highlights the challenges such as weak legislation, limited funding, lack of organic farm certification support, lack of production support, and inadequate facilities and equipment for the OA farmer practitioners. This observation shows a decline in farmer participation among LGUs Organic Farmers Association from 2015 to the present. Some are no longer active members of the association and/or have ceased practicing organic farming, resulting in inconsistent participation and a fluctuating number of farmers in the organic agriculture movement.

This research is based on Implementation Theory within the framework of public policy execution. This theory examines the conversion of policies and programs from conceptual plans to practical implementation. It elucidates why certain government efforts succeed while others fail to meet anticipated outcomes while being meticulously planned and organized. This theory is pertinent to the study, as it will also examine the stakeholders involved in policy and program implementation, as well as the procedures and structures that facilitate or hinder program execution. The theory explicitly examines the discrepancies between policy formulation and actual execution, including market development and research collaboration, elucidates the role of local government unit actors in influencing potential outcomes, and identifies obstacles such as inadequate institutional coordination and restricted stakeholder involvement.

The decreasing number of organic farmers justified the need to conduct this study as these emerged as one of the observed and palpable gaps in the current implementation of the OA program. In addition, this study aims to bridge the policy and practice of the OA program and formulate research-driven interventions that can serve as the basis for LGUs through the LOA and other partner agencies to strengthen OA program implementation. Ultimately, this study aims to inform the refarming of existing programs and projects under the OA initiative, thereby fostering a more robust and sustainable organic agriculture sector.

2. LITERATURE REVIEW

Section 5 of RA 10068 established the NOAP as the Philippines' key strategy for promoting and developing OA nationwide. NOAP aims to convert at least five percent of agricultural land to organic farming, producing organic products for both local and international markets. The program envisions multiple benefits, including improved farm incomes, sustainable livelihoods, enhanced health for farmers and consumers, environmental protection, climate resilience, and social justice. Since its inception, NOAP has undergone two major phases: the first from 2012 to 2016, which focused on institution-building,

research, production support, capacity building, advocacy, market development, and monitoring, and the second from 2017 to 2023, which streamlined these components into six strategic themes to address earlier challenges and further strengthen organic agriculture's role in economic empowerment, poverty reduction, and environmental sustainability.

2.1. Local government units' implementation of the OA program

Local government units (LGUs) play a central role in the implementation of NOAP, with mayors encouraged to establish technical committees to oversee organic agriculture efforts within their jurisdictions. LGUs must ensure local industries are informed and consulted, develop viable plans to support vulnerable sectors, monitor compliance with the Organic Agriculture Act, and establish trading posts to facilitate organic product marketing. The Department of Agriculture (DA), in coordination with the Department of Interior and Local Government (DILG), provides oversight and support, emphasizing organizational management, funding, and effective program execution at the local level. Through collaboration among government agencies, non-government organizations (NGOs), civil society organizations (CSOs), and people's organizations (POs), NOAP integrates national policy with grassroots action to foster sustainable agricultural growth, improve public health, protect the environment, and promote social equity across the Philippines. In one study across Southeast Asia, Europe, and the United States of America, the authors found that six case studies of organic agriculture corroborated that OA has the potential to boost the production of quality food, proper utilization of renewable resources, maintaining long-term soil fertility, biological pest control, and efficient use of water resources (Das *et al.*, 2022). The backbone of OA implementation rests with the frontline implementers, the LGUs.

2.2. Institutional development and results-based monitoring and evaluation

Local government units significantly contribute to institutional development, strengthening, and results-based monitoring and evaluation through the Municipal or City Agricultural Offices, collectively referred to as local agriculture offices. Using the knowledge of Agricultural Extension Workers (AEW), they efficiently close the gap between the government and producers. As affirmed by the Food and Agriculture Organization (FAO), AEWs play a crucial role in transferring knowledge and skills to farmers, which can enhance productivity and revenue (Delgado & Villaruel, 2023). In Vietnam, the slow growth of organic agriculture is a consequence of several factors, including the orientation of agricultural development, which emphasizes quantity over quality, a lack of a legal framework, and complicated and high investment costs for developing organic farming (Presilla, 2018). Monitoring and evaluation (M&E) are essential to program implementation and institutional development. While the perception of its role may vary, its importance as a key element in the project cycle is incontrovertible. M&E is placed at the heart of managing for impact, which means the need to respond to changing circumstances and increased understanding and to manage adaptively to achieve its intended results (Muller–Praefcke, 2010). Another important aspect of institutional development is the strong participation of stakeholders in implementing organic projects, as highlighted by the local government of Malvar, Batangas. Since they began to engage in organic agriculture in 2014, they aimed to become the organic capital of Batangas. This initiative has been driven by the active involvement of stakeholders, as well as the strong political will of the LGU to implement the vision and the appropriateness of the projects geared towards attaining their vision (Mojares & Geneta, 2020). Cooperatives are among the most influential strong stakeholders in the community, playing a significant role in supporting the marketing aspect of organic agriculture. They play a crucial role in helping small-scale and subsistence farmers sell their products in the organic market by providing marketing and technical assistance. Several cooperatives in the country assist organic farmers with market access, linkages to processors, certifiers, traders, and retailers, as well as aid to credit institutions and input services (Villanueva, 2023).

2.3. Research and development

In agriculture, research and development (R&D) requires cooperation among various stakeholders, including farmers, implementers, legislators, and funding organizations. Agricultural research is fundamental, as it provides funding organizations and legislators with the data needed for informed decision-making on projects. It offers research-induced technology for farmers and provides feedback to scientists on which technology or technology components are successful (Olufolaji, 2018). Accordingly, organic agriculture must continually evolve to overcome emerging challenges. Science-based knowledge attained through dedicated research is required to strengthen organic food and farming as a means to address future challenges (Rahmann *et al.*, 2017). In addition, R&D contributes to increased production and reduces pressure on natural resources (Hajirostamlo *et al.*, 2015). Improving sustainability, innovation, and production in the industry depends on strengthening research and development (R&D) networks in agriculture. Both national and international organizations supported numerous R&D initiatives in the Bicol area to address various OA issues.

A key concern raised by the studies is that while farmers are gaining knowledge on improving production practices, it remains a primary challenge to efficiently access the market to sell their products and convert them into cash. (Lirag & Bordado, 2018). The strategic thrust of research and development in NOAP 2017-2023 is centered on enhancing initiatives to strengthen efforts through collaboration with key stakeholders, including active government agencies, the private sector, and indigenous groups. This approach aims to foster continuous upgrading and innovation of relevant, appropriate technologies in organic agriculture. In other areas, such as the Bicol region, they have identified and addressed gaps in terms of research and development. There is a need to develop a centralized web-based information system and conduct research on the practical implementation of policy and governance for OA programs at the local and regional levels (Lirag & Bordado, 2023).

Additionally, through collaboration with various stakeholders, researchers can leverage their collective knowledge and skills to develop innovative solutions (Wells, 2023).

2.4. Extension and capacity building, promotion, advocacy, and education

In agricultural communities, OA learning sites are essential for growth. As models, OA learning sites in agriculture aim to highlight useful agricultural technology to improve the capacities of small-scale farmers and other members of rural communities. These systems promote the viability of agriculture as a business by providing farmers with suitable and appropriate farming technologies, thereby facilitating economic development (Knox *et al.*, 2012). Costales Nature Farm in Majayjay, Laguna, has been a distinguished OA farm and learning site in the Philippines since 2012. It has been featured in numerous articles, news stories, and documentation for its diversified organic farm, a Department of Tourism-accredited agri-tourism site. Promotion, advocacy, and education of OA are integral endeavors of the OA program. Regular information, education, and communication (IEC) on various OA farming practices and success stories of OA farmer practitioners are the most common activities under this component.

The accomplishments of NOAP 2012-2017 encompassed the following activities: a) A quad media information campaign regarding the OA law and its IRR; b) Consumer awareness and education initiatives; c) Incorporation of organic agriculture into school curricula; d) Annual national and regional OA congresses; e) Seminars and trade shows; f) Observance of OA month; g) Regional photo contests depicting OA implementation in the country; h) Regional photo contests illustrating OA implementation in the country; i) The search for the National Organic Agriculture Achievers' Award. IECs are necessary for community development. It lays the foundation for raising awareness, enhancing engagement, and promoting environmentally friendly community development. It empowers individuals, cultivates social capital, and fosters the comprehensive development of communities, resulting in enhanced quality of life and increased self-sufficiency (Singh, 2023). On the other hand, promotion includes establishing display centers dedicated exclusively to organic products in public spaces. Organic trading posts are one of the initiatives as key venues for this endeavor. Organic and conventional raw materials must be segregated to prevent co-mingling or cross-contamination. Packaging and storage must be separate from non-organic products to ensure organic standards are upheld.

2.5. Production and post-production support services

The component on production and post-production support services, as outlined in the NOAP 2017-2023, has a strategic thrust to enhance the productivity of organic and aquaculture areas through the provision of production, post-production, and financial support services and contribute climate change mitigation strategies through intensification of conversion from conventional agricultural areas to organic agriculture and aquaculture areas is the strategic thrust of production and post-production support services (NOAP 2017-2023). One of the support services is the DA's Registry System for Basic Sector in Agriculture (RSBSA). This registry for farmers, fisherfolk, farm workers, and agri-youth serves as a targeting mechanism to identify beneficiaries for government agriculture programs and services. This aims to provide the DA a systematic way of directly reaching and supporting its beneficiary farmers and fishers and serve as a reference for the targeting and monitoring of programs, activities, and projects of the department (DA Memorandum Order 55 series of 2021) Only farmers that are registered under the RSBSA shall be eligible to receive this support. (DA Memorandum Circular 08 series of 2024). The distribution of various inputs for the OA program is also highlighted in the NOAP 2012-2017, which includes providing farm inputs and upgrading farm machinery, equipment, and structures facilitated by the DA and other attached agencies.

2.6. Market support services

Priority actions identified in the NOAP 2017-2023 include increasing the accessibility and availability of organic products in local and international markets, as well as educating farmers or farmer groups on organic agriculture and aquaculture as viable enterprises or businesses. OA market development and commercialization should begin at the local level. This connotes public and private agencies' participation in encouraging OA production among farmers and stakeholders. Establishing a strong market requires a strong determination among OA farmer practitioners to develop their OA farms further. A significant step in this direction is the establishment of organic trading posts. Organic trading posts serve as a vital platform primarily for displaying organic products locally and as a market link between organic farmers and consumers.

According to DA NOAP, successful organic trading posts were characterized by several factors. This includes a strong management team, which ensures efficient operations, a strategic location that facilitates easy access for producers and consumers, and a stable supply and demand for organic products, resulting in a consistent market flow. In addition, and more importantly, the strong support from local government units, such as OTPs in Capas, Tarlac, Negros Occidental, and Zamboanga del Sur. (DA NOAP news 2022). Regional offices then also engage in similar activities, showcasing organic products, local farmers' organic produce, research and innovations, and success stories of OA farmer practitioners, thereby increasing public awareness. Driven by customers' increased demand for natural and healthier substitutes, the potential market for organic produce is expanding noticeably. This is characterized by a growing awareness of health and wellness, with many consumers becoming increasingly mindful of their food and its long-term impact on their overall well-being (Deep, 2024).

2.7. Regulatory support services

The primary objective of the regulatory support services is to ensure organic integrity and consumer confidence while enhancing trade facilitation, economic integration, and market access through a sound and harmonized regulatory management system (NOAP, 2017-2023). Additionally, the official accreditation of OCB should be strengthened by ensuring that policies and procedures are harmonized with international standards and, in collaboration with regulatory

agencies, through the labeling of organic food, non-food, and input products. The PGS enables small farmers and fishers to practice organic farming and obtain certification at a lower cost. PGS refers to a locally focused quality assurance system practiced by people engaged in organic agriculture. It is built on trust, social networks, and knowledge exchange as an alternative to third-party certification (DA Press, 2021). The PGS system is a valuable tool that promotes community, transparency, and integrity in the organic supply chain. It can improve the livelihoods of countless organic farmers and promote sustainable agricultural practices for the benefit of all (Patulilic, 2023).

Moreover, organic agriculture is regulated through international and domestic regulations governing production, processing, and labeling. It is designed to be produced holistically by standards that aim to achieve agro-ecosystems that are socially, ecologically, and economically sustainable (Dhar & Seidel, 2012). The first municipality to have a PGS organic certifying body core group was Tublay in Benguet. It is advantageous to the Cordillera Administrative Region to have an organic certifying body certify more organic farmers at a lower cost and in an easy way. Moreover, this group implemented production control to prevent overproduction and waste. Organic product labeling and packaging constitute still another element of the regulatory services. This is essential to increase consumer trust in the definition of "organic" goods. Organic certifications can be complex and require adherence to specific criteria and rules. While guiding producers to enhance their farm record-keeping systems and increase overall efficiency, the organic inspection helps ensure compliance with the rigorous criteria. PGS is not only an organic certification mechanism but also an active participant in community building, aiming to empower smallholder organic farmers, fisherfolk, and all those engaged in the agricultural system. Aside from producers like farmers and fishers, this can also include consumers, government organizations, research-based groups, academe, local government units, and other individual advocates of organic agriculture. The biggest benefit farmers gain from the PGS system is the ability to label their products as organic under the law. For consumers, it is knowing that the produce they buy has been farmed under strict organic farming guidelines (Tan, 2021).

3. METHODOLOGY

3.1. Research design

This study employed both quantitative and qualitative approaches to thoroughly understand the implementation and challenges of the Organic Agriculture (OA) program in Northern Mindanao. The quantitative-descriptive design measured the extent of OA program implementation across the region. In contrast, the qualitative approach is limited to the analysis of readily available administrative reports from the LGUs. Data were gathered through observations, interviews, and experiences of OA practitioners, which informed the development of targeted interventions.

3.2. Research locale

The research was conducted in Northern Mindanao, a region with approximately 441,000 hectares devoted to agriculture, according to a recent consolidated report from the Department of Agriculture. Of this agricultural land, about 12,786.67 hectares—or roughly 34.49% of the agricultural area—are dedicated to organic agriculture, with Misamis Occidental Province contributing the largest share among the provinces. Agriculture remains a vital sector in the region's economy, and organic farming is a growing focus aligned with sustainable development goals and eco-agri tourism initiatives.

3.3. Research participants

Participants were purposively selected based on their direct involvement in OA program implementation. They included organic farmers from various local associations across Northern Mindanao, as well as Agricultural Extension Officers (AEOs) from regional agricultural offices. These participants represented multiple provinces and communities actively engaged in organic farming practices and program execution.

3.4. Research instrument

The primary research instrument was a researcher-developed questionnaire created from relevant literature and official documents, including NOAP plans and regional agricultural reports. It consisted of two parts: participant profiles and the extent of OA program implementation across multiple components. Experts validated the instrument and pilot-tested it on respondents outside the study population, achieving a high-reliability coefficient (Cronbach's Alpha = 0.963).

3.5. Data collection

Data collection proceeded after obtaining permission from relevant academic and government authorities. Focus group discussions and one-on-one interviews were conducted, often in local dialects, to ensure authentic and in-depth responses. Data were carefully organized, validated, and analyzed by the institutional statistical center.

3.6. Scoring procedure

Responses on OA program implementation were scored using a 5-point Likert scale, ranging from "Very Poor" to "Very Good," reflecting the degree of program execution and beneficiary feedback. Quantitative and qualitative data were analyzed using mean and standard deviation, and findings informed the proposal of interventions to address identified challenges. This methodology provided a comprehensive and ethical framework for assessing and improving the OA program throughout Northern Mindanao.

3.7. Ethical considerations

Ethical considerations were rigorously observed, including obtaining informed consent, maintaining confidentiality, ensuring participant privacy, and safeguarding participants' rights. Data were anonymized and securely stored, and participants were acknowledged for their contributions.

4. RESULTS AND DISCUSSION

Organic products have a high potential for development due to the increasing demand from consumers worldwide for

healthy food that is free from chemicals, such as those found in fertilizers and pesticides (Presilla, 2018). This research focused on analyzing the implementation of the OA program in Northern Mindanao across six key components: (1) institution development and results-based monitoring and evaluation; (2) research and development; (3) extension, capacity building, promotion, advocacy, and education; (4) production and post-production support services; (5) market development; and (6) regulatory services. The evaluation aims to provide a comprehensive overview of how effectively each component is carried out within the local context.

Table 2 reveals that the first component is very well implemented in the region, suggesting effective execution supported by adequate resources. This indicates that the services provided are responsive to the needs of organic farmers, thereby contributing to the success of the program's implementation.

Table 1. Mean and Standard Deviation of OA Program in Institution Development and Results-Based Monitoring and Evaluation

Institution development and strengthening and results-based monitoring	Farmers			Implementers			Overall		
	M	SD	QD	M	SD	QD	M	SD	QD
The facilitation of the Association of OA Farmers' regular and special meetings	4.03	0.81	G	4.75	0.46	VG	4.18	0.80	G
The designated Local OA focal person or coordinator and the extension officers are well-trained in OA programs	4.00	0.79	G	4.88	0.35	VG	4.18	0.80	G
The organized OA Local Technical Committee (LTC) in the city plans, allocates funds, and implementation of OA program	4.13	0.78	G	3.50	1.07	G	4.00	0.87	G
The formulation of policies and guidelines for OA programs/projects with the consultation of the Association of OA Farmers and OA stakeholders	3.80	0.71	G	4.63	0.52	VG	3.97	0.75	G
The allocation of funds for the OA program and the Association of OA Farmers	3.80	0.76	G	4.63	0.52	VG	3.97	0.79	G
The participation of the Association of OA Farmers in the annual planning of OA projects and activities	3.97	0.89	G	3.88	0.35	G	3.95	0.80	G
The facilitation of linkages of the Association of OA Farmers to other stakeholders and government agencies for the enhancement of OA projects and activities	3.67	0.80	G	4.63	0.52	VG	3.87	0.84	G
The action is taken to address the Association of OA Farmers, OA farmer practitioners, and stakeholders' issues and concerns regarding the OA program and projects	3.73	0.87	G	4.25	0.71	G	3.84	0.86	G
The conduct of capability-building activities for the Local Technical Committee (LTC), Association of OA Farmers, stakeholders, and AEOs towards efficient implementation of the OA program	3.83	0.79	G	3.75	0.89	G	3.82	0.80	G
The formulation of the City Organic Road Map is participated in by the Association of OA Farmers and other farmer practitioners	3.67	0.8	G	4.25	0.46	G	3.79	0.78	G
The assistance to the Association of OA Farmers on DOLE/SEC/DILG registration	3.60	0.72	G	4.50	0.53	VG	3.79	0.78	G
The promotion and encouragement of farmers' equity or counterparts' scheme in the implementation of OA projects	3.67	0.96	G	4.13	0.35	G	3.76	0.88	G
The regular monitoring and evaluation of OA projects and activities, or the OA road map with a feedback mechanism and a plan of action	3.57	0.68	G	4.38	0.52	G	3.74	0.72	G
The building or venue assigned for Association of OA Farmers meetings and other OA activities	3.57	0.68	G	4.13	0.35	G	3.68	0.66	G
The strengthening of partnerships among OA farmer practitioners for marketing and the consolidation of their organic products	3.50	0.90	G	4.13	0.64	G	3.63	0.88	G
Overall Mean	3.77	0.80	G	4.29	0.55	G	3.88	0.80	G

Among the statement indicators of the first key components of the OA Program, which include Institution Development and Results-Based Monitoring and Evaluation, the facilitation of the Association of Organic Agriculture Farmers' regular and special meetings received the highest mean. Frequent Association meetings enhance organizational strength by fostering open communication, transparency, and accountability—qualities essential for sustained engagement and effective program execution. Moreover, the outcomes underscore the role of agricultural extension agents, who serve as a link between the government and farmers in the development field. As agents of change, they play a significant role in transmitting knowledge and expertise, thereby enhancing productivity and revenue to farmers (Delgado & Villaruel, 2023).

Conversely, the lowest overall mean score is in strengthening partnerships among organic farmers for marketing and consolidating organic products. This indicates gaps in coordination and support mechanisms for establishing linkages between the Association of Organic Agriculture Farmers and stakeholders. To address this, partnerships with other institutions, such as cooperatives, may assist organic farmers with market access, linkages to processors, certifiers, traders, and retailers, as well as assistance to credit institutions and input services (Villanueva, 2023). The lowest mean score was attributed to the organization of the OA Local Technical Committee (LTC) in the region, which is responsible for allocating funds and implementing the OA program. Farmers, on the other hand, rated this area the highest, suggesting differing perceptions from implementers regarding the effectiveness of personnel involved in the planning process. The seemingly robust institutional systems point to the OA program's efficient responsiveness and service delivery. However, weaknesses in the LTC's organization and cooperation can compromise the effectiveness of planning and execution. These results underscore the importance of participatory and comprehensive governance, as well as enhanced stakeholder cooperation, to ensure that institutional activities yield fair and sustainable outcomes.

The second key component of the OA Program is Research and Development. The R&D implementation was rated as "Fair," as shown in Table 3. This means that the mechanisms and strategies are generally executed moderately efficiently, with efforts to partially provision needed resources and satisfactory client feedback. This highlights some limitations in the full potential of R&D activities to support innovation and evidence-based improvements in OA practices.

Table 3. Mean and standard deviation of oa program in terms of research and development

Research and development	Farmers			Implementers			Overall		
	M	SD	QD	M	SD	QD	M	SD	QD
The OA learning sites established are linked to the Research Development and Extension (RDE) network	3.73	1.08	G	3.75	0.89	G	3.74	1.03	G
The encouragement of OA farmer practitioners to participate in the research and studies conducted by various agencies (DA BAR, DA BFAR, DA ATI, State Universities and Colleges)	3.37	1.07	F	4.13	0.64	G	3.53	1.03	G
The organized Research and Development Network (RDN) in the region is participated in by LGUs' Agriculture Office and organic farmers	3.37	0.96	F	3.13	0.83	F	3.32	0.93	F
The participation of LGUs' Agriculture Office and organic farmers in Research and Development, along with other research institutions or private companies regarding organic agriculture	3.30	1.18	F	3.25	1.04	F	3.29	1.14	F
The participation of the National Commission on Indigenous Peoples (NCIP) in the Research and Development of OA	3.17	0.87	F	3.50	0.76	G	3.24	0.85	F
The organized Research and Development Network (RDN) in the region	3.13	0.86	F	3.13	0.99	F	3.13	0.88	F
Overall Mean	3.34	1.00	F	3.48	0.86	F	3.37	0.98	F

Based on Table 3, the highest overall mean score across all responses is the OA learning sites linked with Research Development and Extension (RDE), with nearly identical ratings from both participants. These findings support the primary objective of LS, which is to serve as an exemplar showcasing practical agricultural technologies that enhance the capacities of small-scale farmers and other rural community members (Lapar & Ehui, 2004). This outcome highlights the awareness among organic farmers and implementers of the crucial role of learning sites, particularly in terms of their collaboration with research institutes.

On the one hand, the lowest mean score was observed in the organized Research and Development Network (RDN), and the mean score was the same among organic farmers and implementers. The reason is the absence of involvement from both parties in research and development efforts. Establishing a Local Technical Committee (LTC) with members from academic institutions is crucial to introducing research-related initiatives that will enhance the program's implementation. The research of Olifolaju (2018) suggests that R&D initiatives

in organic agriculture provide farmers with unique and dependable research-based technologies while also giving scientists input on the efficacy of particular technologies or components, which supports the aforementioned conclusions. Furthermore, improving productivity, creativity, and sustainability in agriculture depends on strengthening research and development (R&D) networks in that field (Lirag & Bordado, 2018). While some strengths are highlighted, there is a clear need for robust Research and Development (R&D) Networks through institutionalization and collaboration between academic institutions and stakeholders to ensure the positive impact and relevance of R&D initiatives.

The third key component of the OA Program is the Extension and Capability Building, Promotion, Advocacy, and Education. Among the statement indicators, the assistance provided for the operation of ATI and TESDA-accredited OA learning sites or training centers yielded the highest mean, indicating "good" implementation; however, there is still room for improvement.

Table 4. Mean and standard deviation of the oa program in terms of extension and capability building, promotion, advocacy, and education

Extension and capability building, promotion, advocacy, and education	Farmers			Implementers			Overall		
	M	SD	QD	M	SD	QD	M	SD	QD
The assistance given for the operation of ATI and TESDA-accredited OA learning sites or training centers	3.77	0.94	G	4.63	0.52	VG	3.95	0.93	G
The assistance/facilitation of OA learning sites and training centers to become tourism sites	3.67	0.96	G	4.88	0.35	VG	3.92	1.00	G
The development and strengthening of OA learning sites or training centers	3.60	1.00	G	4.88	0.35	VG	3.87	1.04	G
The conduct and facilitation of capability building/training for OA farmer practitioners, farm workers, or service providers	3.83	0.87	G	3.88	0.35	G	3.84	0.79	G
The conduct of practical trainings/seminars or technical assistance to OA farmer practitioners on entrepreneurship	3.80	1.06	G	4.00	0.00	G	3.84	0.95	G
Distributing Information, Education, and Communication materials (flyers, magazines, newsletter, etc.) on OA to other farmers, students, etc.	3.50	0.97	G	5.00	0.00	VG	3.82	1.06	G
The awards and recognition given for the best practices of OA farmer practitioners	3.63	1.10	G	4.50	0.53	VG	3.82	1.06	G
The assistance to the OA farmer practitioners on the labeling of their products	3.63	0.96	G	4.38	0.52	G	3.79	0.93	G
The conduct of an awareness seminar on OA standards for OA farmer practitioners	3.70	1.09	G	3.88	0.35	G	3.74	0.98	G
The OA technologies are showcased/highlighted in agricultural forums (Farmers' Congress, Caravan, etc.)	3.57	1.01	G	4.00	0.93	G	3.66	0.99	G
The documentation of best practices of OA farms for a package of technology (POT) to promote and share with farmers and stakeholders	3.53	1.20	G	4.13	0.64	G	3.66	1.12	G
The conduct of E-learning (online seminars) on OA and the facilitation to improve the organic sector	3.43	0.94	F	3.75	0.46	G	3.5	0.86	G
The modules of training and seminars of OA are products of Research and Development	3.43	0.86	F	3.63	0.52	G	3.47	0.8	F
The Information, Education, and Communication (IEC) through the city government website, distribution of flyers, radio, and social media on organic farming practices	3.37	0.93	F	3.88	0.35	G	3.47	0.86	F
The space provided for organic products in the public market for OA farmer practitioners	3.03	0.96	F	2.63	1.19	F	2.95	1.01	F
Overall Mean	3.57	0.99	G	4.13	0.47	G	3.69	0.96	G

Conversely, the lowest mean score is the provision of space for organic products in the public market for OA farmer practitioners, which is rated "Fair." This consistently lowest score for both groups reflects persistent challenges in operationalizing organic trading posts in the region's public markets that were not sustained. Similarly, an organic showroom was established in 2021 but failed to function as intended, as noted in the region's annual report for the years 2016 and 2022. These results underscore the importance of long-term plans to institutionalize an organic marketing infrastructure, including designated space for organic products in the public market, which is necessary for efficient promotion and marketing.

Another component of the OA Program is the Extension and Capability Building, Promotion, Advocacy, and Education. These particular components focused on the extension and linkages program of the region with the appropriate agencies of the national government and other organizations, including but not limited to the academe, NGOs, CSOs, POs, and the like.

Table 5. Mean and standard deviation of oa program in terms of production and post-production support services

Production and post-production support services	Farmers			Implementers			Overall		
	M	SD	QD	M	SD	QD	M	SD	QD
The profiling of OA farmer practitioners or registration with the RSBSA	3.87	1.01	G	4.75	0.46	G	4.05	0.98	G
The facilitation of the Philippine Crop Insurance Corporation (PCIC) for the crops planted by the OA farmer practitioners	3.80	1.00	G	4.00	0.00	G	3.84	0.89	G
The strengthening and support to OA farmer practitioners to venture into the farming business (entrepreneurship)	3.70	0.84	G	4.25	0.46	VG	3.82	0.80	G
The introduction of the importance of third-party certification or the Participatory Guarantee System (PGS)	3.60	0.81	G	4.63	0.52	VG	3.82	0.87	G
The facilitation of OA certification through the Participatory Guarantee System (PGS) to OA farmer practitioners	3.43	0.82	F	4.50	0.53	VG	3.66	0.88	G
The distribution of technical and financial assistance to pursue the Participatory Guarantee System (PGS) registration	3.40	0.97	F	4.50	0.53	VG	3.63	1.00	G
The equitable distribution of appropriate and enough subsidized organic farm inputs	3.50	1.01	G	3.63	0.52	G	3.53	0.92	G
The opportunity to avail of loan programs from partner agencies or financial institutions for OA farmer practitioners	3.47	0.97	F	3.75	0.46	G	3.53	0.89	G
The conduct of Needs Assessment among OA farmer practitioners	3.37	1.00	F	4.00	0.00	G	3.50	0.92	G
The equitable distribution of appropriate modernized farm machinery and equipment for OA farmer practitioners	3.47	0.82	F	3.50	0.53	G	3.47	0.76	F
Sufficient vermicomposting facilities to sustain the requirements of vermicompost of OA farmer practitioners	3.40	0.93	F	3.63	0.52	G	3.45	0.86	F
Sufficient and appropriate farm inputs, machinery, and equipment used in OA demonstration areas	3.23	0.90	F	4.13	0.64	G	3.42	0.92	F
The organic showroom is utilized to display and purchase organic products from OA farmer practitioners	3.33	0.96	F	3.63	0.52	G	3.39	0.89	F
The conduct of a financial literacy seminar as a component of the loan programs offered	3.30	0.88	F	3.75	0.46	G	3.39	0.82	F
The opportunities available to OA farmer practitioners include tax exemptions and subsidies on business permits and other fees.	3.23	1.04	F	2.88	1.25	F	3.16	1.08	F
Overall Mean	3.47	0.93	F	3.97	0.49	G	3.58	0.90	G

The data in Table 5 show that the production and post-production support services are perceived as "Good" but with moderate response variability. This demonstrates that services such as providing farm inputs, farm equipment, access to loans, and other essential services are well-implemented. However, there is variability in responses, implying that not all farmers benefit equally from these services. The highest overall mean was recorded for the profiling of OA farmer practitioners or registration to RSBSA, consistent across both groups of participants. This indicates that the endeavor is well-implemented, and beneficiaries are highly satisfied with the services provided to them. This means that implementers must

comply with the Department of Agriculture (DA) guidelines to effectively reach and support eligible farmers through RSBSA registration, ensuring that assistance is distributed effectively (DA Memorandum Order 55, series of 2021).

On the other hand, the lowest overall mean score, consistently observed in both groups, is the availability of opportunities provided to OA farmer practitioners regarding tax exemptions and subsidies on business permits and other fees. This suggests that participants perceived the implementation as fairly effective, with moderate efficiency and partial availability of funds. The current results indicate potential gaps in the distribution, accessibility, and awareness of the production and post-production support services. Addressing these disparities is essential to fostering a more inclusive and equitable support system, enhancing overall productivity, and amplifying the impact of OA program initiatives.

Another component of the OA Program is Market Development. This component focuses on expanding market opportunities and promoting trade for organic products in the Philippines. Through the Agribusiness and Marketing Assistance Service, NOAP implements programs to develop markets and facilitate trade for organic farmers, helping them access both local and international markets.

Table 6. Mean and standard deviation of oa program in terms of market development

Market Development	Farmers			Implementers			Overall		
	M	SD	QD	M	SD	QD	M	SD	QD
The support given to OA farmer practitioners to participate in trade fairs (local or regional) to promote their products	3.5	0.94	G	4.38	0.52	G	3.68	0.93	G
The promotional activities conducted showcase organic inputs (seeds, fertilizers, and pesticides) at the local and regional levels	3.57	0.9	G	4	0.76	G	3.66	0.88	G
The conduct of a seminar on enterprise literacy for OA farmer practitioners	3.6	0.89	G	3.63	0.52	G	3.61	0.82	G
The introduction of Cost and Return, Investment Opportunities, and a Business Plan on organic farming for farmers	3.4	0.81	F	3.88	0.83	G	3.5	0.83	G
The establishment of a Trading Post solely for organic products for OA farmer practitioners	3.4	1.1	F	2.88	0.99	F	3.29	1.09	F
There is a special day scheduled for the organic products display within the city	3.3	1.02	F	2.88	0.64	F	3.21	0.96	F
The establishment of an organic products display center in the public market for retail, separate from non-organic products	3.13	1.07	F	2	0.93	P	2.89	1.13	F
Overall Mean	3.41	0.96	F	3.38	0.74	F	3.41	0.95	F

Table 6 presents that the market development aspect of the OA program received an overall rating of "Fair." While it is generally perceived as moderately efficient, some variability in responses across the different indicators is noticeable. This implies gaps and room for development, even if some program components are working sufficiently. Classed as "Good," the support given to OA farmer practitioners' involvement in trade fairs got the highest mean score. This demonstrates that organic farmers and practitioners share a shared notion that participation in trade fairs is well-supported and positively impacts the program's efforts to build markets. This positive assessment underscores the importance of promoting natural products and increasing market accessibility for participants.

On the other hand, the lowest overall mean score is achieved by establishing dedicated organic product display centers in the public market, separate from non-organic products. This rating suggests that, upon reviewing all components, both groups considered this project to be "Fair." Organic items must be prioritized since their visibility and marketability may suffer without these clear display spaces. Establishing trading sites or dedicated organic display centers offers an excellent chance for both implementers and producers, given the increased demand for organic products resulting from consumer awareness (Deep, 2024). Establishing trading sites can boost local economies, expand market access, and raise awareness of organic enterprises in the area. Despite global recognition of OA, there are still organic farmers who find some problems in selling their organic products for a reasonable price due to certification labeling (Mutiara & Arai, 2017). Conventional and organic products should be kept apart to ensure adherence to organic standards and prevent cross-contamination (Anderson, 2008). This method of separating organic from non-organic preserves the quality of natural items, increasing their commercial value and reputation.

The OA program's component on market development requires more deliberate and targeted activities to support farmers' simple access to profitable markets as one evident intervention. Ignoring this disparity can compromise the long-term sustainability of the OA program, thus undermining the economic feasibility of organic farming and discouraging farmer involvement. Therefore, early steps in enhancing market infrastructure are necessary to ensure the organic farmer's involvement and long-term success. In Taiwan, 84 percent of organic foods are sold at supermarkets in cities, 16 percent at

supermarkets in rural counties, and the remainder is sold at organic health stores (Hsieh, 2005).

The last component of the OA Program is Regulatory Services. This particular component is primarily concerned with establishing and enforcing standards, as well as accreditation, certification, and compliance mechanisms, to ensure the integrity and credibility of organic agriculture in the Philippines.

Table 7. Mean and standard deviation of OA program in terms of regulatory services

Regulatory services	Farmers			Implementers			Overall		
	M	SD	QD	M	SD	QD	M	SD	QD
The conduct of seminars to strengthen the PGS Group to improve the OA program	3.43	0.97	F	4.13	0.35	G	3.58	0.92	G
The organization of the Participatory Guarantee System (PGS) Group	3.40	1.22	F	4.00	0.53	G	3.53	1.13	G
The formulation of guidelines and protocols for the implementation of the OA program is aligned with the National Organic Agriculture Program (NOAP)	3.23	1.14	F	4.38	0.52	G	3.47	1.13	F
The assistance from DA BAFS and other agencies in the labeling of organic products (food and non-food)	3.27	0.91	F	4.00	0.76	G	3.42	0.92	F
The facilitation of the registration of food and non-food producers to the DOH/FDA	2.90	0.99	F	3.00	1.07	F	2.92	1.00	F
Overall Mean	3.25	1.05	F	3.90	0.65	G	3.38	1.02	F

The results in Table 7 highlighted that the regulatory services aspect of the OA program is relatively "Fair" in implementation. This means that the programs and activities under this component are executed with moderate efficiency and resources partially engaged. In particular, statement indicators on seminars to strengthen PGS have the highest overall mean score, placing them in the "Good" category. This suggests that organic farmers and implementers perceive these activities as valuable in improving the effectiveness and unity of PGS groups, contributing positively to program implementation. The results support the findings of one of the cited related literature, which highlights PGS as a valuable initiative that ensures compliance with organic standards and fosters a strong sense of community among farmers. As a community-based approach, PGS contributes to maintaining the integrity of organic products while empowering small-scale farmers through collective participation and mutual support.

On the one hand, the lowest overall mean, which is true for both groups of participants, is the facilitation of registration for food and non-food producers with the Department of Health or the Food and Drug Administration, which falls into the "Fair" category, bordering on a "Poor" rating. Another crucial element of regulatory services is labeling and packaging; these are the statements that indicate. The PGS certification can be matched to this to improve the marketability and marketing of organic goods using their labels and emblems. The PGS helps organic farmers, most importantly in allowing them to label their goods as organic legally. For consumers, it is reassuring to know that the produce they are buying has been farmed under strict organic farming guidelines (Tan, 2021).

Given that this component is still partially implemented, there are opportunities to hasten the gap for its efficient implementation, which is essential to sustain organic produce. Without the LGU's support to build a strong and well-resourced PGS implementation, consumer trust and organic farmer confidence in the system may weaken, affecting the growth and sustainability of the organic agriculture sector.

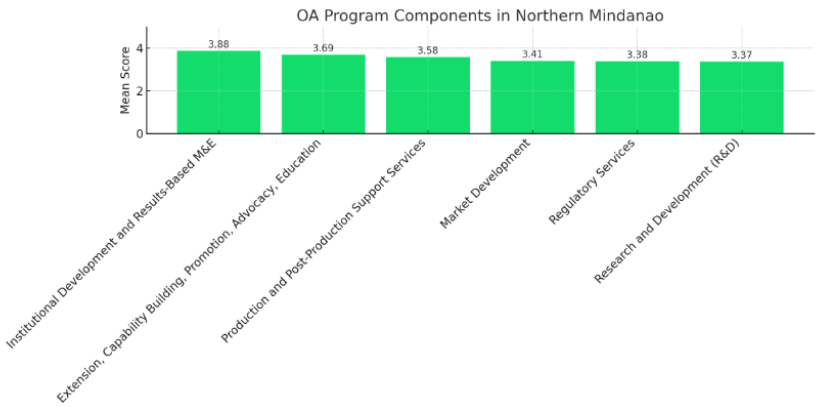

Figure 1. Presents a summary of the mean and standard deviation of the six components of the OA program in the region.

The figure reflects the summary mean and standard deviation of the six components of the OA Program in northern Mindanao. Based on the figure, the following findings are presented: Institutional Development and Results-Based Monitoring and Evaluation were seen as efficiently implemented, although some areas still require improvement. Substantial efforts were also demonstrated in building and promotion, advocacy, and education; however, there is still room to improve their influence. Likewise, Production and Post-Production Support Services received positive comments, with obvious support recognized; however, more interventions are required to maximize results even further. On the one hand, the lowest score on research and development, by contrast, emphasizes the necessity of more strategic direction and more forceful actions. Although it shows promise and leans toward an excellent rating, market development was also judged as fair; nonetheless, considerable work remains to be done to expand market access and enhance product competitiveness. Finally, Regulatory Services require more solid implementation and support to fulfill their role effectively. Although there is a strong overall basis, certain areas require targeted development. While the OA program is generally perceived as well-implemented across its components, the disparity in ratings reflects an imbalance in resource allocation and strategic focus. This emphasizes implementation success; deeper systemic gaps that limit equity, sustainability, and farmer empowerment within the program are overlooked. In one study, the authors found that six case studies of organic agriculture corroborated the potential of OA to boost the production of quality food, promote the proper utilization of renewable resources, maintain long-term soil fertility, facilitate biological pest control, and utilize water resources efficiently (Das *et al.*, 2022).

5. CONCLUSION

The study results indicate that the Organic Agriculture (OA) Program in Northern Mindanao has made considerable progress in areas such as advocacy, education, production support, monitoring and evaluation, extension services, institutional development, capability building, and promotion. These achievements reflect the ongoing efforts of the regional agriculture office to support organic producers and promote sustainable agriculture. However, the program faces significant challenges, particularly in market development, research and development, and regulatory services, which require enhanced support and improved strategies. Additionally, the program's effectiveness is hindered by budget constraints, limited access to infrastructure, equipment, and essential services, as well as insufficient platforms for collaboration and information sharing, and low levels of stakeholder awareness and participation. To overcome these obstacles and fulfill the program's objectives, more comprehensive and inclusive interventions are necessary. Based on the findings and conclusions of this study, several key recommendations are proposed to organic farmers, the Association of Organic Agriculture Farmers, implementers, and stakeholders to strengthen the Organic Agriculture (OA) program in Northern Mindanao. Farmers in Northern Mindanao should be encouraged to view organic agriculture as a viable and sustainable alternative to conventional farming. By providing them with access to knowledge and information, enhancing their skills, offering technical assistance, and exposing them to successful organic farming models, their participation in the region's organic movement can be increased. Additionally, offering transition support such as market linkages or input subsidies will help reduce the initial barriers to adopting organic farming and promote wider program involvement. For the Association of Organic Agriculture Farmers, it is essential to reorganize institutional frameworks and reconstitute local committees, focusing on clearly defined roles and responsibilities to improve program coordination and strengthen stakeholder engagement. Increasing farmer participation through regular meetings and collaborative planning is also crucial. Program implementers, especially the regional agriculture office, are encouraged to allocate more resources toward research and development, streamline regulatory processes, and enhance monitoring and evaluation systems. Efforts should also prioritize market development by establishing linkages, creating trading posts, and addressing production support challenges. Capacity-building initiatives remain vital to reinforce the OA program's foundation. Stakeholders and consumers should foster multi-sectoral collaboration and support capacity-building activities to effectively address implementation gaps. Raising public awareness about the benefits of organic agriculture will further boost community involvement and consumer demand, ensuring the program's sustainability. The regional agriculture office is advised to adopt and implement the proposed intervention plan in partnership with organic farmers and other stakeholders, with a strategic focus on institutional development, capacity enhancement, market access, and regulatory support for the effective and sustainable execution of the program.

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